

# Technical Fire Direction - Cannon (GDU) For AFATDS 6.3.1.0

## FINAL



31 October 2002

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**REVISION STATUS SHEET  
FOR  
TECHNICAL FIRE DIRECTION -  
CANNON (GDU)  
FOR  
AFATDS 6.3.1.0**

<b>Rev.</b>	<b>Date</b>	<b>Description of Change</b>
Final	31 Oct 02	TB 11-7025-354-10-1 Final, replaces all previous Job Aids which were related to AFATDS GDU Operations. This version incorporates new V6.3.1.0 functionality.

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## 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 cannon artillery units that communicate with the weapons via GDU.
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.** Prepare AFATDS to conduct GDU operations. Chapter 1 describes a step-by-step method for constructing a firing battery 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.** Accounting for Non-Standard Conditions. The applications of MV data, meteorological data and registration correction is described in chapter 3. 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 AFATDS.
  - e. **Chapter 5.** Commander's Guidance and Planning. Chapter 5 describes the procedures for receiving and implementing future plans data and entry of commander's guidance.

**Conventions used in this publication.** This publication is procedure 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. Below is an example.

### EXAMPLE

<b>Task P1: Construct Firing Battery /Platoon Unit Data.</b>		
This task builds the fire unit in the current situation.		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1.	Click Units, Workspace, New Friendly Unit or the Units Folder icon in the toolbar.	The Create New Unit window displays.
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.		

Fonts. Fonts are used to indicate information as follows:  
*Italics* are used to provide notes and directions.

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## Chapter 1. Prepare AFATDS to conduct GDU operations.

### Section I.

This chapter provides detailed procedures for constructing a firing battery/platoon database. This procedure begins with establishing a firing battery/platoon setup data and ends with transmitting data to higher and supported headquarters. The procedures are ordered to allow the operator to move sequentially from the first to the last.

#### P1. Construct Firing Battery/Platoon Unit Data

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

AFATDS fire unit data is equivalent to the BCS AFU;UPDATE, BCS;PIECES and AFU;AMMO messages. This information provides a complete record of the battery/platoon and its weapons.

Procedure P1: Construct Firing Battery/Platoon Unit Data.		
Step	Action	Result/Explanation
1.	Click Units, Workspace, or the Units Folder icon in the toolbar, New, Friendly Unit.	The Create New Unit window displays.
<b>NOTE:</b>		
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 battery/platoon 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.	<i>Complete the Identification section.</i>	
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 Battery or Platoon as appropriate.	Used to construct map symbol and to determine unit size in mission processing.
d.	Click Function and select the appropriate artillery type.	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.
6.	<i>Complete the Current Location section.</i>	
b.	Click on Datum: and enter the datum of the used in the survey of the gun position.	
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.	<i>Complete the Command Support section.</i>	
<b>NOTE:</b>		
AFATDS uses Command and Supported Unit ID to determine what stations may task a unit with fire missions. Though not used at the local unit, this information is important to other units that receive the battery/platoon information. The commanding and supported unit ID cannot be entered at this stage		

**Procedure P1: Construct Firing Battery/Platoon Unit Data (cont).**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
8	<i>Complete the Status section</i>	
a.	Click on Mission and select the battery's/platoon's or parent unit'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. 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.
9.	<i>Complete the Detailed data.</i>	
a.	Click on Weapon Model and select the nomenclature of the unit's weapon system.	Weapon system capability data in the window changes based on selection.
b.	Edit the following as required:	
1)	Shift Time (min)	The time required to shift fires during a fire plan.
2)	Response Time (min)	The time required to fire a mission measured from call for fire reception.
3)	Max Range Rap (m)	The maximum achievable range for RAP.
4)	Max Range (m)	The maximum achievable range for non-RAP.
5)	Min Rnds per MVV	The least number of rounds from which a calibrated muzzle velocity can be determined.
6)	Min Range (m)	Least range at which targets may be engaged.
7)	Max Rate of Fire (RPM)	Not used in processing.
8)	Sus. Rate of Fire	Not used in processing.
	Maximum and sustained rates of fire are based on weapon system defaults. Changes made in the detailed unit information do not affect mission processing.	
9)	Azimuth of Lay (mils)	The grid azimuth of lay of the fire unit.
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.
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.
<b>NOTE:</b>		
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.		
10.	<i>Complete Weapon Data section.</i>	
a.	Click in the Authorized field and type the number of weapons the unit is authorized.	This is a required entry but is not used in processing.
b.	Click in the Operational field and type the number of weapons up and in order.	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 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.

**Procedure P1: Construct Firing Battery/Platoon Unit Data. (cont)**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
11.	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.
<b>NOTE:</b>		
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 until lay data is entered. The following fields should be verified and edited as required:		
1)	Max QE (mils)	Enter the max elevation achievable by the weapon as reported in the XO's report.
2)	Status	Defaults to Ready and should be edited to Out of Action if the gun is down.
3)	MCA	Check box defaults to blank. Click the box if the gun has an operational MCA and M94 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)	Azimuth of Lay	Type the azimuth of lay.
7)	Click the Apply button.	The gun data is stored and the Cannon Weapon window remains open to store another piece's data.
8)	Click Weapon Number field and select the next gun number.	The gun number displays in the Weapon Number field.
9)	Repeat steps 10.a. through 10.b. until all weapons have been entered.	
10)	When all weapons have been entered, click OK.	The Cannon Weapon window closes.
12.	<i>Enter lay data</i>	
a.	Click on the Calc Weapon Loc file in Detail folder on upper left of the window.	The Unit ID window displays weapon location data.
b.	Click in the first field of Orienting Station A Loc: and enter the OS grid to the nearest meter.	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.
<b>NOTE:</b>		
If a second OS was used to lay the battery/platoon, repeat step 11.b. for the Orienting Station B Loc.		
c.	Enter lay data for each gun as described below:	
1)	Click on the Group field for the gun and select the platoon assignment for the gun.	Platoon assignments are not required. Values are Left, Right and Center.
2)	Click on the Ref field and select location from which the weapon was laid.	Selections are Station A and Station B for OS A and B respectively and all gun numbers for reciprocal lay.
3)	Click the Azimuth field and enter the azimuth from the laying weapon or OS to the gun.	The azimuth is displayed.

**Procedure P1: Construct Firing Battery/Platoon Unit Data. (cont)**

Step	Action	Result/Explanation
	<p align="center"><b>NOTE:</b></p> <p>The Lay deflection must be converted to an azimuth using the following math step: For an M100 series panoramic telescope:</p> $\begin{array}{r} \text{Azimuth of Lay} \\ + \text{Lay Deflection} \\ \hline \text{Azimuth (if azimuth is greater than 6400, SUBTRACT 6400)} \end{array}$ <p><i>For an M12 series panoramic telescope:</i></p> <p>The location of the weapon as viewed from the OS in reference to forward as the direction downrange must be considered: If the gun is right of or forward of the OS or laying weapon:</p> $\begin{array}{r} \text{Azimuth of Lay} \\ + \text{Lay Deflection} \\ \hline \text{Azimuth (if azimuth is greater than 6400, SUBTRACT 6400)} \end{array}$ <p>Or if the gun is behind or left of the OS or laying weapon:</p> $\begin{array}{r} \text{Azimuth of Lay} \\ \quad 3200 \\ + \text{Lay Deflection} \\ \hline \text{Azimuth (if azimuth is greater than 6400, SUBTRACT 6400)} \end{array}$ <p><i>This procedure may be assisted by using the calculator displayed by clicking Start, Programs, Calculator.</i></p>	
4)	Click the Range field and type the distance from the OS or laying piece to the gun.	The distance is displayed.
5)	Click the VA field and type the vertical angle from the OS or laying piece to the gun.	The vertical angle is displayed.
6)	Repeat steps c.1) through c.6) for each gun.	
d.	Click the Compute button.	The lay data is deleted, the Location field for each gun updates. The Center of Battery Location updates with the average of all gun locations.
e.	Click the Options Exit, save changes Yes button.	The Create New Unit window closes.
<p align="center"><b>NOTE:</b></p> <p>If the OS lies near the junction of two grid zones and the lay data averages to a location is the adjacent grid zone, the coordinates of the pieces, OS and Center of Battery will convert to values in the adjacent grid zone.</p>		
<p><b>Warning!</b> The fire unit can be selected by clicking the map symbol and dragging the unit to a new location on the AFATDS map. If the unit is dragged, the gun location <u>will not</u> update. If the unit is dragged to a new location, click the Calc Weapon Loc file and recalculate weapons location.</p>		

## P2. Store Historical Muzzle Velocity

**Conditions:** Given an AFATDS workstation that is powered, with the AFATDS Current situation displayed and a fire unit constructed with fire unit UNIT ID window displayed...

**Additional Information:** AFATDS provides the ability to determine and stored muzzle velocity data during the conduct of a calibration. This process is discussed in detail in chapter 3, Section III. Data previously determined from calibration, termed historical muzzle velocity data, is entered using the procedure described here. This Procedure begins with fire unit's Unit ID window open as a continuation of Procedure DB 1. If no historical muzzle velocity data is to be entered, go to Procedure DB 3.

<b>Procedure P2: Store Historical Muzzle Velocity data.</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1.	Click on the MVV Data file in Detail folder on upper left of the window.	The Unit ID window displays muzzle velocity data for gun 1. If data for another gun is to be entered, click the Wpn Number field and select the desired gun number.
2.	Click the Proj Model field in the first blank line and select the projectile calibrated	The selected projectile is displayed in the Proj Model field.
<b>NOTE:</b>		
Muzzle velocity data is applied to the computation of firing data as described in Chapter 6, Section III. The actual projectile calibrated is entered with historical data and that data is applied according to transfer rules. No correction to MV 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.		
3.	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.
4.	Click the Prop Lot field and select or type the letter designator for the calibrated propellant lot.	The selected lot is displayed. This is a required entry but the lot does not need to be stored in ammunition inventory for the unit.
5.	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.
6.	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.
7.	Click the Type field in the first blank line and select the Historical.	Historical is displayed.
8.	Click the Save button.	The Last Update field automatically stored the DTG MVV data was stored. The MVV is stored and available for use.
9.	<b>NOTE:</b>	
To store additional data for the selected gun, repeat steps 1 through 8. To store MVV data for another gun, click the WPN Number field and select the desired gun, then repeat steps 1 through 8.		

### P3. Store Fuze Inventory for a Howitzer

**Conditions:** Given an AFATDS workstation that is powered, with the AFATDS Current situation displayed and a fire unit constructed with the fire unit's UNIT ID window displayed This Procedure begins with fire unit's Unit ID window open as a continuation of Procedure P1. If no fuze inventory data is to be entered, go to Procedure P4.

Procedure P3: Store Fuze Inventory for a Howitzer		
Step	Action	Result/Explanation
1.	Click on the Fuzes file in Ammunition folder on left of the window.	The Unit ID window is a list of all valid fuzes for the unit's weapon system.
2.	In the Model column, double-click on the desired fuze nomenclature.	The Fuze window displays.
3.	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.
4.	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. <b>String is invalid</b> displays in green text when non-alphanumeric characters are entered and the cursor is moved to another field.
5.	Click the On Hand field in the first blank line and type the number of fuzes on hand.	The quantity of fuzes is displayed.
6.	Click the OK button.	The Fuze window closes and the Unit ID window displays with the new fuze inventory data.
7.	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.
8.	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.
9.	Click the Apply button to store all input data.	Fuze inventory data is stored.
10.	Repeat steps 2 through 9 for each fuze.	

### P4. Store Propellant Inventory for a Howitzer

**Conditions:** Given an AFATDS workstation that is powered, with the AFATDS Current situation displayed and a fire unit constructed with the fire unit's Unit ID window. This Procedure begins with fire unit's Unit ID window open as a continuation of Procedure P1. If no propellant inventory data is to be entered, go to Procedure P5

Procedure P4: Store Propellant Inventory for a Howitzer		
Step	Action	Result/Explanation
<b>Note</b>		
When entering data for 105mm units it is recommended that you leave the Propellant quantities blank, since "Semi Fixed" ammunition does not have a separate propellant. If you enter propellant data it may cause the software to select a propellant lot during mission processing and the Ballistic Kernel (NABK) calculations will compute no solution.		
1.	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.

**Procedure P4: Store Propellant Inventory for a Howitzer (cont)**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
2.	In the Model column, double-click on the desired propellant nomenclature.	The Propellant window displays.
3.	Click the Lot Code field in the first blank line and type the letter designator for the propellant lot.	This selected lot is displayed.
4.	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. <b>String is invalid</b> displays in green text when non-alphanumeric characters are entered and the cursor is moved to another field.
5.	Click the On Hand field in the first blank line and type the number of propellants on hand.	The quantity of propellants is displayed.
6.	Click the OK button.	The Propellants window closes and the Unit ID window displays with the new propellant inventory data.
7.	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.
8.	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.
9.	Click the Apply button to store all input data.	Propellant inventory data is stored.
10.	To store additional propellants, repeat steps 2 through 9.	

**P5. Store Munitions (Shell) Inventory for a Howitzer**

**Conditions:** Given an AFATDS workstation that is powered, with the AFATDS Current situation displayed and a fire unit constructed with the Unit ID window displayed...

**Additional Information:** AFATDS requires munitions data in order to process fire missions. This Procedure begins with fire unit's Unit ID window open as a continuation of Procedure P1. If no munitions inventory data is to be entered, go to Procedure P6.

**Procedure P5: Store Munitions Inventory for a Howitzer**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1.	Click on the Munitions file in Ammunition folder on lower left of the window.	The Unit ID window is a list of all valid projectiles for the unit's weapon system.
2.	In the Model column, double-click on the desired projectile nomenclature.	The Cannon Mortar Munition window displays.
3.	Click the Lot Code field in the first blank line and type the letter designator for the projectile lot.	This selected lot is displayed.

<b>Procedure P5: Store Munitions Inventory for a Howitzer</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
4.	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. <b>String is invalid</b> displays in green text when non-alphanumeric characters are entered and the cursor is moved to another field.
5.	Click the On Hand field in the first blank line and type the number of projectiles on hand.	The quantity of projectiles is displayed.
6.a	Click on the Projectile Weight (Pounds) field and type the projectile weight to the nearest 0.1 pounds.	The typed values displays
OR		
6.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.
7.	Click the OK button.	The Cannon Mortar Munition window closes and the Unit ID window displays with the new projectile inventory data.
8.	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.
9.	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.
10.	Click the Apply button to store all input data.	Propellant inventory data is stored.
11.	The Cannon Mortar Munition window displays. <i>To add additional projectiles, repeat steps 2 through 10.</i>	

### **P6. Store Movement Factors for the Battery/Platoon**

**Conditions:** Given an AFATDS workstation that is powered, with the AFATDS Current situation displayed and a fire unit constructed with the Unit ID window displayed...

**Additional Information:** AFATDS at the artillery battalion or supported maneuver unit may be used to plan, deconflict and order unit movement. To perform this Procedure, the planning AFATDS requires information as route requirements and column length of a unit's convoy. The unit concerned provides this data. This Procedure begins with fire unit's Unit ID window open as a continuation of Procedure P 1.If movement factors are not to be entered, go to Procedure P7.

<b>Procedure P6: Store Movement Factors for the Battery/Platoon.</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1.	Click on the Movement file in General folder on upper left of the window.	The Movement Factors window displays.
2.	Enter the following data:	
a.	Total Vehicle in March column	Enter the number of vehicles. Vehicles towing loads count as a single vehicle.
b.	Unit Bridge Classification	Enter the bridge classification required by the heaviest vehicle in the unit.
c.	Unit Daily Hauling Capacity	This value may be entered but is not used by other AFATDS in movement planning.

d.	Maximum Vehicle Width	Enter the width of the widest vehicle to the nearest 0.01 meters.
e.	Maximum Vehicle Height	Enter the height of the tallest vehicle to the nearest 0.01 meters.
f.	Maximum Vehicle Length	Enter the length of the longest tractor/towed load or vehicle to the nearest 0.01 meters.
<b>Procedure P6: Store Movement Factors for the Battery/Platoon (cont).</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
g.	Maximum Fording Depth.	Enter the fording depth for the least capable vehicle of the unit to the nearest 0.01 meters.
3.	Click OK.	The Movement Factors window closes and the data entered are stored.

### P7. Store Mask Data.

**Conditions:** Given an AFATDS workstation that is powered, with the AFATDS Current situation displayed and a fire unit constructed ...

**Additional Information:** 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 Procedure begins with Current window displayed. If no mask data is to be entered, go to Procedure P8.

<b>Procedure P7: Store Mask data.</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1.	Click Units, Edit this Unit	The Unit ID window is displayed.
2.	Click the Weapon file of the Detail folder.	The Unit ID window displays weapons.
3.	Double-click the desired weapon in the Wpn No. column.	The selected line highlights.
4.	In the Mask/Azimuth Data section, click the Add button.	A new line of data is added to the mask data displayed.
5.	Click the Left Az (mils) column and type the azimuth to the left side of the crest.	If left limit of the crest is reported in firing deflection, this value is converted to azimuth using the following math step:  $\frac{\text{COMMON DEFLECTION} - \text{DEFLECTION TO CREST}}{\text{DIFFERENCE IN MILS}} + \text{AZIMUTH OF LAY}$ AZIMUTH TO CREST (if azimuth is greater than 6400, SUBTRACT 6400)
6.	Click the Right Az (mils) column and type the azimuth to the right side of the crest.	If right limit of the crest is reported in firing deflection, this value is converted to azimuth using the following math step:  $\frac{\text{COMMON DEFLECTION} - \text{DEFLECTION TO CREST}}{\text{DIFFERENCE IN MILS}} + \text{AZIMUTH OF LAY}$ AZIMUTH TO CREST (if azimuth is greater than 6400, SUBTRACT 6400)

**Procedure P7: Store Mask data.**

Step	Action	Result/Explanation
7.	Click the Rng To Msk (m) column and type the range to crest.	The range to crest is displayed.
8.	Click the VA (mils) field and type the site to crest.	The site to crest is displayed.
9.	Click the OK button.	The Cannon Weapon window closes and the Unit ID window displays.
10.	Click the OK button.	The Unit ID closes and the new mask data is stored.

**P8. 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...

**Additional Information:** Unit data is required by AFATDS to maintain situational awareness. In addition, AFATDS requires unit data be stored in the current situation in order to communicate with that unit beyond the sending of simple freetext This Procedure begins with current situation displayed. If units are not to be constructed, go to Procedure P9.

**Procedure P8: Construct an Observer, Radar, Headquarters or Maneuver Unit.**

Step	Action	Result/Explanation
1.	Click Units, Workspace, or the Units Folder icon in the toolbar, New friendly Unit.	The Create New Unit window displays.
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, met units and headquarters.
		Radar        Use for counter battery and counter mortar radar as well as JSTARS ground station modules.
4.	Click OK.	The Unit ID: window displays.
5.	<i>Complete the Identification section.</i>	
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:
		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
		MET Station                      Met Station

		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 for Firefinder or Ground Surveillance for JSTARS.
		Other	Function is based on unit type
<b>Procedure P8: Construct an Observer, Radar, Headquarters or Maneuver Unit (cont).</b>			
Step	Action	Result/Explanation	
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.	<i>Complete the Current Location section.</i>		
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. Short coordinates may be used if the location plots inside the map mod.	
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. Perform this action again to change the form to MGRS	
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.	<i>Complete the Command Support section.</i>		
a.	Click the Current Command Unit ID and select the unit that commands this unit.	The selection list displays only units already constructed.	
b.	Click the Current Supported Unit ID and select the unit supported by this unit.	The selection list displays only units already constructed.	
8.	<i>Complete the Status section.</i>		
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 operations. 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.

**NOTE:**

If the unit is an observer, go to step 9.

If the unit is a radar, go to step 10.

For all maneuver units, headquarters and Met stations, go to step 11.

9. *Complete the Detailed data for an observer.*

**Procedure P8: Construct an Observer, Radar, Headquarters or Maneuver Unit (cont).**

Step	Action	Result/Explanation
a.	Click on Observer Type and select the description of the observer.	
b.	Edit the following as required:	
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.
2)	Laser Code	Enter the observer's laser PRF code. This is used in Copperhead mission processing.
3)	Max Range	The far edge of the observer's assigned sector of observation.
4)	Left Azimuth	The left most grid azimuth of the observer's assigned sector of observation.
5)	Right Azimuth	The right most grid azimuth of the observer's assigned sector of observation.

**NOTE:**

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.

6)	Cloud Height	The height of cloud cover above the observer in meters. This value is used in Copperhead mission processing.
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.
8)	Laser Quantity, On Hand and Operational	Enter 1 if the observer is equipped with a laser.
c.	Go to step 12.	

**NOTE:**

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 is not reliable will fail TSS checks during fire mission processing.

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:	
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.

2)	Direction of Search	Enter the reference direction for the radar's assigned search in mils grid.
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>

**Procedure P8: Construct an Observer, Radar, Headquarters or Maneuver Unit (cont).**

Step	Action	Result/Explanation
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>
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.
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.
7)	Max Range 1	Enter the max range the radar should search for artillery and mortars
8)	Max Range 2	Enter the max range the radar should search for rockets.
9)	Min Range	Enter the min range the radar should search.
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.
11)	Operational	Enter the number of operational radars assigned to the unit.
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.
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.	<i>Complete Detailed Data section for an other type units.</i>	
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 Select Options Exit, Save changes Yes.	The UNIT ID window closes and the unit data is stored.

**P9. Make Initial Report of Fire Unit Status to Higher and Supported Headquarters**

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

**Additional Information:** Maintenance of unit data is the responsibility of the actual unit. After completion of the database and establishment of communications, the AFATDS operator reports the battery/platoon status and ammunition inventory. This Procedure begins with the current situation displayed and after communications has been established.

<b>Procedure P9: Make Initial Report of Fire Unit Status to Higher and Supported Headquarters.</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1.	Correct Command and Supported relationships.	This step was omitted during the construction of the fire unit because the commanding and supported units did not exist in the database at that time.
a.	Click on the fire unit's symbol on the Current map.	The fire unit symbol changes to white outline form.
<b>Procedure P9: Make Initial Report of Fire Unit Status to Higher and Supported Headquarters (cont).</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
b.	With the cursor over the selected unit, click and hold the right mouse button.	A pop-up menu displays.
c.	Release on Edit.	The Unit ID window displays.
d.	Click the General Data folder.	The Unit ID window displays general data.
e.	Click Current Command Unit ID and select the unit that commands the fire unit.	This is normally the battalion FDC. See note at bottom of table.
f.	Click Current Supported Unit ID and select the unit that fire unit supports.	This is normally the battalion FDC. See note at bottom of table.
g.	Click the OK button.	The Unit ID window closes.
2.	<i>Transmit unit data.</i>	
a.	With the cursor over the selected unit, click and hold the right mouse button.	A pop-up menu displays.
b.	Release on Send Status.	The Send Status window displays.
c.	In the Send list, click all check boxes for all data types.	Checks appear in the checkboxes and the Send button activates.
d.	Click the Send button.	The Send Status window closes and the unit data is transmitted to all units in the distribution setup.
A low level alert indicating "Transmission Complete" is posted to the Low Level Alerts List.		
<b>NOTE:</b>		
<p>Higher echelon AFATDS use the command and support data of units in their databases to determine what units may be tasked with fire missions. Entering the command and supported unit have the following effects:</p> <p>Your Command Unit ID:</p> <p>Indicates that the commanding unit can task you with fire missions. If your commanding unit is a BN FDC, this entry also allows the FSE/FSCC they support and the REGT/DIVARTY FDC to "see" your unit as available for them to task.</p> <p>Provides you as a subordinate for data distribution. The subordinate's list is automatically compiled from unit data in the AFATDS database.</p> <p>Provides the command structure that is modified during CONOPS. CONOPS allows another AFATDS to assume the processing role of a station that loses comm or is destroyed. To assume control of operations, the back-up unit examines the command relationships to determine what units are available.</p> <p>Your Supported Unit ID:</p> <p>Indicates the unit that you support. This is normally the BN FDC. If an FSE/FSCC were entered here and your unit data was transmitted to that FSE/FSCC, the FSE/FSCC could task you directly by transmitting fire missions to your unit without first transmitting the fire request to the BN FDC. The supported unit ID also provides the destination for any mission sent as unsupportable (by clicking the Unsupportable button on the Intervention window) by your station.</p> <p>Provides you as a supported unit for data distribution. The support unit's list is automatically compiled from unit data in the AFATDS database.</p> <p>Provides the command structure that is modified during CONOPS. To assume control of operations, the back-up unit examines the supported units to determine what units are available.</p>		

## AFATDS Communications.

### Section II.

#### C1. Create a GDU Radio or Wire network.

**Conditions:** Given an AFATDS workstation that is powered, with AFATDS started and activated...

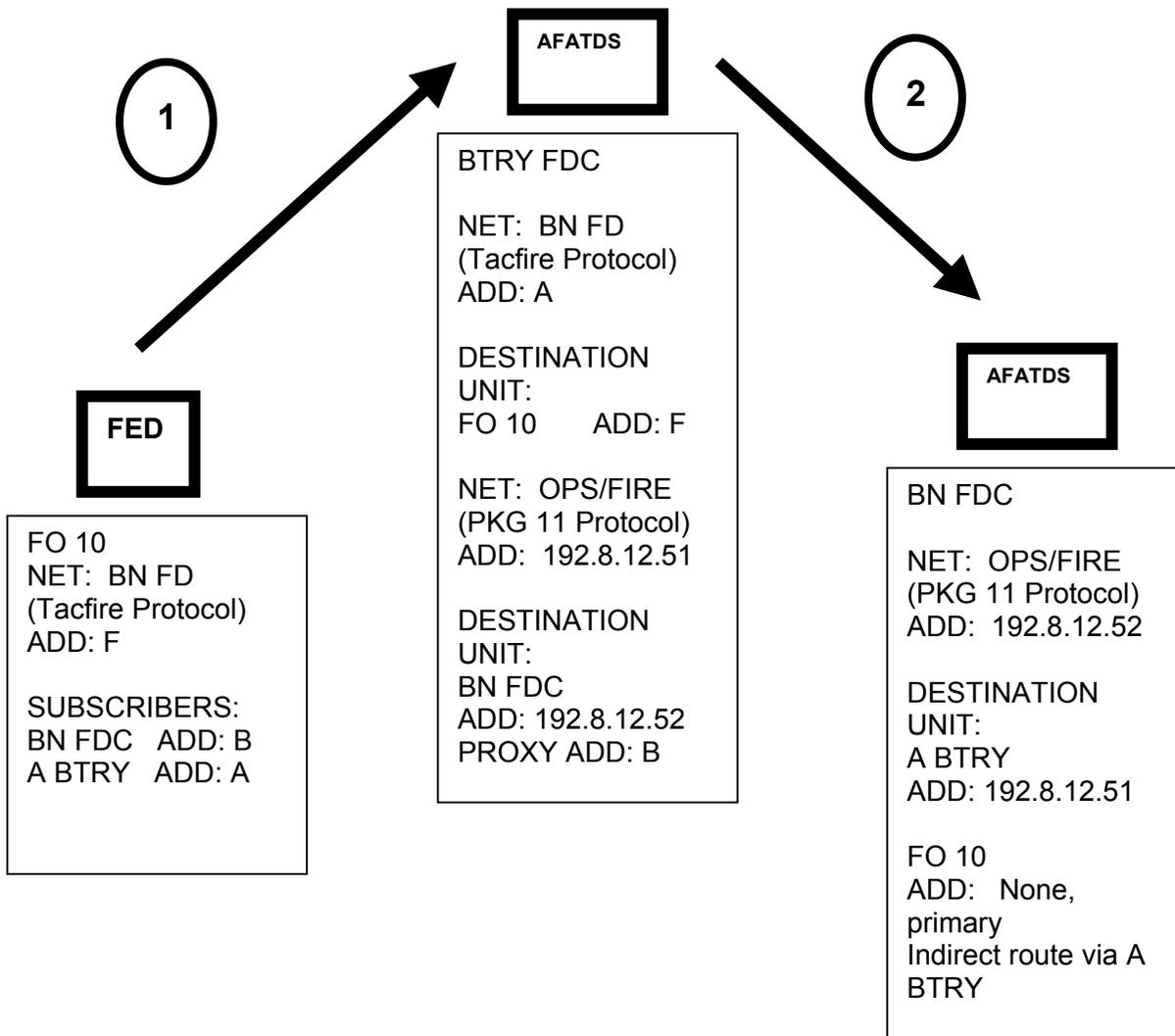
**Additional Information:** A communications configuration is a complete communications plan that contains both network information and address data for destination units. Multiple communications networks and destination units can be included. One of these is selected as the “current” communications configuration. This is the communications plan that currently in operation. Creation of the communications configuration is a multi-step process. Some steps may be omitted depending upon the contents of the communications configuration. This task creates network parameters to operate a GDU protocol network from the TCIM on radio or wireline. This task is required to communicate with the guns’ GDUs and MCAs.

<b>Procedure C1: Create a GDU Radio or Wire network.</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1.	On the Current Networks window, click the Network.	The configuration name highlights.
2.	Click Options, Edit	The Current Networks window displays.
3.	Click Network, New	The Net Channel Settings window displays.
4.	Enter the following:	
a.	Network Name	1 to 16 character network name with no spaces.
b.	Protocol	Select GDU. The More button and all fields except Media Device and Preamble become inactive.
c.	Media Device	Choose the communications medium. Selections are: Local Radio: AN/PRC-68 or AN/PRC-12 Two-Wire-And-Radio: for wire line or wire line and radio
d.	Preamble	Preamble provides keying and setup time to an attached radio. For wire line communications allows this to default. If preamble must be great enough to allow the radio to power up before sending data. Preamble is set to the same value at AFATDS as is set at all GDUs.
5.	Click OK.	The Net Channel Settings window closes and the Current Network window displays.
<b>NOTE:</b>		
Individual GDU equipped guns are <u>not</u> added as destination units in the communications configuration. These are automatically identified when the Section Chief’s Assembly is used to initialize the GDU with the gun number.		

## C2. Create a Proxy Relay

**Conditions:** Given an AFATDS workstation that is powered, with AFATDS started and activated and a communications configuration ...

**Additional Information:** 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 1-1.**

**Example:** Figure 1-1 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. This task creates the communications configuration by giving it a name.

### Procedure C2: Create a proxy relay.

Step	Action	Result/Explanation
1.	Click System, Configuration, Communications, Current...	The Current Networks window displays.
2.	Click Options, Destination Units	The Communication 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 is 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.

### C3. Direct a Gun to Establish Voice Comm with FDC (Ring Guns)

**Conditions:** Given an AFATDS workstation that is activated, with a Current communications configuration active and the Current situation displayed...

Additional information: This procedure test transmits a ring request (GDU Request For Data message) to the gun display unit (GDU) for all or selected guns. The ring request causes an audible alarm to sound at the GDU and displays "RING" in the section chief's assembly display. This action directs the gun section to establish voice communications with the FDC.

### Procedure C3: Communications Connectivity

Step	Action	Result/Explanation
1.	Click the GDU Weapon Status on the Current menu bar.	The Weapon Status GDU window displays.
2.	Click the Ring...button.	The Ring Guns GDU window displays.
3.	<i>Ring GDUs</i>	
a.	<i>To ring all GDUs:</i>	
1)	Click the Select All button.	All gun checkboxes are checked. <i>NOTE: Select All will cause AFATDS to send ring commands to all 12 guns. If there are less than 12 guns a failed comm alert posts for the guns that do not exist.</i>
2)	Click the OK button.	The Ring Guns GDU window closes and ring requests are transmitted to all GDUs.
b.	<i>To ring one or selected GDUs:</i>	

**Procedure C3: Communications Connectivity (cont)**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1)	Click the checkbox next to each desired gun number.	Checks appear in the boxes selected.
2)	Click the OK button.	The Ring Guns GDU window closes and ring requests are transmitted to selected GDUs.

*If communications with the GDU fails during the ring, no alert is presented to the AFATDS operator.*

## 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 it does 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 receive 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.

If the fire mission is entered by the AFATDS operator, the altitude must be entered to allow the Initiate fire mission window.

##### 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 or the Guidance Folder icon in the toolbar. 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 an 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, Workspace, or the Guidance Folder icon in the toolbar, 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 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, Workspace, or the Guidance Folder icon in the toolbar, 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, Mission Info 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:

<b>Procedure 2-1. Computation of Mission Value (cont)</b>	
<b>Step</b>	<b>Computation</b>
1.	Check the target type against the Guidance, Workspace, or the Guidance Folder icon in the toolbar, 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, Workspace, or the Guidance Folder icon in the toolbar, 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, Workspace, or the Guidance Folder icon in the toolbar, Target, High Value Target List.
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, Workspace, or the Guidance Folder icon in the toolbar, Target, Mission Prioritization guidance.

<b>Procedure 2-2. Computation of Priority of Fires Value</b>	
<b>Step</b>	<b>Computation</b>
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 is listed, use a value of 0.
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.

<b>Procedure 2-3. Computation of Targeted Area of Interest Value</b>	
<b>Step</b>	<b>Computation</b>
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, Workspace, or the Guidance Folder icon in the toolbar, 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.

<b>Procedure 2-4. Computation of On-Call Target Value</b>	
<b>Step</b>	<b>Computation</b>
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, Workspace, or the Guidance Folder icon in the toolbar, 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.

<b>Procedure 2-5. Computation of Mission Value</b>	
<b>Step</b>	<b>Computation</b>
1.	Determine the weight of Target Type from the Guidance, Workspace, or the Guidance Folder icon in the toolbar, 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, Workspace, or the Guidance Folder icon in the toolbar, 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.
5.	Determine the weight of TAI from the Guidance, Workspace, or the Guidance Folder icon in the toolbar, 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, Workspace, or the Guidance Folder icon in the toolbar, 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 mission’s 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, Workspace, or the Guidance Folder icon in the toolbar, System preferences and restrictions, 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 intersects 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.

- c. 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, an 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.
  - d. 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.
  - e. 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.
  - f. 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.
  - g. 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, Workspace, or the Guidance Folder icon in the toolbar, 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 requested, 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 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, Workspace, or the Guidance Folder icon in the toolbar, System preferences and restrictions, 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, Workspace, or the Guidance Folder icon in the toolbar, 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.
9. 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.

#### 10. 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, Workspace, or the Guidance Folder icon in the toolbar, 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, Workspace, or the Guidance Folder icon in the toolbar, Cannon, Attack Methods volume of fire, if stored, is tried next.

#### 11. 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:
      - If an adjusting piece is specified, assign that piece or
      - If adjusting platoon is specified, assign that platoon, or
      - If 2 gun, assign the highest ranked pieces.
      - If the adjusting piece is not specified, select from the highest ranking. This selection process will not select a piece adjusting another mission.
      - 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.
      - 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.

#### 12. Propellant selection.

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

- a. 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.
- b. 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.
- c. 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.

#### 13. Charge Selection. AFATDS selects the lowest charge capable of ranging the target.

#### 14. 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 3 for a detailed explanation of registration correction applicability.

#### 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 3 for a detailed explanation of meteorological data applicability.

#### 15. 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 3 for a detailed explanation of MVV correction applicability.

#### 16. 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.

#### 17. Down range mask violations.

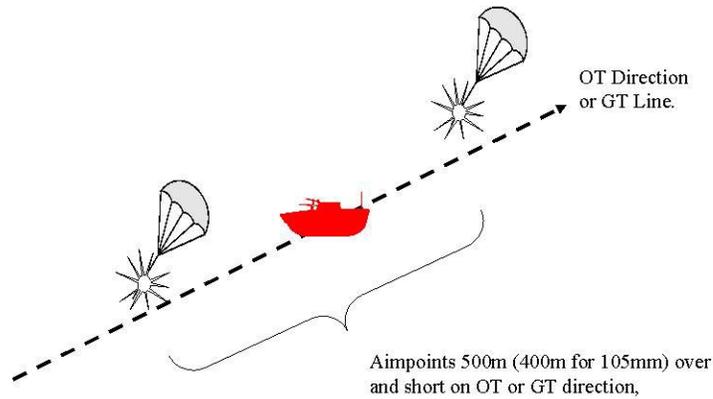
Down range mask violations are checked by determining the trajectory to the target. The height of this trajectory is checked against down range mask geometries. If the trajectory violates the down range mask, the option is marked as incapable and an N is placed in the Downrange Mask Capable column on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

#### 18. Aimpoint placement in the sheaf.

Aimpoint selection is based on the type mission and the munitions. Aimpoints are selected as follows.

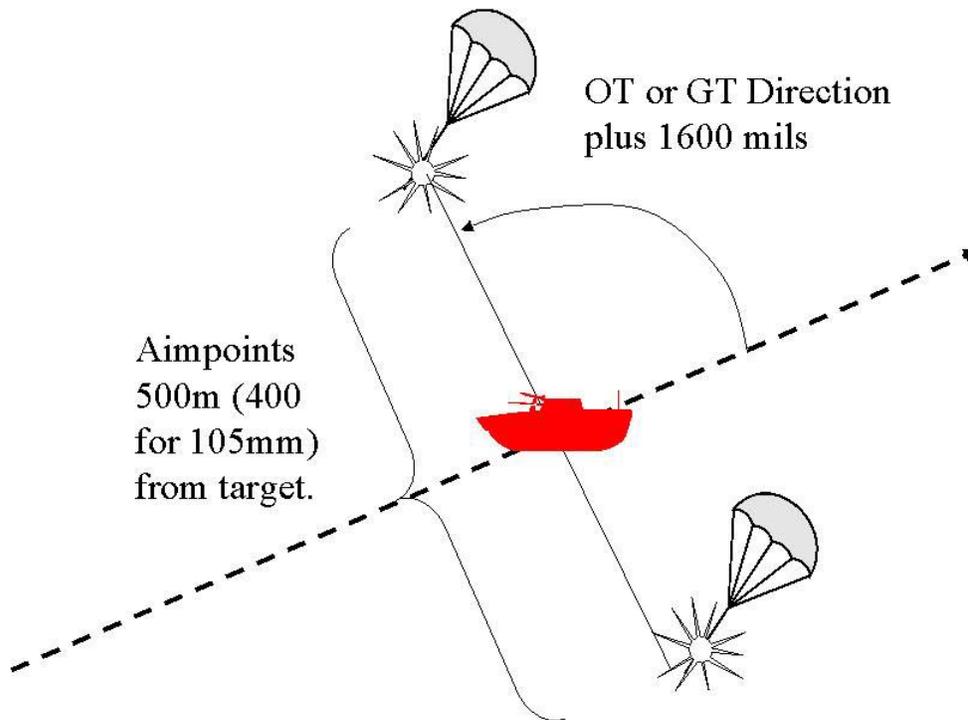
- a. If the mission is a one-gun mission, the aimpoint is the center of the target.

- b. If the mission is a FASCAM or Copperhead mission, the sheaf defaults to converged.
- c. 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 2-1).



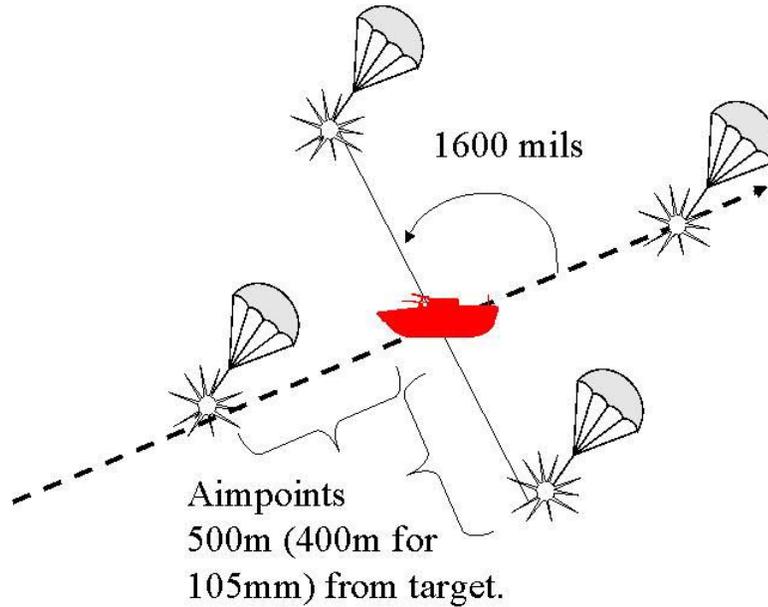
**Figure 2- 1.** Illumination Range Spread.

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



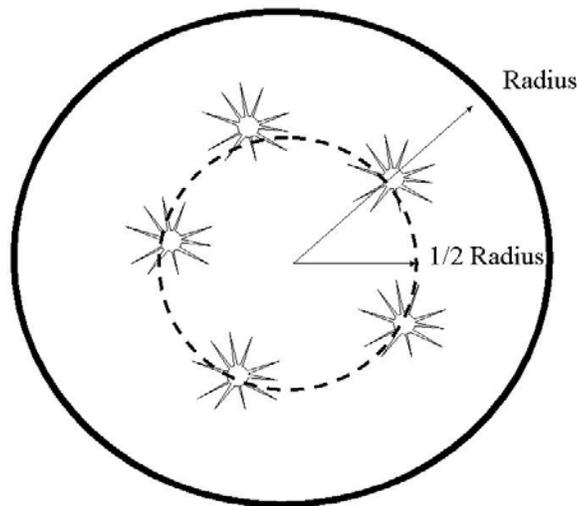
**Figure 2- 2.** Lateral Illumination Sheaf.

- 6) 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.
- 7) 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 2-3.** Range and lateral spread sheaf.

- d. For all other missions, the sheaf is dependent on the target dimensions and the number of weapons engaging the target.
  - 1) If the target is a circle, aimpoints are evenly distributed along the circumference of a circle one half the radius of the target from the target center. (See Figure 2-4.)



**Figure 2-4.** Circular Sheaf.

- 2) The target will be deemed a linear target if the target length is greater than or equal to 5 times the target width. In this instance, the target is divided into segments equal to the number of weapons firing and an aimpoint is assigned on target's attitude in the center of each segment. (See Figure 2-5.)

For example, if the target is described as rectangular and the target length is 200 and width is 10, the length is 20 times the width. This meets the requirement for a linear target. If 6 guns are firing, the target is divided into six 33 meter long segments. An aimpoint is assigned to the center of each of these segments.

Divide target into segments equal to number of guns:

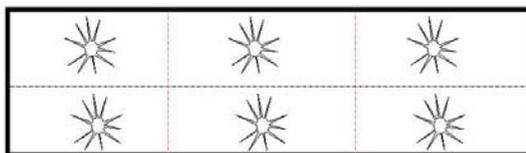


Assign an aimpoint in the center of each segment.

**Figure 2- 5.** Linear sheaf.

- 3) A rectangular target has a length less than 5 times the width. In this case two rows of bursts are applied to the target using the following logic (see Figure 2-6):
  - a) Divide the width by 4 and assign a row of bursts the computed distance from the centerline of the target. Half the weapons firing are assigned to each row of bursts.
  - b) Divide the length by half the number of firing the weapons. Place an aimpoint in the center of each segment for each row.

Divide target width in half:



Divide target length by half the number of guns:

Assign an aimpoint in the center of each segment.

**Figure 2- 6.** Rectangular sheaf.

- c) For example, if the target is 300 meters long and 100 meters wide, aimpoints are placed in two parallel rows, each 25 (100/4) meters from the centerline. If 4 weapons are firing, two are assigned to each row. Each row is 300 meters long and is divided into two segments (because two guns are firing) of 150 meters. An aimpoint is assigned to the center of each of the segments.

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.

- a. 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:
    - An active mission is ended with a request to “Record as Target.”
    - A fire plan is created.
    - By selecting Target, Workspace, or the Target Folder icon in the toolbar, Current, Current On-Call Target List, Select # 3 on the mouse, Open on the On-Call Target List.
    - 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.
- b. 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.**

**FM1. Limit Charge Selection in Training Exercises.**

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

**Additional Information:** Mission Processing Preferences provide a mechanism that supports peace-time 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: This task creates enters Mission Processing Preferences.

This task should only be performed if technical solutions must be limited.

These preferences can be overridden by manually entering different propellant values in the Initiate Fire Mission window.

1. These preferences are examined each time a mission is recalculated and any change in preferences is considered.
2. An observer request for high angle will override the preference for low angle fire.

<b>Task FM1: Limit Charge Selection in Training Exercises</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
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.

**Task FM1: Limit Charge Selection in Training Exercises (cont)**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
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 that is powered, with AFATDS started, activated and with the current situation displayed...

**Additional Information:** AFATDS stores the block of target numbers assigned to the battery/platoon. Target numbers are assigned to calls for fire received without a target number and to targets entered or generated at the AFATDS. This task creates enters a range of target numbers for use by AFATDS.

**Task FM2: Establish Target Number Block.**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
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 that is powered, with AFATDS started, activated and with the current situation displayed...

**Additional Information:** 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.

<b>Task FM3: Enable Audible Fire Mission Alert and Adjust Volume</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
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 voice 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 that is powered, with AFATDS started, activated and with the current situation displayed...

**Additional Information:** 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.

<b>Task FM4: Establish Fire Mission Intervention Criteria</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
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.

**Task FM4: Establish Fire Mission Intervention Criteria (cont)**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
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.
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.
<b>NOTE:</b>		
Each rule created acts independently. If a rule is established, each of the seven criteria in step 2 are 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...

**Additional information:** 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 task describes the basic mission process and acts a map to other tasks that may be required to carry out mission processing.

<b>Task FM5: Process an Area Fire Mission</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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.
<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. Click Mission Processing, Initiate Fire Mission. See TASK FM6. Initiate a Fire Mission at AFATDS</i>	
<b>NOTE:</b>			
<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.</i>			
3.	Btry/Plt AFATDS	<i>Display the mission processing solution.</i>	
a.		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
<b>NOTE:</b>			
<i>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.</i>			
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed.
c.		Click one of the following:	

## Task FM5: Process an Area Fire Mission (cont)

Step	Station	Action	Result/Explanation
		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request: 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. <i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the GDUs and sends an MTO. The MTO: 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>
		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 Supported Unit ID for the btry/plt AFATDS.
		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. <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. <i>If the mission was received directly from an observer:</i> sends a denied MTO to observer. <i>If the mission was received from a radar:</i> no response is transmitted to the radar.</p>
4.	Guns	Receive fire commands.	The GDU alarm sounds and the mission data is displayed at the SCA.
			AFATDS transmits the special instruction "Azimuth" (AZ in the SCA window) for each round fired. Azimuth is provided to allow weapons that receive deflections outside traverse limits to shift trails. The azimuth transmitted is the gun-target azimuth computed for the lowest numbered gun.
5.	Observer	Receives and stored the MTO.	

## Task FM5: Process an Area Fire Mission (cont)

Step	Station	Action	Result/Explanation
6.	Btry/Plt AFATDS	Track mission status of GDUs.	Click the GDU Weapon Status icon of the Current menu tool bar. The Weapon Status GDU window displays. See Task FM8. Examine the Weapon Status GDU Window for details of mission tracking on the Weapon Status GDU window.
<p>If the method of control is At My Command or TOT: got to step 7.</p> <p>If communications with the GDUs fails: see Task FM13. React to a GDU Comm Failure During Mission Processing.</p> <p>If the method of control is WR,: go to step 13.</p>			
7.	Guns	Transmit "Ready" report.	After cycling through the mission, the READY button on the SCA is selected.
8.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun changes from a * with a yellow background to ■ with a green background. When the last gun has reported, the "Ready" command is transmitted to the observer. For a TOT, go to step 9. For an AMC mission, go to step 10.
<p>If "Ready" is received via voice communications with the guns, display the Active Target List (Targets, Target Lists, Active). Highlight the target in the window's list and click Options, Commands. On the displayed Commands window, click the Fire Status field and select Ready. Click the OK button.</p>			
9.	Btry/Plt AFATDS	Transmit "Fire" command for a TOT.	A timer, displayed in the GDU Weapon Status window counts down the time until the fire command is transmitted. At the expiration of the time, the command to fire is automatically transmitted to the GDUs. Go to step 12.
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 GDUs.
12.	Guns	Receive "Fire" command.	The GDU alarm sounds and the command to fire the mission is displayed at the SCA.
13.	Guns	Report "Shot."	The Shot button is depressed on the SCA.
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 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 from a * with a yellow background to ■ 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 is not sent for missile missions. The report is transmitted by clicking the Splash button on the Weapon Status GDU window.
17.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.

**Task FM5: Process an Area Fire Mission (cont)**

Step	Station	Action	Result/Explanation
18.	Guns	Transmit "Rounds Complete" report.	This report is sent the instant all rounds of fire for effect have been fired by pressing the RDS CMPLT button on the SCA.
19.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: <i>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> <i>If the mission was initiated at by an observer, the "Rounds Complete" report is automatically re-transmitted to the observer.</i> As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting gun changes from a * with a yellow background to ■ with a green background.
20.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
<i>If the observer adjusts fire: go to step 21.</i> <i>If the observer ends the mission: go to step 24..</i>			
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, <i>the fire commands are transmitted to the GDUs.</i> If intervention rules apply, <i>the mission the Intervention icon on the Current window tool bar activates.</i> 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 GDUs. <i>If the observer requests Record as Target:</i> The adjusted target location is stored in the On-Call Target list. <i>If the observer requests Record as Known Point:</i> 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.	The SCA displays EOM and the mission number.

**FM6. Initiate a Fire Mission at AFATDS.**

**Conditions:** Given an AFATDS workstation that is activated and with a Current communications configuration active...

**Additional information:** 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 task 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.

Task FM6: Initiate a Fire Mission		
Step	Action	Result/Explanation
1.	<i>Display the Initiate Fire Mission window.</i> Click Mission Processing, Initiate Fire Mission or, with the AFATDS Current menu bar active (framed in blue), simultaneously press <Control> and <i>	
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:	
<i>To enter a grid location, go to step 2.a.</i>		
<i>To enter a shift location, go to step 2.b.</i>		
<i>To enter a polar location, go to step 2.c.</i>		
<i>To enter a laser polar location, go to step 2.d.</i>		
a.	<i>To enter a grid location:</i>	
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.
OR		
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 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. 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.

## Task FM6: Initiate a Fire Mission (cont)

Step	Action	Result/Explanation
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.	
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 4.b. through 4.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	

**Task FM6: Initiate a Fire Mission (cont)**

Step	Action	Result/Explanation
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 an AFATDS workstation that is activated and with a fire mission at intervention...

**Additional information:** When a fire request or fire order is processed, AFATDS determines a tactical and technical solution. If intervention is set for this type of mission (see task FM4. Establish Fire Mission Intervention Criteria), the solution is presented to the operator. This task describes the presentation of the solution.

**Task FM7. Examine the Intervention Windows**

Step	Action	Result/Explanation
1	<i>Display the Intervention Window.</i> Click the IP icon on the Current window tool bar.	The Intervention window displays with the Intervention tab selected (Figure 5-1).

Task FM7. Examine the Intervention Windows (cont)

Step	Action	Result/Explanation

Figure 5- 1. Intervention Tab.

Task FM7. Examine the Intervention Windows (cont)

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.	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.	<b>Mission Value</b>	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>

## Task FM7. Examine the Intervention Windows (cont)

Step	Action	Result/Explanation
k.	Attack Options	Provide color-coded indicators for each fire support type. Color code is: <b>Green:</b> Fire support of this type can engage target within the limits of guidance and without coordination. <b>Yellow:</b> Fire support of this type can engage target within the limits of guidance but requires coordination. <b>Red:</b> Fire support of this type is available but cannot engage the target within the limits of guidance or is out of action or ammo. <b>Black:</b> 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 task 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 below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons
q.	Recalculate Fire Mission	Displays the Initiate Fire Mission window. This allows the operator to 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.

**Task FM7. Examine the Intervention Windows (cont)**

Step	Action	Result/Explanation
3.	Click the Attack Options tab.	The following data is presented: (See Figure 5-2.)

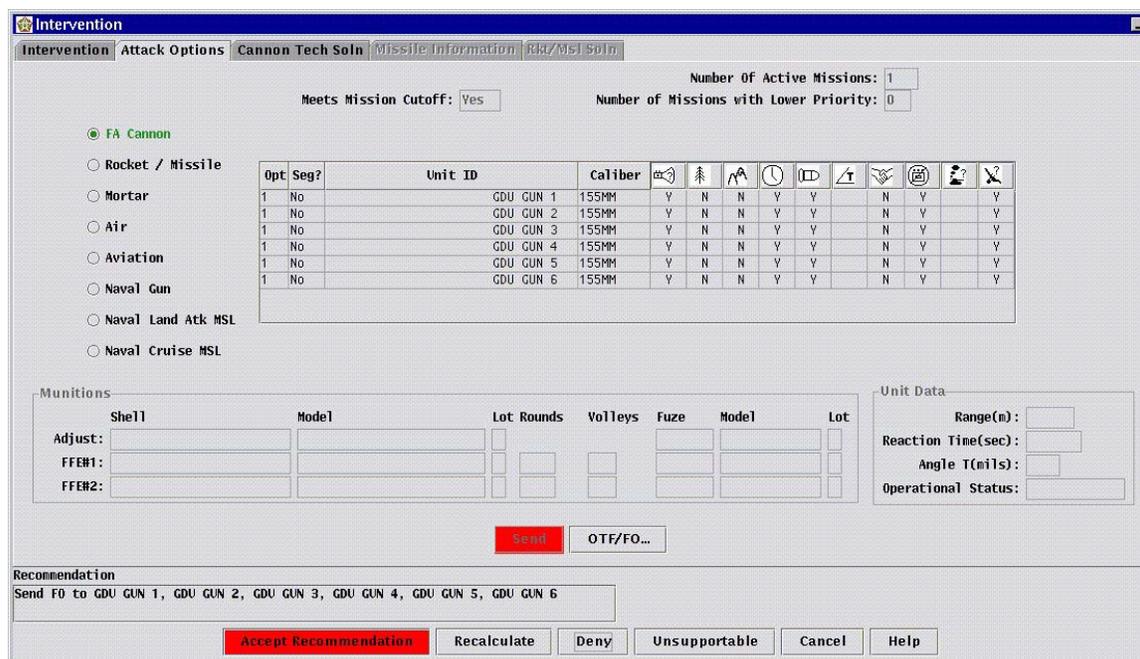


Figure 5- 2. Attack Options tab.

**Task FM7. Examine the Intervention Windows (cont)**

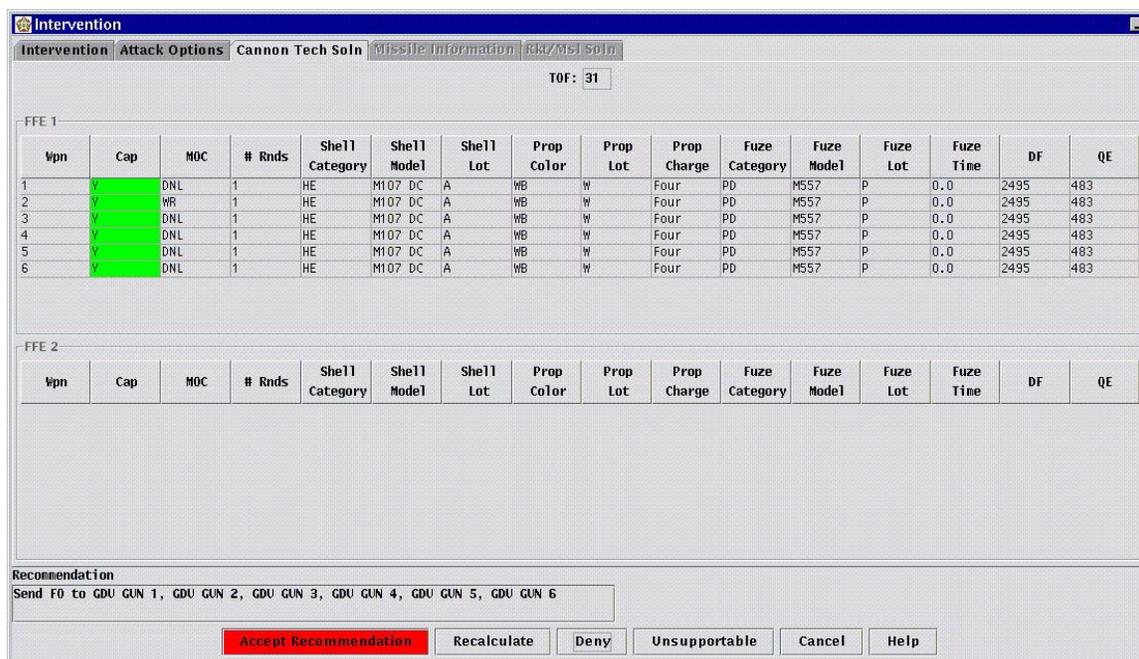
Step	Action	Result/Explanation
	DATA	FUNCTION
a.	Meets Mission Cutoff:	Indicates the mission meets the guidance in Guidances, Target, Mission Prioritization. This indication is relative to the fire support type selected to the left, or <b>FA Cannon</b> in figure 5-2.
b.	Number of Active Missions	Displays 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.	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:
1)	Tgt 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>
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.

## Task FM7. Examine the Intervention Windows (cont)

Step	Action	Result/Explanation
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)		Munition 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.
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	Selecting this button sends the option selected in the Unit ID list and closes all intervention windows.
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.

**Task FM7. Examine the Intervention Windows (cont)**

Step	Action	Result/Explanation
4.	Click the Cannon Tech Soln tab.	The following data is presented. (See figure 5-3.)



**Figure 5- 3. Cannon Tech Soln tab.**

**Task 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.
b.	FFE1 section.	Displays fire commands: <i>In an adjust fire mission:</i> 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. <i>In a fire for effect mission:</i> 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 GDU Window.**

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

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

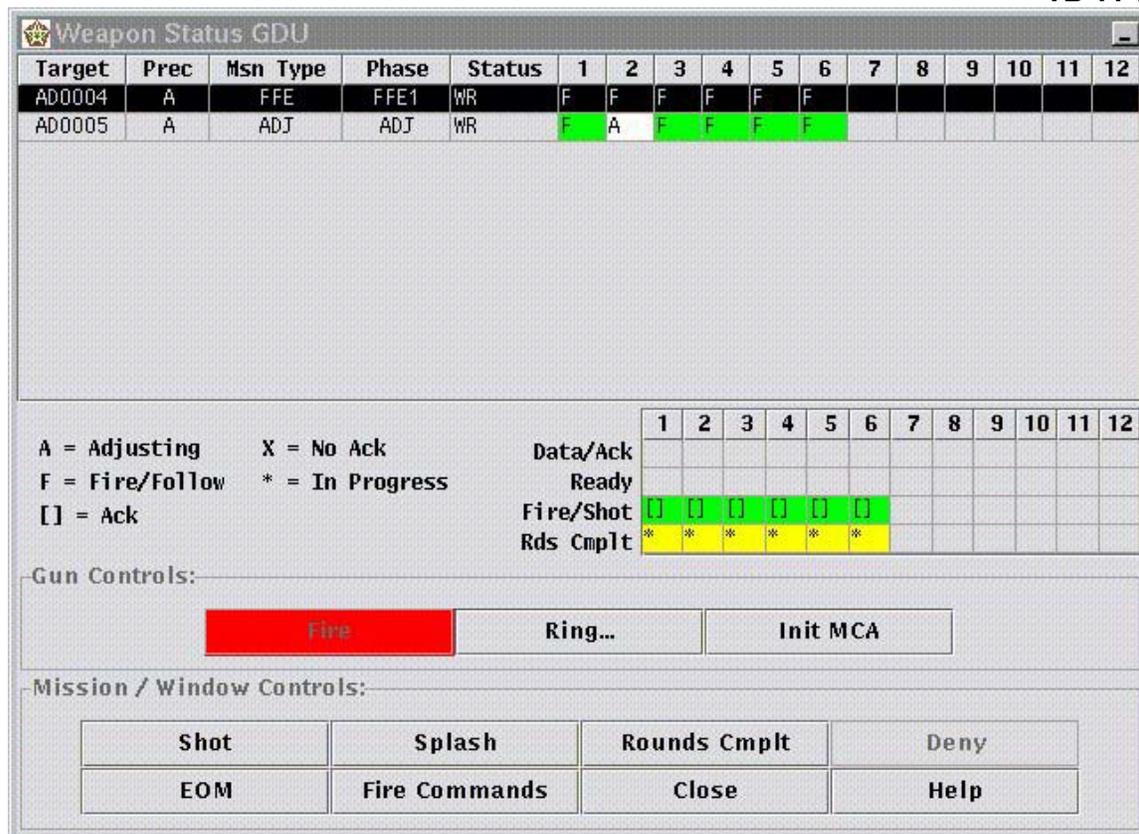


Figure 5-4

**Task FM8. Examine the Weapon Status GDU Window (cont)**

Step	Action	Result/Explanation
1	Display the GDU Weapon Status Window. Click the GDU Weapon Status icon on the Current window tool bar.	The Weapon Status GDU window displays (Figure 5-4). 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

## Task FM8. Examine the Weapon Status GDU Window (cont)

Step	Action	Result/Explanation
e.	Status	Time of opening fire: WR = when ready AMC = at my command Timer counting down minutes and seconds is displayed for TOT missions.
f.	1 through 12	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.	GDU status section.	The middle section of the window displays the GDU status for the mission selected in the Weapon and Missions Section. (In Figure 5-4, status is displayed for the highlighted mission AD0004.)
a.	Data/Ack	<p>★ indicates fire commands have been transmitted to the GDU but not acknowledged.</p> <p>■ displays when the Cycle button on the SCA is pressed, acknowledging the fire commands, or</p> <p>✗ displays if communications fail or the GDU does not acknowledge.</p>
b.	Ready	<p>Displays only for AMC and TOT missions:</p> <p>★ indicates fire commands have been acknowledged but “Ready” has not been received from the GDU.</p> <p>■ displays when the Ready button on the SCA is pressed, transmitting “Ready” to AFATDS, or</p> <p>✗ displays if communications fail or the GDU does not respond with “Ready.”.</p>
c.	Fire/Shot	<p>★ indicates fire commands have been acknowledged or “Ready” has been received from the GDU and AFATDS is waiting for “Shot.”</p> <p>■ displays when the Shot button on the SCA is pressed, transmitting “Shot” to AFATDS, or</p> <p>✗ displays if communications fail or the GDU does not respond with “Shot.”</p>
d.	RDS Complt	<p>★ indicates “Shot” has been received from the GDU and AFATDS is waiting for “Rounds Complete.”</p> <p>■ displays when the RC button on the SCA is pressed, transmitting “Rounds Complete” to AFATDS, or</p> <p>✗ displays if communications fail or the GDU does not respond with “Rounds Complete.”</p>
4.	Buttons	The following button allows 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.	Ring...	Rings the GDU to alert the gun sections to establish voice communications with the FDC. See Task C4 Direct a Gun to Establish Voice Communications with the FDC.
c.	Init MCA	Sends ammunition initialization data to the MCA and M94 chronograph. See procedure MR1 “Conduct Calibration and Determine MVV using M94 and MCA”
d.	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. Used when GDU communications fail and voice reports are received.
e.	Splash	Enters splash for the selected mission. Causes the splash command to be sent to the observer.

**Task FM8. Examine the Weapon Status GDU Window (cont)**

Step	Action	Result/Explanation
f.	Rounds Cmpltd	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 GDU communications fail and voice reports are received.
g.	EOM	Ends the selected mission and transmits end of mission to the GDUs.
h.	Fire Commands	Displays the fire commands for the selected mission.
1)	<i>From the fire commands window, the following actions can be taken:</i>	
	Select any gun and...	
	Click the Send button.	This action retransmits fire commands to the selected gun.
	Click the Delete button.	This action sends EOM to the gun and removes this piece from the fire mission.

**FM9. React to a Denied Fire Mission.**

**Conditions:** Given an AFATDS workstation that is activated and with an active fire mission...

**Additional information:** During firing battery/platoon operations fire missions may be denied by the AFATDS operator or as a result of medium level communications failure alerts that are aborted by the operator. This procedure describes operator actions in these events.

**Task FM9: React to a Denied Fire Mission**

Step	Action	Result/Explanation
1.	<i>If the AFATDS operator denies the missions selecting the DENY button at intervention or accepting a recommendation of deny:</i>	
a.	<i>If the mission was received from an observer or another OPFAC:</i>	The Intervention window closes and a denied MTO is transmitted. If the sender is an AFATDS OPFAC, the mission is placed in that AFATDS's Deny icon on the Current menu tool bar for that station to take action.
b.	<i>If the mission was initiated from the keyboard or was received from a RADAR.</i>	The Deny icon on the Current menu tool bar becomes active and its counter increments.
1)	Click the Deny icon.	The Mission Denied window displays. (If multiple denied missions remain unresolved, a selection list displays and the appropriate target number's request must be selected.)
2)	Click the OK button. (No other action is allowed.)	The Mission Denied window closes. The mission is moved from the Active Target List to the Inactive Target List.
2.	<i>If the mission fails communications to the GDU and the operator selects Abort on the medium level failed communications alert:</i>	
a.		The Deny icon on the Current menu tool bar becomes active and its counter increments.
b.	Click the Deny icon.	The Mission Denied window displays. (If multiple denied missions remain unresolved, a selection list displays and the appropriate target number's request must be selected.)
c.	<i>To recompute the mission:</i> Click the Reprocess button.	The Mission Denied window closes and the mission is recomputed and the solution placed in the IP icon of the Current menu tool bar. No message is sent to the observer until the a decision is executed by the operator for the mission at intervention.
d.	<i>To deny the mission:</i> Click the OK button.	The Mission Denied window closes and a denied MTO is transmitted to the observer. The mission is moved from the Active Target List to the Inactive Target List.

**FM10. React to a Coordination Request.**

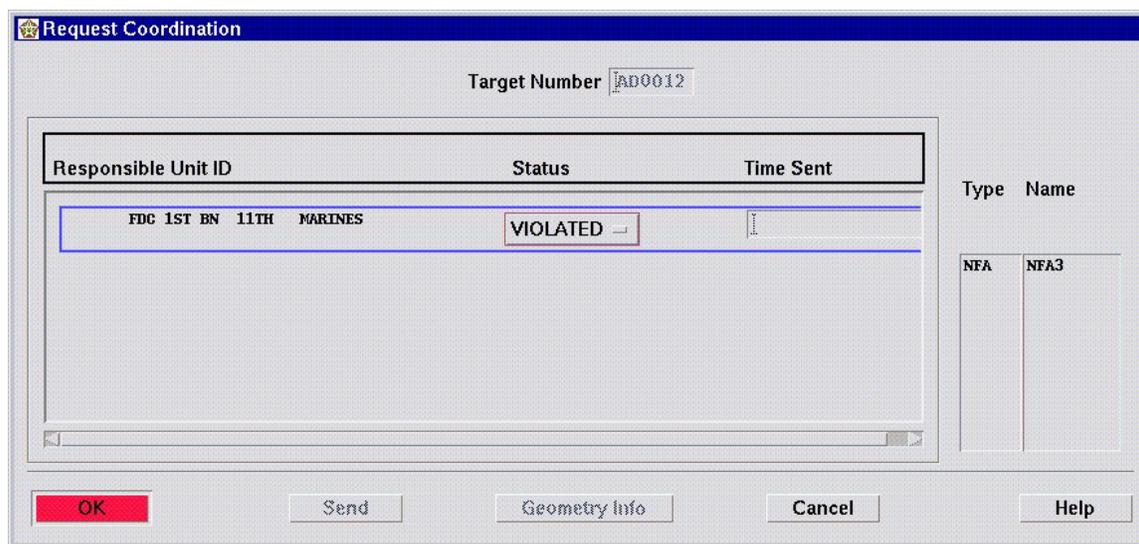
**Conditions:** Given an AFATDS workstation that is activated and with a fire mission requiring coordination...

**Additional information:** AFATDS identifies a need for coordination of fires if FSCMs, ZORs or operator established coordination of fires rules are violated (see Chapter 5, para. 6. for a more detailed explanation). 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 GDU. 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.

Task FM10: 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 5-5).



**Figure 5- 5**

Task FM10: React to a Coordination Request (cont)		
Step	Action	Result/Explanation
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 appears 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>	

**Task FM10: React to a Coordination Request (cont)**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1)	View the violated geometry.	Click the geometry name in the Name list and then click the Geometry Info button.
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 GDUs, AFATDS assumes coordination has been achieved. <i>WARNING: This action should only be taken when directed by a proper coordinating agency since overriding coordination may threaten friendly troops.</i>
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 GDU 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.	<i>If coordination request fails communications:</i>	
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.	<i>Possible operator actions at this point:</i>	
1)	Approve the mission locally.	Click the Status button and select Override in place of Requested. <i>WARNING: This action should only be taken when directed by a proper coordinating agency since overriding coordination may threaten friendly troops.</i> 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.

**FM11. 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...

**Additional information:** In the event that data communications with the observer are lost or the observer does not possess a digital device, the AFATDS operator can receive voice subsequent corrections and apply them to a fire mission in AFATDS.

**Task FM11: Process Observer Subsequent Corrections during Degraded Comm Operations.**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1.	On the Current menu bar, click Targets, Workspace or the Target Folder icon in the toolbar.	The Target List window displays the Current Active Target List..

**Task FM11: Process Observer Subsequent Corrections during Degraded Comm Operations (cont).**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
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 window menu bar, click Target, Actions Commands.	The Commands window displays.
4.	Click Options, Adjust.	The Adjust window displays.
<p><i>To enter a laser correction, go to step 5.</i>  <i>To adjust by coordinates, go to step 6.</i>  <i>To enter a visually spotted correction, go to step 7</i></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 2147483646.
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.
e.	Click Apply.	The correction is applied. The Laser RegistrationAdjust window closes and the Adjust window displays. Go to step 8.
6.	Click the Laser Sensings button.	The Laser RegistrationAdjust 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>Task FM11: Process Observer Subsequent Corrections during Degraded Comm Operations (cont).</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
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.
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. <i>If intervention applies</i> the mission is placed in the Intervention icon of the Current menu tool bar for operator action. <i>If intervention does not apply</i> fire commands are transmitted to the GDUs.
<b>NOTE: For a complete explanation of the fire mission process, see Task FM5 Process an Area Fire Mission.</b>		

### **FM12. 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...

**Additional information:** In the event that data communications with the observer are lost or the observer does not possess a digital device, the AFATDS operator can receive voice subsequent corrections and apply them to a fire mission in AFATDS. This includes the reception and applications of end of mission.

<b>Task FM12: Process End of Mission during Degraded Comm Operations.</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1.	On the Current menu bar, click Targets, Workspace or the Target Folder icon in the toolbar.	The Target List window displays the Current Active Target List..

**Task FM12: Process End of Mission during Degraded Comm Operations (cont).**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
2.	Select the desired active target by clicking the target data in the Target Type column.	The target data highlights.
3.	On the Target List window menu bar, click Target, Actions, End Of Mission.	The End Of Mission window displays.
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.
<i>To end the mission and record as target, go to step 6.</i>		
<i>To end the mission without recording as a target, go to step 7.</i>		
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: End of mission is transmitted to the GDUs. A Mission Fired Report is created and placed in the Active Mission Messages icon. 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. The target stored on the Inactive Target List possesses the original location. If the target was recorded to the On Call Target List, the location reflects total corrections determined during the mission.

**FM13. React to GDU Comm Failure during a Fire Mission.**

**Conditions:** Given an AFATDS workstation that is activated and with an active fire...

**Additional information:.** In the event that data communications with the GDU fails during a fire mission, voice communications can be used to continue the mission. The following procedures describe the process used to continue the mission using voice communications to the guns.

<b>Task FM13: React to GDU Comm Failure During a Fire Mission</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
1	Btry/Plt AFATDS	Transmits fire commands to the GDU. Communications with the GDU fails.	A beep sounds. The M: field of the alerts panel increments and a medium level alert is queued. <i>If the Medium Level Alerts are Suspended:</i> the operator must click the M: field to access the Medium Level Alert List and click the alert and View. <i>If the Medium Level Alert List is already displayed:</i> the operator clicks Refresh, selects the alert and clicks View. <i>If the Medium Level Alert list is not displayed and medium level alerts are not Suspended:</i> The alert opens on the screen.
2.	Btry/Plt AFATDS	React to the displayed Failed Transmission Alert.	The alert states: "Transmission of (tgt #) Gdu Message to (btry/plt AFATDS name) failed."
a.		Click the OK button.	The alert remains in the Medium Level Alert List. If Abort is selected, the mission is placed in the Deny icon of the Current menu tool bar and must be re-processed.
b.		Click OK on the Medium Level Alert List.	The Medium Level Alert List closes.
2.	Btry/Plt AFATDS Operator	Establish voice communications with the guns.	
3.	Btry/Plt AFATDS	Announce fire commands.	
a.		Click the GDU Weapon Status icon on the Current menu tool bar.	The Weapon Status GDU window displays.
b.		In the Target Number column, click the fire mission's target number.	The target data highlights and the current GDU status for the mission displays.
c.		Click the Fire Commands button.	The Fire Command (TGT #) window displays.
d.		Announce the fire commands and click Close.	The Fire Command (TGT #) window closes and the Weapon Status GDU window displays.
4.	Gun section.	Report "Shot."	
5.	Btry/Plt AFATDS	Click the Shot button on the Weapon Status GDU window.	The shot report is transmitted to the observer. The GDU status for the mission updates on the Weapon Status GDU window.
6.	Gun section	Report "Rounds Complete."	
7.	Btry/Plt AFATDS	Click the Rounds Cmplt button on the Weapon Status GDU window.	The rounds complete report is transmitted to the observer. The GDU status for the mission updates on the Weapon Status GDU window.

**Task FM13: React to GDU Comm Failure During a Fire Mission (cont)**

Step	Station	Action	Result/Explanation
8.	Btry/Pit AFATDS	Process the remainder of the mission.	Complete the mission. At EOM, display the Medium Level Alert List and delete all GDU communications alerts that accrued during the mission.

**FM14. Receive and Process Check Firing and Cancel Check Firing.**

**Conditions:** Given an AFATDS workstation that is activated and communications configured...

**Additional information:.** In the event that data communications with the GDU fails during a fire mission, voice communications can be used to continue the mission. The following procedures describe the process used to continue the mission using voice communications to the guns.

**Task FM14: Receive and Process Check Firing and Cancel Check Firing**

Step	Station	Action	Result/Explanation
1	Btry/Pit AFATDS	Receives Check Firing Command from another station.	The following occur: A beep sounds. An Information Message displays indicating: “(DTG) Check Fire All” or “(DTG) Check Fire (TGT #)” Check firing is transmitted to the GDUs. 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.
<i>Warning! If the AFATDS operator transmits fire commands (as described in steps 4.b. through 4.e.) the GDU will receive the commands despite the check firing status of the AFATDS.</i>			
3.	Guns.	Alarm on GDU sounds and SCA displays Check Fire.	
4.	Btry/Pit AFATDS	Receives Cancel Check Firing Command from another station.	The following occur: A beep sounds. An Information Message displays indicating: “(DTG) Cancel Check Fire All” Nothing is transmitted to the GDUs. 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 GDU Weapon Status icon on the Current menu tool bar.	The Weapon Status GDU window displays.
c.		In the Target Number column, click the fire mission’s target number.	The target data highlights and the current GDU 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 GDUs.

**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.*

**FM15. Initiate and Cancel Check Firing.**

**Conditions:** Given an AFATDS workstation that is activated and with an active fire mission

**Additional information:** 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.

<b>Task FM15: Initiate and Cancel Check Firing</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
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 to the GDUs.
b.	To check fire a specific target, click the Target Number field and type the target number and click OK.	Check firing is transmitted to the GDUs.
2.	On the Main Menu bar, click Cancel Check Firing.	The Cancel Check Firing window displays.
a.	To cancel check fire all, click the All button and click OK.	Nothing is transmitted to the GDUs. Fire commands can now be re-transmitted. Any missions received while the AFATDS was in check firing will be placed at intervention.
b.	To cancel check fire a specific target, click the Target Number field and type the target number and click OK.	Nothing is transmitted to the GDUs. 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.

#### 3. 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 database. Additional correction may be applied based on the condition of the database (Figure 3-1).

NOTE: AFATDS computes firing data that approximates 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.

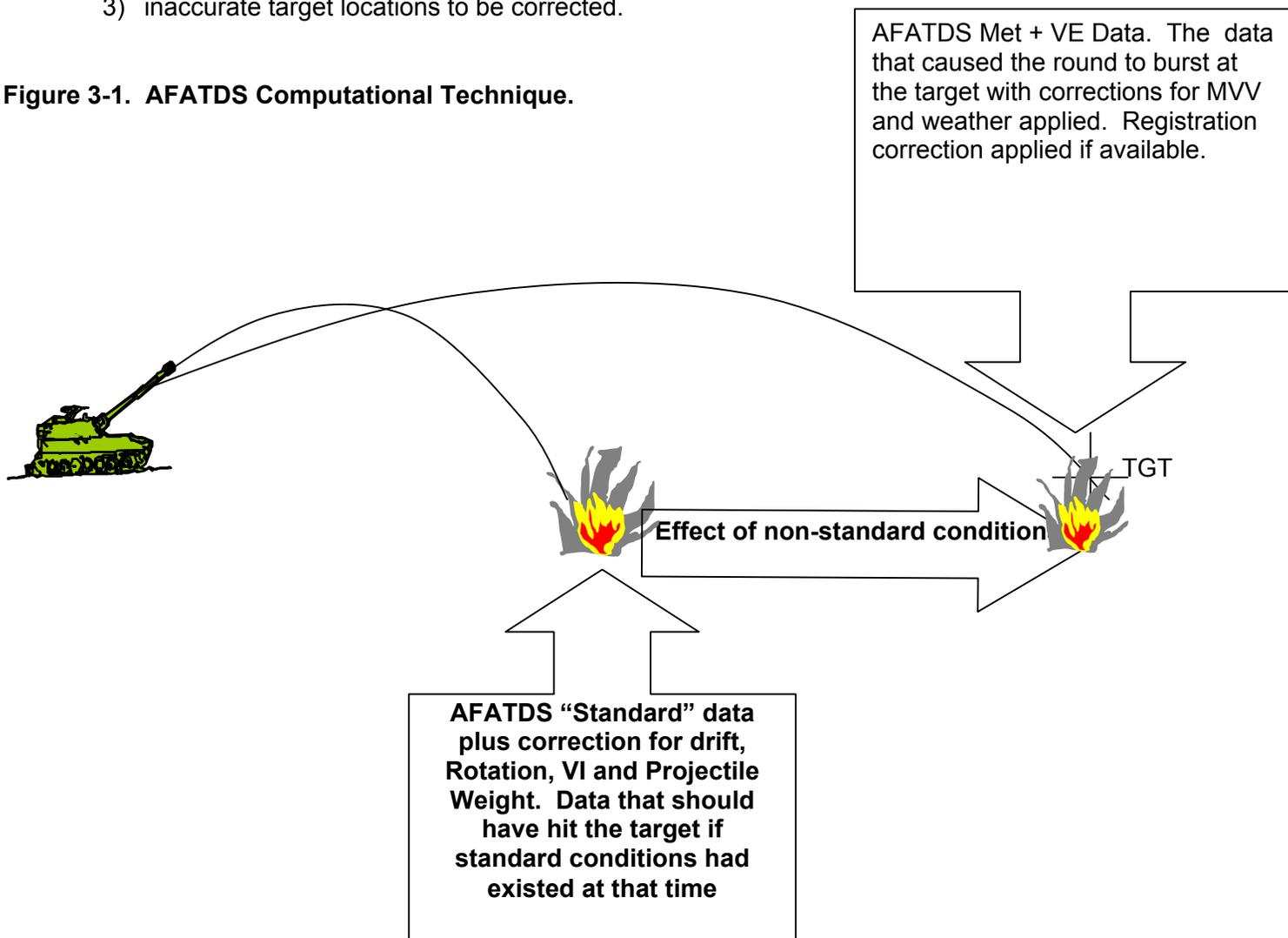
#### 4. The Five Requirements for Accurate Predicted Fires.

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 should 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
- 3) inaccurate target locations to be corrected.

**Figure 3-1. AFATDS Computational Technique.**



- 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.

5. AFATDS determination and use of muzzle velocity data.
  - a. M94 and MCA calibration. AFATDS supports the use of the M94 chronograph coupled with the MCA. The MCA is connected to the GDU communications by assembling the device between the SCA and CA of one of the GDUs. AFATDS initializes the MCA with ammunition data and transmits requests to calibrate. The MCA queries the M94s and returns the MVV data to AFATDS. See Procedure MR1. Conduct Calibration and Determine MVV Using the M94 and MCA.
  - b. M94 calibration. The M94 chronograph can be used independently of the MCA. In this case, the gun section initializes the M94 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.

6. 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.
7. 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:
    - Correct projectile weights and propellant temperatures are stored.
    - MVV data has been determined and stored for the ammunition and weapons.

Valid, concurrent meteorological data is stored.

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 3-2). 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.
  - 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.

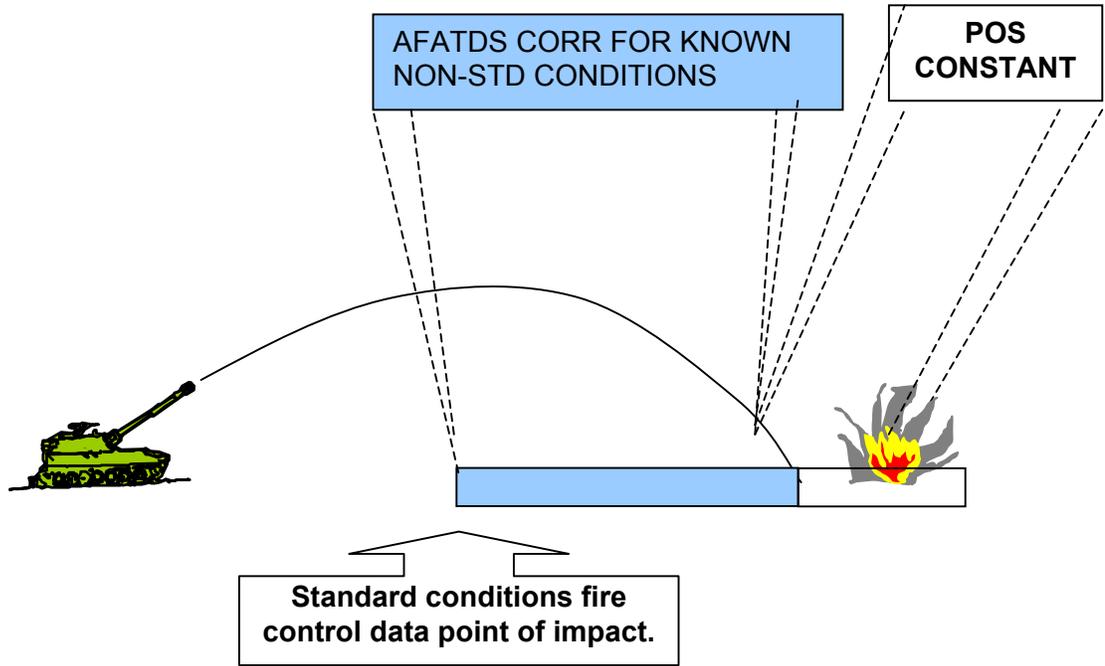


Figure 3-2.

- c) 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 3-3, 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 are all part of the registration correction.

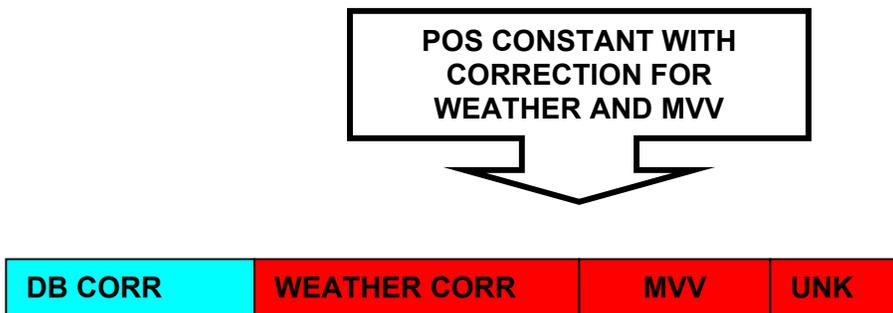


Figure 3-3.

- d) 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 3-4 reflects the condition of the registration correction from figure 3-3 after concurrent met procedure has been carried out.

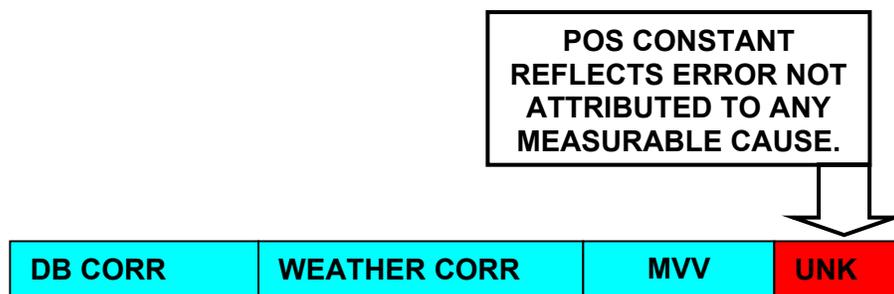


Figure 3-4.

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.

Check #1: 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 check #2.

Check #2: 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 check #3.
  - 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 check #3.

Check #3: Does the registration projectile lot match the mission projectile?

- If yes, go to check #4.
- If no, does the registration projectile family match the mission projectile family?

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, do not apply the registration correction.
- If yes, go to check #4.

Check #4: Does the registration propellant lot match the fire mission lot?

- If yes, go to check #5.
- If no, does the registration propellant model match the mission propellant model?
  - If yes, go to check #5.
  - If no, do not apply registration.

Check #5: Does the registered charge match the fire mission charge?

- If yes, go to check #6.
- If no, is the registered charge one increment higher?
  - If yes, go to check #6.
- If no, is the registered charge one increment lower?
  - If yes, go to check #6.
  - If no, is the registered charge two increments higher?
    - If yes, go to check #6.

- If no, is the registered charge two increments lower?
  - If yes, go to check #6.
- If no, is the registered charge three increments higher?
  - If yes, go to check #6.
  - If no, is the registered charge three increments lower?
    - If yes, go to check #6.
    - If no, do not apply the registration correction?

Check #6: Is standard met in use for both the registration and the fire mission?

- If no, apply the registration correction.
- 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, 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, apply the registration correction.

## Section II. Accounting For Non-Standard Conditions.

### MR1. Conduct Calibration and Determine MVV using M94 and 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 GDU, MCA and M94 chronograph...

**Additional Information:** The Muzzle Velocity Communications Adapter (MCA) acts as an interface between AFATDS and the M94 Chronograph at each gun. The MCA is attached to the GDU at one of the guns. It receives ammunition data from AFATDS and passes this information to the M94. The MCA automatically conducts calibration in an ongoing fashion.

1. When fire commands are transmitted to the GDUs and the number of rounds to fire for effect is equal to or greater than the number of rounds specified in the unit's Detailed Data, Min Rounds per MVV, a request is automatically transmitted to the MCA to collect MVV data for this mission.
2. At the end of the mission, the MVV data is retrieved from the M94s and transmitted to AFATDS as an MVV.
3. AFATDS automatically stores the MVV data for the weapons reported. No alerts are posted at the AFATDS to indicate this has occurred.

Procedure MR1: Conduct Calibration and Determine MVV using the M94 and MCA.		
Step	Action	Result/Explanation
1.	On the Current menu bar, click Unit, Edit this Unit.	The Unit ID window displays with Basic Data.
2.	Click the Detailed Data file.	Detailed data is displayed in the Unit ID window.
3.	Click the Min Rnds per MVV field and type the minimum desired number of rounds for a calibration.	Enter the number of rounds that must be measured to ensure a valid calibration. This value is based on the Assurance of Validity Tables (Table 3-1).
4.	Click Option Save, Option Exit.	The Unit ID window closes and the data is stored.
5.	On the Current menu bar, click the GDU Weapon Status icon.	The Weapon Status GDU window displays.
6.	Click the Init MCA button.	Ammunition data for all weapons is transmitted to the <b>MCA</b> .
7.	Click the Close button.	

**Procedure MR1: Conduct Calibration and Determine MVV using the M94 and MCA (cont).**

Step	Action	Result/Explanation
<b>NOTE:</b>		
Conduct Calibration: Calibration becomes an ongoing process at this point. Reduction of chronograph measured velocity to MVV under standard conditions of propellant temperature and projectile weight occurs at the M94. If guns do not respond with a MVV data, a medium level alert posts "MVV data for weapon ( <i>gun number</i> ) of unit ( <i>Unit ID</i> ) received an MCA Comm Failure. Information being purged." Only incomplete data for the failed weapon and any remaining requests are purged. Any reporting weapons' data are stored.		

<b>Table 3-1 Assurance of Validity Table</b>						
Number of Rounds Fired	1	2	3	4	5	6
Probability Mean is Within 1 PE	50%	66%	76%	82%	87%	90%
Probability Mean is Within 2 PE	82%	94%	99%	99%	99%	99%

**MR2. Conduct Calibration and Determine MVV using M94 without MCA.**

**Conditions:** Given an AFATDS workstation this is powered, with AFATDS started, activated and with the current situation displayed and communications with a gun equipped with operating GDU and M94 chronograph...

**Additional Information:** If the MCA is not used to digitally transmit MV data to AFATDS, this data can be recorded at the M94 chronograph and manually entered at AFATDS. This procedure describes that procedure. The following rules apply:

1. This procedure assumes measured MV data is corrected for projectile weight and propellant temperature at AFATDS. The gun section allows the M94 chronograph to default projectile weight to standard weight and propellant temperature to default to 70.0°F.
2. The AFATDS MVV calculator allows a correction to be applied for the number of equivalent full charges (EFC) fired from the calibrating piece. During the calculation of MVV that will be stored and used to compute firing data, the EFC entry should always be set to the number of EFC rounds that have been fired by the tube. FDC can get this data from the weapon's logbook entry. Weapon Record Data, (DA Form 2408-4 or NAVMC 10558A).

**Procedure MR2: Conduct Calibration and Determine MVV using the M94.**

Step	Action	Result/Explanation
1.	On the Current menu bar, click Unit, Edit this Unit.	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 MVV Calculator 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.

**Procedure MR2: Conduct Calibration and Determine MVV using the M94 (cont).**

Step	Action	Result/Explanation
f.	Type the Powder 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.	Type the measured MVV in the MV column for each round fired.	Enter the MV to the nearest 0.1 m/s.
6.	When all rounds' MV have been entered, click the Compute button.	The change in MV from standard MV is calculated and displayed in the Calculated MVV (m/s) field.
<b>NOTE:</b>		
If the number of measured MVs entered is less than that required for calibration (as indicated in the unit's Detailed folder Min Rnds per MVV) a Continue? window displays prompting "You have not entered the minimum recommended number of MV values (# or more). Would you like to continue?" Selecting Yes proceeds to step 7 below. Selecting No displays the MVV Calculator for additional entries.		
7.	Click the Store button.	The MVV Calculator window closes and the Unit ID window displays with the MVV stored.
8.	Click Option Save, Option Exit to store the MVV and close the Unit ID window or Option Save, to store the MVV and leave the Unit ID window open.	

**MR3. Enter a Computer Meteorological Message.**

**Conditions:** Given an AFATDS workstation this is powered, with AFATDS started, activated and with the current situation ...

**Additional Information:** 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 MR4. 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.

**Procedure MR3: Enter a Computer Meteorological Message**

Step	Action	Result/Explanation
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.

**Procedure MR3: Enter a Computer Meteorological Message (cont)**

Step	Action	Result/Explanation
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.
<b>NOTE:</b> <i>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.</i>		
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.
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 10 for each additional line of met. AFATDS will use standard atmosphere values for all lines for which no data is entered.	
12.	<i>To enable an alert an alert indicating met data validity is becoming suspect:</i>	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><i>If the new met message replaces a standard met in use and is not concurrent to registrations stored:</i> Delete any registrations conducted using the standard met.</p> <p><i>If the new met is concurrent to any registration stored:</i> Re-compute that registration correction. See Procedure MR11. Re-Compute Registration Corrections To Account For Errors In MV/MET/SURVEY.</p> <p><i>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:</i> No additional action is required.</p>		

**MR4. Receive a Computer Meteorological Message**

**Objective:** Receive a computer meteorological message.

**Additional Information:** Meteorological messages are received directly from an MMS or distributed by another AFATDS.

**Procedure MR4: 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.

**Procedure MR4: Receive a Computer Meteorological Message (cont).**

Step	Station	Action	Result/Explanation
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><i>If the new met message replaces a standard met in use and is not concurrent to registrations stored:</i> Delete any registrations conducted using the standard met.</p> <p><i>If the new met is concurrent to any registration stored:</i> Re-compute that registration correction. See Procedure MR10, Re-Compute Registration Corrections To Account For Errors In MV/MET/SURVEY</p> <p><i>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:</i> No additional action is required.</p>			

**MR5. Conduct A Precision Registration.**

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

**Note**

AFATDS requires the operator to enter a propellant lot code for both the 105mm, semi-fixed ammunition as well as the 155mm, separate loading ammunition. For the 105mm the operator should enter the same lot code used for the projectile in the propellant lot code field. Entering a lot code in the propellant field that is different from the projectile lot code will cause the NABK to compute a no solution or invalid registration data.

**Additional Information:**

1. **OBJECTIVE OF PRECISION REGISTRATION:** The objectives of the precision registration are divided between the forward observer and the FDC.
  - a) The observer has two objectives.
    - 1) **OBJECTIVE OF IMPACT PHASE (PREC REG):** 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) **OBJECTIVE OF THE TIME PHASE (PREC REG):** 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) **FIRE DIRECTION CENTER'S OBJECTIVE (PREC REG):** 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 to bracket and determine the HOB. This are in addition to those fired in adjustment.

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.

  - b) A registration point on common survey with the battery is required.

<b>Procedure MR5: Conduct a Precision Registration</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
1	FDO	Issues fire order to FDC.	
2.	Btry/Pit 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 Precision Registration or Precision Quick and Time Registration.	Select Precision Registration if only the impact phase of the registration will be fired.
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.	
1)		<i>To enter the registration point grid:</i>	Type the registration point grid and altitude in the location field. <i>Go to step e.</i>
2)		<i>To enter a known point as the registration point:</i>	
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 redisplay with the grid and altitude of the known 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.	If the registration type selected was Precision Quick and Time Registration the FFE#2 Shell displays the same selection.
g)		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. <i>NOTE: All shell models of the selected category display. Ensure the model selected is appropriate for weapon and ammunition inventory.</i>

h)		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.
i)		Click the FFE#1 Fuze field and select the fuze issued in the fire order for the impact phase..	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 FFE#1 (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.
		<i>If the registration type selected was Precision Registration, go to step o. If the registration type selected was Precision Quick and time Registration go to step l.</i>	
l)		Click the FFE#2 Fuze field and select the fuze issued in the fire order for the time phase.	The Model field activates.
m)		Click the FFE#2 (Fuze) Model field and select the corresponding model.	The Lot field becomes selectable.
n)		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.
o)		Click the Propellant Model and select the model issued in the fire order.	The Lot field becomes selectable.
<b>Note</b>			
When conducting a Precision Registration for a 105mm Howitzer using “Semi Fixed” Ammunition it is important for the operator <b>not to enter</b> the propellant lot in the Ammunition Propellant Summary Data, instead the operator <b>must enter</b> the same lot number as the projectile Lot code. Entering any other data other then the projectile Lot Code will produce a “No Ballistic Solution”.			
p)		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.
q)		Click the Charge field and select the charge issued in the fire order.	The charge displays.
r)		Click the More Mission Data tab.	
s)		Click the Fire Units Add button.	The Select Unit window displays with a list of all guns.
t)		Select the registering piece and click the OK button.	The unit ID of the registering piece displays in the list.
u)		Click Analyze Tgt.	The following occur:
v)		The Registration window displays with firing data, orienting data and probable error data. The registration mission MTO is automatically transmitted to the observer. <i>If digital communications with the observers: go to step 3. If voice communications with the observers: go to step 2.</i>	
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.

**Procedure MR5: Conduct a Precision Registration (cont).**

Step	Station	Action	Result/Explanation
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.		<i>If received digitally:</i>	The Ready to observe check box for the observer displays a check. The Send Fire Commands button activates.
b.		<i>If received voice:</i>	Click the Ready to observe check box for the reporting observer. The Send Fire Commands button activates.
<b>Note:</b>			
<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 GDUs. If the MCA is attached and operating, a request to measure MV is also transmitted.
6.	Gun	Responds with "Shot"	The SHOT/RC button on the SCA is depressed to send shot
7.	AFATDS	Receives "Shot"	Weapon Status GDU window updates. Reception of shot starts a splash timer. 10 seconds prior to the expiration of the time of flight, AFATDS sends "Splash."
		<i>If digital comm with observers:</i>	Automatically transmits "Shot" to the observer.
		<i>If voice comm with observers:</i>	Observer Weapon Status GDU 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.	Gun	Responds with "Rounds Complete"	The SHOT/RC button on the SCA is depressed to send "Rounds Complete." This is necessary to allow the GDU to receive the next command.
10.	Observer	Transmit correction.	The observer converts spotting to correction and sends as a subsequent adjustment.
11.	Btry/Plt AFATDS	Receive correction.	
a.		<i>If received digitally:</i>	The Sensings Rnd 1 data appears displaying the aimpoint location based on the correction. <i>Go to step 12.</i>
b.		<i>If received voice:</i>	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)		<i>To enter a lateral shift:</i> click the Deviation Correction button and select the direction of the shift.	Default is None; selections are Left and Right.

**Procedure MR5: Conduct a Precision Registration (cont).**

Step	Station	Action	Result/Explanation
i.		Type the magnitude of the shift in the Deviation Correction field.	
5)		<i>To enter a range shift:</i> 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)		<i>To change the volume of fire:</i> 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 <sub>R</sub> 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.
7)		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.
Repeat steps 5. Through 11. for each additional round fired in the impact phase.			
12.		<i>For a Precision Registration (no time phase):</i> go to step 13. <i>For a Precision Quick and Time Registration</i> go to step 15.	
13.	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.
14.	Btry/Pit AFATDS	Receives refinement data.	The following occur: The Sensings Rnd (#) data appears displaying the aimpoint location based on the correction. The Record as Reg Point check box automatically displays a check. Go to step 26.
a.		<i>If received voice:</i>	
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)		<i>To enter a lateral refinement shift:</i> 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)		<i>To enter a range refinement shift:</i> 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)		Click the Registration Commands: field and select the Record as Registration Point.	
7)		Click the Apply button.	The Sensings Rnd (#) data appears displaying the aimpoint location based on the correction.
8)		Click the Cancel button.	The Adjust window closes. <i>Go to Step 26.</i>
15.	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.
16	Btry/Plt AFATDS	Receives refinement data.	The following occur: The Sensings Rnd (#) data appears displaying the aimpoint location based on the correction. The Record as Reg Point check box automatically displays a check. Fuze Time firing data is computed.
a.		<i>If received voice:</i>	
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)		<i>To enter a lateral refinement shift:</i> 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)		<i>To enter a range refinement shift:</i> 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)		Click the Registration Commands: field and select the Record as Registration Point.	

7)		Click the Time Repeat check box.	
8)		Click the Apply button.	The Sensings Rnd (#) data appears displaying the aimpoint location based on the correction.
9)		Click the Cancel button.	The Adjust window closes.
17.	Btry/Pit AFATDS	Click the Send Fire Commands button.	Fire commands are transmitted to the GDUs. If the MCA is attached and operating, a request to measure MV is also transmitted.
18.	Gun	Responds with "Shot"	The SHOT/RC button on the SCA is depressed to send shot
19.	AFATDS	Receives "Shot"	Weapon Status GDU window updates. Reception of shot starts a splash timer. 10 seconds prior to the expiration of the time of flight, AFATDS sends "Splash."
a.		<i>If digital comm with observers:</i>	Automatically transmits "Shot" to the observer.
b.		<i>If voice comm with observers:</i>	Observer Weapon Status GDU window for "Shot" and announce to the observer. Splash must be manually determined and announced.
20.	Observer	Receive "Splash."	Observer spots burst and determines spotting.
21.	Gun	Responds with "Rounds Complete"	The SHOT/RC button on the SCA is depressed to send "Rounds Complete." This is necessary to allow the GDU to receive the next command.
22.	Observer	Transmit correction.	The observer converts spotting to correction and sends as a subsequent adjustment.
23.	Btry/Pit AFATDS	Receive correction.	
a.		<i>If received digitally:</i>	The Sensings Rnd (#) data appears displaying the aimpoint location based on the correction.
b.		<i>If received voice:</i>	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)		<i>To enter an HOB correction:</i> 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)		<i>To change the volume of fire:</i> 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.
24.	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.

**Procedure MR5: Conduct a Precision Registration (cont).**

Step	Station	Action	Result/Explanation
25.	Btry/Pit AFATDS	Receives refinement data.	The following occur: The Sensings Rnd (#) data appears displaying the aimpoint location based on the correction. The Record as Time Reg Point check box automatically displays a check. Fuze Time firing data is computed.
a.		<i>If received voice:</i>	
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)		<i>To enter a HOB refinement shift:</i> click the HOB 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 HOB Correction field.	
5)		Click the Registration Commands: field and select the Record as Time Registration Point.	
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.
26.	Btry/Pit AFATDS	Click the Compute Corrections button.	Registration Correction is computed and displayed in the Corrections section of the Registration Information window.
27.	Btry/Pit AFATDS	Click the Store Corrections button.	Registration corrections are stored in the unit's data.
28.	Btry/Pit AFATDS	Click the End Of Mission button.	End of mission is transmitted to the GDUs.

**MR6. Conduct A Visual High Burst/Mean Point of Impact (HB/MPI) Registration.**

**Conditions:** Given an AFATDS workstation this is powered, with AFATDS started, activated and with the current situation ...

**Additional Information:** 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:

1. Advantages.
  - 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.
2. Disadvantages. The disadvantages of the HB/MPI registration are:
- a. Requires two surveyed observers.
  - b. Each observer must be able to accurately measure direction and vertical angle.

<b>Procedure MR6: Conduct a Visual Observed High Burst/Mean Point of Impact registration.</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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.
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 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.

<b>Procedure MR6: Conduct a Visual Observed High Burst/Mean Point of Impact registration (cont).</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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.		<i>For HB registration only:</i> 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.	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.		
<i>If digital communications with the observers: go to step 3.</i>			
<i>If voice communications with the observers: go to step 2.</i>			
2.	Btry/Pit 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 <i>(01 call sign) direction: (Observer Orienting Data 1: Azimuth), vertical angle: (Observer Orienting Data 1: Va), measure the vertical angle.</i> <i>(02 call sign) direction: (Observer Orienting Data 2: Azimuth), vertical angle: (Observer Orienting Data 2: Va).</i> <i>Report when ready to observe.</i>
3.	Observers	Report "Ready."	Each observer orients to observe and reports ready.
4.	Btry/Pit AFATDS	Receive "Ready" from the observers:	
a.		<i>If received digitally:</i>	The Ready to observe check box for the reporting observer displays a check.
b.		<i>If received voice:</i>	Click the Ready to observe check box for the reporting observer.
c.		<i>When both observers have reported:</i>	The Send Fire Commands button activates.

Procedure MR6: Conduct a Visual Observed High Burst/Mean Point of Impact registration (cont).			
Step	Station	Action	Result/Explanation
<b>Note</b>			
<i>If coordination is pending the Send Fire Commands button will not become available until the coordination has been resolved.</i>			
5.	Btry/Pit AFATDS	Click the Send Fire Commands button.	Fire commands are transmitted to the GDUs. If the MCA is attached and operating, a request to measure MV is also transmitted.
6.	Gun	Responds with "Shot"	The SHOT/RC button on the SCA is depressed to send shot
7.	AFATDS	Receives "Shot"	Weapon Status GDU window updates. Reception of shot starts a splash timer. 10 seconds prior to the expiration of the time of flight, AFATDS sends "Splash."
		<i>If digital comm with observers:</i>	Automatically transmits "Shot" to the observers.
		<i>If voice comm with observers:</i>	Observer Weapon Status GDU 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.	Gun	Responds with "Rounds Complete"	The SHOT/RC button on the SCA is depressed to send "Rounds Complete." This is necessary to allow the GDU to receive the next command.
10.	Observers	Transmit sensings.	01 observer sends azimuth and vertical angle; 02 observer sends azimuth.
11.	Btry/Pit AFATDS	Receive sensings.	
a.		<i>If received digitally:</i>	The Sensings Rnd 1 data appears displaying the azimuths and vertical angle and the computed 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 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 field.	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 Sensings window closes.

<b>Procedure MR6: Conduct a Visual Observed High Burst/Mean Point of Impact registration (cont).</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
12.			Repeat steps 5. Through 11. 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 13. . NOTE: When a new sensing is received, AFATDS automatically 'checks' the accept checkbox. AFATDS does not assess the viability of any sensings until the operator selects "comp corrections."
13	Btry/Pit 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 14.
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 15.
14.	Btry/Pit 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 rejected round.	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 15.
b.		<i>To fire additional rounds:</i>	
1)		Click the Accept check box next to each round recommended for rejection.	The check is removed from the box. This "deselects" the sensing per previous warning message.
2)		Repeat steps 5. Through 13. To fire the additional rounds. Operator must "comp corrections" again to consider additional sensings.	
15.	Btry/Pit AFATDS	Click the Store Corrections button.	Registration corrections are stored
16.	Btry/Pit AFATDS	Click the End Of Mission button.	End of mission is transmitted to the GDUs.
17.	Btry/Pit AFATDS	Transmit EOM to observers.	Construct a freetext message to inform the observers that the mission is complete. (or notify them by voice)

### **MR7. Conduct A Radar Observed High Burst/Mean Point of Impact Registration**

**Conditions:** Given an AFATDS workstation this is powered, with AFATDS started, activated and with the current situation ...

**Additional Information:** 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.

<b>Procedure MR7: Conduct a Radar Observed High Burst/Mean Point of Impact registration.</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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.

Procedure MR7: Conduct a Radar Observed High Burst/Mean Point of Impact registration (cont).			
Step	Station	Action	Result/Explanation
2.	Btry/Pit 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 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.
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.		<i>For HB registration only:</i> Click the Height of Burst field and type the HOB issued in the fire order.	The height of burst displays.

<b>Procedure MR7: Conduct a Radar Observed High Burst/Mean Point of Impact registration (cont).</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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.		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.	
		<i>If digital communications with the radar:</i> go to step 3. <i>If voice communications with the radar:</i> go to step 2.	
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. <i>Go to step 4.</i>
3.	Radar	Receive MTO.	The radar receives an MTO with the following data in the message: 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.
<b>Note:</b>			
<i>If coordination is pending the Send Fire Commands button will not become available until the coordination has been resolved.</i>			
6.	Btry/Plt AFATDS	Click the Send Fire Commands button.	Fire commands are transmitted to the GDUs. If the MCA is attached and operating, a request to measure MV is also transmitted.
7.	Gun	Responds with "Shot"	The SHOT/RC button on the SCA is depressed to send shot
8.	AFATDS	Receives "Shot"	Weapon Status GDU window updates. Shot reports are not transmitted to radars.
9.	Gun	Responds with "Rounds Complete"	The SHOT/RC button on the SCA is depressed to send "Rounds Complete." This is necessary to allow the GDU to receive the next command.
10.	Radar	Transmit spotting.	The radar predicts the impact point and location and reports these.

<b>Procedure MR7: Conduct a Radar Observed High Burst/Mean Point of Impact registration (cont).</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
11.	Btry/Pit 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 Mission Information 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 Sensings window displays.
12.		Repeat steps 6. through 11. 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 13. NOTE: When a new sensing is received, AFATDS automatically 'checks' the accept checkbox. AFATDS does not assess the viability of any sensings until the operator selects "comp corrections."	
13	Btry/Pit 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 14.
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 15.
14.	Btry/Pit 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. This "deselects" the sensing.
2)		Click the Comp Corrections button.	The Corrections section of the window displays registration corrections. Go to step 15.
b.		<i>To fire additional rounds:</i>	
1)		Click the Accept check box next to each rejected round.	The check is removed from the box.
2)		Repeat steps 6. Through 13. To fire the additional rounds. Operator must "comp corrections" again to consider additional sensings.	
15.	Btry/Pit AFATDS	Click the Store Corrections button.	Registration corrections are stored
16.	Btry/Pit AFATDS	Click the End Of Mission button.	End of mission is transmitted to the GDUs.

**Procedure MR7: Conduct a Radar Observed High Burst/Mean Point of Impact registration (cont).**

Step	Station	Action	Result/Explanation
17.	Btry/Pit AFATDS	Transmit EOM to the radar.	Construct a freetext message to inform the radar that the mission is complete (or notify by voice radio).

**MR8. Conduct A Laser Observed Mean Point of Impact Registration.**

**Conditions:** Given an AFATDS workstation this is powered, with AFATDS started, activated and with the current situation ...

**Additional Information:** The laser observed MPI registration is very similar to a visually observed MPI. Using a laser allows a single observer to provide accurate lased data for the location of each burst, thus eliminating a need for a second observer. AFATDS uses the lased data to determine a location and altitude for each burst. These are averaged to determine the mean burst location. This technique is applied to graze burst projectiles due to the impracticality of lasing an air burst.

**Procedure MR8: Conduct a Laser Observed Mean Point of Impact registration.**

Step	Station	Action	Result/Explanation
1	FDO	Issues fire order to FDC.	
2.	Btry/Pit 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.

**Procedure MR8: Conduct a Laser Observed Mean Point of Impact registration (cont).**

<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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.	The Registration window displays with firing data, orienting data and probable error data. The MTO is automatically transmitted to the observer.		
If digital communications with the observer: go to step 3. If voice communications with the observer: go to step 2.			
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 GDUs. If the MCA is attached and operating, a request to measure MV is also transmitted.
7.	Gun	Responds with "Shot"	The SHOT/RC button on the SCA is depressed to send shot
8.	AFATDS	Receives "Shot"	Weapon Status GDU window updates. Shot reports are not transmitted to observers.
9.	Gun	Responds with "Rounds Complete"	The SHOT/RC button on the SCA is depressed to send "Rounds Complete." This is necessary to allow the GDU to receive the next command.
10.	Observer	Transmit spotting.	The observer lases the burst and transmits the laser data to the FDC.

**Procedure MR8: Conduct a Laser Observed Mean Point of Impact registration (cont).**

<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
11.	Btry/Pit 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 Registration Adjust 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.
12.		Repeat steps 6. through 11. 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 13.	
13	Btry/Pit 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 14.
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 15.
14.	Btry/Pit 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 rejected round.	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 15.
b.		<i>To fire additional rounds:</i>	
1)		Click the Accept check box next to each rejected round.	The check is removed from the box.
2)		Repeat steps 6. through 13. To fire the additional rounds.	

**Procedure MR8: Conduct a Laser Observed Mean Point of Impact registration (cont).**

Step	Station	Action	Result/Explanation
15.	Btry/Pit AFATDS	Click the Store Corrections button.	Registration corrections are stored
16.	Btry/Pit AFATDS	Click the End Of Mission button.	End of mission is transmitted to the GDUs.
17.	Btry/Pit AFATDS	Transmit EOM to the observer.	Construct a freetext message to inform the observer that the mission is complete (or notify them by voice).

**MR9. Transfer Registration Corrections to Another Unit.**

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

**Additional Information:** AFATDS views the transfer of registration corrections as a communications action. In other words, AFATDS simply transmits or receives the registration correction. Application of the registration correction is governed by the rules described below. The FDC should only transfer registration corrections if:

- 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.

**Procedure MR9: Transfer Registration Correction to Another Unit.**

Step	Action	Result/Explanation
1.	On the Current menu bar, click Units, Edit this Unit.	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.

**MR10. Re-Compute Registration Corrections To Account For Errors In MV/MET/SURVEY**

**Conditions:** Given an AFATDS workstation this 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...

**Additional Information:** 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 accounted-for in the database after the registration has been computed. 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. It should be noted that the registration target must be in the data base when the registration is updated. Purging of this inactive target is not advised.

<b>Procedure MR10: Re-compute registration corrections to account for errors on MV/MET/SURVEY</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1.	On the Current menu bar, click Units, Edit this Unit.	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.
6.	Click the OK button.	The Unit ID window closes.

#### **MR11. Delete Registration Corrections.**

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

<b>Procedure MR11: Delete Registration Corrections</b>		
<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1.	On the Current menu bar, click Units, Edit this Unit.	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.

## 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 ...

**Additional Information:** 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:

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.

Procedure SS1: Process a Radar Fire Mission			
Step	Station	Action	Result/Explanation
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. Click Mission Processing, Initiate Fire Mission. See PROCEDURE FM6. Initiate a Fire Mission at AFATDS</i>	
a.		<i>Complete the Initiate Fire Mission window. Enter the following:</i>	
b.		Observer	Select the Unit ID of the radar.
c.		Allow Mission Type to default to Fire For Effect.	
d.		Location	Enter the grid and altitude 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.	
<b>NOTE:</b>			
<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	<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
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><i>If coordination is required:</i> The coordination request: Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. Fails communications if no route exists, the affected 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. <i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the GDU. 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	Send Selected is used only by units performing tactical fire control. At the battery/platoon FDC, 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 Supported 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. <i>If the mission was received from a radar:</i> no MTO is transmitted to the radar.</p>
4.	Guns	Receive fire commands.	The GDU alarm sounds and the mission data is displayed at the SCA.
5.	Btry/Plt AFATDS	Track mission status of GDUs.	Click the GDU Weapon Status icon of the Current menu tool bar. The Weapon Status GDU window displays. <i>See Procedure FM8. Examine the Weapon Status GDU Window for details of mission tracking on the Weapon Status GDU window.</i>
If communications with the GDUs fails: see Procedure FM13. React to a GDU Comm Failure During Mission Processing.			
6.	Guns	Report "Shot."	The Shot button is depressed on the SCA.

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

Step	Station	Action	Result/Explanation
7.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: <i>If the mission was initiated at the Btry/Plt AFATDS</i> or received from a radar, the shot report is placed in the Active Mission Messages icon of the Current window tool bar. <i>If the mission was initiated by digital comm with the radar</i> , nothing is transmitted to the radar. As "Shot" reports are received, the Fire/Shot indicator for the reporting gun changes from a * with a yellow background to ■ with a green background.
8.	Guns	Transmit "Rounds Complete" report.	This report is sent the instant all rounds of fire for effect have been fired by pressing the RDS CMPLT button on the SCA.
9.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: <i>If the mission was initiated at the Btry/Plt AFATDS</i> , the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. <i>Go to step 11.</i> <i>If the mission was initiated by digital comm from the radar</i> , the "Rounds Complete" report causes AFATDS to transmit EOM to the GDU and move the mission from the Active Target List to the Inactive Target List. <i>This procedure ends here.</i>
10.	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 GDU window.	EOM is transmitted to the GDU 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 ...

**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	<i>Complete the Initiate Fire Mission window.</i> Click Mission Processing, Initiate Fire Mission. <i>See 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.		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.

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

<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
		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. See Chapter 5, paragraph 15 for a description of illumination aimpoint selection.
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><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
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed.
c.		Click one of the following:	

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

<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request: Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. Fails communications if no route exists, the affected 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. <i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the GDUs and sends an MTO. The MTO: 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.</p>
		Send Selected	Send Selected is used only by units performing tactical fire control. At the battery/platoon FDC, 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. <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. <i>If the mission was received directly from an observer:</i> sends a denied MTO to observer. <i>If the mission was received from a radar:</i> no response is transmitted to the radar.</p>
4.	Guns	Receive fire commands.	The GDU alarm sounds and the mission data is displayed at the SCA.
5.	Observer	Receives and stored the MTO.	

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

<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
6.	Btry/Plt AFATDS	Track mission status of GDUs.	Click the GDU Weapon Status icon of the Current menu tool bar. The Weapon Status GDU window displays. See <i>Procedure FM8. Examine the Weapon Status GDU Window for details of mission tracking on the Weapon Status GDU window.</i>
<p><i>If the method of control is At My Command or TOT: got to step 7</i>            If communications with the GDUs fails: see Procedure FM13. React to a GDU Comm Failure During Mission Processing.            If the method of control is WR,: go to step 13.</p>			
7.	Guns	Transmit "Ready" report.	After cycling through the mission, the READY button on the SCA is selected.
8.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun changes from a * with a yellow background to a * with a green background. When the last gun has reported, the "Ready" command is transmitted to the observer. <i>For a TOT, go to step 9</i> <i>For an AMC mission, go to step 10.</i>
9.	Btry/Plt AFATDS	Transmit "Fire" command for a TOT.	A timer, displayed in the GDU Weapon Status window counts down the time until the fire command is transmitted. At the expiration of the time, the command to fire is automatically transmitted to the GDUs. <i>Go to step 12.</i>
10.	Observer	Transmit "Fire" command for an AMC mission.	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 GDUs.
12.	Guns	Receive "Fire" command.	The GDU alarm sounds and the command to fire the mission is displayed at the SCA.
13.	Guns	Report "Shot."	The Shot button is depressed on the SCA.
14.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: <i>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.</i> <i>If the mission was initiated by an observer, the shot report is automatically re-transmitted to the observer.</i> As "Shot" reports are received, the Fire/Shot indicator for the reporting gun changes from a * with a yellow background to a * 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 10 seconds before impact. The report is transmitted by clicking the Splash button on the Weapon Status GDU window.
17.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
18.	Guns	Transmit "Rounds Complete" report.	This report is sent the instant all rounds of fire for effect have been fired by pressing the RDS CMPLT button on the SCA.

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

Step	Station	Action	Result/Explanation
19.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: <i>If the mission was initiated at the Btry/Plt AFATDS</i> , the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. <i>If the mission was initiated by an observer</i> , 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 from a * with a yellow background to ■ with a green background.
20.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
<i>If the observer adjusts fire: go to step 21.</i> <i>If the observer ends the mission: go to step 24.</i>			
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.
If subsequent corrections are received via voice comm with the observer, see Procedure FM 11 for entry of subsequent corrections.			
22.	Btry/Plt AFATDS	Receives subsequent adjustment.	If intervention rules do not apply, <i>the fire commands are transmitted to the GDUs.</i> If intervention rules apply, <i>the mission the Intervention icon on the Current window tool bar activates.</i> 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 GDUs. <i>If the observer requests Record as Target:</i> The adjusted target location is stored in the On-Call Target list. <i>If the observer requests Record as Known Point:</i> 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.	The SCA displays EOM and the mission number.

**SS3 Process a Coordinated Illumination Mission.**

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

**Additional Information:** 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.

<b>Procedure SS3: Process a Coordinated Illumination Mission</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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	<i>Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission. See PROCEDURE FM6. Initiate a Fire Mission at AFATDS.</i>	
a.		<i>Complete the Initiate Fire Mission window. Enter the following:</i>	
b.		Observer	Select the Unit ID of the observer.
c.		Click the Munitions tab.	The Munitions form displays.
d.		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.
e.		Click the IFM tab.	The IFM form displays.
f.		Mission Type and select Coordinated Illum.	
g.		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. See Chapter 5, paragraph 15 for a description of illumination aimpoint selection.
h.		Location	Enter a method of target location. See Procedure FM 6: Initiate a Fire Mission for details.
i.		Select Category	13 target categories are available. Selection defines choices of Type. Default is LOC.
j.		Select Type	Allows selection of specific target type. Default is Terrain.
k.		Click Analyze Target.	When the mission is processed a second target is created at the same location for the HE mission. Both illumination and HE missions are assigned a method of control of At My Command. The HE target number assigned by the Btry/Plt 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.</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	<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.
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed. The HE mission data is displayed as the second shell FFE data.
c.		Click one of the following:	

## Procedure SS3: Process a Coordinated Illumination Mission (cont).

Step	Station	Action	Result/Explanation
		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request: Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. Fails communications if no route exists, the affected 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> <p><i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the GDUs and sends an MTO. The MTO:</p> <p>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.</p>
		Send Selected	Send Selected is used only by units performing tactical fire control. At the battery/platoon FDC, 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.	Guns	Receive fire commands.	The GDU alarm sounds and the mission data is displayed at the SCA.
5.	Observer	Receives and stored the MTO.	MTOs for both Illum and HE missions are transmitted.

**Procedure SS3: Process a Coordinated Illumination Mission (cont).**

Step	Station	Action	Result/Explanation
6.	Btry/Plt AFATDS	Track mission status of GDUs.	Click the GDU Weapon Status icon of the Current menu tool bar. The Weapon Status GDU window displays. See <i>Procedure FM8. Examine the Weapon Status GDU Window for details of mission tracking on the Weapon Status GDU window.</i>
If communications with the GDUs fails: see Procedure FM13. React to a GDU Comm Failure During Mission Processing.			
7.	Guns	Transmit "Ready" report.	After cycling through the mission, the READY button on the SCA is selected.
8.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun changes from a * with a yellow background to  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 GDUs.
11.	Guns	Receive "Fire" command.	The GDU alarm sounds and the command to fire the mission is displayed at the SCA.
12.	Guns	Report "Shot."	The Shot button is depressed on the SCA.
13.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: <i>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.</i> <i>If the mission was initiated at by an observer, the shot report is automatically re-transmitted to the observer.</i> As "Shot" reports are received, the Fire/Shot indicator for the reporting gun changes from a * with a yellow background 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 GDU window.
16.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
17.	Guns	Transmit "Rounds Complete" report.	This report is sent the instant all rounds of fire for effect have been fired by pressing the RDS CMPLT button on the SCA.
18.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: <i>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.</i> <i>If the mission was initiated at by an observer, the "Rounds Complete" report is automatically re-transmitted to the observer.</i> As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting gun changes from a * with a yellow background to  with a green background.
19.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.

*If the observer adjusts fire: go to step 20.*

*If the observer ends the mission: go to step 23.*

**Procedure SS3: Process a Coordinated Illumination Mission (cont).**

Step	Station	Action	Result/Explanation
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.
21.	Btry/Plt AFATDS	Receives subsequent adjustment.	If intervention rules do not apply, <i>the fire commands are transmitted to the GDUs.</i> If intervention rules apply, <i>the mission the Intervention icon on the Current window tool bar activates.</i> 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.
If subsequent corrections are received via voice comm with the observer, see Procedure FM 11 for entry of subsequent corrections.			
22.	All stations.	Steps 3 through 19 repeat as applicable.	
23.	Observer	Transmits end of mission.	The observer transmits end of mission for each mission.
24.	Btry/Plt AFATDS	Receives end of mission.	Btry/Plt AFATDS retransmits end of mission to the GDUs. <i>If the observer requests Record as Target:</i> The adjusted target location is stored in the On-Call Target list. <i>If the observer requests Record as Known Point:</i> The adjusted location is stored in the Targets, Known Points and an MTO with the known point number is transmitted to the observer.
25.	Guns	Receive EOM.	The SCA displays EOM and the mission number.

**SS4 Process a Continuous Illumination Mission.**

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

**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.
<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. 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.		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. See Chapter 5, paragraph 15 for a description of illumination aimpoint selection.
g.		Location	Enter a method of target location. See Procedure FM 6: Initiate a Fire Mission for details.

**Procedure SS4: Process a Continuous Illumination Mission (cont).**

Step	Station	Action	Result/Explanation
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><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
<p><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></p>			
b.		Click the Cannon Tech Soln tab.	Fire commands are displayed. The method of control is continuous fire.
c.		Click one of the following:	
		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request: Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. Fails communications if no route exists, the affected 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> <p><i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the howitzer(s) and sends an MTO. The MTO: 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.</p>

Procedure SS4: Process a Continuous Illumination Mission (cont).			
Step	Station	Action	Result/Explanation
		Send Selected	Send Selected is only 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	<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. <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. <i>If the mission was received directly from an observer:</i> sends a denied MTO to observer. <i>If the mission was received from a radar:</i> no response is transmitted to the radar.
4.	Guns	Receive fire commands.	
5.	Observer	Receives and stored the MTO.	
6.	Btry/Plt AFATDS	Track mission status of guns.	Click the GDU Weapon Status icon of the Current menu tool bar. The Weapon Status GDU window displays. See <i>Procedure FM8. Examine the Weapon Status GDU Window for details of mission tracking on the Weapon Status GDU window.</i>
<i>The mission continues until the observer requests end of mission. Guns receive EOM</i>			

### SS5 Process an Immediate Smoke Mission.

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

**Additional Information:** The following differences exist in immediate smoke mission processing over other area missions:

1. The volume of fire and munitions for immediate smoke missions are determined from the fire request, Guidances: Workspace, or the Guidance Folder icon in the toolbar, Cannon, 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, and 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.

<b>Procedure SS5: Process an Immediate Smoke Mission</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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	<i>Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission. See PROCEDURE FM6. Initiate a Fire Mission at AFATDS.</i>	
a.		<i>Complete the Initiate Fire Mission window. Enter the following:</i>	
b.		Observer	Select the Unit ID of the observer.
c.		Click Mission Type and select Immediate Smoke	
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 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.
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed.
c.		Click one of the following:	

**Procedure SS5: Process an Immediate Smoke Mission (cont).**

Step	Station	Action	Result/Explanation
		Accept Recommendation	<p>If coordination is required: The coordination request: Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry.</p> <p>Fails communications if no route exists, the affected unit does not possess a device that can receive a coordination request or comm fails.</p> <p>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> <p>If no coordination was required or coordination approval was received: Transmits the solution displayed in the Recommendation to the GDUs and sends an MTO. The MTO:</p> <p>Is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS.</p> <p>Is transmitted to the observer if AFATDS has a comm route to that station, either direct or indirect.</p> <p>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> <p>Go to step 4.</p>
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery/platoon FDC, 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 GDU alarm sounds and the mission data is displayed at the SCA.
4.	Observer	Receives and stored the MTO.	

**Procedure SS5: Process an Immediate Smoke Mission (cont).**

Step	Station	Action	Result/Explanation
5.	Btry/Plt AFATDS	Track mission status of GDUs.	Click the GDU Weapon Status icon of the Current menu tool bar. The Weapon Status GDU window displays. See <i>Procedure FM8. Examine the Weapon Status GDU Window for details of mission tracking on the Weapon Status GDU window.</i>
6.	Guns	Report "Shot."	The Shot button is depressed on the SCA.
7.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: <i>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.</i> <i>If the mission was initiated at by an observer, the shot report is automatically re-transmitted to the observer.</i> As "Shot" reports are received, the Fire/Shot indicator for the reporting gun changes from a * with a yellow background to  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 <i>is not</i> sent for missile missions. The report is transmitted by clicking the Splash button on the Weapon Status GDU window.
10.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
11.	Guns	Transmit "Rounds Complete" report.	This report is sent the instant all rounds of fire for effect have been fired by pressing the RDS CMPLT button on the SCA.
12.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: <i>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> <i>If an observer initiated at the mission, the "Rounds Complete" report is automatically re-transmitted to the observer.</i> As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting gun changes from a * with a yellow background to  with a green background.
13.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
<b>NOTE:</b>			
<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 6 through 14 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 GDUs. <i>If the observer requests Record as Target:</i> The adjusted target location is stored in the On-Call Target list. <i>If the observer requests Record as Known Point:</i> The adjusted location is stored in the Targets, Known Points and an MTO with the known point number is transmitted to the observer.
16.	Guns	Receive EOM.	The SCA 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 ...

**Objective:** Process an immediate suppression mission.

<b>Procedure SS6: Process an Immediate Suppression Mission</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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	<i>Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission. See PROCEDURE FM6. Initiate a Fire Mission at AFATDS</i>	
a.		<i>Complete the Initiate Fire Mission window. Enter the following:</i>	
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>			
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
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed.
<b>NOTE:</b>			
<i>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:	

**Procedure SS6: Process an Immediate Suppression Mission (cont).**

Step	Station	Action	Result/Explanation
		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request: Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. Fails communications if no route exists, the affected 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> <p><i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the GDUs and sends an MTO. The MTO: 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 5.</p>
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery/platoon FDC, 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.	Guns	Receive fire commands.	The GDU alarm sounds and the mission data is displayed at the SCA.
5.	Observer	Receives and stored the MTO.	

**Procedure SS6: Process an Immediate Suppression Mission (cont).**

<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
6.	Btry/Plt AFATDS	Track mission status of GDUs.	Click the GDU Weapon Status icon of the Current menu tool bar. The Weapon Status GDU window displays. See <i>Procedure FM8. Examine the Weapon Status GDU Window for details of mission tracking on the Weapon Status GDU window.</i>
7.	Guns	Report "Shot."	The Shot button is depressed on the SCA.
8.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: <i>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.</i> <i>If the mission was initiated at by an observer, the shot report is automatically re-transmitted to the observer.</i> As "Shot" reports are received, the Fire/Shot indicator for the reporting gun changes from a * with a yellow background to  with a green background.
9.	Observer	Receives "Shot" report.	This provides indication that the mission has been fired.
10.	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 GDU window.
11.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
12.	Guns	Transmit "Rounds Complete" report.	This report is sent the instant all rounds of fire for effect have been fired by pressing the RDS CMPLT button on the SCA.
13.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: <i>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> <i>If the mission was initiated at by an observer, the "Rounds Complete" report is automatically re-transmitted to the observer.</i> As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting gun changes from a * with a yellow background to  with a green background.
14.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
<i>If the observer adjusts fire: go to step 16.</i>			
<i>If the observer ends the mission: go to step 19.</i>			
15.	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.
16.	Btry/Plt AFATDS	Receives subsequent adjustment.	If intervention rules do not apply, <i>the fire commands are transmitted to the GDUs.</i> If intervention rules apply, <i>the mission the Intervention icon on the Current window tool bar activates.</i> 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.
17.	All stations.	Steps 3 through 18 repeat as applicable.	
18.	Observer	Transmits end of mission.	

**Procedure SS6: Process an Immediate Suppression Mission (cont).**

Step	Station	Action	Result/Explanation
19.	Btry/Plt AFATDS	Receives end of mission.	Btry/Plt AFATDS retransmits end of mission to the GDUs. <i>If the observer requests Record as Target:</i> The adjusted target location is stored in the On-Call Target list. <i>If the observer requests Record as Known Point:</i> The adjusted location is stored in the Targets, Known Points and an MTO with the known point number is transmitted to the observer.
20.	Guns	Receive EOM.	The SCA 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 ...

**Additional Information:** AFATDS uses the weather conditions entered for a quick smoke mission to determine the number of rounds to fire. AFATDS does not automatically perform subsequent volley replenishment of the smoke screen. This must be accomplished by the operator.

**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	<i>Complete the Initiate Fire Mission window.</i> 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.		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. 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 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.

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

<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
l.		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.
<b>NOTE:</b>			
<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>			
<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>			
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.
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed.
c.		Click one of the following:	

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

Step	Station	Action	Result/Explanation
		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request: 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. <i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the GDUs and sends an MTO. The MTO: 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 5.</p>
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery/platoon FDC, 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. <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. <i>If the mission was received directly from an observer:</i> sends a denied MTO to observer. <i>If the mission was received from a radar:</i> no response is transmitted to the radar.</p>
5.	Guns	Receive fire commands.	The GDU alarm sounds and the mission data is displayed at the SCA.
6.	Observer	Receives and stored the MTO.	

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

<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
7.	Btry/Plt AFATDS	Track mission status of GDUs.	Click the GDU Weapon Status icon of the Current menu tool bar. The Weapon Status GDU window displays. See <i>Procedure FM8. Examine the Weapon Status GDU Window for details of mission tracking on the Weapon Status GDU window.</i>
<p><i>If the method of control is At My Command or TOT: got to step 8.</i>            If communications with the GDUs fails: see Procedure FM13. React to a GDU Comm Failure During Mission Processing.            If the method of control is WR,: go to step 14</p>			
8.	Guns	Transmit "Ready" report.	After cycling through the mission, the READY button on the SCA is selected.
9.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun changes from a * with a yellow background to a  with a green background. When the last gun has reported, the "Ready" command is transmitted to the observer. <i>For a TOT, go to step 10.</i> <i>For an AMC mission, go to step 11.</i>
10.	Btry/Plt AFATDS	Transmit "Fire" command for a TOT.	A timer, displayed in the GDU Weapon Status window counts down the time until the fire command is transmitted. At the expiration of the time, the command to fire is automatically transmitted to the GDUs. <i>Go to step 13.</i>
11.	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 GDUs.
13.	Guns	Receive "Fire" command.	The GDU alarm sounds and the command to fire the mission is displayed at the SCA.
14.	Guns	Report "Shot."	The Shot button is depressed on the SCA.
15.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: <i>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.</i> <i>If the mission was initiated at by an observer, the shot report is automatically re-transmitted to the observer.</i> As "Shot" reports are received, the Fire/Shot indicator for the reporting gun changes from a * with a yellow background to a  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 GDU window.
18.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
19.	Guns	Transmit "Rounds Complete" report.	This report is sent the instant all rounds of fire for effect have been fired by pressing the RDS CMPLT button on the SCA.

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

Step	Station	Action	Result/Explanation
20.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: <i>If the mission was initiated at the Btry/Plt AFATDS</i> or received from a radar, the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. <i>If the mission was initiated at by an observer</i> , 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 from a * with a yellow background to ■ with a green background.
21.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
<i>If the observer adjusts fire: go to step 22.</i> <i>If the observer ends the mission: go to step 25.</i>			
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, <i>the fire commands are transmitted to the GDUs.</i> If intervention rules apply, <i>the mission the Intervention icon on the Current window tool bar activates.</i> 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 GDUs. <i>If the observer requests Record as Target:</i> The adjusted target location is stored in the On-Call Target list. <i>If the observer requests Record as Known Point:</i> 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 SCA 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 ...

**Additional Information:** Artillery delivered minefields are constructed ... AFATDS selects a FASCAM munitions in the following circumstances:

1. An System Preferences & Restrictions Procedure (Guidances, Workspace, or the Guidance Folder icon in the toolbar, System Preferences & Restrictions, System Task 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.

**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 *will not* change the volume desired.

**FASCAM Safety Zone.** AFATDS generates a FASCAM Safety Zone geometry when the mission is transmitted to the GDUs. 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 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.

<b>Procedure SS8: Process a FASCAM Mission</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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/Pit AFATDS	<i>Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission. See PROCEDURE FM6. Initiate a Fire Mission at AFATDS</i>	
a.		<i>Complete the Initiate Fire Mission window. Enter the following:</i>	
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.
<b>NOTE:</b> <i>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.</i>			
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.
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.

**Procedure SS8: Process a FASCAM Mission (cont).**

Step	Station	Action	Result/Explanation
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.
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: 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> <p><i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the GDUs and sends an MTO. The MTO: 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.</p>
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery/platoon FDC, 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 SS8: Process a FASCAM 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	<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. <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. <i>If the mission was received directly from an observer:</i> sends a denied MTO to observer. <i>If the mission was received from a radar:</i> no response is transmitted to the radar.
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 GDU alarm sounds and the mission data is displayed at the SCA.
6.	Observer	Receives and stored the MTO.	
7.	Btry/Plt AFATDS	Track mission status of GDUs.	Click the GDU Weapon Status icon of the Current menu tool bar. The Weapon Status GDU window displays. See <i>Procedure FM8. Examine the Weapon Status GDU Window for details of mission tracking on the Weapon Status GDU window.</i>
<p><i>If the method of control is At My Command or TOT: got to step 8.</i>  <i>If communications with the GDUs fails: see Procedure FM13. React to a GDU Comm Failure During Mission Processing.</i>  <i>If the method of control is WR,: go to step 14.</i></p>			
8.	Guns	Transmit "Ready" report.	After cycling through the mission, the READY button on the SCA is selected.
9.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun changes from a  with a yellow background to  with a green background. When the last gun has reported, the "Ready" command is transmitted to the observer. <i>For a TOT, go to step 10.</i> <i>For an AMC mission, go to step 11.</i>
10.	Btry/Plt AFATDS	Transmit "Fire" command for a TOT.	A timer, displayed in the GDU Weapon Status window counts down the time until the fire command is transmitted. At the expiration of the time, the command to fire is automatically transmitted to the GDUs. <i>Go to step 13.</i>
11.	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 GDUs.

## Procedure SS8: Process a FASCAM Mission (cont).

Step	Station	Action	Result/Explanation
13.	Guns	Receive "Fire" command.	The GDU alarm sounds and the command to fire the mission is displayed at the SCA.
14.	Guns	Report "Shot."	The Shot button is depressed on the SCA.
15.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: <i>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.</i> <i>If the mission was initiated at by an observer, the shot report is automatically re-transmitted to the observer.</i> As "Shot" reports are received, the Fire/Shot indicator for the reporting gun changes from a * with a yellow background to  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 GDU window.
18.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
19.	Guns	Transmit "Rounds Complete" report.	This report is sent the instant all rounds of fire for effect have been fired by pressing the RDS CMPLT button on the SCA.
20.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: <i>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> <i>If the mission was initiated at by an observer, the "Rounds Complete" report is automatically re-transmitted to the observer.</i> As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting gun changes from a * with a yellow background to  with a green background.
21.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
<i>If the observer adjusts fire: go to step 22.</i>			
<i>If the observer ends the mission: go to step 25.</i>			
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, <i>the fire commands are transmitted to the GDUs.</i> If intervention rules apply, <i>the mission the Intervention icon on the Current window tool bar activates.</i> 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 GDUs. <i>If the observer requests Record as Target:</i> The adjusted target location is stored in the On-Call Target list. <i>If the observer requests Record as Known Point:</i> The adjusted location is stored in the Targets, Known Points and an MTO with the known point number is transmitted to the observer.

**Procedure SS8: Process a FASCAM Mission (cont).**

Step	Station	Action	Result/Explanation
27.	Guns	Receive EOM.	The SCA 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 ...

**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.

**NOTE:**

The FPF request should describe the target as a rectangle. The length should not be longer than can be supported by the fire unit. The correct dimensions can be determined as follows:

LENGTH: the number of weapons of the supporting unit times the burst width. *For example:*

6 gun 155mm battery X HE burst width 50m = length 300m

6 gun 105mm battery X HE burst width 30m = length 180m

WIDTH: must be equal to or less than 1/5 of the length. *For example:*

6 gun 155mm battery length 300m X 1/5 = width 60m (expressed as 50m for most FO devices)

6 gun 105mm battery length 180m X 1/5 = width 36m

*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 PROCEDURE FM6. Initiate a Fire Mission at AFATDS	
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 FM 6: Initiate a Fire Mission for details.
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.	LENGTH: the number of weapons of the supporting unit times the burst width. <i>For example:</i> 6 gun 155mm battery X HE burst width 50m = length 300m 6 gun 105mm battery X HE burst width 30m = length 180m
<b>NOTE:</b>			
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.	

*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.*

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

<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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. Mission Type displayed is Assign Precedence displayed is Priority
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed. MOC is DNL.
c.		Click one of the following:	
		Accept Recommendation	<i>If coordination is required:</i> The coordination request: 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. <i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the GDUs and sends an MTO. The MTO: 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/platoon FDC, 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.

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

Step	Station	Action	Result/Explanation
		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.	Guns	Receive fire commands.	The GDU alarm sounds and the mission data is displayed at the SCA. FPF fire commands are automatically transmitted with the special instruction "Use gunner's quadrant."
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 GDUs.	Click the GDU Weapon Status icon of the Current menu tool bar. The Weapon Status GDU window displays. See <i>Procedure FM8. Examine the Weapon Status GDU Window for details of mission tracking on the Weapon Status GDU window.</i>
<p>At this point the FPF mission is available for firing. The observer may perform the following:  <i>Fire the FPF mission: Go to step 7.</i>  <i>Delete the FPF mission: Go to step 18.</i></p>			
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.		<i>If digital comm with FO:</i>	AFATDS receives the fire command and automatically transmits "Fire" to the GDUs. The method of fire is "Continuous Fire."
b.		<i>If voice comm with FO:</i> On the Weapon Status GDU window, click the <b>FIRE</b> button.	AFATDS transmits "Fire" to the GDUs. The method of fire is "Continuous Fire."
9.	Guns	Receive "Fire" command.	The GDU alarm sounds and the command to fire the mission is displayed at the SCA.
10.	Guns	Report "Shot."	The Shot/RC button is depressed on the SCA.
11.	Btry/Plt AFATDS	Receives "Shot" report.	<p>On reception of the first gun's "Shot" report:</p> <p><i>If the mission was initiated at the Btry/Plt AFATDS or received from a radar,</i> the shot report is placed in the Active Mission Messages icon of the Current window tool bar.</p> <p><i>If the mission was initiated at by an observer,</i> 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 changes from a  with a yellow background to  with a green background.</p>
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 GDU window.

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

Step	Station	Action	Result/Explanation
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"	AFATDS automatically transmits "Cease Loading" commands to the GDUs.
a.		<i>If digital comm with FO:</i>	AFATDS automatically transmits "Cease Loading" to the GDUs.
b.		<i>If voice comm with FO:</i> On the Weapon Status GDU window, click the EOM button.	AFATDS transmits "Cease Loading" to the GDUs.
17.	Guns	Acknowledge "Cease Loading".	Press the Cycle button on the SCA.
<b>NOTE:</b>			
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.	<i>Using digital communications with the observer:</i> The target is moved to the Inactive Target List and a Mission Fired Report is generated.  <i>If voice communications with the observer:</i> 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 GDUs.
20.	Guns	Receive EOM.	The SCA 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 ...

**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	<i>Complete the Initiate Fire Mission window.</i> Click Mission Processing, Initiate Fire Mission. <i>See PROCEDURE FM6. Initiate a Fire Mission at AFATDS</i>	
a.		<i>Complete the Initiate Fire Mission window.</i> 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.
<b>NOTE:</b>			
<i>If no observer is associated with the mission, the PRF code (last three digits of the time setting) will be missing from the fire commands.</i>			
c.		Click Mission Type and select Fire For Effect	

**Procedure SS10: Process a Copperhead Target of Opportunity Mission (cont).**

<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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.	
<b>NOTE:</b>			
<i>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. 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	<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
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed. <i>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>
<b>NOTE:</b>			
<i>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:	

**Procedure SS10: Process a Copperhead Target of Opportunity Mission (cont).**

Step	Station	Action	Result/Explanation
		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request: 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> <p><i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the GDUs and sends an MTO. The MTO: 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.</p>
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery/platoon FDC, 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 GDU alarm sounds and the mission data is displayed at the SCA.

**NOTE:**

*AFATDS does not transmit the command to fire multiple Copperhead rounds at timed intervals. This must be accomplished by manually re-transmitting fire commands.*

**Procedure SS10: Process a Copperhead Target of Opportunity Mission (cont).**

Step	Station	Action	Result/Explanation
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 GDUs.	Click the GDU Weapon Status icon of the Current menu tool bar. The Weapon Status GDU window displays. See <i>Procedure FM8. Examine the Weapon Status GDU Window for details of mission tracking on the Weapon Status GDU window.</i>
7.	Guns	Transmit "Ready" report.	After cycling through the mission, the READY button on the SCA is selected.
8.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun changes from a * with a yellow background to  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 GDUs.
11.	Guns	Receive "Fire" command.	The GDU alarm sounds and the command to fire the mission is displayed at the SCA.
12.	Guns	Report "Shot."	The Shot/RC button is depressed on the SCA.
13.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: <i>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.</i> <i>If the mission was initiated at by an observer, the shot report is automatically re-transmitted to the observer.</i> As "Shot" reports are received, the Fire/Shot indicator for the reporting gun changes from a * with a yellow background 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 GDU window.
16.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
17.	Guns	Transmit "Rounds Complete" report.	This report is sent the instant all rounds of fire for effect have been fired by pressing the RDS CMPLT button on the SCA.
18.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: <i>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> <i>If the mission was initiated at by an observer, the "Rounds Complete" report is automatically re-transmitted to the observer.</i> As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting gun changes from a * with a yellow background 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.	

**Procedure SS10: Process a Copperhead Target of Opportunity Mission (cont).**

Step	Station	Action	Result/Explanation
21.	Btry/Plt AFATDS	Receives end of mission.	Btry/Plt AFATDS retransmits end of mission to the GDUs. <i>If the observer requests Record as Target:</i> The adjusted target location is stored in the On-Call Target list. <i>If the observer requests Record as Known Point:</i> The adjusted location is stored in the Targets, Known Points and an MTO with the known point number is transmitted to the observer.
22.	Guns	Receive EOM.	The SCA 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 ...

**Additional Information:** 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.

**Procedure SS11: Process a Copperhead Priority 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	<i>Complete the Initiate Fire Mission window.</i> Click Mission Processing, Initiate Fire Mission. <i>See PROCEDURE FM6. Initiate a Fire Mission at AFATDS</i>	
a.		<i>Complete the Initiate Fire Mission window.</i> 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 FM 6: Initiate a Fire Mission for details.
f.		Select Category	13 target categories are available. Selection defines choices of Type. Default is LOC.
g.		Select Type	Allows selection of specific target type. Default is Terrain.
h.		Click the Munitions tab.	The Munitions form displays.
i.		Click the FFE#1 Shell and select Copperhead.	In combination with Mission Type: Assign, this identifies the target as a Copperhead priority mission.
<b>NOTE:</b>			
<i>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>			
i.		Click Analyze Target.	

### Procedure SS11: Process a Copperhead Priority Mission (cont).

Step	Station	Action	Result/Explanation
<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	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.
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed. <i>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>
c.		Click one of the following:	
		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request: 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> <p><i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the GDUs and sends an MTO. The MTO: 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.</p>
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery/platoon FDC, 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.

**Procedure SS11: Process a Copperhead Priority Mission (cont).**

Step	Station	Action	Result/Explanation
		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 GDU alarm sounds and the mission data is displayed at the SCA.
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 GDUs.	Click the GDU Weapon Status icon of the Current menu tool bar. The Weapon Status GDU window displays. See <i>Procedure FM8. Examine the Weapon Status GDU Window for details of mission tracking on the Weapon Status GDU window.</i>
7.	Guns	Transmit "Ready" report.	After cycling through the mission, the READY button on the SCA is selected.
8.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun changes from a * with a yellow background 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:  <i>Fire the Copperhead priority mission: Go to step 9.</i>  <i>Delete the Copperhead priority mission: Go to step 20.</i></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 GDUs.
11.	Guns	Receive "Fire" command.	The GDU alarm sounds and the command to fire the mission is displayed at the SCA.
12.	Guns	Report "Shot."	The Shot/RC button is depressed on the SCA.
13.	Btry/Plt AFATDS	Receives "Shot" report.	<p>On reception of the first gun's "Shot" report:</p> <p><i>If the mission was initiated at the Btry/Plt AFATDS or received from a radar,</i> the shot report is placed in the Active Mission Messages icon of the Current window tool bar.</p> <p><i>If the mission was initiated at by an observer,</i> 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 changes from a * with a yellow background to  with a green background.</p>
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 GDU window.
16.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.

**Procedure SS11: Process a Copperhead Priority Mission (cont).**

Step	Station	Action	Result/Explanation
17.	Guns	Transmit "Rounds Complete" report.	This report is sent the instant all rounds of fire for effect have been fired by pressing the RDS CMPLT button on the SCA.
18.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: <i>If the mission was initiated at the Btry/Plt AFATDS</i> or received from a radar, the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. <i>If the mission was initiated at by an observer</i> , 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 from a * with a yellow background to [ ] with a green background.
19.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
<b>Note:</b>			
<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.	<i>Using digital communications with the observer:</i> The target is moved to the Inactive Target List and a Mission Fired Report is generated.  <i>If voice communications with the observer:</i> 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 GDUs.
22.	Guns	Receive EOM.	The SCA 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 ...

**Additional Information:** 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, <b>Known Point Number Already Exists</b> 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.

**SS13 Create a Target List.**

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

**Additional Information:** Aside from the default target lists maintained by AFATDS, the AFATDS operator can create additional target lists. These target lists are named and at least one target must be added to allow the target list to be stored.

**Procedure SS13: Create a Target List.**

Step	Action	Result/Explanation
1.	Click Targets, Workspace, or the Target Folder icon in the toolbar Current, New Target Lists.	The Target List window displays.
2.	Click the Target List: field and type a unique name for the target list.	1 to 30 characters, blanks spaces and special characters may be used.
<b>NOTE:</b>		
<i>The Target List window cannot be OK'd without adding at least one target to the list. AFATDS will not store a blank target list.</i>		
<i>To enter a new target on the list: Go to step 3.</i>		
<i>To copy an existing target list into the new list: Go to step 4.</i>		
<i>To copy selected targets from an existing list into the new list: Go to step 5.</i>		
3.	Click Target, New.	The Basic Target Information window displays.
a.	Click the Target Number field and type the target number.	If no target number is entered, the next available target number from the AFATDS target number block is assigned when the target is stored.
b.	Click the Location fields and type the target grid.	Location can be copied and pasted from the map by: -Pointing the cursor at the location on the map -Pressing and holding the Control key and right clicking the track ball button -Pointing the cursor at the Location field --Pressing and holding the Control key and middle clicking the track ball button.
c.	Select Category	13 target categories are available. Selection defines choices of Type. Default is LOC.
d.	Select Type	Allows selection of specific target type. Default is Terrain.

**Procedure SS13: Create a Target List (cont).**

Step	Action	Result/Explanation	
e.	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	
f.	Click OK.	The Basic Target Information window closes and the target data is displayed on the Target List window. To add additional targets, go to the note after step 2; if editing is complete, go to step 6.	
4.	Click the name of the desired list to be copied in the Target Lists list.	The name highlights.	
a.	Click the Copy arrow.	All targets of the selected list are added to the new target list. To add additional targets, go to the note after step 2; if editing is complete, go to step 6.	
5.	Click the name of the desired list to be copied in the Target Lists list.	The name highlights.	
a.	Click the Open button.	The list changes from target lists to targets of the selected list.	
b.	Click those target numbers that are to be added to the new list.	The target numbers highlight.	
c.	Click the Copy arrow.	The selected targets are added to the new target list. To add additional targets, go to the note after step 2; if editing is complete, go to step 6.	
6.	Click OK.	The Target List window closes and the target list is stored.	
To access the list again: Click Targets, Workspace, or the Target Folder icon in the toolbar, Current, Target Lists, Open, select the list name and click OK.			

**SS14. Create a Group.**

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

**Additional Information:** A group is a number of targets that are attacked simultaneously during the execution of a fire plan. After constructing the group, the group must be added to a fire plan (see procedure SS16 below).

**Procedure SS14. Create a Group.**

Step	Action	Result/Explanation
1.	On the Current menu bar, click Targets, Groups, New	The Group window displays.
2.	Type a unique name for the plan in the Group field.	1 to 30 characters, blanks spaces and special characters may be used.
3.	Add targets to the group.	Targets may be added in the following manner.
<b>Note:</b>		
<i>Adding targets to a group also adds the same targets to the OnCall Target List making them available for quick fire requests.</i>		
a.	Add from existing lists.	Perform the following:

**Procedure SS14. Create a Group (cont).**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
1)	In the List Type list, click Target Lists	Target Lists highlights.
2)	Click the Open button.	The heading List Type changes to Target Lists and the list displays stored target list name.
3)	Click the list from which targets will be copied.	The list name highlights.
4)	<i>To copy an entire list to the plan, click the Copy arrow.</i>	All targets in the list appear in the Target Number pane on the left.
5)	<i>To copy individual targets from the list to the plan, click the Open button.</i>	The target list opens to display individual targets in the list.
6)	Click on targets to be added to the plan.	The targets highlight.
7)	Click the Copy arrow.	Selected targets in the list appear in the Target Number pane on the left.
b.	Add from existing groups.	Perform the following:
1)	In the List Type list, click Groups	Groups highlights.
2)	Click the Open button.	The heading List Type changes to Groups and the list displays stored group names.
3)	Click the Group from which targets will be copied.	The name highlights.
4)	<i>To copy an entire Group to the plan, click the Copy arrow.</i>	All targets in the group appear in the Target Number pane on the left.
5)	<i>To copy individual targets from the group to the plan, click the Open button.</i>	The group opens to display individual targets in the list.
6)	Click on targets to be added to the plan.	The targets highlight.
7)	Click the Copy arrow.	Selected targets in the group appear in the Target Number pane on the left.
c.	Add targets from the map.	Perform the following:
1)	Click the desired target symbol on the Current window.	The symbol is displayed in white.
2)	On the Group window, click Target, Add From Map.	The selected target is added in the Target Number pane on the left.
4.	Click OK.	The Group window closes.
To access the stored group: Click Targets, Groups, Edit, click on the desired group name and click OK.		

**SS15. Create a Series.**

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

**Additional Information:** A series is a sequential firing of targets based on a time line. The series is incorporated into a fire plan (see Procedure SS16 below).

### Procedure SS15. Create a Series.

Step	Action	Result/Explanation
1.	On the Current menu bar, click Targets, Series, New	The Series window displays.
2.	Type a unique name for the plan in the Series field.	1 to 30 characters, blanks spaces and special characters may be used.
3.	Add targets to the Series.	Targets may be added in the following manner.
<i>Note: Adding targets to a series also adds the same targets to the OnCall Target List making them available for quick fire requests.</i>		
a.	Add from existing series	Perform the following:
1)	In the List Type list, click Series	Series highlights.
2)	Click the Open button.	The heading List Type changes to Series and the list displays stored series names.
3)	Click the Series from which targets will be copied.	The name highlights.
4)	<i>To copy an entire series to the plan, click the Copy arrow.</i>	All targets in the series appear in the Target Number pane on the left.
5)	<i>To copy individual targets from the series to the plan, click the Open button.</i>	The series opens to display individual targets in the list.
6)	Click on targets to be added to the plan.	The targets highlight.
7)	Click the Copy arrow.	Selected targets in the series appear in the Target Number pane on the left.
b.	Add from existing lists.	Perform the following:
1)	In the List Type list, click Target Lists	Target Lists highlights.
2)	Click the Open button.	The heading List Type changes to Target Lists and the list displays stored target list name.
3)	Click the list from which targets will be copied.	The list name highlights.
4)	<i>To copy an entire list to the plan, click the Copy arrow.</i>	All targets in the list appear in the Target Number pane on the left.
5)	<i>To copy individual targets from the list to the plan, click the Open button.</i>	The target list opens to display individual targets in the list.
6)	Click on targets to be added to the plan.	The targets highlight.
7)	Click the Copy arrow.	Selected targets in the list appear in the Target Number pane on the left.
c.	Add from existing groups.	Perform the following:

**Procedure SS15. Create a Series (cont).**

Step	Action	Result/Explanation
1)	In the List Type list, click Groups	Groups highlights.
2)	Click the Open button.	The heading List Type changes to Groups and the list displays stored group names.
3)	Click the Group from which targets will be copied.	The name highlights.
4)	<i>To copy an entire Group to the plan, click the Copy arrow.</i>	All targets in the group appear in the Target Number pane on the left.
5)	<i>To copy individual targets from the group to the plan, click the Open button.</i>	The group opens to display individual targets in the list.
6)	Click on targets to be added to the plan.	The targets highlight.
7)	Click the Copy arrow.	Selected targets in the group appear in the Target Number pane on the left.
d.	Add targets from the map.	Perform the following:
1)	Click the desired target symbol on the Current window.	The symbol is displayed in white.
2)	On the Series window, click Target, Add From Map.	The selected target is added in the Target Number pane on the left.
4.	Establish the sequence for attack of the targets.	
a.	Click the Offset field for a target.	The target number and type are surrounded by a blue box.
b.	Type the offset time.	The time is the number of minutes after the execution of the plan that this target will be fired.
5.	Click OK.	The Series window closes.
To access the stored series: Click Targets, Series, Edit, click on the desired group name and click OK.		

**SS16. Create a Fire Plan.**

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

**Objective:** Create a Fire Plan.

**Procedure SS16: Create a Fire Plan.**

Step	Action	Result/Explanation
1.	On the Current menu bar, click Targets, Fire Plans, New	
2.	Type a unique name for the plan in the Fire Plan field.	1 to 30 characters, blanks spaces and special characters may be used.
3.	Select On-Call or Absolute	Establishes timing of plan execution.

**Procedure SS16: Create a Fire Plan (cont).**

<b>Step</b>	<b>Action</b>	<b>Result/Explanation</b>
4.	Type Start Time	For On-Call plans this entry establishes the number of minutes after the plan is executed that the first target TOT will be scheduled. For absolute time, enter the H-hour time for the plan in the form DDHHMMZMONYY where DD is the day, HH is the hour, MM is the minute, Z is the time zone, MON is the month and YY is the year.
5,	Type End Time	This entry establishes the number of minutes after the plan is executed during which targets can be scheduled. For On-Call plans enter a number of minutes, for absolute time, enter the H-hour time for the plan in the form DDHHMMZMONYY where DD is the day, HH is the hour, MM is the minute, Z is the time zone, MON is the month and YY is the year.
6.	Add targets to the plan.	Targets may be added in the following manner.
<i>Note: Adding targets to a fire plan also adds the same targets to the OnCall Target List making them available for quick fire requests.</i>		
a.	Add from existing lists.	Perform the following:
1)	Click a target list name in the Target Lists	The name highlights.
2)	<i>To copy the entire list to the plan, click the Copy arrow.</i>	All targets in the list appear in the Target Number pane on the left. To add additional targets, go to step 6; if targeting is complete, go to step 7.
3)	<i>To copy individual targets from the list to the plan, click the Open button.</i>	The target list opens to display individual targets in the list.
a)	Click on targets to be added to the plan.	The targets highlight.
b)	Click the Copy arrow.	Selected targets in the list appear in the Target Number pane on the left. To add additional targets, go to step 6; if targeting is complete, go to step 7.
b.	Add targets from the map.	Perform the following:
1)	Click the desired target symbol on the Current window.	The symbol is selected with black block at its corners.
2)	On the Fire Plan window, click Target, Add From Map.	The selected target is added in the Target Number pane on the left. To add additional targets, go to step 6; if targeting is complete, go to step 7.
7.	Assign scheduling times to targets.	This can be done in either or both of the two methods described below.
a.	Schedule by times relative to start time.	
1)	Click the desired target number.	The target data is surrounded by a blue rectangle.
2)	Click the Offset Time field and type the number of minutes.	This is the number of minutes from the plan Start Time that the TOT will be assigned.
b.	Schedule by rank.	
1)	Click the desired target number.	The target data is surrounded by a blue rectangle.
2)	Click the Rank field and type the priority.	Priority or rank is a value 0 to 999. Lower values are scheduled before higher values.

**Notes:**

*If a combination of offset times and ranks are assigned in a plan, targets assigned an offset time are scheduled first and ranked targets are scheduled second in time slots that are available.*

*If groups exist in the fire plan and a rank or offset time is assigned to a target in the group, all targets in the group automatically are assigned the same rank or offset.*

*If series exist in the fire plan only the Offset Time of the first target can be edited. If this is changed the remaining series targets offset time is adjusted to maintain the time sequence assigned in the series.*

**Procedure SS16: Create a Fire Plan (cont).**

Step	Action	Result/Explanation
8.	Assign Munitions	Munitions assigned here override commander's guidance.
a.	Click the desired target number.	The target data is surrounded by a blue rectangle.
b.	Click FFE Shell #1 and select the desired munitions.	Selected shell appears and Fz, if applicable, defaults.
c.	Click Fz and select desired fuze, if applicable.	Fz displays. <i>Note: FZ cannot be selected for 155mm Copperhead.</i>
d.	Type # Vlys or # Shells.	Assigns quantity.
9.	Create the schedule of fires.	
a.	Click Options, Schedule.	The Schedule of Fires window displays.
b.	Click Options, Calculate.	Each target is examined against guidance as if it was a fire mission and either assigned to the schedule or left unscheduled. Scheduled targets displays as time line bars. The Unscheduled Targets field displays the number of targets that failed to be scheduled. The Total Rounds field displays the number of rounds required to fire the plan.
c.	Click OK.	The Schedule of Fires window closes and the Fire Plan window displays.
d.	Click OK.	The Fire Plan window closes.
To access the fire plan: Click Targets, Fire Plans, Edit, click on the desired fire plan name and click OK.		

**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 ...

**Additional Information:** 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.

**Procedure SS17: Determine the Reason Targets were not Scheduled.**

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.
2.	<i>Access the Unscheduled Targets:</i>	
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.	

**Procedure SS17: Determine the Reason Targets were not Scheduled (cont).**

Step	Action	Result/Explanation
f.	Click the FFE Shell #1 # Shells field and type the desired volume of fire.	
<b>NOTE:</b>		
<i>Repeat steps 4.d. through 4.f. for FFE Shell #2:</i>		
g.	Click the Update button.	The target Firing Time field updates based on the volume of fire.
<b>NOTE:</b>		
<i>To add additional targets to this unit, go to step 4. If no additional target are to be added, go to step 5.</i>		
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 <b>FA Cannon</b> in figure 6-2.
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.

**Procedure SS17: Determine the Reason Targets were not Scheduled (cont).**

Step	Action	Result/Explanation
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.

**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 ...

**Additional Information:** The preferred method for scheduling targets in a fire plan is to calculate the fire plan (see procedure SS16 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.**

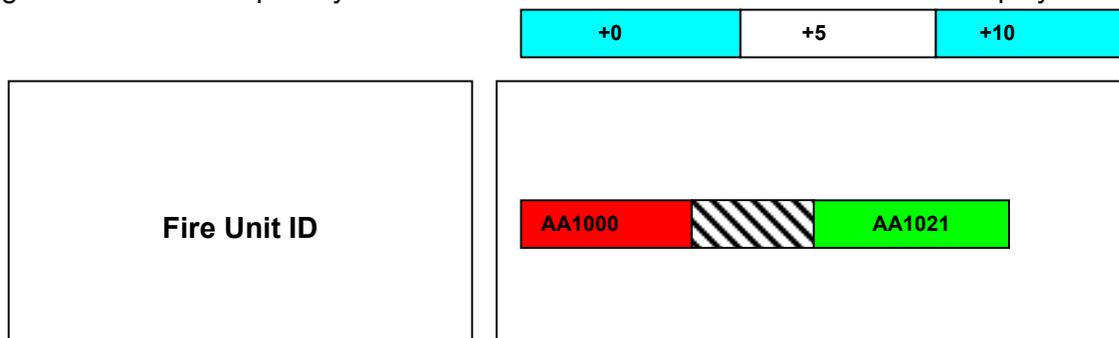
Step	Action	Result/Explanation
1.	On the Current menu bar, click Targets, Schedule of Fires	The Select Schedule of Fires window displays.
a.	Click the name of the fire plan.	The name highlights.
b.	Click the OK button.	The fire Schedule of Fires window displays.
2.	Click the unit to which a target will be scheduled.	The Unit ID is surrounded by a blue box.
3.	Click Options, Unit Schedule	The Unit Schedule window displays.
4.	<i>Add an unscheduled target to the unit's schedule:</i>	
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.	
<b>NOTE:</b>		
<i>Repeat steps 4.d. through 4.f. for FFE Shell #2:</i>		
g.	Click the Update button.	The target Firing Time field updates based on the volume of fire.
<b>NOTE:</b>		
<i>To add additional targets to this unit, go to step 4. If no additional target are to be added, go to step 5.</i>		
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...

<b>Procedure SS19: Receive a Fire Plan from Higher Headquarters.</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
1	Higher Headquarters	Transmit the fire plan.	
2.	Btry/Plt AFATDS	The TGT icon on the AFATDS Current menu bar darkens.	
a.		Click the TGT icon	A window displays indicating the reception of the plan, itsd name and the source.
b.		Click the text.	That line of text highlights.
c.		Click the Delete button.	
d.		Click the OK button.	The window closes
3.	Btry/Plt AFATDS	<i>Preview the fire plan.</i>	
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.
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...

**Additional Information:** 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.

Procedure SS20: Execute a Schedule of Fires.		
Step	Action	Result/Explanation
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 <b>Execute</b> 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: Click the Yes button.</i>	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: Click the NO button.</i>	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.
<b>NOTE:</b>		
<i>When AFATDS sends missions to intervention on execution of a fire plan, each mission is computed independently. Any unscheduled missions will also be re-evaluated. If there are timing conflicts (for example, attempting to fire a group from a single battery) the conflicting targets may provide capable options at intervention but then be denied when an attempt to Accept Recommendation is selected. This is because AFATDS does not know which targets the operator will approve. After one of the conflicting targets are sent to the GDUs, that target is scheduled by AFATDS mission scheduling. At that point, any other missions that are to be scheduled for that weapon during the same firing time will be denied.</i>		

### 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...

**Additional Information:** 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.

SS21. Trigger a Fire Plan Based on H-hour.		
Step	Action	Result/Explanation
1.	<i>Create the Trigger Event.</i>	
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.
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 DDHHHHZMMYY where DD is the day, HHHH is the Z is the time zone, MMM is the month and YY is the year.

## SS21. Trigger a Fire Plan Based on H-hour (cont).

Step	Action	Result/Explanation
<p align="center"><b>NOTE:</b></p> <p><i>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.</i></p>		
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.	<i>React when a trigger event is tripped.</i>	
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.
<p align="center"><b>NOTE:</b></p> <p>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.</p>		
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.

## Chapter 5. Planning and Commander's Guidance.

### Section I. Plans and Orders.

1. AFATDS Planning process. AFATDS supports the staff planning process. This is accomplished by the development and evaluation of fire support courses of action in future plans. This level of planning is outside the scope of battery/platoon operations. However, the products of the plan are normally disseminated to all units to be put into use.
2. Commander's Guidance. Part of the AFATDS planning develops guidance...

#### PG1 Receive a Plan from Higher or Supported HQ.

**Conditions:** Given an AFATDS workstation that is powered, with AFATDS started, activated and communications established with the higher or supported headquarters...

**Additional Information:** Plan data may be transferred in bulk or in multiple transfers. The higher headquarters decides the method based on the capability and reliability of the communications links. Multiple transfers will result in this procedure being executed more than one time for a plan.

Procedure PG1: Receive a Plan from Higher or Supported Headquarters			
Step	Station	Action	Result/Explanation
1	Supported of Higher HQ	Transmit plan data.	
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 Plan Notification
b.		Click the alert.	That line of text highlights.
c.		Click the View button.	The Alert Message window displays with Plan (NAME) received; ready to preview.
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	<i>Preview the plan.</i>	
a.		Click Situations, Received Plans/Current	The Received Plans Current window displays with the plan listed.
b.		Click the plan name.	The plan name highlights.
c.		Click the Preview button.	The Received Plan window displays. All data received in the plan is listed by type. Each type may be selected by clicking the name and viewed by clicking the View button
<b>NOTE:</b>			
<i>Data may also be deleted by selecting the delete button. This action should not be taken as it removes data from the unit's copy of a plan of a higher headquarters</i>			
4.	Btry/Plt AFATDS	Click the Save button.	The plan data is saved and the Received Plans Current window re-displays with a blank list.
a.		Click OK.	The Received Plans Current window closes.

**PG2 Implement a Plan from Higher or Supported HQ.**

**Conditions:** Given an AFATDS workstation that is powered, with AFATDS started, activated and with the a plan stored...

**Additional Information:** Implementing a plan is done at the direction of a higher headquarters. Part or all of the plan may be implemented. The act of implementing the plan causes the plan guidance and geometry to be implemented into the current plan. Units that exist in the plan but not in the current situation are copied into the current situation. The locations of current existing units are not changed by the plan implementation.

<b>Procedure PG2: Implement a Plan from Higher or Supported Headquarters</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
1	Supported of Higher HQ	Order the implementation of a plan.	This can be accomplished via freetext message or voice comm.
2.	Btry/Plt AFATDS	<i>Implement the plan.</i>	
a.		Click Situations, Implement Plan	The Select Plan and Phase window displays with the plan listed.
b.		Click the plan name.	The plan name highlights.
c.		Click the OK button.	The Implement Plan window displays
d.		Click the Information Type button and select All Data.	This implements all received data at once.
e.		Click the Implement button	The Confirm Implement window displays.
f.		Click the Implement button.	The Implement Plan window closes. A low level alert queues indicating: Implementation of Plan: (NAME) Phase: (#) COA: (#) has completed successfully.

**PG3 Receive a Movement Order from Higher or Supported HQ.**

**Conditions:** Given an AFATDS workstation that is powered, with AFATDS started, activated and communications established with the higher or supported headquarters...

**Additional Information:** A unit move calculated at a higher headquarters results in a movement order that contains routes and directions for a unit to move from one position to another.

<b>Procedure PG3: Receive a Movement Order Higher or Supported Headquarters</b>			
<b>Step</b>	<b>Station</b>	<b>Action</b>	<b>Result/Explanation</b>
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.

**Procedure PG3: Receive a Movement Order Higher or Supported Headquarters (cont)**

Step	Station	Action	Result/Explanation
f.		Click the Delete button.	The alert deletes.
g.		Click the OK button.	The Low Level Alerts List window closes.
3.	Btry/Plt AFATDS	<i>View the Move Order.</i>	
a.		<i>Display the Move Order</i>	
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.		<i>Review the order:</i>	
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.

**Section II. Commander's Guidance.**

How to use this section. AFATDS uses the commander's guidance in the form of several guidances. These guidances ensure that the commander's intent is considered each time a fire request is processed. At battery/platoon level the guidances are normally received from higher or supported headquarters. Guidances received should not be modified unless the change is directed or approved by the issuing headquarters. All guidance necessary for the execution of fire missions in independent battery/platoon training exercises is provided in database construction (Chapter 1). This section identifies the effect of specific items of guidance but does not address their creation or entry.

**PG4: Explain the effect of Guidances on Fire Mission Processing.**

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

**Additional Information:** This procedure provides a basic explanation of guidances that effect fire mission processing. The menu path to locate the guidance is provided as well as a reference to the AFATDS Operator's Notebook for additional information.

<b>Procedure PG4: Explain the effect of Guidances on Fire Mission Processing.</b>				
<b>Guidance</b>	<b>Component</b>	<b>Effect</b>	<b>Location</b>	<b>ONB Reference</b>
Target Selection Standards	Max TLE Max Report Age	Provides check of accuracy of target location (based on received TLE or defaulted value) and age of target report. Only ATI messages are checked unless the check box titled Check Calls for Fire against TSS is selected on this window. <i>Checked when:</i> When a fire request is received from an FO.	On the Current menu bar, click Guidances, Workspace, or the Guidance Folder icon in the toolbar, Targets, Target Selection Standards	
High Value Target List		Provides a portion of mission value. <i>Checked when:</i> Any time a fire request or fire order is received. If different than higher headquarters, mission is assigned a different mission value.	On the Current menu bar, click Guidances, Workspace, or the Guidance Folder icon in the toolbar, Targets, High Value Target List	
Target Management Matrix	High Payoff Targets	Specifies the high payoff targets and provides precedence, desired effects, value and identifies the need for BDA and IEW coordination.	On the Current menu bar, click Guidances, Workspace, or the Guidance Folder icon in the toolbar, Targets, TMM high Payoff Targets	

**Procedure PG4: Explain the effect of Guidances on Fire Mission Processing (cont).**

Guidance	Component	Effect	Location	ONB Reference
	Non-High Payoff Targets	Specifies all targets not on the high payoff target list and provides precedence, desired effects and identifies the need for BDA and IEW coordination. During mission processing, AFATDS uses the precedence desired effects for non-HPTs from this list, not the HVT list.		
	Excluded Targets	Targets that should not be engaged. The display of these is governed on this window by the Category button. The list only display excluded targets for the selected category and never shows all excluded targets at once.		
		<p><i>Checked when:</i> Any time a fire request is received. If different than higher headquarters, mission is assigned a different mission value.</p> <p>For fire orders, precedence and desired affects are received from controlling headquarters in the fire order; mission value <i>is checked</i> and will be different if this guidance differs from the headquarters.</p>		

**Procedure PG4: Explain the effect of Guidances on Fire Mission Processing (cont).**

<b>Guidance</b>	<b>Component</b>	<b>Effect</b>	<b>Location</b>	<b>ONB Reference</b>
Mission Prioritiza- tion	Mission Weight or Rank	Determines the relative values of four parts of mission value.		
	Mission Cutoff Factors	Provides minimum value a mission must achieve to be recommended for firing.		
	Priority of Fires	Provides relative priority of fires of requestors. Used to help determine mission value.		
	TAI Priority	Provides relative priority of TAIs. Used to help determine mission value for targets that plot inside TAIs.		
		<i>Checked when:</i> Any time a fire request or fire order is received. If different than higher headquarters, mission is assigned a different mission value.		
System Tasks		Used to determine munitions with which to engage target. This guidance is checked first for possible shell/fuze combinations. <i>Checked when:</i> Any time a fire request is received. Applies to fire orders for area mission only if the ordered munitions cannot be used to compute a capable option.	On the Current menu bar, click Guidances, Workspace, or the Guidance Folder icon in the toolbar, System Preferences And Restrictions, System Tasks list	

**Procedure PG4: Explain the effect of Guidances on Fire Mission Processing (cont).**

<b>Guidance</b>	<b>Component</b>	<b>Effect</b>	<b>Location</b>	<b>ONB Reference</b>
Munitions Restrictions		Used to provide restrictive conditions that prohibit the employment of munitions. <i>Checked when:</i> Any time a fire request or fire order is received.	On the Current menu bar, click Guidances, Workspace, or the Guidance Folder icon in the toolbar, System Preferences And Restrictions, Munitions Restrictions	
FA Cannon Attack Methods		Used to help select a shell/fuze combination and a volume of fire. <i>Checked when:</i> Any time a fire request is received and to fire orders if the directed munitions cannot produce a capable option. For both fire requests or fire orders, this guidance is checked if the requested munitions, followed by any in the FS System Tasks guidance, cannot provide a capable option.	On the Current menu bar, click Guidances, Workspace, or the Guidance Folder icon in the toolbar, Cannon, Attack Methods	
Target Duplication		Used to identify targets that are already in the process of engagement. <i>Checked when:</i> Any time a fire request or fire order is received. The target is checked against other active targets only.	On the Current menu bar, click Guidances, Workspace, or the Guidance Folder icon in the toolbar, Target, Target Duplication	



## Appendix A. Operations of the FDC.

### Section I. Operations.

#### OP1. Determine a HE one Plot GFT Setting and TGPCs.

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

**Additional Information:** 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:

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.
2. If manual operations ensue and if it is necessary to compute individual piece data, corrections are applied to the base piece data.
3. TGPCs, if used, are computed as corrections to the base piece data.

Task LG1: Determine a One Plot GFT setting and TGPCs.		
Step	Action	Result/Explanation
1.	<i>Determine the location of the "base piece."</i>	
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.	<i>Create an observer at the "base piece" location.</i>	
a.	<i>Add the observer to the Master Unit List.</i>	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 New.	The Edit Unit window displays.
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.	<i>Add the observer to the current situation units.</i>	
1)	Click Units, Workspace, or the Units Folder icon in the toolbar, 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.	
<b>Task LG1: Determine a One Plot GFT setting and TGPCs (cont).</b>		
Step	Action	Result/Explanation
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 Options, Exit, Save Yes.	The UNIT ID window closes and the unit data is stored.
3.	<i>Process a "dry" fire mission to determine GFT setting.</i>	
a.	<i>Complete the Initiate Fire Mission window.</i>	
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 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 a HE time fuze.
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.
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.
<b>Task LG1: Determine a One Plot GFT setting and TGPCs (cont).</b>		
Step	Action	Result/Explanation
4.	<i>Determine the GFT setting.</i>	
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: $\frac{\text{Fire Commands Deflection} + \text{Common Deflection}}{\text{Total Deflection Correction}}$
8)	GFT Deflection Correction	Computed with the following equation: $\frac{\text{Total Deflection Correction} - \text{Drift}}{\text{GFT Deflection Correction}}$
5.	<i>Delete the mission.</i>	
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
6.	<i>Compute TGPCs.</i>	
a.	Click Mission Processing, Initiate Fire Mission.	The Initiate Fire Mission window displays.
b.	Click the Observer field and select the Base Piece observer.	The observer unit ID displays.
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 range for the GFT setting in meters in the Distance field.	
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 a HE time fuze.
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 the Munitions tab.	The Munitions frame displays.
8)	Click FFE#1 and select the shell for the GFT setting.	
9)	Click on Fuze and select a time fuze.	
10)	Click the Propellant Model and select the model for the GFT setting.	The Lot field becomes selectable.
11)	Click the (Propellant) Lot and select the lot for the GFT setting.	

12)	Click the Charge field and select the charge for the GFT setting.	
<b>Task LG1: Determine a One Plot GFT setting and TGPCs (cont).</b>		
Step	Action	Result/Explanation
13)	Click the Analyze Tgt button.	The Initiate Fire Mission window closes and the mission is processed.
14)	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.
15)	Click the Cannon Tech Soln tab.	Firing Commands are displayed.
16)	Observer the fire commands.	Record the firing data for each gun.
17)	TGPCs are computed for each piece for the ammunition fired:	
a)	Determine the FS TGPC correction.	Computed with the following equation: Gun Fuze Setting - <u>GFT Setting Fuze Setting(Step 4.b.6) )</u> Gun FS TGPC Correction
b)	Determine DF TGPC correction.	Computed with the following equation: Gun Deflection - <u>Base Piece Deflection(Step 4.b.7) )</u> Gun FS TGPC Correction
c)	Determine Elevation TGPC correction.	Computed with the following equation: Gun QE - <u>Base Piece QE(Step 4.b.5) )</u> Gun QE TGPC Correction
7	<i>Delete the mission.</i>	
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 System, Communications, Configurations, Current or Communications Folder icon in the toolbar., Determined 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.**

Media	Data encoding	Data Rate	Comments
SINGGARS	SINGGARS 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 SINGGARS communications using NRZ communications on either channel of the card. FSK communications are only supported on the first channel of the card. TCIM supports SINGGARS NRZ or FSK communications on both channels.		
	NRZ	600,1200,2400,4800, 16K, 1200N, 2400N, 4800N, 9600N	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.
	FSK 188C FSK 4202A	75,150,300,600,1200	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.		

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

Media	Data encoding	Data Rate	Comments
	FSK 188C FSK 4202A	75,150,300,600,1200	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	All stations on the net must use the same data rate and encoding.
	FSK 188C FSK 4202A	75,150,300,600,1200	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	1. Higher data rate is preferred. 2. All stations on the net must use the same data rate and encoding.
	FSK 188C FSK 4202A	75,150,300,600,1200	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	75,150,300,600,1200	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 Map**

This section provides a number of tables that group problems by operational function. The Troubleshooting Map provides a guide to the correct table. Start troubleshooting here.

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

**TS1. Fire Mission Troubleshooting**

<b>Problem</b>	<b>Possible Causes/Solutions</b>
Time Capable displays "N", red option results.	Mission not later than time expired before mission could be processed. <ul style="list-style-type: none"> <li>➤ Click Guidances, Workspace, or the Guidance Folder icon in the toolbar, Target, Target Decay Time. Enter decay times as per operations order.</li> </ul>
Ammo Capable – displays "N", red Option results.	Ammunition operator assigned for fire mission is not available in unit database <ul style="list-style-type: none"> <li>➤ Click Units, Edit this Unit. Ensure desired projectile, propellant and fuze are stored or change FDO fire order to available ammunition.</li> </ul> No ammunition is available in the unit database. <ul style="list-style-type: none"> <li>➤ Click Units, Edit this Unit. Correct ammunition inventory.</li> </ul>
TSS filter check failure, Recommendation is to Deny.	Target TLE and/or age of report exceed TSS Guidance. To turn this check off: <ul style="list-style-type: none"> <li>➤ Click Guidances, Workspace, or the Guidance Folder icon in the toolbar, Target, TSS. Turn off TSS check by clicking the Check Fire Missions Against TSS.</li> </ul> To leave check on but find cause of this mission failure:

**TS2. Firing Data Troubleshooting**

<b>Problem</b>	<b>Possible Solution</b>
Single piece out of sheaf.	Determine which piece by firing a battery or platoon right or left by piece. Check piece location. <ul style="list-style-type: none"> <li>➤ Click Units, Edit this Unit. Click Calc, Weapons Loc and re-enter piece lay data.</li> </ul> Check piece muzzle velocity data. . <ul style="list-style-type: none"> <li>➤ Click Units, Edit this Unit. Click MVV Data.</li> </ul> Check piece propellant temperature. <ul style="list-style-type: none"> <li>➤ Click Units, Edit this Unit. Click Weapons.</li> </ul>

**TS2. Firing Data Troubleshooting (cont).**

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

**TS3. Communications Troubleshooting**

<b>Problem</b>	<b>Possible Causes/Solutions</b>
Comm alert: Subnet reaching saturation level. Subnet <i>net name</i> at <i>number</i> % of queuing capacity.	<p>Number of transmitted messages on a package 11 or JVMF net exceeds the network's ability to transmit.</p> <ul style="list-style-type: none"> <li>➤ This alert is usually followed by a communications alert indicating: Subnet below saturation level. Subnet <i>net name</i> at <i>number</i> % of queuing capacity.</li> <li>➤ If problem persists, contact net control. Recommend changing net local transmission load to heavy.</li> </ul>
Comm alert: Multi-hop message dropped enroute. A msg bound for the destination could be forwarded by the intermediate station: Intermediate Unit ID: ( <i>unit ID</i> ) Destination Unit ID: ( <i>unit ID</i> )	<p>A message was transmitted via an indirect route. One of the relaying stations failed to received an ack on the message.</p> <ul style="list-style-type: none"> <li>➤ Contact the Intermediate Unit ID to troubleshoot communications.</li> </ul>

### TS3. Communications Troubleshooting (cont)

Problem	Possible Causes/Solutions
Comm alert: Received clear data over secure UDP network. Source address: <i>(ip address hostname)</i>	<p>The station using the IP address in the alert has security set to Clear on their network window and your corresponding network is set to Secure.</p> <ul style="list-style-type: none"> <li>➤ On the Click the Current Communications Configuration icon and verify the security level on your IP network is correct.</li> <li>➤ Contact the transmitting station and have that station verify the network security setting. <i>Note data communications transmitted from a secure to a clear network computer are ignored by the AFATDS set to the lower security level. Another network or voice communications is required.</i></li> </ul>
Comm Alert: Communications modem device failure on workstation. Experienced failure (and subsequent reset) of subnet.	<p>SP-TCIM was manually ejected from CCU2</p> <ul style="list-style-type: none"> <li>➤ Replace SPTCIM and re-boot the computer.</li> </ul> <p>SP-TCIM suffered hardware failure.</p> <ul style="list-style-type: none"> <li>➤ Move network to another SP-TCIM: On the Current menu bar, click the Current Comm Configuration button and select Network, Assign Channels.</li> <li>➤ Replace failed SP-TCIM.</li> </ul>
Comm Alert: Transition to alternate route <i>(route name or blank)</i> Destination Unit ID:	<p>Communications failure has resulted in disabling of the current route and transition to an alternate route or to an "off" status if the alternate route is blank in the alert.</p> <p>On a package 11 or JVFMF net or a net using DSVT or DNVT, the destination unit has turned off his communications network or shutdown his AFATDS.</p>
Comm Alert: Re-establish route for unit. Destination Unit ID:	<p>A unit for which the route was disabled, has successfully communicated on that route. AFATDS has turned the route on as a result. No action is required.</p>

## Glossary

CADRG – Compressed ARC Digitized Raster Graphics.

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

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.

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.

FSCM – Fire Support Control Measures.

ICM – Improved Conventional Munition.

JMTK – Joint Mapping Tool Kit.

JVMF – Joint Variable Message Format.

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.

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).

MGRS – Military Grid Reference System.

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

MUL – Master Unit List.

PCL – Printer Control Language.

SPLL – Self-propelled Loader Launcher.

SPTCIM – Standard Protocol Tactical Communications Interface Module.

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.