

Appendix I

Advanced Field Artillery Tactical Data System

This appendix, utilized in conjunction with MCWP 3-16.2, *Tactics, Techniques, and Procedures for Marine Corps Fire Support System (TTP for MCFSS)* and MCRP 3-16.2A, *Tactics, Techniques, and Procedures for Advanced Field Artillery Tactical Data System (AFATDS)*, sets forth guidelines for operating in automated environments.

General

The Marine Corps Fire Support System (MCFSS) is employed at fire and air control agencies to include, fire direction centers (FDCs) and fire support coordination centers (FSCCs) from battalion through the Marine Expeditionary Force (MEF) Force Fires Coordination Center (FFCC), the Direct Air Support Center (DASC), the Tactical Air Control Center (TACC), the Supporting Arms Coordination Center (SACC), and the Rear Area Operations Center (RAOC) of the Combat Service Support Element (CSSE) Command Element. The system allows these agencies to operate with first generation digital input/output devices that have entered the Marine Corps inventory. Advanced Field Artillery Tactical Data System (AFATDS) allows these stations to transition to a single software system that will eventually replace the Initial Fire Support Automated System (IFSAS), Battery Computer System (BCS), and Multiple Launched Rocket System (MLRS) Fire Direction System (FDS).

AFATDS Development

AFATDS is one of five systems that compose the Army Tactical Command and Control System (ATCCS). AFATDS, the only jointly developed system, provides fire support planning and execution software. AFATDS will be developed through three software versions. Currently, version two (A98) is being utilized by the Marine Corps test bed in I MEF. Version three (A99) will be fielded in FY2000. Prior to this fielding, package 11 software for TACFIRE type devices will be fielded. Thus making all MCFSS devices compatible with AFATDS via VMF protocol. Upon the completion of version three (A99) fielding, all IFSAS/TACFIRE devices will be replaced by AFATDS. In addition, all artillery technical fire direction for cannon and rocket systems will be computed by AFATDS.

1 Software Premise

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3 AFATDS software is developed as a fire support tool. The computer is provided with detailed
4 guidance derived from the staff planning process and the decide-detect-deliver-assess (D3A) targeting
5 methodology. This guidance provides AFATDS with “rules” to utilize during the processing of fire
6 support missions. Through this process the commander and staff can determine the appropriate
7 responses during the period of staff planning. These decisions determined during planning are
8 executed rapidly by AFATDS during the periods of intense activity that characterize modern
9 maneuver warfighting. Failure to provide adequate pre-planned guidance will prevent the system
10 from executing according to commander’s intent.
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13 Guidance Management

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15 Incoming fire missions and fire plan targets are validated by guidance entered at each fire support and
16 fire direction echelon. To ensure rapid and efficient attack of targets and fire plan scheduling, this
17 guidance data must be managed.
18

19 **a. Guidance Messages.** There are several guidance windows that must be maintained in
20 order to manage the fire support system. The following are several but not all inclusive of guidance
21 windows that must be managed:
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- 23 • Target Selection Standards
- 24 • HVT List
- 25 • Target Management Matrix
- 26 • Mission Prioritization
- 27 • System Tasks
- 28 • Fire Support Attack Parameters
- 29 • Munitions Restrictions
- 30

31 **b. Responsibility.** The responsibility for creating and disseminating guidance is an intrinsic
32 element of command and thus resides with the force commander.
33

34 **(1) Prior to Establishment of the Landing Force Ashore.** Prior to establishment of the
35 landing force ashore, the MAGTF FFCC creates guidance in accordance with the CATF and CLF’s
36 intent, orders, and verbal direction. This guidance is transmitted to the LFOC and subordinate FSCCs
37 and fire support assets controlled by the MAGTF FFCC.
38

39 **(2) After Establishment of the Landing Force Ashore.** After establishment of the landing
40 force ashore, the GCE FSCC modifies his guidance in accordance with the CLF and GCE
41 commander’s intent, orders, and verbal direction. This guidance is transmitted to the LFOC (afloat)
42 and subordinate FSCCs, FDCs, and fire support assets.

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2 **(3) Changes to Disseminated Guidance.** Changes to guidance disseminated by higher
3 echelons is necessary to allow AFATDS to perform the functions of differing echelons and roles.
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6 **Fire Mission Processing**

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8 Fire mission processing is a key function of the fire support system. AFATDS uses guidance's, task
9 organization, and received mission information to select the appropriate fire support asset, and to
10 route the fire mission to the appropriate Operational Facility (OPFACS). Processing through multiple
11 OPFACS is usually required to move the mission from the requester to the shooter. The processing
12 and route may be transparent to some of the OPFACS depending upon intervention criteria.
13
14

15 **Intervention Criteria**

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17 **a.** AFATDS possesses the ability to use database information to automatically process,
18 coordinate, and possibly deny fire missions without operator intervention. Intervention criteria allow
19 operators to stop the automatic processing under given conditions for the purpose of review and
20 alterations. Intervention criteria are comprised of a set of rules that govern this interruption of the
21 automatic fire mission process. An almost endless number of intervention rules can be established.
22 Each rule is built around the following six categories of mission information.
23

- 24 • Battle Area
- 25 • Attack Option
- 26 • Mission Precedence
- 27 • Target Type
- 28 • Filters
- 29 • Analysis Result
- 30

31
32 **NOTE:** These six criteria may be set in any combination to create a single rule. Multiple rules may
33 be constructed.

34 **b. Default Setup.** When the database is initially constructed, a single default rule is
35 incorporated that causes all fire missions to be subject to intervention. **Deleting this rule causes all**
36 **fire missions to process automatically.** Missions assigned for attack by ATACMS are automatically
37 displayed for operator intervention without regard to operator established intervention criteria.

38 **c. Tracking Fire Missions.** When a fire mission is processed without any intervention, each
39 OPFAC can maintain situational awareness of active missions in two ways.

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1 **(1)** Active fire missions can be displayed on an overlay. This will cause any received fire
2 mission, regardless of intervention criteria, to appear on the screen of the SHRD as a bold target
3 symbol. The operator can ascertain information about the target by clicking the symbol that appears.
4

5 **(2)** All fire missions that are received are placed in the active target list until the mission is
6 ended by the receipt of a mission fired report. At any time the operator can display mission
7 information for any target.
8

9 **(3)** Each of the methods above allows the operator to display the target status window. The
10 status window displays all fire mission messages received or transmitted for the mission in question.
11 The status of the mission can also be requested or traced to obtain the current status of the mission at
12 every station involved.
13

14 **(4)** Fire requests and fire orders may be printed when they are received and/or transmitted.
15 This is accomplished by making entries in the **CONFIGURE PRINTING SETUP**. This function is
16 accessed by selecting **ALERTS & MESSAGES, MESSAGES, and CONFIGURE PRINTING**
17 **SETUP**.
18

19 **d. Intervention by OPFAC.** The following are recommended employment of intervention
20 criteria:
21

22 **(1) Battalion FSCC**

- 23 • Denied missions.
- 24 • Air and NSFS missions if these assets are available to the battalion FSCC.

25 **(2) Regimental FSCC**

- 26 • Denied missions.
- 27 • Any other rules dictated by the FSC.

28 **(3) Division FSCC**

- 29 • Denied missions.
- 30 • All fire missions in the rear battle area.
- 31 • All fire missions in the deep battle area.
- 32 • All air missions.

33 **(4) Battalion FDC - All missions.**

34 **(5) Regimental FDC – All fire missions.**

1 **Attack Analysis**

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3 During attack analysis, AFATDS considers various parameters of a given fire mission (mission type, observer request, target location, etc.), the guidance that is in effect, the allocated attack units available, FSCMs, and attack option ranking criteria to develop attack options to achieve defeat criteria of the target. There are only three levels of attack analysis in AFATDS.

7
8 **a. FS System Attack Analysis.** System attack analysis allows an FSCC to perform attack analysis only to the level of detail necessary to select an FS system and transmit the mission to the appropriate agency for further processing. When performing FS system attack analysis, no detailed information (locations of firing units, munitions status, etc.) is required. In order to use FS system attack analysis correctly, the FS attack parameters window must be filled out. Generally, this level of attack analysis will be used only at the higher level FSCCs, such as MEF FFCC.

14
15 **b. Unit Attack Analysis.** Unit attack analysis allows an OPFAC to conduct more detailed attack analysis using “rollup” unit information. This level of attack analysis would normally be used in higher level artillery FDCs/FA CPs. Fire units directly supporting or commanded by the OPFAC performing the analysis are analyzed using unit data (location, munitions capabilities, operational status, etc.) to determine if they can attack the target. Fire units that have an intermediate FDC between them and the OPFAC are not analyzed in detail. They are analyzed using the “rollup” data contained in the unit subordinate information window. In order for unit attack analysis to be used correctly, the status for subordinate units must have been transmitted to the OPFAC.

23
24 **c. Detailed Attack Analysis.** Detailed attack analysis allows an OPFAC to determine and evaluate all individual fire units (as well as collective groupings of fire units for massing) against a given target. This method uses all the unit data (munitions, operational status, location, etc.) to determine a solution for the target. This method is available for all OPFACs, but is generally used at the lower echelon, such as regiment and below, FDCs, and FSCCs.

30 **Fire Mission Routing**

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32 Fire missions are routed through OPFACS to allow the selection of the optimum fire support asset, to provide a conduit for coordination and to increase situational awareness. The routing of the mission depends on the source, however the central hub of fire support is the FSCC.

35
36 **a. Options.** AFATDS classifies whether or not a selected fire support asset is a capable option to engage a target into four categories.

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- 38
- 39 • **Green Option.** The asset is a capable option and no coordination is required.
- 40 • **Yellow Option.** The asset is a capable option but coordination is required.
- 41 • **Red Option.** Attack options do exist but there are restrictions that prevent that asset from
- 42 being capable of firing the mission.

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- **Black Option.** No attack options exist for that FS system (i.e., the unit does not have any firing units in support).

NOTE: In order to determine the restrictions of a RED option, open the ATTACK OPTIONS window from the menu bar of the mission window. A series of icons (ammunition, range, achievable effects, etc.) will display illustrating whether or not each of these passed or failed.

b. Battalion FSCC. Fire missions that are requested by an artillery or mortar observer are transmitted to the battalion FSCC. The observer unit information must indicate that the battalion FSCC that the observer reports to is both the command and supported unit (COMMAND UNIT ID and SUPPORTED UNIT ID in the GENERAL UNIT INFORMATION window for the observer). The battalion FSCC normally possesses only organic mortars with which to engage the target. Regardless, the battalion FSCC computer will consider only those fire support assets that are commanded by or support the battalion FSCC. If the mission is recommended for denial or processing to an AIR or NSFS asset; the mission appears in the intervention window and remains there until the operator takes action. If the battalion's organic mortars cannot adequately service the target, artillery, air, and NSFS (when air and NSFS are held at a higher FSCC) may be selected. These missions are transmitted to the regimental FSCC because the battalion FSCC has entered the regimental FSCC name in the fields of the SYSTEM ATTACK PARAMETERS window as the agency to route missions. The mission may be resolved in a number of ways.

(1) Coordination Requests. Coordination requests are transmitted to the agencies responsible for violated boundaries or FSCMs. The transmitting computer will wait until the mission is approved to transmit the fire request to the regimental FSCC.

(2) Mission Denied. The mission may be denied either by failures of guidance or denial from an agency from which coordination was requested. The operator at the battalion FSCC may reprocess the mission.

(3) Missions that do not Require Coordination. The missions are transmitted to the regimental FSCC.

(4) Missions Requiring Coordination with Electronic Warfare Assets. Missions requiring coordination with electronic warfare assets (as indicated by guidance) will transmit a request for coordination to the IEW agency listed in the MISSION ROUTING INFO window. Denial or approval will cause the mission to process as if coordination from another FSCC was required.

(5) No Solution. AFATDS may not be able to determine a solution. In this event the AFATDS recommends "Denied, no capable option." The operator can select UNSUPPORTABLE causing the mission to be transmitted to the regimental FSCC (the battalion's support unit ID) for re-evaluation of fire support engagement.

(6) Override. The operator can override AFATDS' solution and transmit any solution to any station.

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NOTE: Overriding and transmitting a RED option does not allow the automatic routing of FO commands.

c. Regimental FSCC. The regimental FSCC processes the mission and intervenes only on denied missions. The mission may not be assigned to the same asset as predicted by the battalion FSCC if the guidance at the regiment differs from those at the battalion. The mission may be:

(1) Transmitted to any fire support asset that the regimental FSCC commands. If additional coordination is required, these requests are routed prior to transmitting the mission to the fire support asset.

(2) **Unsupportable.** The mission may be determined unsupportable. The operator can then transmit the mission, due to supported unit ID, to the division FSCC.

(3) **Override.** The operator can override the computer solution and transmit any solution to any station.

d. Battalion FDC. The battalion FDC processes the mission to subordinate battery FDCs. The battalion FDC always performs detailed attack analysis due to software default. Though several options may be available to the battalion FDC, one of three possible solutions will be selected by the battalion FDC.

(1) The fire mission can be passed to the firing unit(s) selected by AFATDS.

(2) The fire mission can be transmitted to any subordinate or reinforcing unit regardless of the option AFATDS selected.

(3) **Unsupportable.** The mission can be returned to the regimental FSCC as unsupportable. This option should not be required if the regimental FSCC is in detailed attack analysis. However, if unsupportable is selected, the mission is returned to the regimental FSCC, reprocessed, and most likely transmitted to the division FSCC as unsupportable. This is AFTADS' method of "request for reinforcing fires." Since the fire mission may be received again by the battalion FDC as part of a massed fire mission solution from the regimental FDC, any mission that is returned to the regimental FDC as unsupportable is immediately manually deleted from the active fire target list by the battalion FDC.

(4) Fire missions will never be denied at the battalion FDC.

e. Division FSCC. The division FSCC processes fire missions received but seldom intervenes. NSFS missions are printed and handed off to the representative of this asset (unless automated communications are available to these units). Artillery missions are passed to the

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1 regimental FDC for processing. Air missions are transmitted to the DASC where they will generate
2 an **ASR** in the **TARL** of the **TASM**.

3
4 **f. Regimental FDC.** The regimental FDC processes received fire missions using detailed
5 attack analysis. Fire Orders (OTFs) are passed to the subordinate battalion FDCs. If the mission is
6 unsupportable it is returned as an unsupportable, mission to the division FSCC (the regimental FDC
7 does not deny the mission).

10 **Radar Fire Missions and the TPC**

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12 Radars held in general support are controlled by the TPC. The TPC will process all fire missions to
13 the regimental FDC by clicking unsupportable. Since TPC is commanded by the regimental FDC,
14 missions are automatically passed to them.

15
16 **a. Coordination.** All radar fire missions require coordination since they will plot in the zone
17 of a maneuver unit. Coordination is normally effected by coordination requests automatically
18 generated at the regimental FDC not at the TPC (unsupportable missions do not require coordination
19 until an attack option is determined).

20
21 **b. Radars Assigned Direct Support Missions to the Battalion FDC.** Radars in DS of a
22 battalion are directly linked to that FDC. Command and support relationships of these radars are
23 changed to reflect this and the fire missions transmitted are processed by the battalion FDC in the
24 same fashion as fire missions received by an FO.