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P-78-5

TEC Media Alternatives for the FY 78-83 Period: MOS 13F/FIST Sample Application

by

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

A wide range of methods and media are available or potentially available for delivering current Army Training Extension Course (TEC) systems at unit levels for individual/collective training. In order to help Army training developers choose delivery systems for a variety of training requirements, three interrelated user products were designed, developed, and documented.

The first is a Procedure Guide for Delivery Systems Selection, published as ARI P-78-3, to help developers select the best mix of systems for overall

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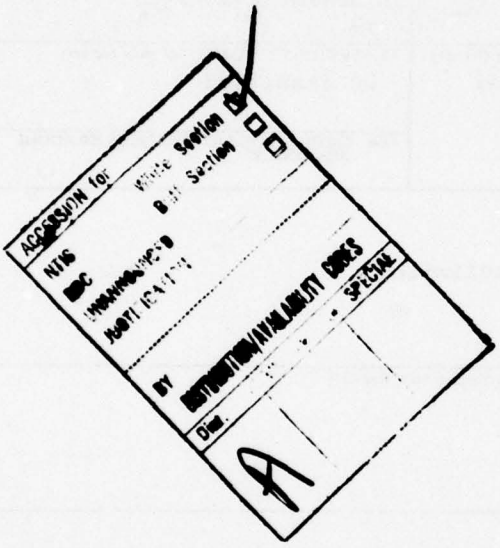
training programs and for lesson modules. The second, complementary volume, the Delivery Systems Data Base published as ARI P-78-4, indexes the pertinent characteristics of 42 Army delivery systems and is expandable as systems expand. This document, the third, illustrates the application of the first two documents to a particular Army Field Artillery School training support requirement--the cross-training of soldiers for proficiency in Fire Support Specialist (MOS 13F) individual and collective tasks required by duty positions on the Fire Support Team (FIST) of a tank company. AD-A068 046

ARI Technical Report TR-78-A30 provides an overview of the entire project, describing the developmental work as well as each of the three user products.



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FOREWORD

This MOS 134F/ FIST Sample Application was produced as Annex C of the "TEC Media Alternatives for the FY 78-83 Period, Final Report." It illustrates application of the Procedure Guide (Annex A, published as ARI P-78-3) and Data Base (Annex B, published as ARI P-78-4) to a particular USAFAS training support requirement--the cross-training of soldiers in MOS 11C/13E (or 11B/13B) for proficiency in Fire Support Specialist (MOS 13F) individual and collective tasks required by duty positions on the Fire Support Team (FIST) of a Tank Company. This work was completed under Amendments P00002 and P00003 to Contract Number DAHC 19-76-C-0027 for the U.S. Army Research Institute for the Social and Behavioral Sciences (ARI).

The special contributions to this project made by USAFAS, ARI, and various SDC personnel are listed under "Project Participants" in the Final Report, which has been published as ARI TR-78-A30.

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SELECTION OF REPRESENTATIVE INPUTS

MOS 13F/FIST Sample Application is an example using selected tasks and personnel data from MOS 13F/FIST (Fire Support Team) to illustrate the application of the Procedure Guide for Delivery Systems Selection together with the Delivery Systems Data Base.

The purpose is to generate a walk-through example as realistic as possible. The selected set of training requirements will be applied to the procedure of determining a delivery system mix for the training program (Block I). In a second block of the procedure, the delivery system mix for one module of the program will be determined from the pool selected in Block I. The procedure, as described in the Procedure Guide will be applied to the MOS 13F sample for illustrative purposes only; not tied to school decisions and schedules.

DATA SOURCES

The following data sources on MOS 13F and FIST were made available by USAFAS for use in creating the walk-through example:

Program of Instruction for - 13F10, Field Artillery Fire Support Specialist Course, MOS:13F10. USAFAS, July 1977.

Close Support Study Group: Final Report - 21 Nov 1975.

ARTEP 6-105, ARTEP: Field Arty 105MM Howitzer, Towed, Infantry, Airmobile, Airborne Divisions and Separate Brigades, HQ, DA. June 1976. (Section II, on battery and Bn level Fire Support Coordination.)

FM 6-20, Fire Support for Combined Arms Operations HQ, DA. July 1976 (working draft dated Nov 75).

TC 6-40-4, Fire for Effect: How to be Your Own Forward Observer, USAFAS, ATSF-DOC-DL, Ft. Sill, OK, August 1975.

FM 6-40-5, Modern Battlefield Cannon Gunnery, HQ, DA. 1 July 1976.

FM 6-13F-CM, Commander's Manual: Fire Support Specialist, MOS 13F (Skill Levels 1-4), June 1976 (Draft Copy).

FM 6-13F1/2, Soldier's Manual, MOS 13F, Skill Level 1/2. July 1976 (Draft Copy).

FM 6-13F3, Soldier's Manual, MOS 13F, Skill Level 3. July 1976 (Draft Copy).

ASSUMPTIONS

Normally, the doctrinal input such as combat employment, deployed organization and personnel subsystem will be provided by combat and training developers as a product of the Needs and Requirements Analysis. The implications of new materiel will be defined jointly by the material developer and the combat developer. Such data sources were not available for the object sample. Thus, SDC had to make the following assumptions, based upon the study of the source documents:

The implementation of the FIST (Fire Support Team) concept is an evolving iterative process. As an immediate step, a FIST shall be formed at each maneuver company. This "Quick Fix" solution implements only those resources that are available at the company level, such as trained (or partially trained) personnel, vehicles, and communications equipment. Some reshuffling of resources at the unit level may be required. The "Long Range" requirements will be based upon:

a. New communications equipment (digitalized gunnery system)

b. New rangefinders (laser-guided munitions system)

c. New vehicles

d. New munitions (CLGP, FASCAM)

e. Greater FO responsibility (including air support missions, etc.)

---

*NOTE: Military and Delivery System Procedure abbreviations used in this document are defined in Appendix A.

The FIST in the "Quick Fix" Solution is Structured as Depicted in Table 1 on page 4.

The Army-wide strength of the new MOS 13F is reflected in Figure 1 below. It includes the Fire Support Sergeants at the Brigade (E8), Bn FS Sergeants and Liaison Sergeants (E6), and associated personnel at these positions (E3-E4).

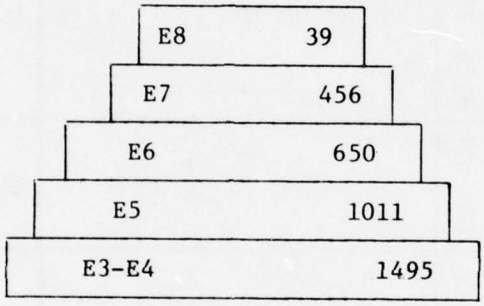

Figure 1. Army-Wide Strength of MOS 13F (Based Upon 13 Div. Force)

TABLE 1

COMPOSITION OF THE FIST AT THE COMPANY LEVEL

POSITION	RANK	TANK CO	MECH INF. CO	INF. CO	AIRB. INF. CO	AIRMOB. INF. CO	NO. OF POSITIONS
FIST CHIEF	LT(FA)	1	1	1	1	1	456
SR. FS. SGT	SSG	1	1	1	1	1	456
ASST. FS. SGT	SGT	1	1	1	1	1	456
PLATOON FO	SGT	-	3	3	3	3	1011
ASST. PL.FO/RTO	PFC	-	3	3	-	-	1381
PER. CARR. DVR	SP4	1	1	-	-	-	
MI5IA2 DVR/RTO	PFC	-	-	1	-	-	
RTO	PFC	1	-	-	1	1	
FIST		5	10	10	7	7	3760

The initial personnel pool will be cross-trained from:

a. FA Lieutenants assigned as FO's to the maneuver companies.

b. Enlisted Personnel

- FA Recon. Sergeants (MOS 13E20)
- FA RTO/DVR (PFC's) (MOS 13E10)
- Mortar FO Sergeants (MOS 11C20)
- Mortar Section RTO/DVR (PFC's) (MOS 11C10)
- Infantrymen (MOS11B), FA crewmen (MOS13B), and other MOS's performing MOS11C/MOS13E duties.

Within the "Quick Fix" Solution all initial skills training and practice, sustaining skills practice, and team training and exercising must be designed as an exportable training package for unit use in G-L-M training areas. Replacement personnel in the transition period to the "Long Range" solution will receive initial training at USAFAS. Then these personnel will be permanently assigned to the maneuver units to ensure:

a. The presence of a FIST with each maneuver unit,

b. That FIST trains together as an integrated team,

c. That the combined arms team develops the required close working relationship.

Training and evaluation must cover all positional and interaction skills, including individual and team practice exercise, for all high-skill tasks and tasks critical to mission success and battle field survival. Within the "Quick-Fix" solution this may involve:

a. Operation of equipment now assigned to the FIST (e.g., vehicles, communications),

b. Interaction within the FIST,

c. FIST interaction with supported unit,

d. FIST/unit interaction with supporting elements (FA, Air Force, etc.),

e. FIST interaction with command posts, such as Bn FDC, FSO/FSE, etc.

SAMPLE SELECTION AND RATIONALE

The lack of data on a "Long Range" FIST solution, specifically on new equipment, new tactics, and a further expansion of the FIST, strongly suggested the selection of "Quick Fix" FIST solution training requirements as a walk-through example.

The most realistic data available covered the FIST situation in tank and mechanized infantry companies. From these two situations, the set of training requirements for the FIST of a Tank Company ("Quick Fix") was selected as a representative example to be used in illustrating application of the procedure for selection of a delivery systems mix for a training program and for the selection of an optimal delivery system mix for a selected module.

SAMPLE INPUTS - BLOCK I OF DELIVERY SYSTEMS SELECTION PROCEDURE

SAMPLE DESCRIPTION

The FIST of a Tank Company (Quick Fix) consists of five members:

a. Lieutenant - FIST Chief

b. SSG - Senior FS SGT

c. SGT - Assistant FS SGT

d. SP4 - Personnel Carrier Driver

e. PFC - Radio/Telephone Operator

Personnel listed under a, b, and e are currently available in the tank companies' FA FO party; personnel listed under c and d are available in the 107mm FO party. The training requirements for each FIST member are determined by the previous job experience, the skill level and the new functions within the team. The following identifies the specific tasks for cross-training of FIST members.

FIST FUNCTIONS AND TASKS BY SKILL LEVEL

All FIST personnel must be trained to call for and to adjust field artillery and mortar fires. Selected personnel must receive Close Air Support training. Thus, the personnel coming from the FA FO Section must master the following tasks:

a. Skill Level 1

- Establish and Maintain Communications within the Mortar FDC nets.
- Request and Adjust Mortar Fire.

b. Skill Level 2

- Observe Precision Registration for Mortars.

The personnel coming from the 107mm Mortar FO Section must master the following tasks for Skill Level 1:

- Establish and maintain communications within the direct support FA command/fire net.
- Transmit Conduct of fire information.
- Request and adjust FA area fire (HE: Q, VT, TI; ICM) using successive and hasty bracketing procedures.

All personnel from Skill Level 3 on have to master the following tasks:

- Monitor/Coordinate Requests for Immediate Close Air Support (CAS).
- Coordinate Requests for Preplanned CAS.
- Direct CAS.

The expansion of FIST functions requires personnel from Skill Level 4 upward to:

- Coordinate Company Level Fire Support.

NEWLY ASSIGNED EQUIPMENT

A significant change is the assignment of an APC (M113A1) to the FIST. This involves proficiency training (or even initial training) of the tasks listed below:

a. Skill Level 1

- Operate M113A1 under usual conditions.
- Operate M113A1 under unusual conditions.
- Guide a tracked vehicle.
- Perform before/during/after operation checks and services on an M113A1.
- Perform ESC evaluation of an M113A1.

b. Skill Level 3

- Prepare an M113A1 for operations under unusual conditions.
- Train personnel to operate an M113A1.

c. Skill Level 4

- Inspect operator maintenance on an M113A1 using preventive maintenance indicators.

The following communications equipment is assigned to the FIST:

AN/GRC - 160

KY - 38

AN/GRA - 39

AN/VRC - 46

MOS11C personnel have been trained to operate an AN/GRC-160. The use of the other communication equipment items must be trained as an individual task, but also in team exercises. This involves the following tasks for Skill Level 1:

- Prepare for operations and operate radio set AN/VRC-46.
- Install and operate radio remote control equipment (AN/GRA-39).
- Prepare for operations and operate speech security equipment KY-38.
- Perform operator checks and services on radio set AN/VRC-46.
- Perform operator checks and services on radio remote control equipment (AN/GRA-39).

PROFICIENCY TRAINING

To achieve the required proficiency and cooperation level the FIST must:

a. Inform all members about the FIST concept and each specific role,

b. Train together as an integrated team,

c. Train with the maneuver unit on the basis of a permanent assignment,

d. Train in a combined arms environment, if possible, including the Air Force.

The proficiency training should involve all tasks defined in the Soldier's Manual MOS 13F, depending upon the specific situation, as well as collective interaction training implied by the above requirements.

TASK MATRICES

The following matrices have been developed based upon the preceding analysis, amplified by ARTEP tasks and requirements stated in the POI MOS 13F10.

TABLE 2

TASK MATRIX 1. SITUATION ORIENTED INDIVIDUAL TASKS

TASK \ DUTY POSITION	DVR	RTO	ASST FS SGT	SR FS SGT	FIST CHIEF
ESTABLISH/MAINTAIN COMMUNIC. WITHIN THE MORTAR NETS	X			X	X
EST./MAINTAIN COMMUNIC. WITHIN THE FA COM/FIRE NET		X	X		
TRANSMIT CONDUCT OF FIRE INFO.		X	X		
REQUEST AND ADJUST MORTAR FIRE	X			X	X
REQUEST AND ADJUST FA AREA FIRE (HE: Q, VT, TI; ICM) USING SUCCESSIVE BRACKETING PROC.		X	X		
REQUEST AND ADJUST FA AREA USING HASTY BRACK PROC.		X	X		
OBSERVE PREC. REG. FOR MORTARS				X	X
MONITOR/COORD. REQUESTS FOR IMM. CAS			X	X	X
COORD. REQ. FOR PREPLANNED CAS			X	X	X
DIRECT CAS			X	X	X
COORD. COMP. LEVEL FIRE SUPPORT				X	X
IDENTIFY THREAT TACT. VEH. & EQUIPMENT	X	X	X	X	X
IDENTIFY FORWARD AREA AIRCRAFT	X	X	X	X	X
USE THE DRYAD NUM/CIPHER AUTHENTICATION SYSTEM AND OPS CODE	X	X	X	X	X
PERFORM PREVENTIVE/REMED. ELECTR. WARFARE PROC.		X	X		
CONSTRUCT TERRAIN SKETCH	X	X	X		

TABLE 3

TASK MATRIX 2. EQUIPMENT-ORIENTED TASKS (INDIVIDUAL/TEAM)

TASK \ DUTY POSITION	DVR	RTO	ASST FS SGT	SR FS SGT	FIST CHIEF	
OP. M113A1 UNDER USUAL CONDITIONS	X	X	X	X	X	
OP. M113A1 UNDER UNUSUAL CONDITIONS	X	X	X	X	X	
PERFORM BEFORE/DURING/AFTER OP. CHECKS & SERV.	X	X	X	X		
PERFORM ESC EVALUATION OF AN M113A1	X	X	X	X		
PERPARE AN M113A1 FOR OPS UNDER UNUSUAL CONDITIONS			X	X	X	
TRAIN PERS. TO OPERATE M113A1			X	X	X	
INSPECT OP. MAINT. USING PMI				X	X	
PREPARE FOR OPS AND OPERATF AN/VRC-46		X	X			
INSTALL AND OPERATE AN/GRA-39		X	X			
PREPARE FOR OPS AND OPERATE KY-38		X	X			
PERFORM OPS CHECKS AND SERVICES ON AN/VRC-46		X	X			
PERFORM OPS CHECKS AND SERVICES ON AN/GRA-39		X	X			
PREPARE FOR OPS AND OPERATE AN/VIC 1		X	X			
PERFORM OPS CHECKS AND SERVICES ON AN/VIC 1		X	X			INDIVIDUAL
GUIDE TRACKED VEHICLE	X	X	X	X	X	TEAM
ERECT/DISMANTLE ANTENNA RC-292		X	X			

TABLE 4

TASK MATRIX 3. SITUATION ORIENTED TEAM TASKS

TASK \ DUTY POSITION	DVR	RTO	ASST FS SGT	SR FS SGT	FIST CHIEF
SET UP OBS. POST AND COMMUNIC.	X	X	X	X	X
CONDUCT ADJUST FIRE MISSION	X	X	X	X	X
CONDUCT FFE MISSION	X	X	X	X	X
CONDUCT ILLUMINATION MISSION	X	X	X	X	X
CONDUCT IMMEDIATE SMOKE MISSION	X	X	X	X	X
CONDUCT SUPPRESSION MISSION	X	X	X	X	X
CONDUCT FIRE MISS. ON DISSIP. TARGETS	X	X	X	X	X
CONDUCT ADJUST FIRE MISS. UNDER ILL.	X	X	X	X	X
CONDUCT ADJUST FIRE MISSION (AERIAL MISSION)	X	X	X	X	X
CONDUCT ADJUST FIRE MISSION (IRREGULAR TARGETS)	X	X	X	X	X
REQUEST/ADJ. FIRE WHILE WALKING	X	X	X	X	X
REQUEST/ADJ. FIRE WHILE MOBILE (VEHICLE)	X	X	X	X	X

TABLE 5

TASK LIST. INTRODUCTORY INFORMATION FOR ALL FIST MEMBERS

- Organization and mission of maneuver and FA unit
- Organization and employment of FIST
- Duties of FS Specialist
- Role of FS Specialist in gunnery team

BLOCK I DELIVERY SYSTEMS SELECTION PROCEDURE APPLICATION AND OUTPUTS

The following is a walk-through of the delivery system selection procedure Block I, "Select Delivery System Mix for Training Program", using the inputs described above. This walk-through follows the five Block I steps described in the Procedure Guide for Delivery Systems Selection.

STEP 1

DETERMINE OVERALL PROGRAM REQUIREMENTS/ CONSTRAINTS

In this activity you will determine the general parameters of the program:

- Program Origin
- Trainee Requirements
- Program Type
- Lead Time
- Funding
- General Methods of Intended Training

Substep 1.1

SECURE
APPLICABLE
DOCUMENTS

Procedure: Ascertain origin of training program requirement.

Identify general regulatory documents.

List program specific documents.

Result: The FIST training program is originated by USAFAS, authorized by CG TRADOC. General regulatory documents are marked in checklist A. Specific documents are listed in checklist B.

Additional directives, letters, memos, phone conversation reports, etc., shall be secured and entered into checklist B.

CHECKLIST A

GENERAL REGULATORY DOCUMENTS

		DOCUMENTS	APPLICABLE	ON HAND	NEED
	1	AR 1000-1			
	2	AR 1000-2			
	3	AR 611-3			
	4	TRADOC REG 350-100-1 (April 77 or later)	X	X	
	5	TRADOC PAM 350-30	X	X	
	6	TRADOC REG 11-8			
	7	TRADOC REG 11-10			
	8	TC 351-3			
	9	TC 21-5-3	X	X	
	10	TC 21-5-7	X	X	
	11	FM 21-6	X	X	
	12	SQT Dev Handbook	X		
	13	Army Tech Documentation and Training Acquisition Handbook			X
	14	Cost and Training Effectiveness Analysis Handbook	X	X	
S	15				
	16				
P	17				
E	18				
	19				
C	20				
	21				
I	22				
	23				
F	24				
Y	25				

CHECKLIST B

CHECKLIST OF PROGRAM SPECIFIC DOCUMENTS

	DOCUMENT TITLE	ON HAND	NEED
1	POI MOS 13F 10	X	
2	Commander's Manual MOS 13F	X	
3	Soldier's Manual MOS 13F 1/2	X	
4	Soldier's Manual MOS 13F 3	X	
5	Soldier's Manual MOS 13F H		X
6	ARTEP 6-105	X	
7	Close Support Study Group Report	X	
8			
9			
10			
11			
12			
13			
14			
15			
16			
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ENTER THE SPECIFIC DOCUMENTS IN THE SPACE PROVIDED AND INDICATE THE CURRENT STATUS.

Substep 1.2

DETERMINE TRAINEE REQUIREMENTS

Procedure: Summarize the personnel subsystem data provided by combat and training developers. For the FIST sample see SAMPLE INPUTS - BLOCK I (page 7).

Result:

DUTY POSIT.	SKILL LEVEL/ RANK	JOB LOCAT.	TRAINEE DENSITY		JOB RELATED EXPERIENCE
FIST CHIEF	LT.	UNIT	1	PER COMPANY	FA FO
SR. FS. SGT	4/SSG		1		FA FO PARTY
ASST. FS. SGT	3/SGT		1		MORTAR FO
APC DVR	1/SP4		1		MORTAR FO PARTY
RTO	1/PFC		1		FA FO PARTY

Total Trainees: 5 X 138 = 690

Substep 1.3

DETERMINE TYPE OF PROGRAM

Procedure: Select type of program required for the FIST sample.

Result: The sample requires the development of a training package for unit use. The materials shall be usable in the garrison as well as when the unit moves to local or major training areas.

Substep 1.4

DETERMINE LEAD TIME

Procedure: Determine the time frame between program origin and implementation.

Result: The FIST sample deals with a "Quick Fix" solution. Thus, the lead time is short. The development of <u>new</u> training devices is not possible, although exportable existing devices/simulators should be considered.

Substep 1.5

DETERMINE
FUNDING
LEVEL

Procedure: Establish the relative magnitude of cost for cross-training personnel within a unit (Battalion or Company).

Result: We assume a "medium" cost magnitude for the "Quick Fix" cross-training requirements.

Substep 1.6

DETERMINE
GENERAL METHOD(S)
OF INTENDED
TRAINING

Procedure: Determine how the training should be administered to meet the requirements.

Result: Your sample input task matrices to Block I of the procedure (Tables 2-5, pages 11-13) and general setting requirements (substep 1.3) point to unit collective/team training, SOJT, and individual self-study. See checklist C.

CHECKLIST C

GENERAL METHODS FOR INTENDED TRAINING

Collective/Team Training	X
Supervised School Training	
Supervised OJT	X
Self Study Training in Group Mode	
Self Study Training Individual Mode	X

Substep 1.7

SUMMARIZE
REQUIREMENTS
AND CONSTRAINTS

Procedure: Review substeps 1.1 through 1.6 and draw conclusions. Summarize these conclusions for comparison against the Delivery System Data Base.

Results: See Worksheet D.

WORKSHEET D

REQUIREMENTS AND CONSTRAINTS WORKSHEET

Program Title: MOS 13F/FIST QUICK-FIX (Selected TASKS)

Write a brief summary statement for each category:

SPECIFIC DIRECTIVES (1.1)
Immediate implementation of the FIST concept at each maneuver company.

TRAINEE REQUIREMENTS (1.2)
FA personnel to be trained in MOS 11C skills
Inf " " " " " MOS 13E skills
FIST team to be integrated to call and adjust all types of indirect fires, including CAS.

TYPE OF PROGRAM (1.3) Exportable for unit use in garrison (Ind. learning center, and the job), and on terrain at local and major training areas.

LEAD TIME (1.4) Short

FUNDING (1.5)
Medium level

GENERAL METHOD OF INTENDED TRAINING (1.6)
Collective/Team Training (FIST) G-L-M
Supervised OJT (Equipment Related) G (Job)
Self-Study Training Individual Mode G (ILC, Barracks)

STEP 2

IDENTIFY DELIVERY SYSTEM FAMILY AND MEMBER CANDIDATES

Procedure: Consider the summary of requirements and constraints (Substep 1.7) in comparison with the Family and/or Member delivery system description found in the Delivery System Data Base.

Results: See summary sheet E, next two pages, Column A (Step 2, Selection). You selected:

- FM's (A1) for training situation-oriented tasks.
- TM's (A2) for training equipment-oriented tasks.
- Printed Materials (B), self-instructional, adapted or newly developed, to support FM's and TM's.
- Training/Combat Literature (C), i.e., existing Soldier's Manuals MOS 13F (C1), SQT (C2), and ARTEP (C3).
- Instructor with Standard Aids (D), such as charts or display boards (D2), overhead transparencies (D3), or models and mockups (D4). This delivery system may be used in garrison to introduce the FIST concept.
- Audio-Visual (F). The use of TEC Audio-Visual (F1), Slide or Slide/Sound Programs (F2) or Army Training Films (F3) can be considered for training individual situation-oriented tasks.

SUMMARY SHEET E

DELIVERY SYSTEM SELECTION SUMMARY SHEET

	(A) Step 2 Selection	(B) Step 4 Selection
A. Job Materials	✓	X
1. FMs	✓	X
2. TMs	✓	X
3. ITDT Manuals		
B. Printed Material	✓	
1. TEC Print	✓	
2. Correspondence Courses	✓	
C. Training/Combat Literature	✓	X
1. Soldier's Manual/Job Book	✓	X
2. SQT	✓	X
3. ARTEP	✓	X
D. Instructor with Standard Aids	✓	
1. Class Packets	✓	
2. Charts/Display Boards	✓	
3. Overhead Transparencies	✓	
4. Models/Mockups	✓	
E. Audio-Only		
1. TEC Audio		
2. Language Labs		
F. Audio Visual	✓	X
1. TEC Audio Visual	✓	X
2. Slide/Slide Sound	✓	X
3. Army Training Films	✓	X
G. Television/Videorecording		
1. Classroom CCTV		
2. Television Trainer (TVT)		
3. Videodisk		
H. Computer-Assisted/Managed Instruction (CAI/CMI)		
1. Remote Access PLANIT		
2. PLATO IV/TUTOR		
3. ABACUS Computerized Training System		
I. Embedded Training (ET)		
1. Operational TACFIRE PLANIT (OTP)		
2. TACFIRE Training System (TTS)		
3. TACFIRE Subsystem Team Training (TSTT)		

SUMMARY SHEET E

DELIVERY SYSTEM SELECTION SUMMARY SHEET (Cont'd)

	(A) Step 2 Selection	(B) Step 4 Selection
J. Training Devices/Simulators	✓	X
1. Sand Table	✓	X
2. Fire Control Simulator BT--33		
3. Observed Fire Trainer (OFT)	✓	X
4. Artillery Direct Fire Trainer (ADFT)		
5. M-31 Field Artillery Trainer	✓	X
K. Tactical Engagement Simulations	✓	X
1. SCOPES		
2. REALTRAIN	✓	X
3. MILES		
L. Command/Staff Battle Simulations		
1. Tactical Ex Without Troops (TEWTS)		
2. CPX Simulation Facility		
3. CAMMS		
4. CATTS		
5. FIREFIGHT		
6. DUNN KEMPF		
7. PEGASUS		
8. FIRST BATTLE		

- Training Devices/Simulators (J); the employment of existing training devices/simulators which are exportable to one or more training settings is essential for individual task mastery. You have selected the Sand Table (J1), the Observed Fire Trainer (J3), and the M-31 Field Artillery Trainer (J5).

- Tactical Engagement Simulations (K); the participation of the FIST in these simulations is essential for team task mastery and mission practice. Thus you have checked REALTRAIN (K2), since MILES is not available yet, and SCOPES is not as applicable as REALTRAIN to FIST training needs.

STEP 3

DETERMINE SUBJECT MATTER REQUIREMENTS

Procedure: Using the tasks matrices as input you will classify these tasks according to skill level, task type, and level of training requirement.

Results: See Subject Matter Characteristics Worksheet (Worksheet F), next three pages. Your worksheet shows you have the following Training Level Requirements:

- 4 Tasks requiring specific orientation to unit mission/job duties (Level 1)
- 3 Tasks requiring training of task component procedures (Level 3)
- 23 Tasks requiring individual duty position situational practice (Level 4)
- 3 Tasks requiring small-team training (Level 5), one with a larger-team training requirement (Level 6)
- 10 Tasks requiring multi-unit interaction training (Level 7)
- There is no requirement, in this task and personnel sample, for command/staff training (Level 8).

The elements interacting have been identified for the 13 collective/team tasks.

(WORKSHEET F) SUBJECT MATTER CHARACTERISTICS WORKSHEET

TASK STATEMENT[1]	SKILL LEVEL	TRG. SETTING				OTHER REQ.	TASK TYPE				TRG. LEVEL	ELEMENTS INTERACTING
		INIT.		PROF.			IND		TEAM			
		I	U	I	U		E	S	E	S		
EST/MAINTAIN COMM. WITHIN FA/ MORTAR NET	1		X		X			X			4	
TRANSMIT CONDUCT OF FIRE INFO	1		X		X			X			4	
REQUEST AND ADJUST MORTAR FIRE	1		X		X			X			4	
REQUEST AND ADJUST FA FIRE	1		X		X			X			4	
OBS. PREC. REG. FOR MORTARS	2		X		X			X			4	
MONITOR/COORD. REQ. FOR CAS	3		X		X			X			4	
COORD. REQ. FOR PREPLANNED CAS	3		X		X			X			4	
DIRECT CAS	4		X		X			X			4	
COORD. CO. LEVEL FS	4		X		X			X			4	
ID THREAT TACT. VEH. & EQ.	1		X		X			X			3	
ID FORWARD AREA AIRCRAFT	1		X		X			X			3	
USE DRYAD AUTHENT. SYSTEM & OPS CODE	1		X		X			X			3	
PERF. PREV/REM. ELECTRONIC WARFARE PROCEDURES	1		X		X			X			4	
CONSTRUCT TERRAIN SKETCH	1		X		X			X			4	
OPERATE M113A1 UNDER USUAL & UNUSUAL CONDITIONS	1		X		X		X				4	

[1] See Abbreviations, page 57, for column heading definitions.

(WORKSHEET F) SUBJECT MATTER CHARACTERISTICS WORKSHEET (Cont'd)

TASK STATEMENT[1]	SKILL LEVEL	TRG. SETTING				OTHER REQ.	TASK TYPE				TRG. LEVEL	ELEMENTS INTERACTING
		INIT.		PROF			IND		TEAM			
		I	U	I	U		E	S	E	S		
PERFORM OP. CHECKS & SERVICES	1		X		X		X				4	
PERFORM ESC EVALUATION	1		X		X		X				4	
PREPARE M113A1 FOR OPS (UNUSUAL CONDITIONS)	3		X		X		X				4	
TRAIN PERS. TO OP. M113A1	3		X		X		X				4	
INSPECT OP. MAINT. USING PMI	4		X		X		X				4	
GUIDE TRACKED VEHICLE	1		X		X				X		5	DRIVER, GUIDING PERSON
PREPARE FOR OPS & OP AN/VRC-46	1		X		X		X				4	
INSTALL AND OP AN/GRA-39	1		X		X		X				4	
PREP. FOR OPS & OP KY-38	1		X		X		X				4	
PERF. OPS. CHECKS & SERV. ON RADIOS	1		X		X		X				4	
PREP. FOR OPS & OP AN/VIC-1	1		X		X		X				4	
PERF OPS CHECKS & SERV. AN/VIC-1	1		X		X		X				4	
ERECT/DISMANTLE ANTENNA RC-292	1		X		X				X		5	4 SOLDIERS
SET UP OBS POST AND COMMUNICATIONS	1		X		X					X	5/6	FIST, SUPP. UNIT

[1] See Abbreviations, page 57, for column heading definitions.

(WORKSHEET F) SUBJECT MATTER CHARACTERISTICS WORKSHEET (Cont'd)

TASK STATEMENT[1]	SKILL LEVEL	TRG. SETTING INIT. I	TRG. SETTING INIT. U	TRG. SETTING PROF. I	TRG. SETTING PROF. U	OTHER REQ.	TASK TYPE IND E	TASK TYPE IND S	TASK TYPE TEAM E	TASK TYPE TEAM S	TRG. LEVEL	ELEMENTS INTERACTING
CONDUCT ADJ. FIRE MISSION	1		X		X	L M TRG. AREA				X	7	FIST, SUPPORTING ELEMENT(s), SUPPORTED ELEMENT
CONDUCT FFE MISSION	1		X		X					X	7	
CONDUCT ILLUM. MISSION	1		X		X					X	7	
CONDUCT IMM. SMOKE MISSION	1		X		X					X	7	
CONDUCT SUPPRESSION MISSION	1		X		X					X	7	
CONDUCT FIRE MISS. ON DISS. TARG.	1		X		X					X	7	
CONDUCT FIRE MISS. ON IRREG. TARG.	1		X		X					X	7	
CONDUCT ADJ. FIRE MISS. UNDER ILLUM	1		X		X					X	7	
REQ./ADJ. FIRE WHILE WALKING	1		X		X					X	7	
REQ./ADJ. FIRE RIDING IN MOTORIZED VEHICLE	1		X		X					X	7	
DESCR. ORG & MISS OF MANEUVER & FA UNIT	1		X		X			X			1	
DESCR. ORG & EMPLOYM OF FIST	1		X		X			X			1	
DESCR. DUTIES OF FS SPEC	1		X		X			X			1	
DESCR. ROLE OF FS SPEC IN GUNNERY TEAM	1		X		X			X			1	

[1] See Abbreviations, page 57, for column heading definitions.

STEP 4

SELECT DELIVERY SYSTEM MIX TO MEET PROGRAM REQUIREMENTS

Procedure: Group the sample tasks according to the training level. Compare the requirements for stimulus display, trainee response, and training setting against capabilities of the delivery systems selected as candidates in Step 2. You have checked these already in Column A of Delivery Systems Selection Summary Sheet (Summary Sheet E, pps. 25, 26). Check in Column B all delivery systems suited for the training program, the FIST sample in this case.

Results: See Worksheets G and H (next page), and choices subsequently entered in Column B of Delivery Systems Selection Summary Sheet E (pps. 25 and 26). Symbolic audio or visual display is required on training levels 1-3. Only seven out of 43 tasks are at these training levels. Thus, the supervised classroom training (instructor) may be eliminated from further consideration since the objectives can be achieved in the more economical self-paced training mode. It is strongly recommended, as one approach to the requirement for a new, group-oriented manual, that a specific FM for the FIST be developed. The FM, or other document for this purpose, will ensure adequate coverage of these tasks.

To develop specific printed materials in support of TM's and FM's is not economical considering the relatively small number of trainees. Thus, family B can also be eliminated from the candidate list.

The majority of tasks for the sample program is at training levels 4-7, requiring either individual or team situational practice. Therefore, the other candidates, checked in Step 2, have still to be considered.

WORKSHEET G
TASK TYPE/TRAINING LEVEL WORKSHEET

TRG. LEVEL / TASK TYPE	1-2 INDIV.	3 INDIV.	4 INDIV.	5-7 TEAM
EQUIPMENT ORIENTED			12	2
SITUATION ORIENTED	4	3	11	11

23 13 = 36

FIGURE 2. GENERAL REQUIREMENTS MATRIX
(FROM PROCEDURE GUIDE)

TRG. LEVEL / TASK TYPE		1-2 INDIV.	3 INDIV.	4 INDIV.	5-7 TEAM
EQUIPMENT ORIENTED	DISPLAY	A,V,T	A,V,S	S	S
	RESPONSE	V,S,A	A	A	A
	SETTING	JOB,G,I	JOB,G,I	JOB,G,LM,I	JOB,LM
	TRG. MODE	SPGI	SOJT	SOJT	T
SITUATION ORIENTED	DISPLAY	A,V	A,V	S	S
	RESPONSE	V,S,A	S,A	A	A
	SETTING	JOB,G,I	JOB,G,I	JOB,LM	JOB,LM
	TRG. MODE	SPGI,SCT	SOJT,SPGI,SCT	SOJT	T

Note: See Appendix A for Abbreviations.

WORKSHEET H
GENERAL REQ. SUMMARY

TASK TYPE/TRG. LEVEL	E/4	S/5-7	S/4	S/1-2	S/3	E/5-7
NO. OF TASKS	12	11	11	4	3	2
DISPLAY	S	S	S	A,V	A,V	S
RESPONSE	A	A	A	V,S,A	S,A	A
SETTING	JOB,G,LM	JOB,LM	JOB,LM	JOB,G	JOB,G	JOB,LM
TRG. MODE	SOJT	T	SOJT	SPGI, SCT	SOJT, SCT, SPGI	T

STEP 5

PREPARE DELIVERY SYSTEM SELECTION RATIONALE

Procedure: Summarize results of Steps 1-4 to justify your selection of delivery systems for the overall training program. (In this case the sample of 13F FIST Quick-Fix training requirements).

Results: See example selection rationale, Summary Sheet I, next two pages.

SUMMARY SHEET I

TRAINING PROGRAM DELIVERY SYSTEM MIX SELECTION RATIONALE

1. Program Requirements and Constraints: The 13F/FIST Quick-Fix trainee pool consists of soldiers with related entry-level skills. They are used to operating communications equipment and vehicles. They are familiar with the job of indirect fire observers in at least one mode (13E/11C or 13B/11B).

   The given short lead-time makes maximum use of existing materials mandatory where appropriate. There is a trade-off possibility between adjusting and utilizing existing materials versus developing new materials for the selected delivery systems.

   Methods of instruction required include team training and supervised on-the-job training. Trainee response must be actual performance.

2. Requirements of Subject Matter: The main thrust of the mission and job-duty task training requirements are in the following areas:

   a. FIST Operations Concept. Requires individual situation-oriented training in unit specific organization, mission, job duties, Regs, SOPs (Training Level 1).

   b. Newly Assigned Unit Equipment. Requires operator and situational equipment-oriented training for individuals (Training Levels 2-4) and small teams (Training Level 5).

   c. FIST Duty-Mission Procedures. Requires tactical procedures training and situation-oriented practice for individual tactical functions (Training Levels 3, 4) and several levels of team/external unit interactions for mission objectives (Training Levels 5-7).

SUMMARY SHEET I

TRAINING PROGRAM DELIVERY SYSTEM MIX SELECTION RATIONALE (Cont'd)

3. Delivery System Requirements: The training program (sample FIST of a Tank Co, Quick-Fix) will require a delivery systems mix as follows:

   a. Job materials (FMs) and Training/Combat Literature for the FIST Operations Concept.

   b. Highly pictorial, proceduralized job materials (TMs) and continuing hands-on practice including REALTRAIN missions for proficiency on newly assigned Unit Equipment.

   c. Training/Combat Literature, Training Devices/Simulators (Sand Table, OFT, M-31) and Tactical Engagement Simulations (REALTRAIN) for FIST Duty/Mission tactical practice.

   d. As an alternative, audiovisual presentations (e.g., TEC audiovisual, TEC audio-only, or TVT) may be considered to augment the use of training devices/simulators.

4. Requirements of Trainees: The delivery system mix selected is appropriate for the expected trainees, enlisted personnel Skill Levels 1-4 (in RTO, APC Driver, Asst FS Sgt, Sr. FS Sgt duty positions) and FIST Chief (Lt. or Sr. NCO Skill Level 5) because the mix:

   a. Satisfies a mixture of possible learning styles (seeing, reading, hearing, doing). The combination of job materials, exportable training devices, and tactical engagement simulations will provide realism and accommodate individual preferences.

   b. Enables effective training for trainees with limited reading abilities through simulators and/or audiovisual, and tactical engagement simulations.

SUMMARY SHEET I

TRAINING PROGRAM DELIVERY SYSTEM MIX SELECTION RATIONALE (Cont'd)

c. Realism of job materials with situational displays and practice provided by simulators or tactical engagement simulations should be appealing to soldiers in cross-training.

5. Training Effectiveness of Delivery Systems Mix: The employment of existing resources (manuals and training/combat literature, adapted or supplement as required) and existing, exportable training devices/simulators combined with carefully planned participation in REALTRAIN (and MILES, when available) will provide a credible unit-level training program, ensuring an increase in effectiveness of cross-trained soldiers at substantial savings.

Evaluations of the exportable training devices/simulators by USAFAS and of REALTRAIN by ARI/TRADOC in USAREUR has shown these methods to be highly effective in job-transfer of training and mission effectiveness. Soldiers also find these methods highly credible and acceptable. There is considerable potential for more efficient use of ammo, fuel, and time available for realistic tactical training while units are in Garrison, Local, or Major training areas.

Training effectiveness and acceptance by soldiers may, in turn, result in substantial reduction of unit turbulence, including an increase in re-enlistment rates of trained MOS 13F personnel. These will become the cadres for the long-range FIST solution, involving an increase in personnel, new equipment, and expansion of FIST missions.

SAMPLE INPUTS-BLOCK II OF DELIVERY SYSTEMS SELECTION PROCEDURE

The task samples, training requirements, Module Design Approach documents for the selected samples, and the selection of delivery systems for the program (Block I, Step 4) constitute the input to Block II.

DESCRIPTION OF TASK SAMPLE

The tasks inventory for the sample program, as represented in the Task Matrices (see page 11) serves as the starting point for the learning analyst to develop behavioral objectives, both terminal and enabling, as well as criterion test items for each objective. Then the objectives are sequenced into performance modules or lessons. Each string of objectives within an instructional unit (lesson/module) is subjected to Steps 6-8 (Block II), the allocation of delivery systems to program modules/lessons.

Since no learning analysis was available for the selected sample, two performance modules were developed for illustrative purposes.

Performance Module A strings together all tasks dealing with the new FIST vehicle, the M113A1. Task statements, conditions and standards are stated in FM 6-13F 1/2 (Soldier's Manual MOS13F, Skill Level 1/2):

- Operate the M113A1 under usual conditions in accordance with the operator's manual.
- Operate the M113A1 under stated unusual conditions in accordance with the operator's manual.
- Perform before/during/after operations checks and services on the M113A1 APC as described in the TM.
- Perform Equipment Serviceability Criteria (ESC) evaluation on the M113A1 in accordance with TM-2350-257-ESC.

- Guide a tracked vehicle to a designated parking space using hand and arm signals during the day, a flashlight at night.

These task statements serve as the statement of behavior 1 objectives for Module A.

Performance Module B covers a tactical team task. Module objective, conditions and standards are stated in POI MOS 13F10, G034SW-Service Practice (Mobile).

Objective:

a. Behavior: Student will request and adjust fire while moving to different locations in a motorized vehicle. (M113A1)

b. Condition: Given a map, binoculars, and compass, M113A1 and communications equipment in a field environment.

c. Standard:

1. Locate the target to within 200 meters of actual location;
2. Transmit the complete call for fire within 60 seconds of target identification;
3. Transmit each subsequent correction within 10 seconds of the burst;
4. Express deviation corrections to the nearest 10 meters and use the correct OT factor;
5. Express range corrections to the nearest 10 meters;
6. Fire for effect must be within 50 meters of the target;
7. Transmit appropriate surveillance and refinement data;
8. Express height of burst corrections to the nearest 5 meters and achieve a 20 meter height of burst at fire for effect with FZ Time.

Adequate performance of this team task by the given target population requires the mastery of the following individual tasks:

1. Estimate/maintain communications within a mortar FDC net
2. Estimate/maintain communications within a FA command/fire net
3. Transmit conduct of fire information
4. Request and add FA and/or mortar fire
5. ID threat tactical; vehicles
6. Use Dryad authentication system and operations code
7. Perform remedial electronic warfare procedures
8. OP M113A1 under usual and unusual conditions
9. Prepare for operations and operate AN/VRC-46
10. Install and operate AN/GRA-39
11. Prepare for operations and operate KY-38
12. Prepare for operations and operate AN/VIC-1

Each one of the tasks listed above should be subject or part of a separate instructional unit (lesson or module); Task 8, for example, is part of the sample performance Module A.

In addition to the individual tasks listed above, the following knowledges are required:

a. Organization and mission of maneuver unit
b. Organization and employment of the FIST
c. Duties of the FS Specialist
d. Role of the FS Specialist in the Gunnery Team.

The prerequisite skills and knowledges listed must be supplemented by continuing practice exercise of all other tasks listed in the Soldier's Manual and the POI.

TRAINING REQUIREMENTS FOR SELECTED MODULES

Module A. The trainees have operated a wheeled vehicle. The transition training to operate an APC requires SOJT. Stimulus display may be a stated condition (verbal), or a real situation. Trainee response must be actual performance. Proficiency training is required.

Module B.[1] Training will be accomplished in successive steps. Prerequisite knowledges a-d and skills 5, 6, and 7 require initial training. This may be accomplished by self-study and SOJT with subsequent SQT. Prerequisite skills 9-12 require training analogous to that described for Module A. Prerequisite skills 1-4 require small and larger team exercises. The FIST team must train the module performance task together before commencing a multi-unit exercise.

MODULE (LESSON) DESIGN APPROACH

Generally, an LDA (Lesson Design Approach) document will be prepared for each lesson. For the illustrative sample, separate LDA documents were not developed. Summary Module Design Approach documents were substituted for both sample modules.

These module design approaches (MDAs) are shown in Figures 3 and 4 for Module A (Prepare for Operation and Operate M113A1) and Module B (FIST Operations While Moving in an M113A1), respectively.

[1] Knowledges and skills referenced are listed on page 40.

MODULE DESIGN APPROACH SUMMARY

MODULE NUMBER:	A
MODULE TITLE:	Prepare for Operation and Operate M113A1
OBJECTIVES:	Operate M113A1 under usual and unusual conditions, perform before/during/after OP checks and services perform ESC evaluation, guide tracked vehicle to the stated standards (see pages 38, 39).
INSTRUCTIONAL STRATEGY:	This module consists of lessons using structured supervised on-the-job training as well as practical exercise.
CRITERION TEST:	Actual performance in a given situation. This should bear high similarity to the corresponding SQT (Hands-on component).
MODULE ADMINISTRATIVE INSTRUCTIONS:	There will be separate administrative instructions for each lesson (LAI). These will include the objectives, the training time to achieve adequate performance, and a supervisor's guide to administer training.
VALIDATION:	Each lesson shall be validated in 2 small group trials with at least five soldiers per trial. Criterion for acceptance is 90/90, or acceptable successive GO/NO-GO standard as represented by government-approved sequential testing charts.

Figure 3. Module Design Approach-Module A

MODULE DESIGN APPROACH SUMMARY

MODULE NUMBER:	B
MODULE TITLE:	FIST Operations While Moving in an M113A1
OBJECTIVES:	The soldier will request and adjust fire under the stated conditions to the stated standards (see page 39).
INSTRUCTIONAL STRATEGY:	This module puts previously mastered skills and knowledges together into a tactical team exercise. The module will train the performance of each FIST member individually, of the FIST as an integrated team, and of FIST interactions with the supported and the supporting elements.
CRITERION TEST:	Actual performance in a field environment. This should bear high similarity to the appropriate Training and Evaluation Outline, as stated in the corresponding ARTEP.
MODULE ADMINISTRATIVE INSTRUCTIONS(MAI):	The MAI will include the objectives for each FIST member, for FIST as a whole, and for FIST interactions with other units; the approximate training time to achieve adequate performance; instruction for performance evaluation.
VALIDATION:	The module will be validated by three different FIST's. Criterion for acceptable validation is 90% of individual/team tasks performed correctly by all three teams.

Figure 4. Module Design Approach-Module B

BLOCK II DELIVERY SYSTEMS SELECTION PROCEDURE APPLICATION AND OUTPUTS

The following is a walk-through of the delivery system selection procedure Block II, "Allocate Delivery Systems to Program Modules/Lessons," using the inputs described above. This walk-through follows the procedural steps 6-8 (Block II) as described in the Procedure Guide for Delivery Systems Selection.

STEP 6

DETERMINE DELIVERY SYSTEM REQUIREMENTS FOR EACH MODULE/LESSON

Procedure: Review input data, in this case the preceeding section "SAMPLE INPUTS - BLOCK II". Determine presentation and response requirements for each instructional unit.

Consider training setting requirements.

Results: (See Worksheet J on page 47). The stimulus presentation requirements for Module A are (examples in parenthesis):

Visual:

Alphanumeric	(Instructions)
Special Symbology	(Diagrams)
2-D Graphics	(Schematics)
Static Display	(Pictorials)

Auditory:

Speech	(Verbal instructions and stated conditions)

The response requirements are all performance-oriented:

Indication	(Locating)
Manipulation	(Hands-on performance)
Read/Interpret	(Comprehension of TM)
Situation Evaluation	(Conclusions)
Decide Action	(Maintenance or Ops Procedures)

Training setting requirements are:

Job Station
Garrison
Local/Major Training Area

The stimulus presentation requirements for Module B are (examples in parenthesis):

Visual:

Alphanumeric	(Messages)
Special Symbology	(Map)
3-D Graphics	(Terrain Scene)
Motion Display	(Target, drift of smoke)

Auditory:

Signals/Tones	(Firing, bursts, equipment)
Speech	(Intercom, radio)

Tactile:

Size/Shape	(Handling of controls)
Positional cues	(No's. of equipment controls)

The response requirements are:

Manipulation	(Manual performance)
Read/Interpret	(Code/decode)
Listen/Interpret	(Receive messages)
Voice Composition	(Send messages)
Situation Evaluation	(Determine distance to target)
Decide Action	(Select ammo)

Training setting requirements are:

Local/Major Training Area

NOTE: The identification of requirements for Module B does not deal with the prerequisites. Each one of these must be treated separately, just as Module A.

(WORKSHEET J) MODULE/LESSON REQUIREMENTS WORKSHEET
WITH STEP 6 REQUIREMENTS ENTERED

DS CHARACTERISTICS / FAMILY-MEMBER CODE	MODULE/LESSON NAME	PRESENTATION										RESPONSE										SETTING				
		VISUAL						AUDITORY		TACTILE		VERBAL			PERFORMANCE											
		ALPHANUMERIC	SPEC. SYMBOLOGY	2-D GRAPHICS	3-D GRAPHICS	STATIC DISPLAY	MOTION	COLOR	SIGNALS/TONES	SPEECH	SIZE/SHAPE	POSITIONAL CUES	CHOICE SELECT.	SPEC. RECALL	COMPOSED/CREATED	INDICATION	MANIPULATION	READ/INTERACT	LISTEN/INTERPRET	VOICE COMPOSITION	SIT. EVALUATION	DECIDE ACTION	INSTITUTION	IN-SYSTEM	JOB STATION	GARRISON	LOC/MAJ TRG. AREA
	Module A - Prepare for Operations and Operate M113A1	X	X	X		X				X						X	X	X			X	X			X	X	X
	Module B - FIST Operations while Moving in an M113A1	X	X	X			X		X	X	X	X					X	X	X	X	X	X					X

TABLE 6. DELIVERY SYSTEM CHARACTERISTICS TABLE

DS CHARACTERISTICS / FAMILY MEMBER		PRESENTATION											RESPONSE									SETTING				
		VISUAL							AUDITORY		TACTILE		VERBAL			PERFORMANCE										
CODE	NAME	ALPHANUMERIC	SPEC. SYMBOLOGY	2-D GRAPHICS	3-D GRAPHICS	STATIC DISPLAY	MOTION	COLOR	SIGNALS/TONES	SPEECH	SIZE/SHAPE	POSITIONAL CUES	CHOICE SELECT.	SPEC. RECALL	COMPOSED/CREATED	INDICATION	MANIPULATION	READ/INTERPRET	LISTEN/INTERPRET	VOICE COMPOSITION	SIT. EVALUATION	DECIDE ACTION	INSTITUTION	IN-SYSTEM	JOB STATION	GARRISON	LOC/MAJ TRG. AREA
A-1	Field Manuals (FMs)	X	X	X		X		X														X		X	X	X
A-2	Tech Manuals (TMs)	X	X	X		X																X	X	X	X	X
A-3	ITDT Manuals	X	X					X														X	X	X	X	X
B-1	TEC Print	X	X	X		X		X					X	X	X			X			X	X		X	X	X
B-2	Correspondence Courses	X	X			X		X					X	X	X			X			X	X		X	X	
C-1	Soldier's Manual/Job Book	X	X			X																		X	X	
C-2	SQT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X
C-3	ARTEP	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X				X	X
D-1	Class Packets	X	X	X		X		X		X			X	X	X			X			X	X	X		X	X
D-2	Charts/Display Boards	X	X	X		X		X														X		X	X	X
D-3	Overhead Transparencies	X	X	X		X		X														X		X	X	X
D-4	Models/Mockups	X	X	X	X	X		X			X	X				X	X					X		X	X	X
E-1	TEC Audio-Only								X	X						X	X		X	X		X		X	X	X
E-2	Language Lab								X	X									X	X		X				
F-1	TEC A/V (Beseler Cue-See)	X	X	X		X	X	X	X	X			X	X	X			X	X		X	X	X		X	X	X
F-2	Slide/Sound	X	X	X	X	X		X	X	X			X	X	X								X		X	X	
F-3	Army Training Films	X	X	X	X	X	X	X	X	X													X		X	X	
G-1	Classroom CCTV	X	X	X	X	X	X	X	X	X													X				
G-2	Television Trainer (TVT)	X	X	X		X	X			X													X		X	X	X
G-3	Video Disc	X	X	X	X	X	X	X	X	X			X	X				X	X		X	X	X	X	X	X	
H-1	Remote Access PLANIT	X	X		X								X	X	X			X			X	X	X			X	

TABLE 6. DELIVERY SYSTEM CHARACTERISTICS TABLE (Cont'd)

DS CHARACTERISTICS / FAMILY MEMBER		PRESENTATION										RESPONSE									SETTING				
		VISUAL							AUDI-TORY		TAC-TILE	VERBAL			PERFORMANCE										
CODE	NAME	ALPHANUMERIC	SPEC. SYMBOLOGY	2-D GRAPHICS	3-D GRAPHICS	STATIC DISPLAY	MOTION	COLOR	SIGNALS/TONES	SPEECH	SIZE/SHAPE	POSITIONAL CUES	CHOICE SELECT.	SPEC. RECALL	COMPOSED/CREATED	INDICATION	MANIPULATION	READ/INTERPRET	LISTEN/INTERPRET	VOICE COMPOSITION	SIT. EVALUATION	DECIDE ACTION	INSTITUTION	IN-SYSTEM	JOB STATION	GARRISON	LOC/MAJ TRG. AREA
H-2	PLATO IV/TUTOR	X	X	X		X	X	X					X	X	X	X		X			X	X	X			X	
H-3	ABACUS CTS	X	X	X		X	X						X	X	X			X	X		X	X	X			X	
I-1	Operational TACFIRE/PLANIT	X	X			X							X	X	X			X			X	X	X	X	X	X	X
I-2	TACFIRE Training System	X	X			X			X		X	X	X	X	X	X	X	X			X	X	X	X	X		
I-3	TACFIRE Subsystem Team Training	X	X			X			X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X
J-1	Sand Table		X		X	X		X		X						X			X	X	X	X	X		X	X	X
J-2	Fire Control Simulator (BT-33)		X		X	X	X	X	X										X	X	X	X	X				
J-3	Observed Fire Trainer (OFT)				X		X	X	X					X	X				X	X	X	X	X			X	
J-4	Arty. Direct Fire Trainer (ADFT)					X	X	X			X	X				X	X		X		X	X	X			X	X
J-5	M-31 Field Arty. Trainer		X		X	X	X	X	X	X	X	X				X	X		X	X	X	X	X				X
K-1	SCOPES	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X						X
K-2	REALTRAIN	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X						X
K-3	MILES	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X						X
L-1	Tactical Ex. Without Troops (TEWTS)	X	X		X					X	X	X					X	X	X	X	X	X				X	X
L-2	CPX Simulation Facility	X	X	X		X		X		X						X	X	X	X	X	X	X	X			X		
L-3	CAMMS	X	X	X	X	X	X	X		X							X	X	X	X	X	X	X			X		
L-4	CATTS	X	X	X	X	X	X	X		X							X	X	X	X	X	X	X			X		
L-5	FIREFIGHT	X	X	X		X											X				X	X	X			X		
L-6	DUNN-KEMPF	X	X	X	X	X	X	X		X		X					X	X	X		X	X	X			X		
L-7	PEGASUS	X	X	X	X	X	X	X		X		X					X	X	X	X	X	X	X			X		
L-8	FIRST BATTLE	X	X	X		X		X		X		X					X	X	X	X	X	X	X			X		

STEP 7

ASSIGN OPTIMAL DELIVERY SYSTEM MIX TO EACH MODULE/LESSON

Procedure: Compare the Module/Lesson Requirements Worksheet, developed in Step 6 (page 47) with each delivery system checked in the Delivery System Summary Sheet, column B (pages 25 and 26). Use the Delivery System Characteristics Table (pages 48 and 49) as a performance aid.[1]

Results: The delivery systems checked in column B of the Delivery System Selection Summary Sheet (pages 25 and 26) are:

A1	Field Manuals
A2	Tech. Manuals
C1	Soldier's Manuals
C2	SQT
C3	ARTEP
F1	TEC Audio Visual
F2	Slide/Slide Sound
F3	Army Training Films
J1	Sand Table
J3	Observed Fire Simulator
J5	M-31 FA Trainer
K2	REALTRAIN

[1] NOTE: Comparison of your Requirements Worksheet (page 47) with the Characteristics Table (pages 48 and 49) will be easier in practice by sliding your worksheet down the table, or by using an overlay.

Comparing these delivery systems characteristics with the stated requirements for Module A you will find the following matches or "best-fits":

A1	FM	(No response inherent)
A2	TM	(No response inherent)
C2	SQT	
C3	ARTEP	
F1	TEC AV	(Indication/Manipulation Response non inherent)
K2	REALTRAIN	(Not usable at job station and garrison)

A review of these delivery systems results in the elimination of :

- Field Manuals (A1) since the module consists of equipment-oriented tasks,
- ARTEP (C3) since the module contains predominantly individual tasks,
- REALTRAIN (K2) since Module A deals only with one set of prerequisite skills for satisfactory combat performance.

The delivery systems mix for Module A is:

A2	(Tech Manuals)
C2	(SQT)
F1	(TEC AV - if available)

Comparing the characteristics of the selected delivery systems with the stated requirements for Module B you will find the following matches or "best-fits":

C2	SQT
C3	ARTEP
J5	M-31 FA Trainer
K2	REALTRAIN

A review of these four delivery systems results in the elimination of C2 (SQT) since the performance module deals with a tactical team task , and J5 (M-31 FA Trainer) since this delivery system is aimed at certain prerequisite skills only.

The delivery system mix for Module B is:

C3	ARTEP
K2	REALTRAIN

The code numbers of the optimal delivery system mix for each module have been entered into the first column (Family-Member Code) of the Module/Lesson Requirements Worksheet, as shown on the next page.

(WORKSHEET K) MODULE/LESSON REQUIREMENTS WORKSHEET WITH STEP 7 DELIVERY SYSTEM SELECTIONS ENTERED

DS CHARACTERISTICS / FAMILY-MEMBER CODE / MODULE/LESSON NAME	PRESENTATION										RESPONSE										SETTING				
	VISUAL							AUDITORY		TACTILE	VERBAL			PERFORMANCE											
	ALPHANUMERIC	SPEC. SYMBOLOGY	2-D GRAPHICS	3-D GRAPHICS	STATIC DISPLAY	MOTION	COLOR	SIGNALS/TONES	SPEECH	SIZE/SHAPE	POSITIONAL CUES	CHOICE SELECT.	SPEC. RECALL	COMPOSED/CREATED	INDICATION	MANIPULATION	READ/INTERACT	LISTEN/INTERPRET	VOICE COMPOSITION	SIT. EVALUATION	DECIDE ACTION	INSTITUTION	IN-SYSTEM	JOB STATION	GARRISON	LOC/MAJ TRG. AREA
Module A - Prepare for Operations and Operate M113A1	X	X	X		X				X						X	X	X			X	X			X	X	X
A2 (Tech Manuals)																										
C2 (SQT)																										
F1 (TEC AV)																										
Module B - FIST Operations while Moving in an M113A1	X	X	X			X		X	X	X	X					X	X	X	X	X	X					X
C3 (ARTEP)																										
K2 (REALTRAIN)																										

STEP 8

PREPARE RATIONALE
FOR MODULE/LESSON
DELIVERY SYSTEM
MIX SELECTION

Procedure: Assemble all Module/Lesson Requirements Worksheets with the appropriate delivery systems codes entered in column one. Review this information and summarize the overall module/lesson requirements. State how the selected delivery system mix optimally meets these requirements.

Results: Module A

Requirements for presentation, response and training setting are listed on pages 42, 45 and 53.

The selected delivery system mix is A2 (Tech. Manuals) and C2 (SQT). Existing TEC lessons, such as 945-171-0100F, 945-171-0101F and 510-091-6486 F shall also be used.

TM's are the fundamental means by which the Army communicates to soldiers the requirement to perform equipment operation and maintenance. Since no response possibilities are inherent in this delivery system, a supervisory person must be available to train the object tasks. The inclusion of SQT into the delivery system mix for this performance module will insure verification of adequate individual performance. The existing TEC lessons will be reviewed to ascertain their usability for the given target population.

Results: (Cont'd)

Module B

Requirements for presentation, response, and training setting are listed on pages 45, 46 and 53.

The selected delivery system mix is K2 (REALTRAIN) and C3 (ARTEP).

REALTRAIN is presently the one available delivery system fit to train tactical team tasks involving multiple units. The existing ARTEP should be modified to reflect the FIST concept. Its application will ensure the verification of adequate performance of the FIST.

The prerequisite skills and knowledges listed on page 40 must be trained before this tactical team task is approached. The delivery system mix for each set of prerequisites has to be determined separately.

APPENDIX A - ABBREVIATIONS

MILITARY

APC	Armored Personnel Carrier
ARTEP	Army Training and Evaluation Program
CAS	Close Air Support
CLGP	Cannon Launched Guided Projectile
DVR	Driver
ESC	Equipment Serviceability Criteria
FA	Field Artillery
FASCAM	Field Artillery Scatterable Mine
FDC	Fire Direction Center
FFE	Fire for Effect
FIST	Fire Support Team
FO	Forward Observer
FS	Fire Support
FSE	Fire Support Element
FSO	Fire Support Officer
G-L-M	(G)arrison, (L)ocal, (M)ajor training areas
HE	High Explosive
ICM	Improved Conventional Munitions
MICV	Mechanized Infantry Combat Vehicle
POI	Program of Instruction
Q	Quick Fire
RTO	Radio/Telephone Operator
TI	Time Fuse
VT	Variable Time Fuse

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SUBJECT MATTER CHARACTERISTICS AND DELIVERY SYSTEM REQUIREMENTS[1]

Display:

S	Situational (simulation/reality)
A	Audio (symbolic)
V	Visual (symbolic)
T	Tactile

Response:

V	Verbal
S	Symbolic Performance
A	Actual Performance

Training Setting (Trg. Setting):

JOB	On-Job/In-System
G	Garrison (includes barracks and Individual Learning Center)
I	Institutional (School, ATC, Div./Post school)
INIT	Initial Training
PROF	Proficiency Training
U	Unit

Task Type:

E	Equipment Oriented
IND	Individual
S	Situation oriented
TEAM	Team

[1] Reference Worksheet F (pages 29-31) and Figure 2 (page 33).

Training Mode (Trg. Mode):

SPGI	Self paced in group or individual mode
SCT	Supervised classroom training
SOJT	Supervised OJT
T	Team Training