Research Problem Review 78-12

LEVEL II

NET ASSESSMENT OF TANK CREW TRAINING

AN ANALYSIS OF KEY QUESTIONS FROM THE OFFICER'S SURVEY, TANK CREW SURVEY, AND TRAINING SUBJECTS/FACILITIES EXAMINATION

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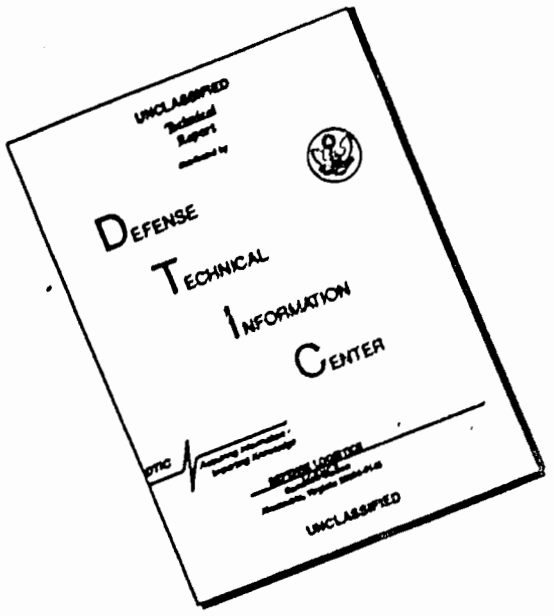

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Research Problem Review 78-12

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Research Problem Reviews are special reports to military management. They are usually prepared to meet requests for research results bearing on specific management problems. A limited distribution is made--primarily to the operating agencies directly involved.

FOREWORD

This report is provided as input for the overall Department of Defense net assessment study of U.S. and Soviet tank crew training. It will be incorporated as Appendix A into the MASSTER May 1975 report "Assessment of Tank Crew Training." Some of the research was accomplished by Operations Research Associates under Contract DAHC 19-75-C-0017. Officers and tank crew members were surveyed in conjunction with the Tank Crew Training study and asked a variety of questions hypothesized to be related to training readiness. After the survey was completed, the questions and responses were screened to identify those key questions which elicited responses which were considered to be of basic importance and which revealed unexpected or revealing information. This report presents the results of the analyses of the responses to these key questions.

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AN ANALYSIS OF KEY QUESTIONS FROM THE OFFICER'S SURVEY, TANK CREW SURVEY, AND TRAINING SUBJECTS/FACILITIES EXAMINATION

BRIEF

Requirement:

This project report was prepared in response to a request by the Training Developments Branch of the Operations and Plans Division, HQ MASSTER, Fort Hood, Texas. The project was designed to fulfill a requirement for the analysis and reporting of tank crew training data from three sources: 1) an Officers Questionnaire, 2) Tank Crewmens Questionnaire, and 3) a review of training subjects and facilities. The research was required as input for a Department of Defense net assessment study of U. S. and Soviet tank crew training. The objective was to provide an integrated analysis of data from the three information sources which would enable a comparison across selected problem areas.

Procedure:

The officers and tank crewmen of an M60A1 tank battalion were administered questionnaires concerning their training program. A review was then conducted of the battalion's training program and facilities. The data were tabulated and analyzed by subject, data source, and by subject area.

Principal Findings:

The results provided initial evidence for the identification of three major problem areas which adversely affect current tank crew training. These are:

- Turbulence within tank crews and special duty assignments during training cycles seriously degrade training proficiency.
- Tank maintenance and repair functions are inhibited by a shortage of trained mechanics and difficulty in obtaining spare parts.
- Training facilities, especially maneuver ranges and gunnery ranges, cannot meet the demands for use. These facilities need to be expanded and improved.

Utilization of Findings:

These findings will be incorporated into the TRADOC Report Net Assessment of U. S. and Soviet Tank Crew Training. This TRADOC report will, in turn, be provided as input to the Department of Defense net assessment study of U. S. and Soviet tank crew training.

CONTENTS

ANALYSIS OF KEY QUESTIONS FROM THE OFFICER'S SURVEY, TANK CREW SURVEY, AND TRAINING SUBJECTS/FACILITIES EXAMINATION

1. INTRODUCTION

The responses to the questions in the Officer's Survey, Tank Crew Survey, and Training Subjects/Facilities Examination were reviewed to identify key questions which elicited responses which were of fundamental importance and which produced unexpected or revealing information. The data from the selected questions were processed, using descriptive statistics in most cases, to obtain a general impression of the nature of the responses. The key questions and data from the three surveys were then combined together under appropriate subject categories to bring together all the questions bearing on a particular subject. This arrangement combines all the data relating to a subject and allows for a comprehensive evaluation of the results including comparisons of all data relevant to the subject.

The question identification numbering codes used in this appendix are taken from the survey numbering systems without modification. Questions from the Officer's Survey are identified by alphanumeric codes prefixed with two letter combinations ranging from AA to DB. Questions from the Tank Crew Survey are identified by the alphanumeric code prefixed with the letter combination of GA. Questions from the Training Subjects/Facilities Examination are identified by a simple two digit number. The following coding system is used to identify item numbers of four types of information.

Code	Type of Information
∇	Items from Officer's Survey
Δ	Items from Tank Crew Survey
θ	Items from Training Schedules Examination

2. INDIVIDUAL TRAINING SUBJECTS

a. MOS Training Subjects and Programs

(1) Amount of MOS Training

Δ GA061. Approximately what percentage of your on-duty time is spent in MOS related training during the year?

Answer:

	Mean Percent	S.D.	n
TC	66%	25.32	53
G	65%	23.90	51
D	67%	25.98	46
L	68%	22.92	46

(2) Number Trained

θ 38. How many people receive tank training each year (drivers, TC's, gunners, loaders)? What is relationship between number of tanks in inventory to number of personnel trained?

Answer: At any given time of the year, there are usually 3-4 crewmembers assigned to each tank. Due to Special Duty, TDY, leave and support requirements, only one or two of those assigned are normally present for training (except on special occasions such as ARTEP and tank gunnery). Consequently, the training is presented to as many as possible throughout the year, most of which occurs immediately prior to these two training seasons. Impacting on this is the Division's Priority Phased Training Program. A copy of the implementing instructions is at Inclosure 2-9. Depending upon which training phase a unit is in (P1, P2, or P3) it will be able to accomplish more (or less) specific training. This is necessary due to the numerous support commitments inherent at Fort Hood throughout the year.

(3) Tank Commander Training

θ 23. What formal advanced training courses are available for tank crewmen at any time after BCT and AIT? Completely describe each course available; selection criteria, purpose, POI, where taught, who trains, tests, graduate return to same tank crew.

Answer: The unit, as in the case with most TOE units, has the capability to present any BCT and AIT instruction program whenever needed. None have been presented other than an AIT program for Scouts (MOS 11D). Training time and resources have not been available in order to plan and

execute these valuable programs. An AIT program for tankers (MOS 11E) planned for August-November 1974 was cancelled due to requirements for ARTEP. III Corps conducts a Tank Commander's Course (TCC) throughout the year. This course does not award an MOS. The course is 3 weeks in duration and includes subjects related to tanks and tank operation/employment. Personnel are selected to attend this course at unit level and return to that unit when finished. Based upon the needs of the particular unit, the individual may or may not return to the same crew. A detailed description of the course is at Inclosure 2-5. Selection criteria is left to the judgment of the unit (Battalion or Company) commander based upon the unit needs and the individuals' potential to advance. The school is taught on post at the III Corps Troop School where this (TCC) and 16 other courses are presented continuously. Instructors are Special Duty (SD) from units on post offering post-wide centralized training. Examinations are given at the conclusion of the course and those who fail may be recycled should the unit commander deem appropriate. On an annual basis, the attrition rate is about 20-24 percent post wide for the TCC. This course is coordinated closely with the appropriate TRADOC MOS-Awarding School course for content and objectives. The examined battalion enrolled 31 enlisted personnel to the TCC during the 1 year period. As of the publishing of this report only 22 of the 31 remain in the battalion.

(4) Gunner Training.

6. What is the tank crew proficiency course/test? Completely describe to include verbal (sequence of events), schematic and photographic descriptions.

Answer: The tank crew proficiency test is the dry run exercise outlined in Inclosure 2-5. It should be noted that all crewmembers passed the Preliminary Gunners Instruction/Exam (PGI/PGE) and execute the dry run proficiency course prior to firing the tank tables.

(5) Driver Training.

BB104. Driver training is given continuously and consists mainly of on-the-job training during FTX's and is integrated with field and gunnery training.

19. What driver training is given. Are drivers licensed/tested?

Answer: Only the unit drivers in Company A received a 14.6-hour block of driver training. All drivers in the battalion received practical experience in driving during field training. New drivers are selected and trained by the unit as required. The training is OJT from 2 to 3

days duration and includes night driving. Driver candidates are sent to a Post Driver Testing facility where formal medical and driver tests are administered. Approximately 149 new drivers were licensed in the battalion during the period of this report.

(6) Loader Training.

∇ BB105. There is no program to provide special training to loaders. What they receive is informal instruction by the tank commanders during on the job training.

θ 20. Is there special training for the loader?

Answer: No.

b. MOS Training Effectiveness Criteria.

(1) Tank Crew Members Measures of Effectiveness.

θ 7. What are the proficiency tests for individual tank crewmembers?

Answer: Same as paragraph a(4) Gunner Training.

(2) Tank Gunnery Measures of Effectiveness.

∇ AC005. The officer's estimation of the percent of individuals that meet the established tank gunnery standards were as follows:

Mean = 75%; S.D. = 15.3; n = 12

(3) Tank Commander's Measure of Effectiveness.

∇ CA002. There are no set standards for the mental requirements of tank commanders. However, they must demonstrate capacity in technical knowledge, crew performance, leadership, emotional stability, initiative and willingness to work. There are no formal standards or tests of mental capacity or other desired characteristics for tank commanders.

c. General Military Subjects (GMS) Training Subjects and Programs.

(1) Amount of GMS Training.

θ 10. Percentage of training time (from training schedule) used for subjects not directly relating to tank training? (List subject areas and time.)

Answer: A total of 18 percent, 612.7 hours, of the time shown on the training schedule was scheduled for subjects other than tank training. The subject areas considered to fall in this category are at Inclosure 2-3.

▽ AE004. Estimates of the percent of training time used for subjects not directly related to tank training follows. (See BB10B, page A-35 for additional data).

Percent of time	n
Less than 5%	7
6 - 15%	5
16 - 25%	2

Mean = 8%; S.D. = 6.5

(2) Map and Navigation Training.

BB103. Training in map reading and navigation is limited to minimal on the job training during slow periods of FTX's. No formal classroom instruction is given on these subjects and no proficiency tests are given to measure training effectiveness.

θ 18. What training in map reading and land navigation?

Answer: No formal training was presented on this subject during the period. Integrated practical work during field exercises was the only training given.

(3) Individual Weapons Training.

θ 21. What training is given in use and maintenance of individual weapons?

Answer: The companies of the battalion averaged 38.6 hours during the period on maintenance of individual weapons. They averaged 81.0 hours preliminary markmanship and 36.0 hours on actual live fire of these weapons for an average total of 155.6 hours. Individual weapons include M-16 rifle, .45 cal pistol, .45 cal submachinegun, and the M-203 (over and under 5.56 mm and 40 mm). See Summary Table of Company Training Schedules, page A-41.

(4) First Aid.

▽ BB118. The officers indicated that only a minor amount of medical training is given in first aid and it is limited to basic subjects.

θ Only Company A had time allotted on its training schedule for first aid which consisted of 4.0 hours.

(5) Physical Education.

θ 16. What physical training is given?

Answer: The physical training program consists of a mile run/walk conducted almost daily. This consumes approximately 1.5 hours per week.

Δ 053. The tank crewmen estimated that their status of physical training was adequate.

d. Crew Position Selection and Promotion

(1) Selection Criteria.

∇ CB001. How are soldiers selected to be trained as gunners, drivers, loaders, and tank commanders?

Crew Position	SELECTION CRITERIA						
	Promotion	MOS Test	Longivity	Vacancy	Ability	Desire Change	Total
TC	8	7	4	5	8	2	34
G	6	4	3	7	10	2	32
L	4	3	1	10	7	5	30
D	4	3	1	10	6	6	30
Total	22	17	9	32	31	15	126

The frequency data in the Table indicates that the three criteria most frequently cited for selecting men for crew positions are as follows:

Crew Position	SELECTION CRITERIA		
	1st	2d	3d
TC	Ability	Promotion	MOS Test
G	Ability	Vacancy	Promotion
L	Vacancy	Ability	Desire Change
D	Vacancy	Ability	Desire Change

(2) Time of Selection.

∇ CB002. At what stage in training is the decision made as to the tank crewman position to be occupied?

Answer: Eight of the nine officers responding to this question indicated that the decision is made prior to gunnery. Other times are whenever a vacancy occurs and needs filling.

(3) Promotion Criteria.

θ 42. What are promotion criteria for tank crewmen?

Answer:

E-1 to E-2 Automatic promotion to PV2 at 4 months time-in-service (TIS) unless prevented by individual's Company Commander.

E-2 to E-3 12 months TIS and 4 months time in grade (TIG). Two months TIG waiverable. Local commanders are authorized to promote outstanding E-2's to E-3 with the constraint that such promotions will not cause more than 20 percent of their assigned and attached E-3 strength to have less than 12 months TIS.

E-3 to E-4 Twenty-four months TIS and 6 months TIG. In recognition of outstanding E-3's with at least 12 but less than 21 months active service, local commanders or promotion authorities may promote to grade E-4 with the constraint that such promotions do not exceed 80 percent of E-3's and E-4's assigned who have 12 but less than 21 months active service. Soldiers in grade E-4 with 21 or more months service are excluded from this computation.

E-4 to E-5 Thirty-six months TIS and 8 months TIG. Seventeen months TIS waiverable and 4 months TIG waiverable.

E-5 to E-6 Seventy-two months TIS and 10 months TIG. Twenty-four months TIS waiverable and 5 months TIG waiverable.

For promotion to grade E-5 and E-6 the following requirements must be met:

(a) An individual can only be recommended for promotion in Primary MOS or Secondary MOS provided the individual has a valid MOS test score of 110 or higher. MOS test scores are waiverable to 100. EM must have a test score of 100 or higher to compete in Secondary MOS.

(b) All requests for waivers must be approved by individual's Company Commander.

(c) Individual must be tested in PMOS within 12 months of recommendation for promotion.

(d) Individual is limited to 2 waivers maximum.

(e) Requests for reevaluation may be submitted by the individual 3 months after original board appearance IAW Para 7-33g(2), AR 600-200.

3. TANK CREW TRAINING SUBJECTS

BB111. The three-main tank crew training subject areas ranked in order of importance (1 to 3) are as follows:

	Gunnery	Tactics	Maintenance
Mean Rank	1.6	1.7	2.7
n	13	13	13
S.D.	0.8	0.6	0.9

The ranking data were analyzed by a Friedman Two-Way Analysis of variance test. The results were statistically significant, $Xr^2 = 9.335$, $k = 3$, $N = 13$. The results indicate that gunnery and tactics were ranked as more important subject areas than maintenance.

a. Tank Gunnery Training Program.

11. Tank Gunnery Training Program:

a. How often?

Answer: Annually. In addition, a semiannual familiarization phase is conducted. This familiarization phase consists of preliminary gunners instruction/exam (PGI/PGE) and tank tables I-VI.

b. Describe prescribed cycle of training to include number of days.

(1) This cycle is described in Inclosure 2-2. The PGI is also the PGE in that the instruction and exam are given together.

(2) Company training schedules indicate that approximately 600 hours are annually scheduled for tank gunnery subjects including testing, practice and firing.

c. Is cycle actually followed?

Answer: Yes.

d. What training received prior to firing weapons?

Answer: PGI/PGE described in Inclosure 2-2.

e. Which members of crew participate in preliminary training?

Answer: All members present for duty and slotted against tank crew spaces.

θ f. Who conducts training (tank gunnery specialist dedicated)?

V AC004. Different battalions and brigades have differing Tank Gunnery programs and standards although divisional tank gunnery assistance teams have been recently established to provide uniform guidance and assistance.

θ 11f. The parent division of the examined battalion has recently organized a Tank Gunnery Assistance Team (TGAT) which will:

(a) Provide Tank Gunnery Assistance to units of the division throughout the year in the form of instruction, maintenance, and advice on tank gunnery related problems.

(b) Provide for maintenance of and assistance on the Division Mini Tank Range while being used by division units.

(c) Advise unit commanders on tank gunnery related matters within the command.

This is the only assistance given to tank battalions other than the Tank Commanders' Course (TCC) (formal instruction) mentioned in question/answer 23.

θ g. Where is training conducted?

Answer: Mini-tank range, close-in training areas, and Fort Hood tank gunnery tables.

θ h. What subjects are taught (include number of hours)?

Answer: Only the PGI/PGE shown at Inclosure 2-2 was given.

V BB004. What tank gunnery training do tank crews receive?

Training Subject	n/%
PGE	14/100%
Sub-CAL	13/93%
Gunnery Tables	14/100%
Audio-Visual Aids	14/100%
Devices	11/79%
Mini-Range	14/100%

θ (1) What training in target acquisition?

Answer: This subject is taught on the Dry Run TCQC and Mini-Tank Range complex during scheduled and unscheduled periods.

Δ BB016. Target acquisition training is neither studied nor practiced. It is an area which has been completely ignored.

θ 46. What materiel recognition training is conducted (enemy or friendly)? How often, what aids are utilized?

Answer: This training is integrated into gunnery since the Mini-Tank Range includes Soviet-type silhouettes for targets. Additionally, posters showing Soviet equipment are displayed throughout the battalion area.

θ (2) What fire control equipment are crewmen taught to use?

Answer:

M-32 Gunners Periscope w.IR Elbow
M-105D Telescope
M-44C Infinity Sight
M-17 Rangefinder
M-36 TC Periscope w/IR Elbow
M-17 Standard Binoculars
M-18 IR Binoculars

θ (3) What fire commands (initial and subsequent) are taught (elements)?

Answer:

Alert - (Gunner)
Ammo - (HEP/HEAT/SABOT)
Target - (Tank/Troops/MG)
Execution - (Fire)

Additional commands that may or may not be given are:

Direction - (when TC does not lay gun)
Range - (given only in the case of HEP ammo engagements)

θ (4) What training is given in range estimation?

Answer: This subject is addressed only at crew level on the TCQC course and is given primarily to TC's and gunners.

V BB028. Very little formal training or practice is given in range estimation.

V BB029. Judging the importance of range estimation to successful target engagement was made. The results were a mean = 7.2, S.D = 2.7, n = 14 on a 10-point scale where 10 was highest.

θ (5) What use is made of battlesights?

Answer: Unit battlesight is 1100 meters HEAT. This is used on tables VI, VII and VIII (day and night).

θ (6) At what ranges are tank crewmen taught to open fire with main gun, coax, and cal .50 machinegun?

Answer: This depends entirely upon the factors of METT and the particular situation. The unit has no information pertaining to this subject in the SOP.

θ (7) What techniques of fire are taught for firing on the move?

Answer: The main gun is not fired on the move since none of the tanks are stabilized. The 7.62 and cal .50 weapons are fired at area targets and for suppression by tanks on the move.

θ (8) What suppressive fire techniques are taught?

Answer: A "Z" pattern is employed to give the area full coverage. If the firing vehicle is moving, it continues to move. Suppressive fire philosophies are taught when in battle drill exercises. Suppression is also practiced through the use of smoke.

θ (9) What training is given in rangecards?

Answer: During gunnery, rangecards are employed by searchlight tanks only. During FTX, all crews are required to prepare rangecards in each position occupied and submit them to platoon/company leaders. No formal instruction was given on this subject.

V BB056. Very little training is given in the use of range cards. The training consists of informal instruction at platoon level during rest periods in tactical training operations, and while operating searchlights during tank gunnery.

θ (10) What training is given in main gun indirect fire techniques?

Answer: None.

V BB077C. The number of hours annually devoted to instruction in indirect firing methods ranges from 0 to 10 with a mean = 4.2, S.D. = 3.8, n = 11.

V BB060. No operational or live fire training is given in indirect fire techniques.

θ i. What test/examination is administered prior to actually firing tank weapons? Completely describe and record results. (Is tank Crew Gunnery Skills Test used in lieu of PGE)?

Answer: Same as answer in Section 1, A (4) Gunner Training, Page A-5. All crews passed PGE prior to firing tank tables.

θ j. What tank tables or other firing courses/exercises are used? (Is the Mini tank range or tables I, II, III, A & B used). What are crew prerequisites for each table? What crewmembers fire each table exercise? What are the scores for all tables (not including table VIII)? How are the results used?

Answer: Mini-tank range is used in lieu of tables I, II and III, followed by tables IV - VIII (VIII being the TCQC at Crittenberger Range). Normally, each crew is required to satisfactorily complete each phase (table) prior to moving to the next. Time and inflexible training schedules prohibit this practice on occasions and some crews (units) must move on prior to satisfactory completion. All crewmembers participate in each table. Scores (maximum and minimum satisfactory) for all tables are:

θ TABLE

	(Mini Range)						
	I	II	III	IV	V	VI	VII
Max	200	200	200	200	200	1,320	1,900
Min	140	140	140	140	140	920	1,330

Figure 2-6.

θ k. How is gunnery proficiency maintained between firing periods?

Answer: By use of the Mini-rank range when available.

θ L. Amount of live fire gunnery practice.

3. Tank gunnery:

a. What were the total main gun rounds fired by the battlion by type? (Data from Battalion Records.)

Answer:	HEP-TPT	HEAT_T	HEAT-TPT	HEP-T	DS/T	TOTAL
	834	3,136	7,295	1,414	540	13,219

b. Total subcaliber rounds fired by type?

Answer:	Cal .22*	7.62	Cal .50 (M85)
	9,500	257,340	119,080

*Mini-Tank Range

V AB004. Number of rounds by type ammo authorized per crew position in an annual gunnery cycle are estimated as follows:

		HEAT	HEP	SABOT	.50	7.62
	n	8	8	0	9	9
TC	Mean	10.6	1	0	1263	0
	S.D.	4.10	1.85	0	966	0
	n	9	8	7	9	8
G	Mean	99	33	8	0	2556
	S.D.	37.89	13.69	3.46	0	1687
	n	4	4	4	4	4
L&D	Mean	6	0	0	0	75
	S.D.	0	0	0	0	86

AB008. Estimations of the number of main gun and subcaliber rounds fired by each crewman annually.

Main Gun Rounds

		TC	G	L	D	TOTAL
	n	13	13	8	8	
	Mean	14.6	169.3	2.0	2.0	
	S.D.	7.23	62.77	3.85	3.85	
54 x	Mean	788.4	9,142.2	108	108	10,146.6

Subcaliber Rounds

	TC	G	L	D
n	12	13	9	7
Mean	944	1830	150	36
S.D.	1219	2822	323	56

The battalion records show that a total of 13,219 main gun rounds were fired during the last year. Extrapolations from the officers' mean estimates total 10,147, which is a difference of over 3,000 rounds. However, the estimates of the total number of rounds fired by gunners ranged from 100 to 250 rounds (S.D. = 62.77) indicating a wide variance in the estimates. The totals would agree if a mean of 226 rounds was used for the gunners. In any case, the estimates reveal that approximately 70 to 80 percent of the allocated main gun ammo is fired by the gunners.

b. Tank Gunnery Measures of Effectiveness.

5. Is there a tank gunnery proficiency standard? If so, what is it?

Answer: None was identified. The general feeling was that all crews should qualify annually. A generally satisfactory level was considered to be 75 percent of the unit qualified annually. A total score 910 (total for day and night course) is sufficient for qualification. A score of 1040 would have to be achieved to qualify as a distinguished crew.

c. Tank Gunnery Training Status.

V AC005. The estimation of the percent of crews that meet the established tank gunnery standards are: mean = 69%, S.D. = 9.7, n = 12.

Δ GA49. The tank crewmen estimated the training status to be at a point, mean = 2.77, between fully trained = 2 and adequately trained = 3. See page A-26 for additional information.

d. Maintenance Training and Duties.

(1) Instruction.

V BB088. The TM-10 is used as the text book for maintenance training at the tank crew level. Almost all instruction is acquired through on the job training and practice.

θ 4. What are maintenance responsibilities of each tank crewmember?

Answer: Only typical first echelon maintenance functions. Crewmembers do assist maintenance personnel, within their capabilities on tasks above first echelon maintenance. The unit SOP does not reflect any instruction concerning this subject.

θ (2) Amount of Maintenance Duty.

The company training schedules allocate approximately 971 hours per year for vehicle maintenance.

V AC009. The officers estimated that about 19 hours per week are devoted to crew maintenance of the tank. This figure would project to 950 hours per year which agrees closely with the figures in the training schedules.

(3) Maintenance Training Status.

V AE001, BB082C. The officers' opinions on the performance of maintenance duties indicate the following:

1. There is a lack of trained maintenance personnel to perform second echelon repair. Crewmen are required, therefore, to perform these repairs or they are not done and the tank remains deadlined. Using personnel untrained for the task is inefficient in terms of the excessive time required to effect repairs and the poor quality of work. It tends to increase the time crewmen spend on maintenance and reduces the time spent on tank training.

2. The situation results in the paradox of many tanks being deadlined for long periods of time and the tank crews spending an inordinate amount of time doing unauthorized repair work in attempting to keep them operational.

3. If the tanks are operated in the field continuously for periods up to two to three weeks, they begin to have breakdowns and the crews are unable to make the necessary repairs which will keep them operational.

4. The efforts required to keep the tanks running reduces the time available for tank training.

5. Second echelon duties including repairs, replacement of parts, ordering of parts, maintenance of 2408-14 are performed by tank crewmen at platoon level.

e. Other Tank Crew Training Subjects.

(1) Communications Training.

θ 14. What training is conducted for tank crewmen in commo equipment?

Answer: Commo training for crewmembers consists of OJT during other training. There was no formal instruction presented on this subject other than one 4-hour block to one company on maintenance of commo equipment.

∇ BB097. In the area of commo training crews train on jamming avoidance using the following techniques.

1. Alternate the frequency boost power.

2. Relocate antennas.

3. Change radio frequencies.

4. Move to an area which blocks out the jamming source.

5. Avoid indicating that you are being jammed.

(2) Combined Arms Training.

∇ BB077. Training in requesting and adjusting mortar and artillery fire is limited to classroom instruction.

(3) Camouflage Training.

θ 17. What camouflage training is given?

Answer: There was no formal camouflage training given during the period. This training is integrated at crew level on each field exercise.

∇ BB102. Training in camouflage is given in the field during FTX's. Instruction is given by platoon leaders and sergeants. Emphasis is on camouflaging vehicles with natural materials. Some training is given on the use of nets. Little training or practice is devoted to personnel camouflage.

θ 12. What training does the crew receive in use of smoke?

Answer: On all FTX's the units employ smoke techniques to cover friendly actions as well as practicing operations in enemy-employed smoke. No smoke generators were used, only smoke pots and grenades.

(4) Night Training.

θ 13. What kind of night training is done by tank crews. (How much training is completed/)

Answer: The core subjects of night training (navigation, battle drill, and firing) are conducted at every opportunity. There is no formal program outlined for night training. It is therefore impossible to establish whether a mandatory level of proficiency was reached or what percentage of the "required" night training was conducted.

f. Crew Stability.

(1) Duration of Crew Assignment.

Δ GA001. How long have you been assigned to the crew you are currently serving with?

Answer:

Crew Position	Mean No Months	S. D.	n
TC	5.00	4.50	54
G	4.36	4.38	54
D	3.45	3.07	49
L	3.31	2.37	49

V AD001. The estimate of the duration individuals remain in the same unit, though not in the same crew is as follows:

Mean = 21.7 months, S.D. = 5.7, n = 14

V AD002. The estimate of how long individuals in each position stay in the same crew is as follows:

	TC	G	L	D
n	13	13	13	13
Mean (months)	11.5	8.9	8.8	10.0
S.D.	3.5	3.9	5.7	6.4

∇ AD003. The estimate of the quality of stability of crew membership over a one and two year period is as follows:

	One Year	Two Years
Judgment	n	n
1 = poor	6	10
2 = fair	4	1
3 = good	4	1
4 = excellent	0	1

One Year Mean = 1.9 (Fair) Two Year Mean = 1.4 (Poor)

A comparison of the crewmen's (GA001) and officers' (AD002) estimates of the duration of time the crewmen have been assigned to their crews indicate that the officers overestimated crew assignment duration by a factor of about 2. The implication is that the officers may not be fully aware of the extent of crew reorganization that is continuously taking place within their units.

(2) Crew Turnover Rate.

Δ GA46. How many different people have served in each position in yor crew since you became Tank Commander?

Answer:

	Mean No. of Persons	S. D.	n
TC	1.15	0.60	46
G	1.70	0.93	45
D	1.43	0.64	40
L	1.65	1.25	40

If plus and minus 1 S. D. are used to cover the range of answers for the majority of the tank commanders responding (64%), the results would indicate that the tank commanders would have had 1 to 3 gunners, 1 to 3 drivers, and 1 to 3 loaders in their crew since being assigned to it. Furthermore, item GA001 indicates that the tank commanders, themselves, have been assigned to the crew for an average of only five months. In order to achieve the mean turnover rate within a five-month period, gunners, drivers, and loaders would

have to be rotating in and out of the crew at the rate of one every 2-1/2 months; that is, three new crewmen every 2-1/2 months. The crewmen's mean estimates in item GA001 are from three to four months turnover rate which is about a month longer, but in general agreement with the derived figures.

(3) Assignment Practices.

V AE003. Estimates of the percent of tank crewmen assigned to the unit but are permanently or temporarily detailed to other duties is as follows:

Percent Assigned to Other Duties	n
0	1
1 - 5%	2
6 - 10%	5
11 - 20%	4
Over 20%	2

Mean = 11%; S. D. = 7.3

Δ GA002. Are you regularly assigned to this crew at your home station?

Answer

Crew Position	(1) Yes	(2) No Special Duty Assign't	(3) No Assigned To Other Crew	(4) Other	(5) Total n
TC	50	1	1	2	54
G	50	2	0	2	54
D	41	1	6	1	49
L	39	1	7	2	49

Δ GA003. Normal crew position and position served in when firing Gunnery Table VIII?

		NORMAL CREW POSITION				
		TC	G	D	L	TOTAL
Crew Position When Firing Gunnery Table VIII	TC	54/100%	-	-	1	54
	G	1/2%	49/91%	1/2%	3/5%	54
	D	-	3/6%	44/90%	2/4%	49
	L	-	4/8%	7/14%	39/78%	50

V BB062. Eight of the 14 officers indicated that crew members positions are changed around prior to range firing to maximize performance regardless of rank or position assignment.

(4) Crew Stability Status.

Δ GA60. What is the minimum time a crew should serve and train together to be fully trained?

Crewman	Mean Months	S.D.	n
TC	8.49	4.45	51
G	8.07	4.90	51
D	7.40	4.79	45
L	6.78	4.51	45
Mean of Means	7.69		

V BB113. How long does it take to develop a proficient tank crew?

Time	n/%
Less Than 6 Months	6/43%
6 - 12 Months	6/43%
13 - 18 Months	2/14%

V BB114. In response to the question of the relation of crew stability to crew proficiency the respondents indicated the following.

1. The relationship is a direct one; the longer the crew stays and trains together, the more the proficiency is attained until it reaches a high level and stabilizes.

2. Crew stability is very poor in the battalion and the crews are never together long enough to attain the proficiency required for minimum standards.

In response to item GA60, the crewmen indicated that a crew should serve and train together from 4 to 12 months to become fully trained and proficient; mean = 7.69, S.D. = 4.66. The above analysis on crew turnover rate showed that in most cases crews are not kept together for much longer than three months. Therefore, crews are unable to attain a state of full training and proficiency before replacement of individual crew members occurs which terminates crew integrity.

The officers' opinions were in general agreement. In response to item BB113, six officers felt that it takes less than six months to develop a proficient tank crew, while six officers felt 6 - 12 months were required, and two officers indicated that 13 - 18 months were necessary. On item BB114, the officers indicated that crew stability is very poor in the battalion and that crews are never together long enough to attain the proficiency required for minimum standards.

g. Behavioral Factors.

(1) Self-Rating Judgments.

Δ GA33. Rank your tank crew relative to other tank crews in your company on a 10-point scale (Worst = 1 to Best = 10).

Answer:

	Mean Rank	S. D.	n
TC	8.54	1.83	54
G	7.49	2.62	53
D	8.00	2.26	45
L	7.56	2.51	45

(2) Socialty Measures.

Δ GA28. Circle the crew positions (excluding your own) of the men in your crew you consider as close, personal friends.

	TC	G	D	L	None	No./Pct Of Crewmen Answering Question
TC	-	27	20	22	6	35/66%
G	21	-	25	22	1	38/72%
D	21	26	-	20	1	37/76%
L	20	28	21	-	1	41/84%

h. Tank Crew Measures of Effectiveness.

V AC001. Measures used to rate the effectiveness of tank crews ranked according to the frequency the measure was listed (n) and its mean ranking value.

Gunnery	n	Mean Rank	S. D.
Table VIII	9	1.2	0.4
Subcal Range	4	2	0
Performance Proficiency	3	1.3	0.58
Maintenance Proficiency	2	3	0
PGE	2	3	0
Technical Knowledge	1	1	0
ARTEP Score	1	3	0
MOS Score	1	4	0

i. Tank Crew Training Status.

Δ GA47-60. Indicate the status of your crew in each of the subject areas listed using the following scale: 1 = Overtrained; 2 = Fully Trained; 3 = Adequately Trained; 4 = Under Trained; 5 = Untrained. Subjects are arranged from highest rank to lowest rank according to crew mean value.

Subject Area	Rank	Crew Mean	Training Status	Crew Position	TC	G	D	L
Vehicle Maintenance	1	2.67	Adequate	Mean	2.91	2.62	2.51	2.63
				S.D.	0.90	0.97	0.94	0.88
				n	53	52	45	47
Individual Weapons	2	2.76	Adequate	Mean	3.04	2.79	2.62	2.57
				S.D.	0.93	0.94	0.96	0.89
Gunnery	3	2.77	Adequate	Mean	2.87	2.85	2.68	2.67
				S.D.	0.98	0.94	0.88	0.94
				n	53	52	44	46

Subject Area	Rank	Crew Mean	Training Status	Crew Position	TC	G	D	L
Tank Tactics	4	2.81	Adequate	Mean	2.90	3.13	2.76	2.43
				S.D.	1.03	0.93	0.92	0.77
				n	52	52	44	47
Night Operations	5	2.81	Adequate	Mean	3.08	3.00	2.76	2.39
				S.D.	1.06	1.03	1.05	0.64
				n	52	52	45	46
Radio Procedures	6	2.94	Adequate	Mean	3.37	3.02	2.58	2.80
				S.D.	0.71	1.06	0.70	0.86
				n	52	52	43	46
Physical Training	7	3.07	Adequate	Mean	3.02	3.00	3.02	3.22
				S.D.	1.04	1.20	1.30	1.00
				n	52	52	43	45
Vehicle Recovery	8	3.20	Adequate	Mean	3.58	3.21	3.19	2.80
				S.D.	0.98	1.07	1.05	0.97
				n	52	52	43	45
Radio Maintenance	9	3.48	Adequate	Mean	3.66	3.42	3.44	3.38
				S.D.	0.85	0.91	0.96	0.81
				n	53	52	43	45
NBC Warfare	10	3.97	Under Trained	Mean	4.08	3.88	4.19	3.73
				S.D.	0.86	1.13	0.98	0.99
				n	52	52	53	45
Deepwater Fording	11	4.47	Under Trained	Mean	4.83	4.40	4.44	4.22
				S.D.	0.38	1.00	0.83	0.93
				n	52	52	43	45
Raft Shipment	12	4.48	Under Trained	Mean	4.73	4.40	4.51	4.29
				S.D.	0.63	0.91	0.80	0.80
				n	52	52	43	45

4. TANK UNIT TRAINING SUBJECTS

a. Unit Training Programs

(1) Programs

e 27. What formal unit training cycles does a platoon participate in? Describe fully: Subjects emphasized, MOI, repetition, length, realism, etc.

ANSWER: Crew served weapons training is conducted on a quarterly basis and tank gunnery and individual weapons training is conducted on an annual basis. The battalion is given guidance (normally verbal) on anticipated unit activity by Division Headquarters, through brigade. When this general guidance is received, it is disseminated by a Letter of Instruction (LOI) from the Battalion Commanders to the companies.

These LOI's are prepared and issued as required by battalion in order to give the company commanders planning guidance. An example is the Tank Gunnery LOI at Inclosure 2-2.

e 26. How are small unit (crew - platoon level) training programs devised and organized? Are they prescribed by higher headquarters, school, some agency?

ANSWER: None were prescribed or conducted.

BC005. The officers indicated that formal unit training cycles for the platoon consists mainly of the annual tank gunnery tests. Other training is interrupted by serving on MASSTER tests.

e (2) Training Schedules: According to S-3 personnel, data derived from training schedules is somewhat unreliable. These training schedules were prepared 2 weeks in advance and in most cases (estimate 75 percent) do not accurately portray the actual activities of the units. This is due to continuous changes in the units' training mission and priorities. An example would be that the unit may have been scheduled for vehicular maintenance but, in actuality, was on the Mini tank range. Tank Gunnery, Tank Weapons familiarization and ARTEP entries were followed, for the most part, as the schedule reflected. The time entries scheduled for these subjects are presented below.

SUBJECT	COMPANY			TOTAL	MEAN
	A	B	C		
Tank Gunnery	559.5(hrs)	590.5	608.2	1,758.2	586.1
Tank Weapons Familiarization	135.5	108.0	107.5	351.0	117.0
ARTEP	827.3	608.5	685.6	2,121.4	707.1
TOTAL	1,522.3	1,307.0	1,401.3	4,230.6	1,410.2

(3) Tests

θ 30. What training tests such as ATT's, ARTEP's/ORTT's are given? (platoon level) What are the scores achieved? Describe fully.

ANSWER: The ARTEP for tank battalions is the annual training evaluation for the battalion. A copy of the ARTEP LOI is at Inclosure 2-4. ARTEP results for this period were:

Battalion TF Missions	A	B	C	Mech	Bn
1. Night Tactical Road March	-	S	S	S	S
2. Night Occupation of Assy Area	-	S	S	S	S
3. Illum of Night Attack	-	S	U	S	S
4. Defense	S	-	S	S	S
5. Delay	S	S	S	S	S
6. Daylight Atk & Exploitation	S	S	S	S	S
OVERALL	S	S	S	S	S

(S = Satisfactory)
(U = Unsatisfactory)
(- = Not Tested)

Figure 2-8

θ 31. Are checklists used by training inspectors? What are they; what do they check; what are standards; what are results?

ANSWER: Fort Hood Form 514 at Inclosure 6 is used by training inspectors at all levels. The Battalion S-3 did not keep formal inspection forms; however, Battalion S-3 personnel did visit and observed company training.

(4) Inspections

θ 32. What type of inspections are made (IG, etc.)? Is there special interest or emphasis during inspections (maintenance, gunnery)?

ANSWER: Battalion inspections include:

TA-50
Weapons
Uniform
Maintenance
Administrative
Billets
Training

COMMENT: There are a number of Inspection/Assistance Teams at Division and Corps level. At Corps there is the MAIT (Maintenance Assistance and Instruction Team). This team is authorized by TDA and has expertise in

Communications/Electronics, Avionics, Engineer, Quartermaster, NBC, Weapons, Aircraft, and Combat/Tactical and Support Vehicles. They also can assist in Maintenance, TAMMS, and PLL. Units assigned to Corps can request assistance from this team as required. Corps also has a SAET (Supply Assistance and Evaluation Team) offering expertise in Supply areas. This team can also be called upon by Corps units for assistance. Also at Corps (or Post) is a CARE (Command Assistance Readiness Evaluation) Team. At Division level there is a SSATT (Service Support Assistance Training Team)(1st Cav Div) and DMAT (Division Maintenance Assistance Team)(2d AD). These teams are available to assist units as well as being the Commanders' experts to assist in inspection. Formal inspections by higher headquarters are conducted annually. Informal inspections are periodic and unannounced and no records of the results were kept.

b. Field Training Exercises with Tank Platoons:

θ (1) How often?

ANSWER: Quarterly. This field training is in the form of Army Training and Evaluation Program (ARTEP), Battalion FTX's, or other scheduled field training designed to maintain proficiency in Battle Drill. Additionally, on an unscheduled basis, platoons and/or companies are tasked to support MASSTER test and National Guard efforts. Many such commitments are received on short notice and are not reflected on prepublished unit training schedules. These tasks are considered to be field training and occurred approximately 10 - 12 times throughout the period covered (1 April 1974 - 31 March 1975).

θ (2) Normal duration?

ANSWER: Three to four days. According to the training schedule, a typical tank company within the battalion went to the field about seven times during the year for an average of 655.5 hours field training. Each trip to the field averaged 110.8 hours. Total hours of field training for the battalion was 1966.6 hours for the year. Additional field manuever time conducted in support of MASSTER tests and other taskings cannot be substantiated since training records were not kept on such matters.

▽AA003. The average length of an FTX is estimated as: mean = 75 hours (3 days) N = 15, S.D. = 17.4.

θ (3) Total days field training?

ANSWER: Approximately 82 days of training (day and night) was spent in a field environment.

▽AA008. Estimates of the number of days per year the unit trains in the field are: Mean number of days = 96, N = 14, S.D. = 53.9.

(4) Simulation Exercises

θ 45. Are simulation type exercises used in lieu of actual field training? To what extent? What type (sand tables, gaming type exercises, etc.)?

ANSWER: Some sand table exercises are used. Particular benefit has been realized from the "Armor Gaming Device" obtained from TASO.

(5) Training Subjects

▽ (a) AA07 and AA-9. The types of Training most emphasized in FTX's are listed below by mean ranking value in descending order high to low priority.

DAYTIME TRAINING				NIGHTTIME TRAINING			
Type of Training	Mean Rank	S.D.	n	Type of Training	Mean Rank	S.D	n
Tactical	1.33	1.1	15	Tactical	1.67	0.8	15
Movement	2.07	0.6	15	Movement	1.80	1.1	15
Maintenance	3.33	0.9	15	Gunnery	3.67	1.1	15
REALTRAIN	4.00	0.7	15	Maintenance	3.73	0.9	15
Gunnery	4.33	1.2	15	REALTRAIN	4.13	1.1	15

▽ (b) Other subjects emphasized in FTX's are:

1 Driver training (BB104).

2 Camouflage training on vehicles (BB102).

3 All-around defense and security tactics (BC013).

4 Combined arms training with infantry (BC016).

▽ (c) Training subjects included in FTX's, but given little emphasis are:

1 NBC training (BB098, BB099B).

2 Map reading and navigation (BB103).

3 Training in the use of range cards (BB056).

4 Target acquisition training (BB016).

5 Range estimation (BB028)

(d) Rating of Unit Training Subjects.

▽ BC002. Subjects on unit training ranked according to importance on a 0 (low) to 10 (high) scale are as follows:

Subject	Mean Rank	n	S.D.
Shooting Accuracy	9.4	13	1.0
Overwatch Techniques	9.2	13	1.2
Use of Terrain	8.5	13	1.9
Use of Speed	7.2	13	2.2
Commo within Platoon	7.2	13	2.8
Tactical Marches	6.6	13	2.1
Commo within Crew	6.6	13	3.3
Use of Mass	5.6	13	2.8
Operating with Infantry	5.1	13	3.0
Commo Discipline	4.8	13	2.6
Operating w/Other Arms	4.8	12	2.9
Operating w/Engineers	3.8	12	2.7

▽ (6) Environmental Factors: BB109. The consensus of opinion of the effects of adverse weather and terrain on training was that it has some negative effects, but no more than expected. Inclement weather tends to reduce field training and increase classroom training, reduce morale slightly, slows down maintenance work, and reduces the effectiveness of FTX's.

(a) Amount

θ 29. What percentage of unit training conducted at night? How often does the platoon practice night operations?

ANSWER: The unit engaged in night training whenever located in a field environment for an overnight period. No records were kept to determine the time or percentage of training time spent on night operations.

(b) Training Subjects

▽BC019. Subjects taught and practiced for night operations include the following:

Black-out road marches
Night attacks
Noise and light dicipline
Radio silence
Use of white, red and IR illumination in attacks
Movement to assembly areas
Use of tactical road marches to achieve surprise attacks.

(c) Measures of Effectiveness

▽BB078D. Measures used for estimating the effectiveness of night training are:

Measures	n
1. Gunnery scores	3
2. Navigation	1
3. Tactical proficiency in Gunnery, manuevering, & communicating	1
4. Same as measures used for day training	1

C. Tactics

(1) Battle Drill

▽BF009. What battle drill are tank crews taught and expected to know?

Battle Drill Subjects	n
Gunnery Techniques	2
Overwatch Fire & Movement Methods	7
Battle Formations	1
Real Train	1
	11

VBC009. The use of cover and concealment in movement is taught by the methods of the overwatch concept. Overwatch techniques are taught as standard battle drill throughout the battalion.

VBF013. At what level are battle drill procedures standardized?

Unit Level	n/percent
Platoon	3/27%
Company	4/36%
Battalion	8/73%
Brigade	2/18%
Division	1/9%
Corps	0/0
Army	2/18%
TOTAL	20/100%

VBF014. What is the effect of battle drill standardization on individual tank performance and on proficiency when there is a turnover within crews.

ANSWER: The opinions concerning the effects of standardization varied from none to positively aiding uniformity in tank crew battle drill performance. The opinions concerning the effects of standardization on proficiency during crew turnover also were mixed, but the majority indicated that new crew members quickly adapt to the teamwork of the crew, and that retraining time is reduced.

VBC013. All around defense and security tactics are taught and practiced on FTXS.

VBC016. Tank crewmen are given cross-training (interpreted as: combined arms training) with mechanized infantry on FTXS. Cross-training with other arms and branchs is rudimentary and informal.

VBC016A. Mean frequency estimates of how often tank crewmen operate with other branches are given below.

never = 1, seldom = 2, often = 3, and always = 4

Branch	Mean Rating Value	n	S. D.
Infantry	2.8 (often)	12	0.62
Artillery	2.3 (seldom)	12	0.87
Air	2.1 (seldom)	11	0.70
Engineers	2.2 (seldom)	12	0.94

(2) Tactical Maneuver

e 28. What tactical road march training is given? What is prescribed interval between moving and halting tanks (column, line, etc.) (SOP)

ANSWER. This training is conducted only on a practical exercise basis in conjunction with field exercises. The unit (BN) accumulated a total of 147 hours of Tactical Road March Training for the period. The unit SOP at Inclosure 2-6 details unit policies on tactical road marches (paragraph 9 on pp 4 through 5).

θ 15. What training in deep water fording, raft/bridge crossing, and snorkeling is given? (hours, type training, frequency of exercise)

ANSWER: None. The absence of qualified personnel available to teach these subjects within the battalion and other training and support requirements have precluded its accomplishment.

▽ BB100. Thirteen of fourteen officers indicated that no training was given on the subjects of (1) deep water fording, (2) raft and bridge crossing, and (3) snorkeling.

▽ BC011. Little formal or practical training is given in refueling and resupply operations.

(3) NBC Training

2. NBC training integrated into field exercises:

θ a. How integrated?

ANSWER: NBC training is integrated into all tactical training as far as possible. The majority of this training however, consists of carrying/wearing the protective masks. Annual gas chamber drills are conducted as well as the use of CS gas on ARTEP.

θ b. What emphasis placed on NBC training?

ANSWER: Little emphasis is given. Its priority is below a number of other items; consequently, little is actually accomplished and the typical soldier knows how to wear his mask and not much more.

θ c. What equipment available for NBC training?

ANSWER: Standard radiac meters and protective masks.

θ d. What classroom training conducted (hours)?

ANSWER: Companies A and B received 4 hours of formal NBC instruction during the year. Company C has no record of receiving any formal instruction in this subject.

θ e. Is most training oriented towards passive protection or active measures to inflict enemy casualties?

ANSWER: Passive protection. Some classroom instruction however, included offensive NBC warfare.

▽ BB098, 99B. NBC Training is not emphasized. It consists of semiannual gas exercises using the protective mask and using CS grenades on some FTXS. Estimates of the number of hours annually spent on NBC Training is as follows:

	Classroom	Field
n	8	7
Mean	3.5 hours	5.3 hours
S. D.	3.4	3.3

▽ BB099F. The respondents indicate that performance on NBC training is not measured systematically by any standardized measures of effectiveness.

(4) Live Fire Training

▽ BC008. Fire and movement training is done on platoon live fire exercises annually with infantry. Stringent safety restraints are observed.

▽ AC005. The estimation of the percent of platoons that meet the established tank gunnery standards are: mean = 68%, S.D. = 21.2, n = 12.

D. Realism in FTXs and Live Fire Training

▽ AA010. In response to the question - How is realism injected into FTXS - The Frequency (n) and percent of the officers indicating the methods employed are given below.

Method	n	Percent
Opposing Forces	15	100%
Simulators	13	87%
Organized Aggressors	12	80%
Devices	8	53%

▽ A011D, A011F. Realism in tactical and gunnery training is severely degraded by the use of many safety restraints.

▽ BB066 and 68. Ten of the 14 officers indicated that realism played a small part on the tank gunnery range. Safety regulations necessarily place limits on realism.

E. General Military Subjects

θ 22. What other general military subjects does the tank crew receive training in as a crew? (describe)

ANSWER: None. All general military subjects are presented to groups of platoons or higher. These subjects are listed in Inclosure 2-3.

▽ BB10B. Time spent on crew training on general military subjects is estimated as follows.

	First Aid	Commo	Gen.Conv.	Race Rel.	JAG	Drug	Command Info
Mean (hrs)	6.5	7.6	3.0	34.0	4.5	8.6	27.3
n	8	8	6	8	6	7	10
S. D.	3.3	3.5	1.9	28.2	2.1	4.9	16.7

Total Mean (hrs) = 91.5

5. FACILITIES AND TRAINING AIDS

a. Facilities

∇ BD011. The officers feel that the training facilities at Fort Hood are adequate for handling one armored division, but not two armored divisions and a support brigade which are presently stationed here.

(1) Gunnery Ranges and Training Areas

(a) Range Layouts

θ 8. What is the range layout for tank gunnery at the local training areas? Completely describe to include verbal (sequence of events), schematic and photographic descriptions. Include distance and angle from each firing point to each target; number of tanks which can be fired at one time; target descriptions and photographs (target simulate troops, vehicles and Soviet tank silhouettes).

ANSWER: Detailed range description for each range/table is at Inclosure 2-2.

(b) Range Modifications Resulting from the 1973 Middle East War.

∇ AC011. Changes in Gunnery resulting from the experiences of the 1973 Middle East War are as follows: The physical layout of the ranges have not changed, but the grading system on Tables VII and VIII has changed. The system now stresses quick first round hits. More emphasis is placed on using battle-sight gunnery techniques to achieve first round hits in the shortest amount of time.

θ 9. Have the range layouts for tank gunnery changed due to the 1973 Middle East War? How?

ANSWER: A number of efforts have been adopted or are in the process of adoption for ranges here at Fort Hood as a result of the Middle East War. Many of these are attempts to instill innovative philosophies more so than actually implementing physical changes. Among these philosophies are increased emphasis on realistic firing positions, use of battlesights in the engagement of certain targets, use of rangecard engagements on certain night targets, and the need for realistic hard targets rather than (unrealistic) 8 foot by 8 foot panels. Some of the firing positions have been improved by the addition of parapets or the more tactical use of natural terrain features. A shortage of hard targets has hampered the effort to make targets more realistic; however, the desire to implement this change remains. Another area of change has been the increased importance of "opening engagement times." This is an effort to impress upon the soldier the importance of being the first to engage in a tank versus tank situation. Two additional areas where work is underway are the need to present multiple targets to the crew in order to teach "greatest threat" decision making and the desires to make target cues more realistic through the use of pop-up or demolition-triggered targets.

(c) Training Areas

θ 33. What major permanent training areas/schools/centers are used for training tank crews and units? Include size, type terrain (tactical, driving, gunnery), railroads in and out of training areas, limitations, days each area is used for each type training by unit (up to platoon operations).

ANSWER: The areas outlined on the map at Inclosure 2-8 were used. Periods of use varied from "passing through" to 4 or 5 days occupancy. The photographs at this inclosure typlfy the terrain outlined on the map.

b. Training Aids

θ 44. What organization is responsible for training aids in tank crew training? Are the training aids standardized? At what echelon are they manufactured, stored, and distributed? What simulators are used (quantity and conditions)? What subcaliber devices are used? Which aids are used most frequently?

ANSWER: The unit relies heavily on the Post Training Aids Supply Office (TASO) for this support. Units in need of these devices (Division through Company) have accounts with TASO and can sign for the required items directly. Some items are expendable; others are accountable. Training aids are standardized and most are manufactured and stored at the TASO. Once a unit has signed for an item from TASO, that unit is responsible for its use and/or further allocation. Among the more frequently used training aids are simulators. Some of these are:

θ Item	Quantity*	Condition	Frequency of use By the examined Battalion
Main Gun Tank Simulators (17-54)	258	good	annually
Hoffman Devices	10	excellent	none
Wiley Burst on Target (BOT) Devices	3	bad	none
.22 cal subcaliber devices	42	good	semiannually
Mockups of tank fire control items	2	excellent	annually
Armor Gaming Device	13	good	semiannually
Laser Subcaliber (17-56)	4	good	none
Track Vehicle Driver Trainer (M-34)	2	good	annually

*Total number at Post TASO.

Figure 2-9

Additionally, the battalion has eight sets of the Training Extension Course (TEC) device and approximately 40 lessons. Through this device the unit has the capability to video tape its own training and play back these tapes as required. The battalion S-3 is responsible for control of these items.

c. Training Literature

θ 43. In what form is training literature (Manuals, pamphlets, sheets)? How often is it updated/revised? Where does it come from (Bn, Bde, Div, higher)? How used? How disseminated?

ANSWER: Standard training literature from TRADOC service schools is used and updated as new material is received. Dissemination has always been a particular problem in this division due to changes in unit designations of many battalions. Mailing lists at the various Army Wide Training Support facilities and pinpoint distribution have not yet absorbed all the changes . Training guidance sheets are often received from FORSCOM.

θ 35. What guidelines for training are used (ASS/POI/ATP)? Describe each.

ANSWER:

AR	ATP	
350-1	17-1	FORSCOM Sup to AR 350-1
	17-2	5th Army Tng Dir 350-1
	17-35	TRADOC Tng Dir 350-1
	17-36	III Corps Tng Dir 350-1
	17-37	1st Cav Div Reg 350-1
	17-39-1	1st Brigade SOP
	20-5	Battalion SOP
	21-114	

▽ DB003. The effectiveness of training literature was estimated on a 10-point scale 0 (low) to 10 (high) with the following results.

mean effectiveness = 7.0, n = 11, S.D. = 1.9

6. ORGANIZAITON AND EQUIPMENT

a. Organization of the Tank Platoon

24. How is the standard tank platoon organized and equipped?

Equipment

Vehicles

No.	Type
5	M60A1 Tanks

Communication Equipment

No.	Type
3	AN VRC-64 Transmitter/Receiver
2	AN VRC-12 Transmitter/Receiver

Personnel

Number	Position	Rank	MOS
1	Platoon Leader	01/02	1203
1	Platoon Sergeant	E-7	11E40
3	Tank Commanders	E6/E5	11E40
5	Drivers	E-5	11E20
5	Gunners	E-5	11E20
5	Loaders	E-3	11E20
20			

Figure 2-7

a. Does the number of tanks vary?

ANSWER: No, TO&E for all tank platoons is constant as shown above.

b. Equipment

36. Are any tanks kept in storage for use only in contingencies? How many, how long, what maintenance is performed?

ANSWER: None are kept in storage.

25. What medical equipment/kits are stored in the tank?

ANSWER: Expendable field First Aid Kit.

θ 39. What is basic load by type and number of rounds?

ANSWER: Both type and number of rounds are determined by operational requirements and availability of ammo. There is no standard mix prescribed by the battalion S-3. Normal total load and storage space for the M60A1 is 63 rounds. Ammo mixes consist of various numbers of APDS-T, HEAT-T, HEP-T, WP-T, and APERS-T, depending upon the unit's mission and the anticipated threat. No particular mix was specified in the unit SOP.

(1) Repair and Replacement Factors

θ 40. What criteria are used to determine when a tank requires major overhaul/replacement? Engine hours, miles (kilometers), time of use, rounds fired, other?

ANSWER: Mileage is the most common criteria. Major overhaul is scheduled for every 6,000 miles. Replacement requests are initiated at the 550 mile mark.

θ 37. What is the average tank mileage per year?

ANSWER: Individual tank mileage per year ranged from 305 to 1,041 accumulated miles. The average is about 621 miles per tank per year.

θ 41. What are criteria for replacement of major assemblies (tube, engine, turret, etc.)?

ANSWER: The major assemblies requiring replacement are in the drive train, engine, transmission, axle, etc. The replacement criterion is assembly failure. Major assemblies are replaced after they become inoperable. No turrets or main gun tubes have been replaced since none have experienced breakdown or excessive wear.

SUMMARY TABLE OF COMPANY TRAINING SCHEDULES
IN INCLOSURES 2-10, 2-11, 2-12, AND 2-13 OF THE INITIAL REPORT MAY 1975

TRAINING SUBJECT	COMPANY A	B	C	TOTAL	MEAN
Vehicle Maintenance	1,052.1	1,114.9	1,255.2	3,422.2	1,140.7
Tank Weapons Familiarization	135.5	108.0	107.5	351.0	117.0
ARTEP	744.0	608.5	685.6	2,038.1	679.4
Tank Gunnery	559.5	590.5	608.2	1,758.2	586.1
General Military Subjects	431.2	207.8	147.9	786.9	262.3
Individual Weapons	218.8	124.0	124.0	466.8	155.6
MOS Related Subjects	152.7	60.0	309.0	521.7	173.9
Support Activities	179.0	0.0	28.0	207.0	69.0
Garrison Activities	183.1	211.0	167.0	561.1	187.0