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BATTALION TRAINING STRATEGY FOR UNIT CONDUCT OF FIRE
TRAINER (UCOFT)(U) ARMY WAR COLL CARLISLE BARRACKS PA
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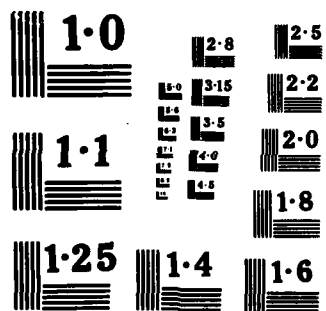
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Tables.

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USAWC MILITARY STUDIES PROGRAM PAPER

BATTALION TRAINING STRATEGY FOR UNIT
CONDUCT OF FIRE TRAINER (UCOFT)

INDIVIDUAL STUDY PROJECT

by

Lieutenant Colonel Howard F. Bachman, AR

Colonel Dwane C. Watson, IN
Project Adviser

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The basic question for this study to answer is how best to integrate the UCOFT with its planned reduction of ammunition into the battalion training program. An examination of the current program was conducted to include surveys at the Army War College of former battalion commanders. The conclusions of this examination were to make a concerted usage surge of the UCOFT early in the life of the UCOFT in the unit and to shave main gun ammunition on all the current tank tables by considering the performance of a battalion as a whole as the best way to live within the allocation. The study suggests a training strategy and model for the UCOFT, and revisions to the current Tank tables.

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BATTALION TRAINING STRATEGY FOR UNIT
CONDUCT OF FIRE TRAINER (UCOFT)

1. The purpose of this study is:

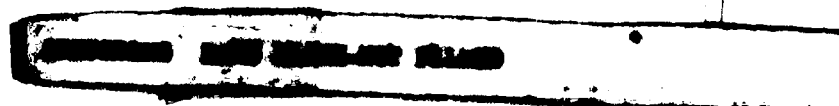
- a. Provide views of recent Battalion Commanders about tank gunnery that could help the armor community.
- b. Model various Unit Conduct of Fire Trainer (UCOFT) training strategies.
- c. Present personal observations of the UCOFT.
- d. Discuss the current tank tables.
- e. Present an ammunition analysis.

2. The study was conducted by LTC Howard F. Bachman primarily at the Army War College. It consisted of a written survey, interviews of selected students, and computer assisted analysis. The views expressed are that of the author and have not been staffed. Fort Knox did provide help and aid without which this study would not be possible. A special thanks to CPT Kelly who acted as my point of contact at Fort Knox and MAJ Mike Burton who reviewed the study.

3. Based on the survey conducted (Tab A) the following observations were made:

a. General Observations:

(1) The first truth is that there is no universal agreement on the subject, particularly between USAREUR and CONUS commanders. I have tried to relate the general feelings of the group except where noted. Additionally one must realize that the group was mostly former USAREUR commanders (including author) (Tab B). This gives the study a heavy European flavor. The USAREUR viewpoint is more test oriented due to the mission and the lack of training opportunities.



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(2) Platoon Gunnery should be emphasized more. This is the most heated and longest discussion that I had with the commanders. A synopsis of the remarks follows. Most felt that individual qualification has been the most emphasized of the skills. Most felt that we must get on to platoon or higher and make the jump from shooting to fighting. The problem has been that the crews for whatever reason have not been trained well enough to make this leap forward. The chain of command has been totally consumed by the task of qualifying tanks and have little time or incentive to go on to platoon firing. When confronted with that state of affairs, they split over what should take priority. We, the armor community must decide what should be done. Platoon Gunnery must be conducted to a very tough measurable standard. Perhaps it is better to choose not to fire table 8 once a year in favor of stressing Platoon Gunnery. Canadian Army Trophy standards must be the goal! Platoon Gunnery builds teamwork. The best way to resolve this is to set and enforce a high standard of professionalism within the tank commander corps. This must be done with a very tough standard certification. Tank commanders at all levels must be able to teach their crews and qualify their tanks with less attention by the chain of command.

(3) Combined Arms Live Fire Exercise (CALFEX) is good training when it is measured. If not, it tends to become a mad minute.

(4) Precision gunnery is the best technique to follow. Encouraging battle sights tends to cause crews to go the easy way. This quickly results in disaster on the more difficult ranges.

(5) Tank Gunnery should be a stressful time for the young leaders. It is a battle hardening process that is hard to duplicate elsewhere.

(6) The two biggest challenges for the battalion commander are enforcing tough standards on all the exercises before main gun firing and keeping

the interest of the crews during that same period. Most felt that chain of command presence was very critical and the only effective way to get maximum benefit from the training. Quite frankly too much of any one exercise gets very boring for the crews. Variety is the spice of life.

(7) The Master Gunner (MG) Program should be continued. The product is first class and the MG's contribute greatly to the quality of the Army's gunnery.

(8) There is a vast store of knowledge that is not being shared as to the best way to get a unit ready for gunnery. There is a need to consolidate those exercises and techniques in a single source manual. Each crew position must be analyzed to marry the skills with the best exercise or choice of exercises that will most efficiently train the crew member in the least amount of time. This manual should include a sample gunnery book that would include all score cards and results of UCOFT, Tank Crew Proficiency Course (TCPC) and the main gun ranges.

b. Mini Tank Range:

(1) Most felt that the range was not adequate to train the gunners as it was designed to do. The inaccuracy of the subcaliber devices caused more bad training than it did good. Because the gunners still wanted to hit targets, they would apply Burst-On-Target (BOT) when that is not correct for the new tanks. The maintenance requirements for the M55 laser are excessive. The new plastic ammunition may improve the mini tank range value.

(2) The range was used to good advantage to train platoon fire distribution. The fire commands were broadcast for all to hear. This put pressure on leaders to do well. The hitting of targets was down played.

(3) The range was also used to train tower crews. This was a big plus for units that were firing under tough Range Control rules.

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(4) Most felt that the UCOFT should be able to replace the lower tables. The M-1 UCOFT Training Device Support Package (DRAFT) states that the UCOFT cannot replace the lower tables (1-4). That is just not true. It should train the Tank Commander (TC)/Gunner better than the Mini Tank Range. Full crew training is done on the TCPC.

(5) There is very little correlation between good performance on the Mini Tank range and the later ranges.

(6) Telfare is a much better device to use where possible for these exercises.

c. Tank Crew Proficiency Course (TCPC):

(1) This is the single most important training exercise one can do to prepare a unit for tank gunnery.

(2) In spite of its importance it is also the exercise most difficult to execute well. Close supervision by the Master Gunner and the S3 is essential.

(3) Tank Crew Examiners (TCE) are the key to this operation. TCE's must be trained and certified by the Battalion. In spite of this, they will get lazy or indifferent if not motivated and supervised well. They must be taught to identify all the errors a crew is doing. One technique that worked was to form crews of TCEs and have other TCEs ride with them as part of the training. This put peer pressure on the TCEs to produce and gave each an opportunity to see how others taught and briefed. In order to train platoon leaders, they must be used as TCEs.

(4) The Army must make every effort to get the best possible targets for TCPC. Target acquisition must be taught on a reasonable range. A good popup target system and a portable mover available to each unit is needed. Efforts are ongoing but need to be followed through. The chain of command

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must provide the best possible course given the local conditions. A big problem in Europe is that the TCPC course can not model the difficulties of the large new Grafenwehr ranges.

(5) Degraded mode gunnery must be included on the course. The TCE can do this.

(6) Crews must be forced to use subsequent fire commands. One way to do this is to rule that a crew can only have two first round hits during their turn on the course. Problems that will occur on the main gun ranges must be practiced here.

(7) Good concurrent training stations at a TCPC course should include laying the gun and defensive engagement driving practice.

(8) Tower crews should also be trained at this time.

(9) Since Tank Table 8 (TT 8) represents the tasks that are most important to execute, the target layout should mirror it as much as possible.

(10) The Battalion should run/evaluate at least the last runs before the unit starts main gun firing.

(11) Most of the commanders had tried the Multiple Integrated Laser Engagement Simulator (MILES) with their TCPC with very mixed results. First, all understood the value of a system that would give feedback quickly on the course and felt efforts should be expended to perfect the system. Problems with the laser's large hit area was mentioned. However, the biggest problem was one of maintenance. My experience may cloud this discussion. The availability of turf to conduct TCPC in Europe was so scarce and the weather that dictated if tanks could move to the site was so unpredictable, that every training minute had to be used on the course. This was just not possible if one used MILES. The delays to fix equipment were too frequent. If the equipment worked then the tank would lose its zero. The trade off of lost

time versus enhanced training is currently not worth it. Only two commanders felt the maintenance was not a problem. Both enjoyed good TCPC courses and a close maintenance facility. In my travels in Europe last summer as part of another study, I found that those that praised the system highly either were not the direct users or they lived very near the site where the equipment was maintained. Hopefully the action officer who checks out the next generation will try to insure that the equipment will enhance training rather than run it.

d. Other devices.

(1) The DETRAS (movie simulation) device, where available, was heavily used as an excellent round robin event.

(2) The needle device used by the Bundeswehr and adopted by some of the units to check the aiming point of the gunners was a good cheap device that works.

(3) The Telfare (50 caliber main gun simulator) was used well by those blessed with ample range time or local ranges that permitted their use.

(4) Gyms and parking lots have been set up to train platoon fire distribution without using tanks. Crews were walked through the course.

e. Range Operations.

(1) Dry Fire exercises are an excellent way to get extra practice for a crew. Few will do this well without encouragement.

(2) Conduct the calibration exercise separate from TT 6. There are two reasons. First the crews will be more precise. Second if you have bad weather, those tanks that have passed the accuracy test can shoot off the Tank Thermal Sight (TTS) and progress. If you shoot TT 6 with it, then fewer tanks will be able to progress if the weather gets too bad to see the bore sight panel with the pywatson bore sight device.

DEAR ARMORPHILE

I am currently doing a study on a Battalion Tank Gunnery Training Strategy to include the Unit Conduct of Fire Trainer. I need some "tribal wisdom" to help me model the computer scheduling and to broaden my own viewpoint. Please answer #1-#3 and then give me your choice on the rest.

1. Assume that you have recently completed a reasonably successful qualification gunnery. Your UCFT has just arrived and you face another qualification gunnery in six months. Please fill in the following chart to reflect your estimate for the start condition of your crews, the turbulence, and the number of crews that you expect to take to the range. Crews here are only TC/Gunner combinations.

	CREWS LOST	STRONG	AVERAGE	WEAK
START STATUS				=58
END MO 1				
END MO 2				
END MO 3				
END MO 4				
END MO 5				
END MO 6				
END STATUS				

2. Did you adjust your crews before you started this new run up or would you adjust them closer to the actual start date of gunnery to account for schools and new losses? How much closer?

3. If you have an old typical yearly master calendar, I would really like a copy. No units will be cited in report unless cleared by you.

Additional areas of interest are shown below. Please indicate your desire

_____ Contact me for interview. I am tired of all these surveys!!!!

_____ Leave me alone! I have nothing of value to offer.

_____ My views are attached.

Thanks for your help. If you have any questions please contact me (tel 243 9895). My box number is 25.

level of rounds needed. Additionally if we place more emphasis on platoon gunnery, extra runs for weak platoons will not be possible.

7. In summary the following recommendations are made:

- (a) Stress Platoon Gunnery as the true test.
- (b) Publish a gunnery training tips.
- (c) Maintain Master Gunner Program as is.
- (d) Continue to improve tank target systems for isolated units. A small portable mover is needed.
- (e) Consider surging the UCOFT usage the first months in a unit.
- (f) Do not allow Tank ammunition allocation to drop below 100 Rds. We are at an absolute minimum.

b. Many of the engagements allow for more rounds than targets. Good crews will not need them. Battalion level ammunition savings chart (Tab G) shows where I believe rounds will be saved due to first round hits. Thus where three rounds were allocated to kill two targets, I assumed that a certain percentage of the crews would hit them in two rounds. I admit my numbers are based on my own feel for the subject but I believe them to be reasonable. Data could be generated to support more refined projections. I used this approach with the old tables to good results. I normally shot all my ammo and also got lots of extra practice for the weak crews.

c. Tanks always bring back rounds from the CALFEX unless they conducted a mad minute at the end. I shaved the number of rounds from 15 to 10. The course can always be designed to do this.

With this in mind, my solution follows:

$100 \text{ (per tank)} \times 58 \text{ (tanks per Bn.)} = 5800 \text{ total available.}$

Demand

CALFEX	580
TT 12	406
6-8x2	<u>6264</u>
	7250 total demand

Savings

6-8x2	784
6Bx2	<u>920</u>
	1704 total saved

$7250 - 1704 = 5546 \text{ total needed} < 5800 \text{ total available.}$

Those rounds not needed would then be used for weak crew runs on TT 7 modified or for reruns on TT 8. This is not nearly the number I use to milk out of the system to give my weak crews extra practice. Thus I feel we are at the bottom

of equal difficulty. This would put added pressure on the crews and force us to train harder.

6. Ammunition analysis of the UCOFT cuts. I hesitate to advance the following analysis on the ammunition situation because it could be used against us in the future. However the question of whether and where ammo can be preserved in order to reduce usage to 100 per tank is very important. I would submit that it can be done and still shoot essentially the required program. I do believe that a crew must shoot the main gun to get ready for TT 8 and beyond. Because ammunition allocations are based on rounds per tank, it makes savings possible at the aggregated battalion level. I have assumed that all tanks will fire which safe-sides this plan to start with. I only shot all my tanks on all the tables once in 3 years. I have not bothered to break out HEAT vs. SABOT for the purpose of this discussion. The following logic/assumptions were made:

a. Based on normal range availability of twice a year—a number that most agreed with—I would shoot the following main gun exercises during a given year:

TT 6A x2 *

TT 7 x2 **

TT 8 x2

TT 12 x1

Calfax x1

* TT 6A would be shot both times as it is the best place to practice defensive engagements and is needed to get crews accustomed to the main guns. I do not shoot TT 6B with main gun. This saves rounds and keeps crews fresher to shoot TT 7. I found that it did not hurt performance and crews did not wear down as fast. TTS makes the night engagements less of a change from the day.

** I don't think you can shoot a successful TT 8 without a TT 7.

weather could sock in. If maximum tanks are calibrated, then firing may be conducted on the Tank Thermal Sight.

(2) Add engagement 1, TT 7. Increase the range out to at least 2100 meters. I see this as an ideal opportunity to practice a very long range shot. More later on why I moved it.

c. Table 7: This is usually the best range next to TT 8 to practice movement. I view this as the most critical training that the unit does. In the past I would set up a mirror of TT 8 and shoot it as TT 7. With the extra skills that are being practiced in the new tables I have only allowed myself to change a few that would help a crew see the same engagements as TT 8.

(1) Engagement 1 is defensive in nature and thus could be shot on TT 6. TT 6 can normally be shot faster than TT 7. If TT 7 is shortened then more runs and a bit of extra practice can be added. I have always shot an extra run for at least the weak crews on TT 7. Normally it was a modified TT 8 using only about 3 to 4 engagements which experience taught us were the toughest. Shortening TT 7 would help in this plan. Note that nothing is lost trainingwise if the engagement is moved.

(2) Engagement 2 would be exactly the same as Engagement 1, TT 8. Movers are always a problem. Either one does not work or the lag time between runs per the maintenance requirements slows the range down. For reasons stated above I would want to speed up the range in the interest of more runs.

(3) Engagement 3 at night would add a RPG Rocket team ala Engagement 4 TT 8, again for the practice.

d. Table 8 is good as it is. If we can train crews to TT 8 standards then we will have very good crews indeed. In about 5 years, if UCOFT and smarter training allows us to get better, then I would propose we consider a nonstandard TT 8 where a set number of engagements are shot but each engagement would be selected randomly from a group of engagements considered to be

(1) The device is better than I thought it would be.

(2) While it will not solve all our problems, it will improve the TC/Gunner group to the point that we should be able to produce crews that can qualify easily. This should allow more time and command emphasis on platoon gunnery and fighting at the team level.

(3) The device allows us to really get down to basics with the crew training.

(4) Command support will still be the key to making the system work.

(5) This device can train crews on situations that we can not practice on the ranges.

(6) The one drawback to the UCOFT is the fact that the unit must solve the problem of what to do with the driver and loader while the TC/Gunner are on the device.

5. My views on the tank tables: I am still very much in favor of the new tank tables. As a result, I tailored the tank tables to a more workable arrangement if they were shot at Grafenwohr. This discussion is based on the tables published 10 November 1984. (Tab F.) Weak crews must practice the test to pass it. I am assuming that TT 7 and TT 8 are shot on different ranges. If doing well is one of the imperatives of TT 8, then commanders should have some leeway as to how they prepare for it.

a. Table 5 is a much needed addition to the tables. I would add engagement 3, TT 8 to the day run. I have never found machine gun ammunition or range time here to be much of an issue. This engagement needs to be practiced prior to TT 8.

b. Table 6A.

(1) Calibration would be fired by all tanks of a company before any tanks shot the rest of the engagements. Personal experience taught me that the crews tend to get sloppy if it is not done separately. Additionally the

Battalion XO the first week as a shake out of the trainers that were taught as part of the fielding. This would be a normal 10 hours a day for 6 days. Hopefully the leadership would get to the desired level. The next 4 weeks one company would be on reverse cycle while one was on normal days (Tab E). Each company would get 10 hours on the device for 6 days each week for 2 weeks. This would give each crew 10 hours or more on the device. Cooperation with the field support representative would be essential. There is a degree of risk involved since the program assumes the UCOFT will perform well beyond its reliability requirements. However it has done so under tests so I believe the risk is justified. I just believe that without this type of initial surge one would never quite get the program started. To stretch out this initial period with the normal attrition would cause the program to flounder. After the initial training, refresher would be conducted in the middle months with the Table 8 training at the end. A recap of this approach yields 1265 training sessions. This is more than enough sessions to get the job done properly.

g. The UCOFT training would be conducted by platoon with the platoon leader and sergeant as the instructors. Each platoon would get 4 days in a row on the device as shown at Tab E. Each crew would start by observing the previous crew for approximately 30 minutes before its session. Then a 15 minute prebrief, 60 minute session in the tank and a 15 minute debrief would constitute its actual session. The crews not actually in the UCOFT would be practicing some type of concurrent training station. Many come to mind of both a crew and individual nature. I think the drivers and loaders could be set up just outside the tank to mentally practice their responsibilities. Obviously this could not be done everytime or else they would get very bored.

h. My personal observations of the UCOFT system are summarized for emphasis:

Initial Training	5 hours
Refresher	2 hours
Table 8*	6 hours

* Tailored for each crew; run by battalion team. These exercises would be used specifically to get a crew ready for TT 8.

This leaves 206 sessions to work with weak and new crews. The initial training would be done immediately; the Table 8 specific would be backward planned, with the other sandwiched in the middle months. After this first go I would then try to continue a fairly stable program that would always include some Table 8 specific training if that was paying off. For just training the crews to shoot better on Table 8 this is probably an adequate approach. It will never produce the superior crews that would allow one to assume qualification on TT 8 so the focus could be shifted to platoon gunnery.

(2) SCENARIO II.

- (a) One UCFT.
- (b) Fifty-eight crews that plan to shoot the next range density.
- (c) One can surge the device to get the initial training out of the way, i.e., use the device for the first 4 weeks beyond the maintenance bounds.
- (d) Use weekend training to get the full 50 hours per week after the surge period.
- (e) Seventy-five percent of the 6 months the unit is available to use the device.

This scenario would allow one to train all of one's current tank crews to Reticle Aim Level 3 of Group 3 in the training cube of the UCFT. I agree with the analysis that this level best eliminates the quick decay in training of the crews. This level would be met by most crews within 15 hours of intensive training. Some more and some less. Train the commanders and the

subject to fewer distractions. This would be most effective during the initial training phase. If the 10 hour per day restriction on the UCOFT can be eased in the beginning, then schedule one company during the day and another at night. This is the best way to keep the UCOFT humming all the time and would ease the surge needed to start everybody on the device.

(2) If there is more than one device on post, then a central scheduling plan for the first 6 months might be helpful.

(3) Conduct makeups, commander crew and new crew training on Saturdays. This assumes only 8 hours scheduled each day. My hunch is that crews will fight to get more time on the UCOFT. One needs to take advantage of the enthusiasm of a new training device.

(4) While I rebel against non-chain of command training, scheduling by crew is one way to get more usage. I would not use it. Instead I would schedule companies to set up round robin training that would include the UCOFT sessions as the most important crew station. More on this below.

f. Below are two scenarios that outline the way I would consider using the machine in the first 6 months.

(1) SCENARIO I.

(a) One UCOFT.

(b) Fifty-eight crews that plan to shoot the next range.

(c) Ten hours per day for the first month (using reverse cycle).

(d) Use weekend training to get the full 50 hours per week.

(e) Seventy-five percent of the 6 months the unit is available to use the device.

This would be a plan of attack. Those assumptions produce 960 one hour sessions to schedule. Each crew gets the following breakdown of sessions.

That level of change was not discussed in the UCOFT Training Support Package. A model of that change creates the need for more training sessions. The following table attempts to show this problem.

OFF OPT	NUMBER OF CREWS	HRS/DAY	TR DAYS	TR S	SESSIONS PER CREW
KNOX	58	8	130	1040	18
OPTION ONE	68	8	130	1040	15
OPTION TWO	82	8	130	1040	13
OPTION THREE	87	8	130	1040	12
OPTION FOUR	87	8	96	768	9

As the number of crews change, the number of sessions per crew dwindles. Note that I assumed the maximum amount of time was available for the first four options. If one accepts a lesser usage factor the degradation is even more pronounced. Option one is the same as counting your command tanks as double crewed; while Option two counts all the possible crews that can be formed with the extra tankers in a battalion. Option three models a 50% turbulence rate where all crews receive the same amount of sessions. If one considers turbulence and tries to schedule all the crews possible one can not complete the current recommended 10 hour initial training and do the refresher training. There are not enough possible sessions. No matter how one looks at it the bottom line is that there are more needs than sessions available. So how does one get "the most bang for the buck?"

e. There are a few ways to increase the usage factor of the device. These should be considered for initial training.

(1) Place one company on reverse cycle. It would then be easier to schedule the UCOFT for the full 10 hours a day. The company at night would be

CONUS 2	8	90	720	12
CONUS 3	8	125	1000	17

* This is the standard option of 6 months with maintenance down time. It is Ft. Knox's planning figure. Note that the most sessions anybody thought they could schedule was 1000 compared to 1040 that is the current planning figure. There is a great difference between the Statewide and Europe Commanders. This can primarily be contributed to the need to travel to major training areas in Europe and the contribution that every unit in Germany makes toward REFORGER each year. The restrictions on training and other training distractors appear to be greater in Europe.

c. My own notion about the maximum time a unit can use the machine is about 75% or 96 days of any given 6 month or 130 day period. In a 6 month period one would lose/be away the following days:

Major Training Area	14
Prep for move	4
Alerts	6
GDP*Ex	5
Other	5

This is optimistic at best. The number of sessions possible using the steady state of 8 hours a day would be 768. This result further exacerbates the problem of the initial training the unit must undergo to reach the proper level. After the first 6 months, the 768 number of sessions is enough to maintain the proficiency while training new crews. It is not enough for the start up phase.

d. Turbulence will be a great problem for the trainer until every unit has a UCOFT. The constant change in crews that occurs in battalions in spite of intensive management is an obstacle. Most commanders admitted to me that they lost at least 50% of their crews (TC/Gunner) in that 6 month period.

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(1) How does one surge enough when the device first comes on board to get all the crews up to RATLG3?

(2) Is it reasonable to expect the units to use the device 5 days a week every week?

(3) What will turbulence do to the plan?

(4) How does one best employ the machine?

The following paragraphs will provide some proposed answers to these questions.

b. The current planning figures for the machine appear to be unattainable. The assumption that the units can use it 10 hours/day, 5 days/week, every week for 6 months is not realistic. The following chart shows various levels of use which different Battalion Commanders felt were possible. Most tried to figure on the basis of weeks used. Their answers are based upon one UCOFT per battalion, 58 crews with no turnover and 1 hour per session for a normal 6 month period.

BN CDR INPUT	HRS/DAY	TR DAYS	TR SESSIONS	SESSIONS PER CREW
KNOX 1	8	130*	1040	18
KNOX 2	10	130	1300	22
EUR 1	5	85	425	7
EUR 2	8	65	520	9
EUR 3	8	65	520	9
EUR 4	8	65	650	11
EUR 5	8	100	800	14
EUR 6	8	80	640	11
EUR 7	4	90	360	6
CONUS 1	6	90	540	9

overriding truth that one must keep in mind during the rest of this discussion is that this device trains the TC/Gunner to a level far beyond anything attainable under any previous training aids or ranges I have seen. Keeping

this in mind the following facts have been developed during testing of the device on real Army crews:

(1) Crews are much weaker in the fundamentals than most would suspect. The UCOFT's ability to detect switch errors, aiming tendencies and other problems normally not detected by the TCE has revealed this.

(2) Crews can only train for about one hour at a time before the training benefit falls off. Three nonconsecutive hours a day is the maximum they can stand.

(3) Trainer/Operator also must be rotated.

(4) A crew must reach Reticle Aim Level 3 of Group 3 (RATLG3) in the cube (see Tab D) in a concentrated period of time or its skills decay rapidly. If a crew achieves this level then it can pause 3 to 4 weeks before there is a very noticable decay in its skills. In order to get to this critical point it takes most crews between 10 and 20 hours. This is a point of apparent disagreement between different agencies. I did not believe these numbers at all until I personally visited the UCOFT and observed the Canadian Army Trophy (CAT) crews in action. I also reviewed the test results and am satisfied that the magnitude of the time is in the ballpark.

(5) Good crews need about 30 total hours on the device to certify. Thus a training approach of an intense nature for about 12 to 15 hours followed by 2 hours every 3 to 4 weeks appears to be the route to follow. If one couples these results/facts with the current plan to run the UCOFT 10 hours a day, 5 days a week, every week, a number of valid issues arise.

f. Tank Tables.

(1) All agreed that the new tables were a great move in the right direction. A comment worth considering is the fact that too much emphasis has been placed on the 50 caliber machine gun. Few Armies view it as much more than an antiaircraft weapon. Too many engagements on TT 8 call for it. (This has been overcome by the new tables.)

(2) As stated before, few place much faith in TT 1-4 and see them going away when UCOFT is fully fielded.

(3) The TCE should ride on the tank including the M-1. All the M-1 commanders stated that they used an onboard TCE for all the tables except TT 8 which Grafenwehr dictated would be in the tower.

4. The Unit Conduct of Fire Trainer (UCOFT) will be a very valuable tool if properly supported and used. This paragraph will use some input from the commanders but consists mostly of my own analysis and observations.

a. A general discussion is necessary for the clarity of the following analysis. Much of the discussion is based on the DRAFT UCOFT Training Support Package. (Selected pages at Tab C.) The UCOFT is a tank simulator that is designed to teach and practice the skills necessary for the tank commander and gunner. They are placed in a very realistic tank mockup which simulates nearly all the functions inside either a M60A3 or the M-1. The UCOFT is designed to automatically analyze a crew's performance and recommend which exercise the crew should shoot next. The objective is to work through the so called "cube" to the far end where a crew is then declared "certified." The cube (Tab D) is nothing more than the three dimensional exercise matrix. The deeper onto the cube the crew moves the more difficult the exercises. These exercises test skills that the trainer has only thought about but was unable to train. Long range shots on moving tanks that disappear behind hills in fog and haze are conditions that we can not duplicate on our ranges. Thus the

The following questions are asked to glean both your managerial approach and to determine state of facilities at your post. The "why" of the action is probably equally as important as the "what". I am looking for your deviations from the norm or the published rather than the standard stuff. Where you think the standard stuff is a waste of time please so state. Again all of this is for me and all stated heresies will be carefully guarded.

1. What unit were you with and when?

2. Were the main ranges adequate?

3. Did you shoot all the standard tables up to table 12? Why? If no what did you shoot?

4. Based on the new tables with what engagements did you have the most trouble? Why?

5. Discuss use of and condition of your Mini Tank Range. How good was the training. Was there any correlation between good results here and later?

6. Discuss use and condition of your TCPC course. What secrets worked for you?

7. Did you always conduct a full TCGST? If not, why and what did you do?

8. Did you use MILES with your TCPC? What problems did you have? Was the effort worth it? Tips on how to use it.

9. The UCFT is a tank simulator that could be used 45 hrs a week. Assume it will train TC/Gunners really well. How many hours per week and how many weeks out of 26 weeks do you think you would be able to use it?

10. Did you shave ammo per runs on the lower tables to make more runs? How? Where and to what extent?

11. What other tricks or devices or training aids did you use?

12. Did you certify any of your people? For example 3AD certified their TC's

13. If you have any papers that you produced in your unit that you would like to share with me I would be happy to copy and return.

THANKS AGAIN!! *Howie* HOWIE BACHMAN

List of Commanders

LTC Brinkley
LTC Konitzer
LTC Mountcastle
LTC Van Zant
LTC Cherrie
LTC Giddings
LTC Quinn
LTC Smith
LTC Abate
COL Kievenaar

e. Training Strategy and a "Model" Training Schedule.

(1) Combined arms training in a unit. The training events previously described at individual through platoon levels can be executed within the current battalion organizational training structure with available personnel. Below is a notional annual battalion training program relating training events to readiness, consistent with STRAC. The selected program shows the types of events and the minimum iterations of each type of event which units should execute for an appropriate readiness objective. The column headings indicate the standard readiness levels (AR 220-1) as well as the STRAC training readiness condition (TRC) as defined in DA Circular 350-XXX (Draft).

M1 Notional Annual Training Program
[Standards in Training Commission (STRAC), DA Cir 350-XX]

	C1 TRC A	C2 TRC B	C3 TRC C
Basic Gunnery Tables (I-IV)	6	6	2
Intermediate Gunnery Tables (V-VIII)	3	3	2*
Basic Tactical Tables (A-C)	3	2	2
Intermediate Tactical Tables (D-F)	2	1	1
Advanced Gunnery Tables (IX-XII)	2**	2**	0
Advanced Tactical Tables (G-I)	1	1	1
Platoon Field Training Exercise (FTX) (Jeep Exercise)	2	0	0
Platoon FTX	3	3	3
Company Tactical Exercise Without Troops (TEWT)	4	4	3
Company FTX (Jeep Exercise)	1	1	0
Company Fire Coordination Exercise (FCX)	2	2	2
Company Command Field Exercise (CFX)	1	1	1
Company FTX	2	2	1
Company Live Fire Exercise (LFX)	1	1	0
Battalion TEWT	4	4	3
Battalion FTX (Jeep Exercise)	1	1	0
Battalion Command Post Exercise (CPX)	4	4	4
Battalion FCX	1	0	0
Battalion CFX	1	1	1
Battalion FTX	2	2	1
Battalion Battle Simulation	4	4	4
Battalion Weapon Qualification	6	4	4
Combined Arms Live Fire Exercise (CALFX)	1	1	0

* Tables V, VII, VIII and calibration.

** 2 iterations of IX/XI or X/XII.

Table 7. M1 Notional Annual Training Program.

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(2) This notional training program provides a battalion-level framework for the training manager. Into this framework, he must insert other types of training events. Examples might be daily training of individuals in SQT tasks and basic skills, and weekly training of crews in drills. A variety of training devices and simulations are becoming available to assist this training. To effectively integrate the wide variety of devices and training methods available, the training manager must apply a unified training strategy. The next paragraphs describe an overall training device strategy for tank combat training.

(a) Initial unit gunnery training for armor crewmen will focus first on underlying individual skills, such as acquisition, tracking, and switch positioning. When the M1 videodisc gunnery simulator (VIGS) becomes available in FY 87, units will have a low cost, part-task, table top trainer which will focus on these skills. AC units should have each member of the crew train at least once each week on this device. RC units, by nature of their monthly drills, generally will be limited to monthly use of the device. Until VIGS becomes available, units must take other approaches to training these skills, including the use of the M55 laser, tracking boards, dry-fire practice, and Telfare (see FM 17-12-1, chaps 8 and 10).

(b) Guided by SQT and TCGST results, this initial gunnery training period for the crew will also focus on a daily building of individual knowledge -- such as knowledge of locations of switches and controls, built through tank PMCS -- and of individual skills related to gunnery, such as assembly and disassembly, mounting and dismounting of machine guns. This period of training will include a variety of training methods and media: actual equipment, devices, unit classes, TEC lessons, correspondence courses, and individual drills.

(c) When the tank commander and gunner develop minimal proficiency in gunnery skills of acquisition, identification, fire commands, reticle lay, tracking, lasing, and switch positioning, they are ready to begin U-COFT training. The purpose of this approach is to avoid wasting valuable U-COFT time. Crews can smooth out their fire commands, target handoff, and other rough edges before their U-COFT training. The tank commander and gunner should meet the following requirements before beginning U-COFT training:

1 Requirement 1: Gunner.

Action: Engage targets with the main gun from the gunner's position on an M1 tank.

Conditions: a. Firing tank turret-down.
b. Firing tank fully operational.
c. Daylight visibility conditions..

- d. Target: 1 stationary tank at long range (1,700-2,700 meters).
- e. Initial fire command given by the tank commander.

Standards: The gunner, as a minimum, performs the following:

- a. Selects the ammunition announced in the fire command.
- b. Selects the weapon announced in the fire command.
- c. Looks through the GAS and announces "DRIVER--STOP" when gun is clear of terrain.
- d. Announces "IDENTIFIED" when target is identified.
- e. Switches GPS magnification level to 10X and uses the GPS 10X for firing.
- f. Lases before firing.
- g. Announces "ON THE WAY."
- h. Fires only after the tank commander has announced "FIRE."
- i. Hits the target within 20 seconds after target appearance.

2 Requirement 2: Tank Commander.

Action: Direct main gun engagements on an M1 tank.

- Conditions:
- a. Firing tank turret-down.
 - b. Firing tank fully operational.
 - c. Daylight visibility conditions.
 - d. Target: 1 stationary tank at long range (1,700-2,700 meters).

Standards: The tank commander, as a minimum, performs the following:

- a. From the time the target is exposed, lays the gun for direction so that the gunner says "IDENTIFIED," within 10 seconds.
- b. Announces "GUNNER--SABOT--TANK."
- c. Gives directions to the driver to move the tank out of turret down.

- d. Announces "FIRE" after the loader says "UP" and the gunner says "IDENTIFIED."
- e. Performs duties fast enough so the target is hit within 20 seconds after target appearance.
- f. Commands "CEASE FIRE--DRIVER BACK UP," or similar command to stop fire when the target is destroyed, and gives directions to the driver to rapidly return to a turret-down position. Tank commander must ensure tank is exposed no longer than 15 seconds.

(d) A suggested strategy for integrating the U-COFT into individual and crew training follows:

1 Key principles for a U-COFT training strategy:

- a TRAINED INSTRUCTORS ARE A MUST. Shortly after each U-COFT is fielded, a 2-week course will train 12 unit personnel to be U-COFT Instructor Operators. Operation of the U-COFT is simple, but quality training with it demands mentally sharp instructors who know the tank, and know tank gunnery training. Make sure the right people are selected to attend the course.
- b TRAIN LEADERS FIRST. Unit leaders (battalion commander, XO, company commander, platoon leader, platoon sergeant) must set the example in U-COFT training, in achievement and enthusiasm. The leaders should begin an intense period of U-COFT tank commander training (minimum: 10 hours each) as soon as possible after the device is installed in the unit.
- c EMPHASIZE CHALLENGE AND EXCELLENCE. Competition and a clear ranking of performance are easily achieved with U-COFT. Use these motivators to keep training exciting. Every crew will know exactly how far they have progressed in the U-COFT training matrix. They will have shot patterns and detailed performance printouts of their engagements. USE YOUR IMAGINATION. Think "CHALLENGE MATCH," "U-COFT TOURNAMENT," "TOP 10 GUNS IN THE BATTALION."

- d INTEGRATE U-COFT WITH OTHER TRAINING/DEVICES. As powerful a tool as U-COFT is, it still will not solve all your training problems. Use the U-COFT most for what it does best -- advanced tank commander/gunner practice in target engagement. DO NOT waste U-COFT time by placing crews on it who do not know basic fire commands and crew duties. DO follow-up U-COFT sessions with training sessions using other devices or the tank itself to work on identified skill weaknesses -- such as target hand-off, tracking, range estimation -- and to prepare for upcoming U-COFT sessions. DO use full crew training exercises over actual terrain to integrate the tank commander/gunner team with the loader and driver. DO integrate gunnery and tactical training at all levels.
- e INTENSE INITIAL TRAINING FOR CREWS. What you do not want is the "greased pole" effect, that is, a situation where crews build up skill on U-COFT only to lose those skills (slide back down the pole) before their next U-COFT training session. Your crews will require one or more periods of concentrated U-COFT training to adjust to the device and to build their skills to a level that assures retention, especially in certain "problem areas" such as NBC, moving-moving, and manual mode engagements.
- f KEEP THE WHOLE BATTALION PROGRESSING. Although intense initial training periods are desirable for each crew, you should not extend this phase of the battalion's training so long that the battalion as a whole never finishes the initial period, due to personnel turnover. For this reason the length of initial training period is recommended at 10 hours per crew, or 3-4 calendar months for the battalion.

2 Assumptions: The strategy described in this package is based on the following assumptions. You will need to decide your unit's approach based on the actual conditions in your unit:

- a Number of tank crews for sustainment training:
68 (58 tanks in a Division 86 Armor Battalion.

plus 10 additional tank commanders, that is, company commanders and XO's, battalion commander, battalion S3).

- b Number of tank crews for cross training (gunners trained as tank commanders, loaders trained as gunners): 58.
- c Number of additional Armor personnel for cross or sustainment training: approximately 128 Armor (by MOS) officers, NCOs and enlisted men are not assigned to a tank crew. These personnel require training to maintain their gunnery skills.
- d Number of non-Armor personnel which may be trained in gunnery basics to serve as replacement personnel: approximately 100-120.
- e Percentage of personnel fill: The calculations and model schedule in this package are based on 100% fill of positions. Any reduced level of fill for tank commanders and gunners reduces U-COFT time requirements for sustainment training, but increases the importance of cross training and basic training.
- f Hours available for U-COFT use: 45 hours per week. (U-COFT maintenance contract provides for 10 hours usage per day X 5 days = 50 hours. Minimum operational availability is 90%; $90\% \times 50 = 45$ hours per week.)

3 Training approaches:

- a Initial training. As already noted, for inexperienced M1 crews an initial, intensive U-COFT training period of 10 hours per crew is recommended. This period will allow the crews to adjust to the device and advance to a point in the training matrix where they can continue U-COFT training less frequently, yet continue to learn effectively. It is suggested that unit schedule 4-5 crews at a time, until all crews have 10 hours of U-COFT experience. Initial platoon training should be conducted by the platoon leader and platoon sergeant. Remember, completion of this first 10 hours is just a starting point, a "floor," not a ceiling! With

U-COFT, your crews will never run out of different gunnery engagements that continue to challenge their developing gunnery skills.

b Typical problem exercises. As crews progress through the training matrix, certain types of exercises are generally problem areas for crews. You may want to use off U-COFT time to prepare the crews for these exercises. Typical problem areas are listed below, in the sequence that they are normally encountered on U-COFT:

- NBC engagements.
- Transition from short-range to long-range targets.
- Transition from single targets to multiple targets.
- Transition from stationary targets to moving targets.
- Transition from stationary tank to moving tank.
- Manual mode and emergency mode engagements.

c Leadership training. Beginning with the initial training period, unit leaders (battalion commander, XO, company commanders, platoon leaders, platoon sergeants, master gunners) should set the example in U-COFT training. Therefore, "leader crews" should be scheduled for initial U-COFT training (10 hours per crew) soon after the U-COFT arrives in the unit. This training should be conducted by the battalion master gunner.

d Sustainment training. After the initial training period, each crew should be able to maintain the skills they have learned, and to continue to progress through the matrix, by practicing at a rate of 2 hours every 2-1/2 to 3-1/2 weeks. This training should be conducted by the platoon sergeant/platoon leader.

e Cross-training. As time allows, schedule U-COFT cross-training. Estimate 2 hours quarterly per gunner and 4 hours quarterly per loader and driver. This training should be conducted by the platoon sergeant/platoon leader.

- f 19K skill training. The approximately 28 additional Armor officers, NCOs, and EMs in a battalion not assigned to a tank crew should receive the same training program outlined in paragraphs a and b above, but should be scheduled behind unit leaders and assigned tank crews. This training should be conducted by the company or battalion master gunner.
- g Transition training. Individuals making the transition to the M1 tank should receive U-COFT exercises as part of their transition training. U-COFT transition training should start with a 10 hour initial period of frequent practice, beginning with U-COFT exercise 32111. This should be followed by U-COFT sustainment training (para c). U-COFT training must be combined with on-vehicle training of tasks which cannot be trained on U-COFT. This training should be conducted by the company or battalion master gunner.
- h Basic training. The lowest priority of U-COFT training will be training of non-Armor personnel (cooks, mechanics) so they can serve as battlefield replacements. For these personnel, a 5-hour initial U-COFT training period is recommended. This training will begin with U-COFT exercise 31111. When possible, it should be scheduled within the first 1-3 months after arrival of these personnel in the unit. This should be followed by a minimum of 1 hour U-COFT training per month, in combination with other types of training (for example, crew drills, other devices, training with the M1 sight reticle handbook). The company or battalion master gunner should conduct this training.
- u Integration of U-COFT into training. After the initial training period, the training manager must continue to integrate U-COFT training efficiently into the unit's annual training program. The following are examples of related individual and crew training activities which must be planned with U-COFT training. Other types of training (land navigation) and levels of training (tank with wingman, platoon) must be integrated into the overall unit training strategy.

- 7
- a Daily individual training of related skills, such as weapons assembly/disassembly and PMCS.
 - b Daily individual training of individual gunnery skills which cannot be trained on U-COFT, such as driver and loader duties, and range estimation. (See section 2b of this training device support package.)
 - c Individual training, using other devices or training methods, to sustain individual skills taught on U-COFT or to work on selected individual skills identified as weaknesses by U-COFT practice.
 - d Crew training of gunnery and tactical skills which cannot be trained on U-COFT. This training may be accomplished using crew drills, subcaliber devices, MILES, tank gunnery tables, tank tactical tables, AMTP, and so forth.

5 Examples of U-COFT training integration:

- a SITUATION #1: -- U-COFT HAS ARRIVED.
-- GUNNERY IS IN 6 WEEKS.

ACTION: Gunnery is in 6 weeks! Are you kidding? The best thing you can do to prepare for gunnery is to continue the training program which is already peaking in your unit. But you can start now with U-COFT to establish a solid base for year-round gunnery training. Shake loose your key trainers for the U-COFT Instructor/Operator Course (2 weeks). The course will provide intense practice in training the hardest skills in target engagement, as well as time firing from the U-COFT crew station. Then begin a concentrated U-COFT gunnery training period for unit leaders (10 hours per person, at a rate of 2 hours per day for 5 days). Once leader training is complete, select a platoon to start an initial training cycle for your unit. (See Situation #3).

- b SITUATION #2: -- U-COFT ARRIVES.
-- GUNNERY IS IN 12-13 WEEKS.

ACTION:

- OPTION 1: If you know that your crews must have a "crash course" in gunnery and you want to use U-COFT to do it, 12-13 weeks is the minimum time you'll need. Allow 2 weeks to train Instructor/Operators. The remaining 10-11 weeks can then be used to give each crew in the battalion a total of 6-7 hours of U-COFT training. In this time, each crew will fire a set of 13 U-COFT exercises selected to train most target engagement situations in Tables VIIIA and VIIIB. Each exercise will be fired twice. These exercises were listed earlier in this package. See Table 5, U-COFT/Tank Gunnery Tables.

Problems: This approach assumes that you can juggle battalion requirements to keep crews on the U-COFT 10 hours per day for 10 weeks. It assumes that you can do this while integrating U-COFT training with full-crew training, including TCPC, dry fire/subcaliber, procedural task training (for example, boresight and calibrate), tactical tables, and a live fire Table VII. Finally, this option assumes that you are willing to choose the short term gain of a "crash course," with its attendant disadvantages: the gradual, planned U-COFT train-up of your unit will be delayed, and the crews trained on the advanced U-COFT exercises may not possess the prerequisite skills they need to train effectively.

Advantages: You will quickly see the present level of gunnery proficiency of your crews as they attempt the challenging U-COFT engagements -- you will know the size of the training

problem. You will also be able to identify your best (and worst) commanders, gunners and commander-gunner teams. The crews will encounter training under stress sufficient to test their attitudes and discipline. The crews will resolve crew coordination and compatibility problems before they get on the range. Finally, the crews will improve their proficiency on Table VIIIA and Table VIIIB tasks.

- OPTION 2: If you feel a "crash course" is not warranted, that is, if the crews in your battalion are already making solid progress through a well-planned gunnery training program, we recommend that you continue that program, but begin a long-term U-COFT training cycle for your unit (see Situation #3).

- c SITUATION #3: -- U-COFT ARRIVES.
-- GUNNERY IS IN 16 WEEKS OR LONGER.

ACTION: In this situation, begin a long-term integration of U-COFT into your gunnery training. Complete instructor/operator training and leader training. While this is occurring, select 5 crews to start the initial U-COFT training phase. Ensure these 5 crews receive training on fire commands and crew duties. Check for eye problems or attitude/compatibility problems -- any distractors that will waste U-COFT training time. Schedule these 5 crews for five 10-hour days on U-COFT -- each crew to be in the crew station for 2 hours per day. As noted above, the idea is to avoid the "greased pole" effect. It is important to encourage excellence through competition here and at all points in the training program so crews learn as much as possible in each training session. After the first 5 crews have completed initial training, schedule the next 5 crews. After 3-4 weeks, you will need to schedule sustainment training of the crews who have completed the initial training phase. A minimum of 2 hours per 2-1/2 to 3-1/2 weeks per crew is

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TABLE VIIB -

TASK	CONDITION TARGETS/SITUATION	AMMO
1. Engage multiple targets. (Defense)	Move from a turret-down to a hull-down position. 2 stationary BMPs (NATO #59) 800-1,000 meters, using GPS and precision engagement from a stationary tank.	2 rds HEAT-TP-T
2. Engage simultaneous targets. (Defense)	Move from a turret-down to a hull-down position. Troop targets, 300-500 meters using GPS, area engagement techniques. Troop targets, 300-500 meters using loader's machine gun and area engagement techniques from a stationary tank with illumination. (TIS failure)	50 rds Coax 50 rds 7.62
3. Engage a target. (Offense)	1 stationary T-72 tank (NATO #70) 900-1,100 meters using GPS and precision engagement from a moving tank. (NBC environment)	1 rd TPDS-T
4. Engage a target. (Offense)	1 moving T-72 tank, (NATO #58) 1,400-1,600 meters, using GPS and precision engagement from a moving tank.	2 rds TPDS-T

ASK	CONDITION TARGETS/SITUATION	AMMO
1. Engage multiple targets. (Defense)	Move from a turret-down to a hull-down position. 2 stationary BMPs (NATO #59) 800-1,000 meters, using GPS and precision engagement from a stationary tank. <u>VIII-2</u>	2 rds HEAT-TP-T
2. Engage simultaneous targets. (Defense)	Move from a turret-down to a hull-down position. Troop targets, 300-500 meters using GPS, area engagement techniques. Troop targets, 300-500 meters using loader's machine gun and area engagement techniques from a stationary tank with illumination. (TIS failure)	50 rds Coax 50 rds 7.62
3. Engage a target. (Offense)	1 stationary T-72 tank (NATO #70) 900-1,100 meters using GPS and precision engagement from a moving tank. (NBC environment)	1 rd TPDS-T
ADD 2 RPG Tn 400-600		50 J. 60
4. Engage a target. (Offense)	1 moving T-72 tank, (NATO #58) 1,400-1,600 meters, using GPS and precision engagement from a moving tank. <u>VIII-4</u>	2 rds TPDS-T

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TABLE VIIA

STATIONARY

TABLE VIIA

TASK	CONDITION TARGETS/SITUATION	AMMO
1. Engage a target. (Defense)	Move from a turret-down to a hull-down position 1 stationary T-72 tank, (NATO #70) 1,800-2,000 meters, using GPS and precision engagement from a stationary tank.	2 rds TPDS-T
2. Engage multiple targets. (Defense)	Move from a turret-down to a hull-down position 1 moving T-72 tank, (NATO #58) 900-1,100 meters and 1 moving T-72 tank (NATO #58) 1,400-1,600 meters, using GPS and precision engagement from a stationary tank.	3 rds TPDS-T
3. Engage, simultaneous targets. (Defense)	Move from a turret-down to a hull-down position 1 stationary BMP, (NATO #59) 1,200-1,400 meters, using the GAS, 1 RPG team, 200-400 meters using the TC's sight from a stationary tank. (NBC environment) (Computer interface failure)	1 rd HEAT-TP-T Cal .50
4. Engage multiple targets. (Offense)	1 stationary BMP (NATO #59) 400-600 meters and 1 RPG team 400-600 meters using GPS from a moving tank. (NBC environment)	1 rd HEAT-TP-T 50 rds Coax
5. Engage a moving target. (Offense)	1 moving T-72 tank, (NATO #58) 900-1,100 meters, using GPS from a moving tank. (Lead angle sensor failure)	1 rd TPDS-T
6. Engage multiple targets. (Offense)	2 stationary BMPs, (NATO #59) 400-600 meters using GPS and precision engagement from a moving tank.	2 rds HEAT-TP-T

2. Engage multiple targets. (Defense)	Move from a turret-down to a hull-down position 1 moving T-72 tank, (NATO #58) 900-1,100 meters and 1 moving T-72 tank (NATO #58) 1,400-1,600 meters, using GPS and precision engagement from a stationary tank.	3 rds TPDS-T
3. Engage, simultaneous targets. (Defense)	Move from a turret-down to a hull-down position 1 stationary BMP, (NATO #59) 1,200-1,400 meters, using the GAS, 1 RPG team, 200-400 meters using the TC's sight from a stationary tank. (NBC environment) (Computer interface failure)	1 rd HEAT-TP-T Cal .50
4. Engage multiple targets. (Offense)	1 stationary BMP (NATO #59) 400-600 meters and 1 RPG team 400-600 meters using GPS from a moving tank. (NBC environment)	1 rd HEAT-TP-T 50 rds Coax
5. Engage a moving target. (Offense)	1 moving T-72 tank, (NATO #58) 900-1,100 meters, using GPS from a moving tank. (Lead angle sensor failure)	1 rd TPDS-T
6. Engage multiple targets. (Offense)	2 stationary BMPs, (NATO #59) 400-600 meters using GPS and precision engagement from a moving tank.	2 rds HEAT-TP-T

TABLE VII

ASK	CONDITION TARGETS/SITUATION	APPD*
1. Engage a target.	Move from a turret-down to a hull-down position	1 rd TPDS-T
(Defense)	1 stationary T-72 tank, (NATO #70) 900-1,100 meters, using GPS, and precision engagement, with illumination, from a stationary tank. (TIS failure)	
2. Engage multiple targets.	Move from a turret-down to a hull-down position	2 rds TPDS-T
(Defense)	2 stationary T-72 tanks (NATO #70) 900-1,100 meters, using GPS and precision engagement from a stationary tank. (NBC environment)	
3. Engage multiple targets.	Move from a turret-down to hull-down position	2 rds TPDS-T
(Defense)	1 roving T-72 tank, (NATO #58) 900-1,100 meters and 1 roving T-72 tank (NATO #58), 1,000-1,200 meters, using GPS and precision engagement from a stationary tank.	
4. Engage a target.	Move from a turret-down to hull-down position	1 rd TPDS-T
(Defense)	1 stationary T-72 tank, (NATO #70), 1,400-1,600 meters, using GPSE and precision engagement from a stationary tank. (3-man crew) (loader killed, gunner takes loader's position)	

No CHANGE

DON'T SHOOT

REVISED

TABLE VIA

TASK	CONDITION TARGETS/SITUATION	AMMO*
1. Bore-sight the 105-mm gun. Refer all sights, apply computer/ correction factors, index ammo subdes and manual inputs.	Given a fully operational M1 tank, a 12'x 12' boresight panel at 1,200 meters and a M26 MBD. Ref FM 17-12-1, appendix C, or TT 17-12-1, pg C-1. (Rated task).	
2. Calibration and screening exercise.	1 (NATO #60) target 950 meters, 1 (NATO #70) target 1,500 meters, 1 (NATO #59) target 1,200 meters; using GPS while firing with the emergency firing mechanism from a stationary tank. (Rated task)	3 rds TPDS-T
3. Engage a target. (Defense)	Move from a turret-down to a hull-down position 1 stationary BMP (NATO #59) 1,200-1,400 meters, using GPS, and precision engagement from a stationary tank. (NBC environment)	2 rds HEAT-TP-T
4. Engage a moving target. (Defense)	Move from turret-down to a hull-down position 1 moving T-72 tank (NATO #58) 1,400-1,600 meters; using GPS and precision engagement from a stationary tank.	2 rds TPDS-T
5. Engage multiple targets. (Defense)	Move from a turret-down to a hull-down position 2 stationary T-72 tanks (NATO #70) 1,000-1,200 meters. Using GPS and battle-sight from a stationary tank. (Computer interface failure)	2 rds TPDS-T
6. Engage simultaneous targets. (Defense)	Move from a turret-down to a hull-down position. 1 BMP (NATO #59), 1,000-1,200 meters, using GAS. 1 RPG team 100-300 meters from a stationary tank. (LRF failure)	2 rds HEAT-TP-T 50 rds Cal .50

TASK	CONDITION TARGETS/SITUATION	AMMO*
1. Bore-sight the 105-mm gun. Refer all sights, apply computer/ correction factors, index ammo subdes and manual inputs.	Given a fully operational M1 tank, a 12'x 12' boresight panel at 1,200 meters and a M26 MBD. Ref FM 17-12-1, appendix C, or TT 17-12-1, pg C-1. (Rated task).	
2. Calibration and screening exercise.	1 (NATO #60) target 950 meters, 1 (NATO #70) target 1,500 meters, 1 (NATO #59) target 1,200 meters; using GPS while firing with the emergency firing mechanism from a stationary tank. (Rated task)	3 rds TPDS-T
3. Engage a target. (Defense)	Move from a turret-down to a hull-down position 1 stationary BMP (NATO #59) 1,200-1,400 meters, using GPS, and precision engagement from a stationary tank. (NBC environment)	2 rds HEAT-TP-T
4. Engage a moving target. (Defense)	Move from turret-down to a hull-down position 1 moving T-72 tank (NATO #58) 1,400-1,600 meters; using GPS and precision engagement from a stationary tank.	2 rds TPDS-T
5. Engage multiple targets. (Defense)	Move from a turret-down to a hull-down position 2 stationary T-72 tanks (NATO #70) 1,000-1,200 meters. Using GPS and battle-sight from a stationary tank. (Computer interface failure)	2 rds TPDS-T
6. Engage simultaneous targets. (Defense)	Move from a turret-down to a hull-down position. 1 BMP (NATO #59), 1,000-1,200 meters, using GAS. 1 RPG team 100-300 meters from a stationary tank. (LRF failure)	2 rds HEAT-TP-T 50 rds Cal .50
1. Engage a target. (Defense)	Move from a turret-down to a hull-down position 1 stationary T-72 tank, (NATO #70) 1,800-2,000 meters, using GPS and precision engagement from a stationary tank.	2 rds TPDS-T

Shoot
SEPARATELY

ADD

TABLE VB - MACHINE GUN TRAINING

TASK	CONDITION TARGETS/SITUATION	AMMO
1. Engage area targets. (Defense)	Move from a turret-down to a hull-down position. Coax Troop targets, 600-800 meters, using GPS and area target engagement techniques from a stationary tank with illumination. (TIS failure)	100 rds
2. Engage point target. (Defense)	Move from a turret-down to a hull-down position. Coax 1 RPG team, 200-400 meters, using GPS, thermal and point target engagement techniques from a stationary tank. (NBC environment)	50 rds
3. Engage a moving target. (Defense)	Move from a turret-down to a hull-down position. Coax 1 moving truck, (NATO #31) 700-900 meter, using GPS, thermal and point target engagement techniques from a stationary tank.	50 rds
4. Engage area targets. (Offense)	Troop targets, 300-500 meters, using loader's machine gun and area target engagement techniques from a moving tank with illumination.	100 rds 7.62
5. Engage a moving target. (Offense)	1 moving BROM-2 (NATO #58) 1,000-1,200 meters; Cal .50 using TC's sight and point target engagement techniques from a moving tank with illumination during a short halt.	50 rds

No Change

REVISED

TABLE VA - MACHINE GUN TRAINING

TASK	CONDITION TARGETS/SITUATION	AMMO
1. Zero coax machine gun.	1 coax zero panel at 800 meters, using the GPS and point target engagement technique from a stationary tank.	50 rds Coax
2. Zero tank commander's weapon.	1 cal .50 zero panel at 500 meters, using TC's sight and point target engagement techniques from a stationary tank.	50 rds Cal .50
3. Engage area targets. (Defense)	Move from a turret-down to a hull-down position. Troop targets, 600-800 meters, using GPS and area engagement techniques from a stationary tank. (NBC environment)	100 rds Coax
4. Engage a target. (Offense)	1 moving truck, (NATO #31) 700-900 meters, using the GPS and point target engagement technique from a moving tank.	50 rds Coax
5. Engage simultaneous targets. (Defense)	Move from a turret-down to a hull-down position. Troop targets, 600-800 meters using loader's machine gun and area engagement. 1 RPG team 200-400 meters using GPS and area target engagement techniques from a stationary tank.	50 rds 7.62-mm 50 rds Coax
6. Engage a target. (Offense)	1 moving BROM-2, (NATO #58) 1,000-1,200 meters, using the TC's sight and point target engagement techniques from a moving tank during a short halt.	50 rds Cal .50
7. Engage simultaneous targets. (Offense)	2 sets of troops targets, 400-600 meters, using the GPS and the TC sight. Area target engagement techniques from a moving tank, during a short halt. (NBC environment)	100 rds Coax 100 rds Cal .50

TABLE VA - MACHINE GUN TRAINING

TASK	CONDITION TARGETS/SITUATION	AMMO
1. Zero coax machine gun.	1 coax zero panel at 800 meters, using the GPS and point target engagement technique from a stationary tank.	50 rds Coax
2. Zero tank commander's weapon.	1 cal .50 zero panel at 500 meters, using TC's sight and point target engagement techniques from a stationary tank.	50 rds Cal .50
3. Engage area targets. (Defense)	Move from a turret-down to a hull-down position. Troop targets, 600-800 meters, using GPS and area engagement techniques from a stationary tank. (NBC environment)	100 rds Coax
4. Engage a target. (Offense)	1 moving truck, (NATO #31) 700-900 meters, using the GPS and point target engagement technique from a moving tank.	50 rds Coax
5. Engage simultaneous targets. (Defense)	Move from a turret-down to a hull-down position. Troop targets, 600-800 meters using loader's machine gun and area engagement. 1 RPG team 200-400 meters using GPS and area target engagement techniques from a stationary tank.	50 rds 7.62-mm 50 rds Coax
6. Engage a target. (Offense)	1 moving BROM-2, (NATO #58) 1,000-1,200 meters, using the TC's sight and point target engagement techniques from a moving tank during a short halt.	50 rds Cal .50
7. Engage simultaneous targets. (Offense)	2 sets of troops targets, 400-600 meters, using the GPS and the TC sight. Area target engagement techniques from a moving tank, during a short halt. (NBC environment)	100 rds Coax 100 rds Cal .50
8. Engage multiple targets. (Offense)	2 sets of troop targets, 400-600 meters and 700-900 meters using the GPS with area engagement techniques from a moving tank.	200 rds Coax

ADD

APPLE][+

* J U N E *

1982

7

SUN	MON	TUE	WED	THR	FRI	SAT
		1	2	3	4	5
		.B CO .A CO	TTB TR.			
6	7	8	9	10	11	12
	.D CO .C CO	TTB TR				
13	14	15	16	17	18	19
	PREP GRAF		WEAK - CREWS	MOVE T- D GRAF		
20	21	22	23	24	25	26
		GRAF				
27	28	29	30			

* PERSONAL CALENDAR *
FOR LTC H.F. BACHMAN

1
2 3 4 5 6 7 8
9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31

MAY

1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 31

JULY

APPLE][+

* M A Y *

1982

SUN	MON	TUE	WED	THR	FRI	SAT
						1
2	3	4	5	6	7	8
	D CO.					
9	10	11	12	13	14	15
	A CO.					
16	17	18	19	20	21	22
	B CO.					
23	24	25	26	27	28	29
	C CO.				PAYDAY	
30	31					
	MEMORI- AL DAY					

* PERSONAL CALENDAR *
FOR LTC H.F. BACHMAN

1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30

APRIL

1 2 3 4 5
6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30

JUNE

APPLE][+

* A P R I L *

1982

SUN	MON	TUE	WED	THR	FRI	SAT
				1	2	3
				O Co. →		
4	5	6	7	8	9	10
	A Co. →					
11	12	13	14	15	16	17
EASTER	←		GDP EX →			
18	19	20	21	22	23	24
	B Co. →					
25	26	27	28	29	30	
	C Co. →				PAY DAY	

* PERSONAL CALENDAR *
FOR LTC H.F. BACHMAN

1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30 31

MARCH

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31

MAY

APPLE JC+

* M A R C H *

1982

SUN	MON	TUE	WED	THR	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
	A CO. AND NE- REFRESHER W CREWS					
14	15	16	17	18	19	20
	B CO.					
21	22	23	24	25	26	27
	C CO.					
28	29	30	31			
	D CO.		PAY DAY			

* PERSONAL CALENDAR *
FOR LTC H.F. BACHMAN

1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28

FEBRUARY

1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30

APRIL

APPLE 'JIC+

* F E B R U A R Y *

1982

SUN	MON	TUE	WED	THR	FRI	SAT
	1	2	3	4	5	6
		C-2	C-3			C-3
		D-2	D-3			D-3
7	8	9	10	11	12	13
	A-1	A-2	A-3	B-1	B-2	MAKEUP
	REFRESHER					
14	15	16	17	18	19	20
	WASHINGTON'S BDAY	B-3	C-1	C-2	C-3	MAKEUP
		REFRESHER				
21	22	23	24	25	26	27
	D-1					
	REFRESHER	D-2	D-3	MAKEUP	PAYDAY	
28						

* PERSONAL CALENDAR *
FOR LTC H.F. BACHMAN

3	4	5	6	7	8	9	1	2	3	4	5	6	
10	11	12	13	14	15	16	7	8	9	10	11	12	13
17	18	19	20	21	22	23	14	15	16	17	18	19	20
24	25	26	27	28	29	30	21	22	23	24	25	26	27
31							28	29	30	31			

JANUARY

MARCH

APPLE II+

* J A N U A R Y *

1982

SUN	MON	TUE	WED	THR	FRI	SAT
					1	2
					NEW YEA- R'S DAY	
3	4	5	6	7	8	9
	LEADER		TRAINING			WEEK
10	11	12	13	14	15	16
	.A-1			.A-1	.A-2	
	.B-1			.B-1	.B-2	
17	18	19	20	21	22	23
		A-2	.A-3			.A-3
		B-2	.B-3			B-3
24	25	26	27	28	29	30
	.C-1			.C-1	.C-2	
	.D-1			.D-1	.D-2	
31						

* PERSONAL CALENDAR *
FOR LTC H.F. BACHMAN

1 2 3 4 5
6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30 31

1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28

DECEMBER

FEBRUARY

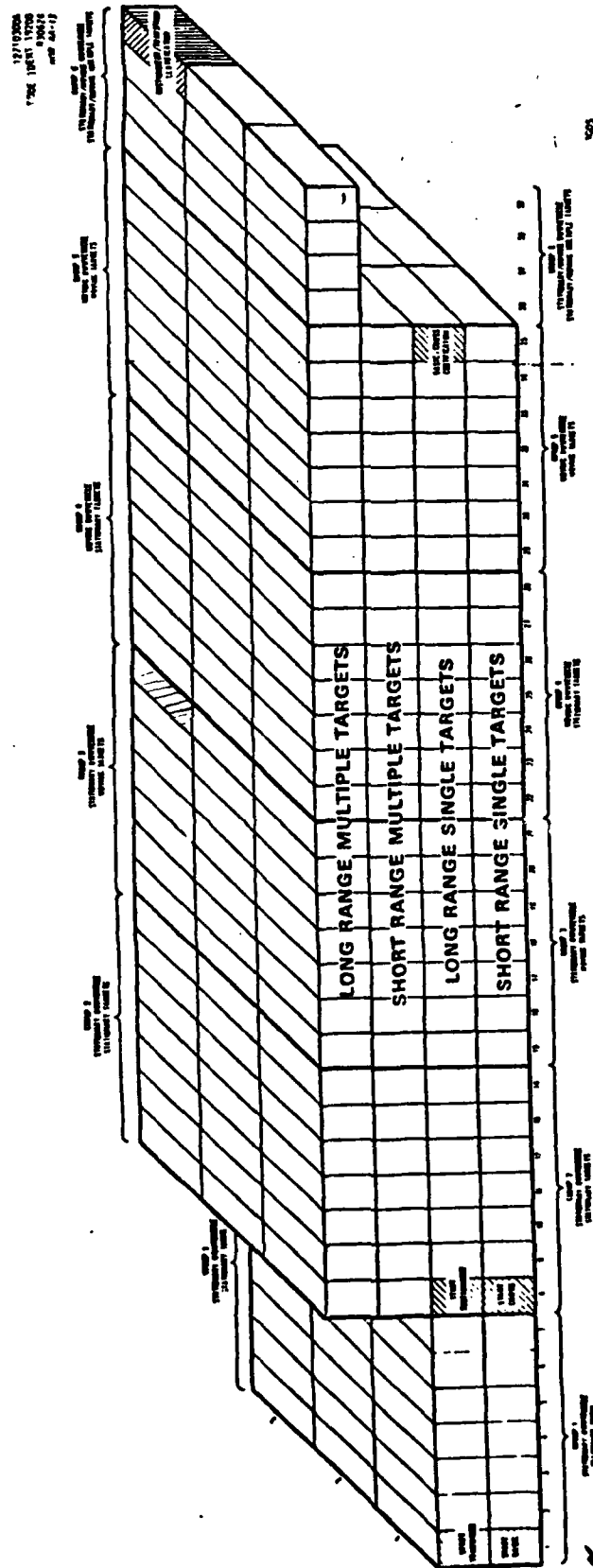


Figure 3.2.1.3.1.2.1. Commander/Observer
Matrix Structure

recommended for sustainment training. Crews who are having particular difficulty may need two 1-hour sessions once a week.

As gunnery approaches, you again have the option of interrupting your long-term training for a 10-week "train-up." This is not recommended, however, since one of the purposes of U-COFT training is to develop a year-long gunnery program that builds skills logically to avoid the sharp proficiency peaks (and subsequent declines) of the past.

6 Typical questions on U-COFT Training Integration:

- a QUESTION #1: If I have used U-COFT in a special "train-up" for gunnery, what do I do after gunnery is over?

ANSWER: After your unit completes gunnery, you will assess the performance level of each crew. Crews which do well during gunnery should continue their U-COFT training, beginning with the next computer-recommended exercise. But what about crews which do not do well? You may be tempted to move them backwards in the U-COFT training matrix, to let them train through certain areas again. This is not recommended. Instead, identify and correct those training deficiencies not related to U-COFT, for example, driver duties, loader duties, full four-man crew combination, reticle lay during motion over real terrain, nervousness about the shock of firing. Then you may want to select certain U-COFT exercises for practice. If you do, select them by number/content, using the M1 U-COFT Instructor Utilization Handbook. As soon as possible, allow the crew to continue their normal computer-controlled progress through the U-COFT training matrix.

- b QUESTION #2: How do I plan U-COFT training for a new TC or gunner (or both) with prior U-COFT experience in another unit?

ANSWER: Your first step is to look at each new person's U-COFT records from the sending unit. The tank commander should be manually located in the U-COFT commander's matrix, at the point where

TT 7 MOD

TASK	CONDITION TARGETS/SITUATION	AMMO*
1. Engage multiple targets. (Defense)	Move from a turret-down to hull-down position, 1 moving T-72 (NATO #58) 900-1,300 meters, and 1 stationary T-72 tank (NATO #70) 900-1,300 meters, using GAS and battlesight engagement techniques from a stationary tank. (Computer & LRF failure)	3 rds TPDS-T

4. Engage multiple targets. (Offense)	2 stationary T-72 tanks (NATO #70) 1,400-1,600 meters using GPS and precision engagement from a moving tank. (NBC environment)	3 rds TPDS-T
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5A. Engage multiple targets. (Offense) (Alternate task)	1 stationary T-72 tank (NATO #70) and 1 moving T-72 (NATO #58) 1,400-1,600 meters using the GPS and precision engagement from a moving tank.	3 rds TPDS-T
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BATTALION LEVEL AMMO SAVINGS

TANK TABLE NUMBER	ENGAGEMENT #	% FIRST ROUND HITS	SAVINGS
6A	2	100*	58
	3	60	34
	4	60	34
	6	20	11
7A	1	75	43
	2	30	17
8A	1	30	17
	2	50	29
	4	30	17
	5	30	17
8B	1	70	40
	2	30	17
	4	50	28
	5	70	40

			382

* NEARLY ALL TANKS THAT ARE PROPERLY CHECKED WILL ONLY NEED TWO ROUNDS TO VERIFY

DATE
FILMED
-8