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at local training areas prevents tanks from being stored at these sites, and lack of access to one site prevents tanks from being transported there. Planned security arrangements should alleviate the storage problem in the future. For environmental reasons, land damage is repaired after tank maneuvers are conducted. Environmental concerns may close access to some maneuver areas in the future. Adequate training areas are available, however, so the impact may be small. An insufficient number of tanks is available for training at armories and at local training areas, but a sufficient number is available at the major training area. The problem at local training areas will be alleviated when security arrangements are completed. Other training requirements and duties reduce the time available for gunnery training. However, the impact of these other requirements can be reduced by concurrent training. Implementation of some training guidelines contained in the U.S. Army Armor School's armor training strategy may not be feasible due to possible lack of funds for additional training assemblies. Also, the recommended amount of training on M-COFT may not be feasible because of scheduling problems and conflicts with other training requirements.

ARMOR TRAINING IN THE IDAHO ARMY NATIONAL GUARD

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## ARMOR TRAINING IN THE IDAHO ARMY NATIONAL GUARD

### Overview

Armor units are becoming increasingly reliant on training devices and aids to compensate for reductions in training resources (e.g., fuel, ammunition) and in operating tempo (OPTEMPO). Guidelines for using these devices and aids in training are provided in two device-based training strategies. A training strategy developed by the U.S. Army Armor School (1990a) focuses on unit training and prescribes how computer-based simulators and tank-appended devices should be used to support the combat table training program. This strategy, which is referred to as a macrostrategy by the U.S. Armor School, specifies the frequency and length of training sessions for each device. A second strategy was developed by Hoffman and Morrison (1988) for the Army Research Institute for the Behavioral and Social Sciences (ARI). In contrast to the training strategy developed by the U.S. Army Armor School, the strategy developed by Hoffman and Morrison is a more general approach to training that was derived from a combination of instructional theory and the constraints that are involved in tank gunnery training.

Although these two training strategies differ in their general approach, they are alike in the sense that they provide general rather than specific guidance. Neither strategy provides detailed guidance on the tasks that are to be trained on each device; the performance criteria that are to be used to ensure learning, retention, and transfer; or training alternatives when certain devices and aids are not available. Moreover, neither training strategy addresses the unique training constraints of Army National Guard (ARNG) armor units, particularly the scarcity of time available to plan and execute training. To meet the needs of these units, a detailed strategy (i.e., a microstrategy) is needed rather than a general strategy (i.e., a macrostrategy). This microstrategy should concentrate on specific details such as the devices and aids that are available to ARNG armor units; the monthly training schedule that these units develop; the facilities that are available at their home stations, local training areas (LTAs), and maneuver areas; and the distances that ARNG armor units must travel to major maneuver areas.

The development of a microstrategy for ARNG armor units requires detailed information on the training devices and aids that are available for ARNG armor training. It also requires information on the training programs that are currently implemented in the ARNG and the conditions that constrain training. The present report, the third in a series of four reports, focuses on armor training as it is being conducted by the Idaho Army National Guard (IDARNG). The first report in the series (Morrison, Drucker, & Campshure, 1990) described six devices and aids that can support training in an armory environment. The report included descriptions of the training functions each device was purported to support; the results of a review of the literature dealing with the success of each device in facilitating skill acquisition, skill retention, prediction of performance, and transfer of training; a description of the fidelity and instructional features associated with each device; and a description of the hardware and software associated with each training aid. The second report in the series (Campshure, 1990) described the specific conditions and actions that each training device can simulate. The fourth report in the series will describe a device/aid-based training strategy

for ARNG armor units that will be based on information obtained in the first three reports. This strategy will be designed to provide detailed guidance for training gunnery at the company level.

### ARNG Training Policy

The mission of the reserve components "... is to provide trained, well-equipped units and individuals for active duty in time of war, national emergency, or at such other times as the national security requires" (Office of the Secretary of Defense, 1990, p. xiv). The normal training allocation to ARNG units to fulfill this mission is 39 days per year (Department of the Army, 1983). A total of 24 days of training are conducted on weekends as Inactive Duty Training (IDT), and 15 days are conducted during annual training (AT). Whereas AT is conducted over a period of 15 consecutive days, IDT is conducted once a month on weekends. Each weekend training session comprises four 1/2-day blocks that are collectively referred to as a Monthly Unit Training Assembly (MUTA); thus, a total of 12 MUTAs are available for weekend training during the year.

The National Guard Bureau (NGB) also provides funds for Readiness Management Assemblies (RMAs) and for Additional Training Assemblies (ATAs). An RMA is a 4-hr block of time that can be allocated to an individual for planning and training or for administration. An ATA is a 4-hr block of time that can be allocated to an individual for special programs. For example, the IDARNG conducted transition training from the M60 to the M1 tank during ATAs.

### The IDARNG

This section of the report contains a description of the IDARNG including its organizational structure and mission. This description is presented to provide the background necessary to understand the role assigned to armor training in the IDARNG and the constraints under which this training is conducted. This information, as well as information on the current armor training program (which is summarized in the following sections of the report), was obtained from the following sources: (a) interviews of IDARNG personnel at brigade, battalion, and company level conducted during on-site visits between 8 and 15 August 1990; (b) questionnaires that were administered to company-level training personnel; (c) brigade- and battalion-level training guidance; and (d) company-level unit training schedules. The interviews and questionnaires are contained in the Appendix to this report.

### Chain of Command

The chain of command for the IDARNG is shown in Figure 1. Command of the IDARNG is vested with the Governor through The Adjutant General (TAG) of Idaho. The TAG formulates IDARNG policy, enforces standards, and implements policies and directives from the NGB and Forces Command (FORSCOM). The IDARNG is geographically located within the U.S. 6th Army area. The U.S. 6th Army is responsible for providing training assistance (e.g., service schools for Military Occupational Specialty Qualification [MOSQ]), technical evaluation (e.g., inspection teams) and active component (AC) participation (e.g., training assistance teams) to the IDARNG through the office of the TAG.



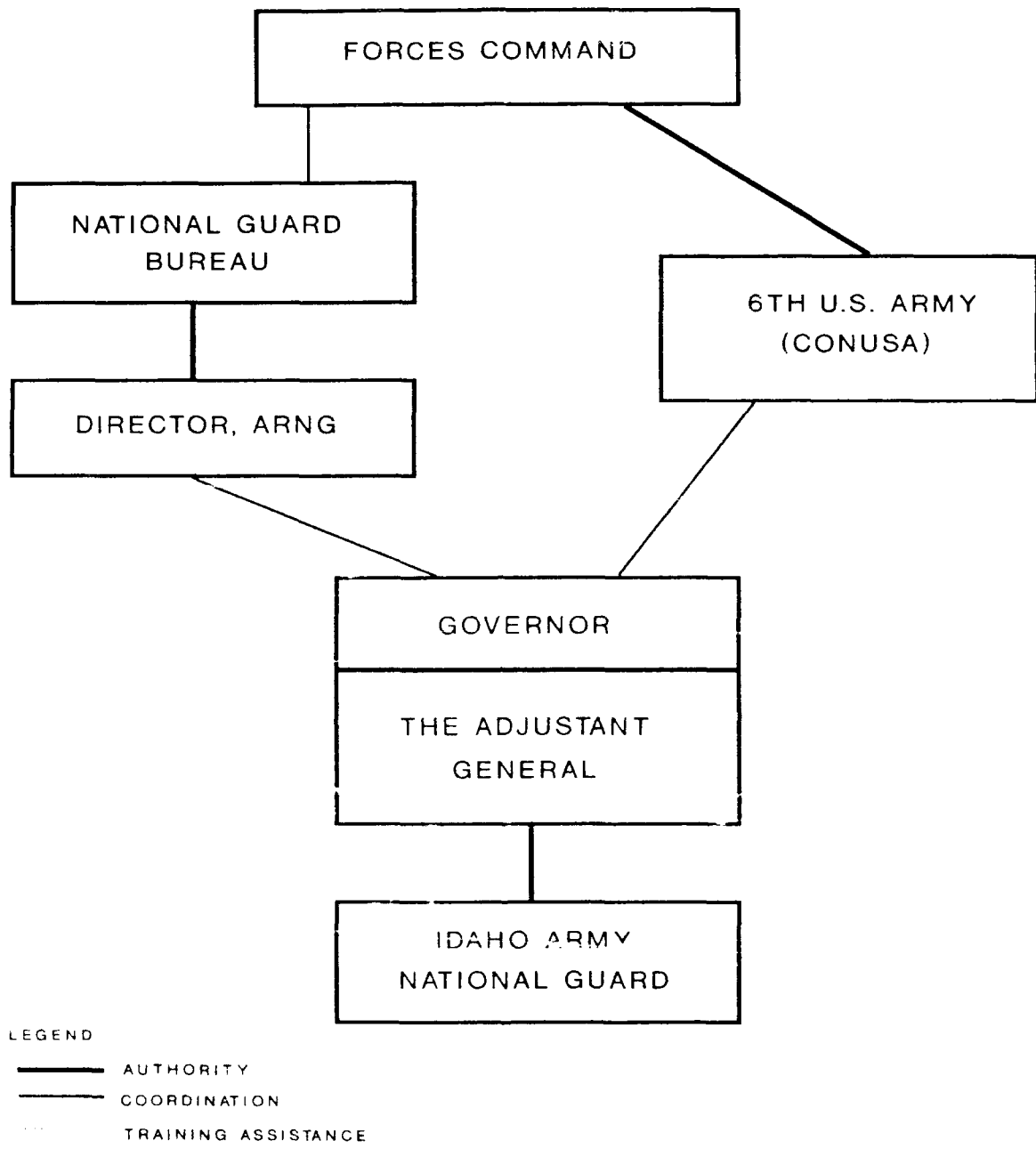


Figure 1. IDARNG chain of command.

## The 116th Cavalry Brigade

### Organization

The IDARNG has one armor brigade--the 116th Cavalry Brigade.<sup>1</sup> The Brigade has recently been selected as a roundout brigade to the 4th Infantry Division (ID), an AC Division located at Fort Carson, Colorado. As a roundout brigade of the 4th ID, the 116th Cavalry Brigade would deploy as the third brigade of the 4th ID upon mobilization. Prior to 1989, the 116th Cavalry Brigade and the 2d Battalion, 116th Cavalry Brigade were organized as an Armored Cavalry Regiment Headquarters with four subordinate Cavalry Troops, each equipped with M60 tanks. In March, 1989, the Brigade was reorganized into its current structure: the 116th Cavalry Brigade Headquarters and two M1 tank battalions, the 2d Battalion, 116th Cavalry Brigade and the 3d Battalion, 116th Cavalry Brigade. Brigade Headquarters are located in Boise, Idaho. The 3d Battalion, 116th Cavalry Brigade is located in Oregon rather than Idaho, and was not included in this research effort. Both Battalions are equipped with M1 tanks.

### Mission

The 116th Cavalry Brigade has both a training and a wartime mission. Its training mission is "to prepare ... soldiers and units to fight, win, and live to fight again" (116th Cavalry Brigade, 1989, p. 2). Its wartime mission is "to deploy combat ready forces on C-day to Europe ... occupy designated staging areas, and prepare and execute assigned combat operations" (116th Cavalry Brigade, p. 2). Contingency missions include deployment during civil disturbances, the protection of life and property, and the preservation of peace, order, and public safety upon order by State and Federal authorities.

### The 2d Battalion, 116th Cavalry Brigade

The 2d Battalion, 116th Cavalry Brigade consists of a Battalion Headquarters and Headquarters Company (HHC), four tank companies (A, B, C, and D), a mortar detachment, and a scout detachment. The Battalion Headquarters are located in Twin Falls, Idaho, approximately 120 miles from the Brigade Headquarters in Boise.

Company A, 2d Battalion, 116th Cavalry Brigade is located in Emmett, Idaho. Emmett is approximately 35 miles (1-hr travel time by bus) from Gowen Field, the major training area (MTA) used by all four companies within the Battalion. Because of its proximity to Gowen Field, Company A uses Gowen Field as its LTA. Whereas Company A is close to Brigade Headquarters and relatively far from Battalion Headquarters, Companies B, C, and D are relatively close to Battalion Headquarters and far from Brigade Headquarters. Company B is located in Burley, Idaho. Burley is approximately 170 miles (4-hr travel time by bus) from Gowen Field, and the Company uses Kimama Week End Training Site (WETS) as its LTA. Kimama WETS is approximately 30 miles (less than 1-hr travel time by bus) from Burley. Company C is located in Rupert, Idaho which is approximately 200 miles from Gowen Field. The Company

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<sup>1</sup>The 116th Cavalry Brigade is actually an armor brigade. It had earlier been a cavalry regiment. When the regiment was reorganized as an armor brigade in 1988, it kept the cavalry designation for historical reasons.

is located only 15 miles (20 min by bus) from Kimama WETS and uses it as its LTA. Company D is located in Gooding, Idaho. Gooding is approximately 100 miles (2-hr travel time by bus) from Gowen field, but only 8 miles from Gooding WETS, its LTA. Unfortunately, Gooding WETS is inaccessible to M1 tanks because of a 12-ton weight restriction on the bridge leading to the site. Tank crews from HHC conduct their gunnery training with Company D.

### The IDARNG Training Strategy for Tank Gunnery

The Battalion training strategy for tank gunnery is prescribed by the Battalion Commander. The Battalion Commander develops the training strategy using guidelines provided by the Standards in Training Commission (STRAC) and by the U.S. Army Armor School at Fort Knox.

#### STRAC Guidelines

The STRAC guidelines are contained in Standards in Weapons Training, Pamphlet 350-38 (Department of the Army, 1988a). The STRAC guidelines for ARNG units are based on a two-year cycle in which the first year is devoted to gunnery and the second year to maneuver. During the gunnery year, tank crews are to train monthly on the Videodisc Interactive Gunnery Simulator (VIGS) and bimonthly on the Mobile Conduct-of-Fire Trainer (M-COFT), and are to fire Tank Gunnery Tables III-VIII and Tank Tactical Tables A-I. During the maneuver year, tank crews are to train on the same devices and to fire the same tables (except Tables VI and VIII which are not to be fired during the maneuver year), although Tank Gunnery Tables III-V and Tank Tactical Tables A-C are to be fired less often during the maneuver year. The frequency with which crews are to fire each table and the ammunition allocations for each table are listed in Standards in Weapons Training. One deviation from STRAC guidance suggested by the Battalion Commander pertains to the frequency with which Table VIII is fired. Whereas the Battalion Commander would prefer to fire Table VIII annually (during both the gunnery and maneuver training years), STRAC guidance is to fire it once every other year (during the gunnery year).

The STRAC guidelines also state that (a) basic skills are to be trained at garrison level (i.e., armory) using VIGS and M-COFT, (b) intermediate skills are to be trained at LTAs (including limited subcaliber training), and (c) qualification testing is to be conducted at MTAs.

#### Armor School Guidance

The U.S. Army Armor School has prepared two documents that provide guidance for Reserve Component (RC) armor training: (a) Tank Combat Tables M1, FM 17-12-1 (Department of the Army, 1986b) and (b) Armor Training Strategy, ST 17-12-7 (U.S. Army Armor School, 1990a). These two documents are described below.

#### Tank Combat Tables M1

Whereas STRAC guidance focuses on what aspects of gunnery should be trained (i.e., which tables will be fired) and where they will be trained (i.e., garrison, LTA, or MTA), Tank Combat Tables M1, FM 17-12-1 (Department of the Army, 1986b) focuses on how the training will be conducted. Detailed descriptions are provided for 12 tank gunnery tables and 9 tank tactical tables. The descriptions of the tank gunnery tables contain information on

the conditions under which each engagement is to be conducted, the targets for each engagement, the amount of ammunition that is to be used, performance standards, and scoring procedures. The descriptions of the tank tactical tables contain information on the conditions, performance steps, and performance standards for each task. The training strategy developed by the Battalion Commander reflects the implementation of this guidance within the constraints of the IDARNG.

### Armor Training Strategy

The document entitled Armor Training Strategy, ST 17-12-7 (U.S. Army Armor School, 1990a) was prepared "to provide unit commanders, training officers, and master gunners a single-source document that integrates the various individual devices into the overall Armor device-based training strategy" (p. iii). The document enumerates the devices that are available for armor training now (FY 1990) and those that will be available during the near term (FY 1991-92), the midterm (FY 1993-96), and the far term (FY 1997-2005). In addition, the document specifies the number of hours various training devices are to be used during the gunnery and maneuver years.

ST 17-12-7 specifies that device training is to begin by training the gunner on VIGS. This training is to be conducted for 18 1-hr sessions annually: 1 hr during each monthly weekend drill and 1 hr during each of 6 ATAs to be provided for M-COFT training. Tank commander (TC) and gunner teams are to be trained on M-COFT in 2-hr sessions. M-COFT is to be used 13 times annually: 6 times during monthly weekend drills, 6 times during ATAs, and 1 time during AT. When GUARDFIST I becomes available during the near term, it is to be used 13 times annually for crew training, 1 hr per month during each monthly weekend drill, and 1 hr during AT. The other crew level events are combat tables (i.e., tank gunnery tables); they are to be conducted one or two times per year (depending on whether training is being conducted during the gunnery or maneuver year) with appropriate devices (e.g., Multiple Integrated Laser Engagement System [MILES] or Tank Weapons Gunnery Simulator System [TWGSS], machinegun, full caliber).

### Battalion Role in Gunnery Training

The Battalion has a role in evaluating tank gunnery. Evaluation teams, which are made up of all the Master Gunners within the Battalion, assess the performance of tank crewmen on the Tank Crew Gunnery Skills Test (TCGST). The Battalion Commander also assures compliance with the gunnery performance standards in Tank Combat Tables M1, FM 17-12-1 (Department of the Army, 1986b). The Battalion holds quarterly meetings with the Company Master Gunners and Readiness NCOs to disseminate and discuss training policy. The Company Commander and Company Master Gunner (or Readiness NCO) determine where training events will occur given the resources available for gunnery training within the Company. Allocations of ammunition and fuel are received from the TAG. The Battalion then allocates these resources to the companies on an equal basis although allocations can vary as a result of local constraints.

### IDARNG Guidelines for Tank Gunnery Training

Yearly training guidance (116th Cavalry Brigade, 1989) is prepared by Headquarters, 116th Cavalry Brigade and sent to each of the different subordinate commands (e.g., 2d Battalion, 116th Cavalry Brigade; 3d Battalion,

116th Cavalry Brigade). Brigade guidance is used by 2d Battalion, 116th Cavalry Brigade as input into the Battalion yearly training program that is published as an operations order (2d Battalion, 116th Cavalry Brigade, 1990). These two sources of guidance are described below.

### Brigade Command Training Guidance

The training guidance issued by the 116th Cavalry Brigade (1989) covers two training years--1991 and 1992. The document contains both general guidance (e.g., training priorities; goals and objectives; training plans) and guidance pertaining to specific training programs (e.g., collective training; nuclear, biological, and chemical [NBC] tasks). The following paragraphs describe the Brigade training requirements that affect gunnery training either directly or indirectly.

### Training Goals

The current training guidance (116th Cavalry Brigade, 1989) includes goals and objectives that pertain to all commands within the 116th Cavalry Brigade (e.g., maintain an 85% pass rate on the Army Personnel Fitness Test) as well as goals and objectives that pertain to specific commands (e.g., 90% of assigned soldiers in the 2d Battalion must be MOS qualified by 30 September 1992). The goals for the entire Brigade concern the following topics:

- weapons qualification standards
- maintenance training programs
- command post exercises (CPXs), field training exercises (FTXs), and external Army Training and Evaluation Program (ARTEP) evaluations
- Officer Development Program (ODP)/Noncommissioned Officer Development program (NCODP)

Goals specifically for the 2d Battalion, 116th Cavalry Brigade concern the following topics:

- duty military occupational specialty (DMOS) qualification standards
- ARTEP exercises
- Master Gunner assignments

### Training Management

The Brigade guidance specifies that commanders should emphasize individual- through platoon-level training during IDT. In addition, a minimum of 9 consecutive days are to be spent in a tactical field environment during AT with an effort being made to simulate actual battlefield conditions. AT is to focus on collective Mission Essential Task List (METL) tasks that support the unit mission.

Each battalion is to prepare a Yearly Training Plan (YTP) specifying METL tasks, objectives, priorities, support requirements, ODP/NCODP guidance, ARTEP schedule, and a maintenance training plan for operators and maintenance

personnel. Each battalion is also to prepare a Yearly Training Calendar (YTC) that specifies dates for exercises, evaluations, and other training events.

### Evaluation

Evaluation is required during all training events, and after action reviews are to be given after each event. Commanders are required to monitor training proficiency within their units. NCOs are responsible for assuring that soldiers are trained on the individual tasks that support the unit METL. The Brigade S-3 is responsible for conducting an annual evaluation of the training management and IDT within each command, and unannounced IDT evaluations are to be conducted by Headquarters, 6th Army.

### Training Requirements

The Brigade has several training requirements that are summarized in Table 1 along with the Battalion training requirements. In addition to the gunnery and maneuver training required by STRAC, the Brigade requires training on tasks contained in the METL, professional development tasks for officers and NCOs, the performance of tasks in an NBC environment, and both collective and individual training.

### Battalion Training Guidance

The training guidance developed by the 2d Battalion, 116th Cavalry Brigade (1990) was issued as an operations order. The document describes the training mission of the Battalion and contains instructions for the execution of this mission. The following paragraphs describe the Battalion training requirements that affect gunnery training either directly or indirectly.

### Training Goals

The document entitled Yearly Training Guidance, Operations Order 1-91 (2d Battalion, 116th Cavalry Brigade, 1990) contains the Battalion's training guidance for the current training year. The guidance specifies that training will be conducted at the platoon level and that METL tasks are to be emphasized. Skills learned during M-1 new equipment transition training (NETT) are to be sustained while all crews are to qualify on Tank Table VIII. Each crew is to train a minimum of 4 hrs on M-COFT during each 3-month period. Local facilities are to be used whenever possible for M-1 training to minimize hardship on individual soldiers. Specific objectives related to gunnery include the following topics:

- percentage of soldiers who must qualify on individual and crew served weapons
- percentage of crews who must qualify on Table VIII and pass the TCGST
- firing while wearing full protective clothing (MOPP IV)
- NBC
- percentage of soldiers who must be DMOS qualified.

Table 1

Comparison of Brigade and Battalion Training Requirements

Training Category	Training Requirements	
	Brigade	Battalion
Mission Essential Task List (METL)	Tasks performed during (1) deploy the brigade, (2) conduct combat operations, (3) sustain combat operations, and (4) division battle tasks.	Tasks will be selected from seven missions--prepare for combat, tactical road march, occupy an assembly area, tactical movement, occupy a battle position, passage of lines, and breach an obstacle.
Officer Development Program (ODP)	Fourteen topics are suggested including mission/METL analysis, NBC threat and defense, and OPFOR doctrine.	75% of ODP tasks should focus on METL requirements. Eleven tasks are suggested along with a recommended reading list.
Noncommissioned Officer Development Program (NCOOP)	NCOOP and ODP programs should be combined; NCOOP tasks are to be selected by battalion.	75% of NCOOP tasks should focus on METL requirements. Two recommended topics are (a) plan and issue a march order, and (b) receive, comprehend, and pass on OPORD for tactical movement.
NBC Training	Training for all missions must include performance in an NBC environment. NCOs must be trained to perform NBC tasks. Soldiers must be trained in NBC tasks listed in Common Task Manual.	Same as brigade requirements.
Collective Training	Training METL tasks, synchronization of brigade and battalion commanders, maximize training at WETS and at Gowen field, train offensive operations, and relate evaluations to unit METL.	Crew qualification on Table VIII.
Individual Training	Focus on tasks from the METL. Sustainment of skills is to be emphasized.	Major emphasis is on MOS qualification. NCOES is second in importance. 19K skills are paramount. A list of 20 common task test (CTT) tasks is provided.

In addition to these objectives for the entire Battalion, specific goals are given for each company within the Battalion. These pertain to participation in an ARTEP and REMOBE.<sup>2</sup>

Finally, Battalion personnel are required to participate in the following tests and events:

<sup>2</sup>REMOBE is an exercise for practicing mobilization plans.

- TCGST
- Army Physical Fitness Test (APFT)
- Platoon METL exercises

#### Unit Specific Missions

METL tasks are to be selected for training from seven missions. These missions are (a) prepare for combat, (b) tactical road march, (c) occupy an assembly area, (d) tactical movement, (e) occupy a battle position, (f) passage of lines, and (g) breach an obstacle.

#### Training Requirements

Training requirements for the Battalion are summarized with the Brigade requirements in Table 1. These requirements represent training that must be conducted in addition to training in gunnery and maneuver as required by STRAC (Department of the Army, 1988a). Major emphasis is placed on tasks from the METL. In addition, 75% of the ODP and NCOOP tasks are to be based on METL requirements. The major emphasis for individual training is on MOS qualification (90% of the soldiers are to be DMOS qualified), whereas the major emphasis for unit training is on Table VIII performance (80% of the crews are to be qualified on Table VIII).

#### Training Calendar

A monthly training calendar for each company and detachment in the Battalion is provided in Yearly Training Guidance, Operations Order 1-91 (2d Battalion, 116th Cavalry Brigade, 1990). The primary training events listed on the calendar and the companies that are scheduled to perform these events are contained in Table 2.

Just nine events are scheduled to be performed by all four companies within the Battalion. Four of these are tank gunnery events (the Tank Gunnery Tables; Tactical Tables B, C, F, and I; TCGST; and the Conduct-of-Fire Trainer [COFI]). The remaining events do not involve tank-related training per se (e.g., command inspection, 100% inventory). Thus, the training calendar for the Battalion shows that the training events scheduled for the current training year differ from company to company.

#### Company Training Schedules

Each company within the Battalion is required to prepare monthly training schedules. The Brigade requires that the schedules be developed and published at least 3 months prior to training. The schedules contain (a) the date and time of each training event, (b) the tasks that are to be trained, (c) the location of the training event, (d) the individual or element to be trained, (e) the trainer conducting the event, and (e) training aids, references, or other resources related to the event. During the visits to each company made by the members of the research staff during August, 1990, the company was asked to provide a set of training schedules for the current training year. These sets were provided, but they were not inclusive of the



Table 2

## Training Events Scheduled on Battalion Training Calendar by Company

Event Category	Training Event	Companies
CREW GUNNERY	Tank Gunnery Tables I-VIII	ABCD
	TCGST	ABCD
	COFT	ABCD
	TCPC	ABD
TACTICAL GUNNERY	Tactical Table A	ABD
	Tactical Tables B, C, F, and I	ABCD
	Tactical Table D	A
	Tactical Table E	AC
	Tactical Table H	C
	ARTEP Exercise	AB
OTHER GUNNERY	Armament and Accuracy Checks	AD
	Individual Weapons Proficiency	ACD
MOVEMENT	STX A	ACD
	STX B	BCD
	Tactical Movement	AB
TACTICS	Occupy Assembly Area	ABC
	Occupy Battle Position	ABC
TEWTS	Occupy Assembly Area	A
	Occupy Battle Position	BCD
	Breach Obstacle	D
	Tactical Movement	BD
	Passage of Lines	D
	STX A & B	D
	JEEP Exercise	B
	Perform Chemical Decontamination	C
	Tactical Road March	D
MISCELLANEOUS	Command Inspection	ABCD
	REMOB	ABCD
	OSMS/UMMS	ABD
	M2 PGE	ABCD
	100% Inventory	ABCD
	APFT	ABCD
	Maintenance Challenge	B
	Required Briefings	B

Note. OSMS = Organizational Supply Management System. PGE = Preliminary Gunnery Examination. STX = Situational Training Exercise. TCPC = Tank Crew Proficiency Course. UMMS = Unit Maintenance Management System.

last 12 months. Consequently, there was no way to determine whether or not the training events listed in the Battalion 12-month calendar were implemented by each of the four tank companies during the training year.

### Company Level Training in the IDARNG

Each ARNG unit is required to conduct 2 days of IDT per month at an armory or LTA and 15 days of AT at an MTA. A description of each training site and the events that occur at these sites is presented in the following sections.

#### Training Sites

Each company conducts armor training at three types of sites: an MTA, an LTA, and an armory. These sites are described below.

#### MTA

Gowen Field. Gowen Field in Boise, Idaho is the major training and maneuver area used by all armor companies in the Battalion for annual training. It is located 35, 170, 200, and 100 miles from Companies A, B, C, and D, respectively. Travel time to Gowen Field ranges from approximately 1 hr (Company A) to 4 hrs (Companies B and C). Each company in the Battalion stores some of its tanks at its armory; the rest are currently stored at Gowen Field where they can be used by all of the companies in the Battalion. In addition to the tanks, there are a sufficient number of gunnery ranges and a maneuver area large enough to conduct the tank gunnery and tank tactical tables. A multipurpose range complex (i.e., an instrumented range that can be configured for any gunnery table) is scheduled to be completed during the Fall of 1990. In addition to the ranges and maneuver areas, numerous tank-appended training devices (i.e., MILES, Telfare) are available at Gowen Field through the Training Support Center (TSC). One Unit Conduct-of-Fire Trainer (U-COFT) is also available at Gowen Field, but students in the Reserve Component Tank Commander Course (RCTCC) have priority in its use.<sup>3</sup>

One problem associated with training at Gowen Field are the environmental constraints. Units that train at Gowen Field must fill in holes and repair other damage caused by maneuvering tracked vehicles. One of the questionnaire respondents stated that the training NCOs spend an entire day to restore the training area after it has been used. The Bureau of Land Management (BLM) and IDARNG officials monitor these activities to ensure that they are performed. It is possible that part of Gowen Field now being used for maneuver may become a preservation area in the future to protect birds of prey that reside there. This may introduce even more constraints to training.

#### LTAs

Gowen Field. Because Gowen Field is located only 35 miles from its armory in Emmett, Company A uses Gowen Field as its LTA. Tanks, gunnery ranges, maneuver areas, and various tank-appended devices are therefore

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<sup>3</sup>MILES, Telfare, U-COFT and other devices mentioned in this report are described in Tank Combat Training Devices, FM 17-12-7 (Department of the Army, 1988b).

available to Company A for IDT. However, the environmental requirements for Gowen Field must also be met.

Kimama WETS. Kimama WETS is used by Companies B and C as their LTA. It is located 30 miles from the Company B armory in Burley and 15 miles from the Company C armory in Rupert. Kimama WETS is an open area that is suitable for maneuvering tanks. It is also suitable for gunnery practice using MILES, but live ammunition cannot be used. Because M-1 tanks cannot be stored at Kimama WETS (guards must be posted 24 hrs a day), tanks must be transported to the site from the armory. Lack of money for transporting the tanks has limited the use of this area for training. There are also some environmental constraints. Units training at Kimama WETS report that they are careful not to damage the terrain in order to avoid upsetting conservationists. Although conservationists do not monitor Kimama WETS closely, there appears to be a prevailing concern that conservationists will become more active in the future.

Gooding WETS. Gooding WETS is located 8 miles from the Company D armory in Gooding. Like Kimama WETS, Gooding WETS is an open area with no facilities for storing equipment. Unlike Kimama WETS, M1 tanks cannot be driven to Gooding WETS because the weight of the M1 tank greatly exceeds the weight limitation of a bridge that provides access to the training site. Consequently, Company D uses Gooding WETS for individual weapons qualification (IWQ) and maneuver exercises with jeeps. Although Gooding WETS cannot be used for training with tanks, the tank trail leading to this area is used for tank training. The Company uses the tank trail for practicing maneuver and for conducting a modified Tank Table IV.

#### Armories

Some of the training resources available to each of the four companies at its armory are described below. The types of training exercises conducted at each armory are also described.

Company A. Company A has one tank at its armory in Emmett. The only tasks scheduled for training at the armory in Emmett are a small number of NBC, common task test (CTT), ODP, and NCODP tasks.

Company B. Two of the tanks assigned to Company B are stored at its armory in Burley. The Company conducts the TCGST at the armory along with NBC, CTT, ODP, and NCODP tasks. It also conducts Tactical Exercises Without Troops (TEWTs) and sandtable exercises at the armory.

Company C. Company C has two tanks at its armory in Rupert. The armory is adjacent to the Rupert Fairgrounds which are used to conduct Tank Tables I through IV. MILES and laser target interface devices (LTIDs) are used at the fairgrounds for gunnery training. Company B uses the facilities at Rupert Fairgrounds on occasion when it is not being used by Company C. In addition to its use of the Rupert Fairgrounds, Company C also uses the armory for the TCGST and for NBC, CTT, ODP, and NCODP tasks.

Company D. Company D has two tanks at its armory in Gooding. The Company has a worm board and Stout device there that it uses for training tracking skills. Because of its location overlooking adjacent open land, the Company is able to conduct dry-fire exercises in the parking lot. The Company

also uses the armory for TCGST preparation, conduct-of-fire classes, CTT tasks, and TEWTs.

### Gunnery Training Events

Three types of gunnery training events are described below: tank gunnery tables, tank tactical tables, and the TCGST.

#### Tank Gunnery Tables

Tank gunnery is trained in a series of gunnery tables that are described in Tank Combat Tables M1, FM 17-12-1 (Department of the Army, 1986b). Tank Tables I through VIII are designed to train individual and crew level gunnery skills, and Tables IX through XII are designed to train section and platoon level skills. Tables IV and VIII are crew level qualification tables (basic and intermediate levels respectively), and Tables X and XII are section and platoon level qualification tables (advanced level). Each of these tables is described below. In addition, the site where each company conducts the table is specified along with any devices that are used by each company.

Tank Table I. According to FM 17-12-1, the purpose of Table I is "to train TC and gunner teams on basic gunnery skills (including target acquisition, gun laying, manipulation, and direct-fire adjustment) from a stationary tank." Because the table does not require an actual range, it can be conducted at a subcaliber range using the M55 laser gunnery trainer, a snake board, a manipulation target, and a Stout board. (See FM 17-12-1 for descriptions and diagrams of these training devices.) Companies B and D conduct Table I at their armories. Company A conducts it at Gowen Field, and Company C conducts it at the Rupert Fairgrounds adjacent to their armory.

Tank Table II. Stationary and moving targets are engaged from a stationary tank during Table II. The recommended procedure for firing Table II is to attach a rifle to a Brewster device. If a rifle cannot be used, the recommended alternative is to attach an M55 laser to the Brewster device and to use a Stout board, substituting stationary for moving targets. The least desirable alternative is to use dry fire. Company A fires Table II at Gowen Field (presumably using the Brewster device and a rifle). Companies B and D conduct the table at their armories using the M55 laser and Stout board. Company C conducts the table at Rupert Fairgrounds using MILES.

Tank Table III. Table III is the first Tank Gunnery Table requiring the participation of the entire crew. Targets are engaged from stationary tanks in defensive positions (requiring movement from turret- to hull-down positions) and from moving tanks. The table can be fired using the Telfare device, or it can be dry-fired. Company A fires Table III at Gowen Field, but the device that it uses could not be determined from the questionnaire responses. Companies B and D fire Table III at their armories using the M55 laser and Stout board, presumably fired from stationary tanks. Company C fires Table III at Rupert Fairgrounds using MILES.

Tank Table IV. Table IV is the basic crew qualification course in which crews fire at targets from stationary and moving tanks using Telfare. If Telfare is not available, MILES or thru-sight video can serve as alternatives. If these alternatives are not available, then Table IV can be conducted using dry-fire. Company A fires Table IV at Gowen Field using MILES. Company B

fires Table IV both at the Armory and at Gowen Field using MILES. Company C conducts Table IV at the Rupert Fairgrounds and at Gowen Field during AT. It uses both MILES and dry-fire. Company D conducts Table IV at Gowen Field using MILES and on the trail to Gooding WETS using the Phoenix device.

Table IV is a gate table. Companies A, B, and D reported that crews must pass Table IV before conducting Table VIII, and Company C reported that crews must pass Table IV before conducting Tables V and VI.

Tank Table V. Table V is a machine gun engagement in which stationary and moving targets are engaged with the coaxial machine gun, the TC's machine gun, and the loader's machine gun. Company B conducts the gunnery table at Gowen Field using the machine guns. Company A reported that it conducts the table at Gowen Field using MILES rather than live ammunition. Companies C and D fire a combined Table V and Table VI exercise at Gowen Field. Although Table V is a machine gun engagement, Companies C and D reported that they only used main gun ammunition during the combined exercise.

Table VI. Table VI is the first gunnery table in which the main gun is fired. Consequently, the main gun must be boresighted and the accuracy of the fire control system must be confirmed. During Table VI, crews fire at stationary and moving main gun targets from a stationary tank in a defensive position. Engagements are conducted both during the day and at night. All four companies in the Battalion fire Table VI at Gowen Field. Companies C and D fire Table V with Table VI in a combined exercise. Company B uses Table VI as a gate table. That is, crews in Company B must pass Table VI in order to participate on Table VIII.

Table VII. In Table VII, each crew fires all of its tank-mounted weapons at stationary and moving targets from both a stationary and moving tank. Both day and night engagements are included. All four companies fire Table VII at Gowen Field. Company C uses Table VII as a gate table; crews in Company B must pass Table VII in order to participate on Table VIII.

Table VIII. Table VIII is the crew qualification table. Crews fire at both stationary and moving targets with all of the tank-mounted weapons while negotiating a course. Offensive engagements are conducted from a moving tank, and defensive engagements are fired from stationary tanks after moving from a turret-down to a hull-down position. Engagements are conducted both during the day and at night. All four companies in the Battalion conduct Table VIII at Gowen Field. Although Companies A, C, and D reported that Table VIII is a gate table, the remaining four tank gunnery tables (IX through XII) are not conducted.

#### Tank Tactical Tables

In contrast to the tank gunnery tables, which were developed to train proficiency in the use of the tank weapon systems, the tank tactical tables were developed to train the tactical aspects of gunnery (e.g., reacting to opposing force [OPFOR] elements, coordinating on a 360° battlefield). Tactical Tables A, B, and C are designed to train crew skills; Tactical Tables D, E, and F are designed to train section skills; and Tactical Tables G, H, and I are designed to train platoon skills. Each of these tables is described below. In addition, the site where each company conducts the table is specified.

Table A. Table A comprises a series of individual tasks performed by each of the four crewmembers. There are 11 tank commander tasks (e.g., negotiate a route using terrain for cover and concealment, select firing positions), 3 gunner tasks (e.g., identify targets using the thermal imaging system), 8 loader tasks (e.g., load the 105mm main gun, identify friendly and threat armored vehicles), and 9 driver tasks (operate an M1 tank in a wooded area, react to indirect fire). Company A conducts Table A at Gowen Field, Companies B and D conduct it at their armories, and Company C conducts it at the Rupert Fairgrounds.

Table B. Table B comprises a series of eight crew drills (e.g., protect against nuclear attack, evacuate injured crewman). Company A conducts Table B at Gowen Field, Companies B and D conduct it at their armories, and Company C conducts it at the Rupert Fairgrounds. Company B uses Table B as a gate table for Table C.

Table C. Table C is a series of crew reaction exercises in which the crew encounters and reacts to OPFOR elements (e.g., react to ambush, engage OPFOR tanks to the rear) while negotiating a course. Tank Combat Tables M1, FM 17-12-1 (Department of the Army, 1986b) recommends that MILES be used during Table C. Companies A and B conduct Table C with MILES at Gowen Field and Kimama WETS, respectively. Company C conducts the table at the Rupert Fairgrounds using dry-fire. Company D conducts Table C with MILES along the trail to Gooding WETS. Two of the companies in the Battalion reported using Table C as a gate table; crews in Companies A and D must pass Table C in order to participate on Table F.

Table D. Table D comprises two exercises requiring coordination between the two tanks in a section (move tactically using the wingman concept and execute herringbone formation). Three companies within the battalion conduct this table. Company A conducts it at Gowen Field, Company C conducts it at the Rupert Fairgrounds, and Company D conducts it on the trail to Gooding WETS.

Table E. Table E comprises three section drills (action drill, contact drill, and react to indirect fire). Companies A and D conduct Table E; Company A conducts it at Gowen Field, and Company D conducts it on the trail to Gooding WETS.

Table F. Table F is a series of six section reaction exercises in which the two crews in a section react to OPFOR conditions (e.g., engage multiple machine gun targets, engage enemy tank platoon). Company A conducts the table at Gowen Field using MILES, and Company D conducts it on the trail to Gooding WETS using MILES. Company C reported that it conducted the table at Gowen Field using MILES during transition training to the M1 tank. Companies A and D use Table F as a gate table for Table I.

Table G. Table G is a series of six platoon formations (e.g., column formation) and movement techniques (e.g., bounding overwatch). Companies A and D conduct the table at Gowen Field. Company C reported that it conducted the table during transition training. Companies C and D reported that they use MILES during their execution of Table G.

Table H. Table H comprises four platoon drills (e.g., action drill, air attack drill). Companies A and D conduct the table at Gowen Field. Company C

reported that it conducted the table during transition training. Companies C and D reported that they used MILES during their execution of Table H.

Table I. Table I consists of a set of seven platoon reaction exercises (e.g., engage targets of opportunity, react to ambush). It is conducted at Gowen Field by Companies A, C, and D using MILES.

#### Tank Crew Gunnery Skill Test

The Tank Crew Gunnery Skills Test (TCGST) is a performance test that is used to certify a crewmember's gunnery skills prior to participation in live-fire exercises. The test consists of 18 tasks. A tank crewman must pass all of the tasks pertaining to that crewman's position within the crew. Tank Combat Tables M1, FM 17-12-1 (Department of the Army, 1986b) specifies that each crewman must pass the test for that crewman's position during the 6-month period prior to participating on Tank Table IV. The Battalion Headquarters schedules this event using the Battalion Master Gunner along with each Company Master Gunner. This team administers the test to each tank crew in the Battalion.

#### Training Devices and Aids

The questionnaires and interviews contained questions pertaining to the availability and use of devices and aids for training gunnery. The responses to these questions are summarized below.

#### U-COFT

A single U-COFT, located at Gowen Field, was used by the Battalion in 1988 for transition training from the M60 tank to the M1 tank. Although training on the COFT is included in the Battalion training schedule, it does not appear on the Company training schedules for IDT. The Battalion Commander reported that crews received about 1 hr of training on U-COFT during their last AT. Company level personnel reported that crews in their company have used U-COFT twice during the last 2 years.

#### M-COFT

The 2d Battalion, 116th Cavalry Brigade will soon be assigned an M-COFT that will be shared by the four tank companies and by HHC. An M-COFT pad was being built at the armory in Burley for Company B when the research team visited the site in August, 1990. M-COFT pads will also be built at each of the other three armory sites within the Battalion. Company C currently lacks the required three-phase power line that it must have to use M-COFT. If the required power line is not installed by the time M-COFT will be available, then Company C plans to use the M-COFT in Burley until the line is installed.

#### GUARD FIST I

None of the companies in the 2d Battalion, 116th Cavalry Brigade has access to GUARD FIST I at the present time. However, two prototype versions of GUARD FIST I will be assigned to the Battalion. Both prototypes will be located in the same armory. Eventually, individual GUARD FIST I training devices will be available at each of the four armories.

### M1 VIGS

None of the companies currently has an M1 VIGS. Companies C and D have each ordered an M1 VIGS from TSC, however.

### MILES

MILES is available from TSC in Boise, and all four companies in the Battalion use MILES extensively for training. It is used most often for Tank Table IV and for the Tank Tactical Tables. It is used at most training locations including Gowen Field, Kimama WETS, Rupert Fairgrounds, and at the Company C armory in Rupert. LTIDs and Hoffman Devices are used with MILES. Although some units report that they have had problems installing the equipment, MILES appears to be used throughout the Battalion.

### Phoenix

The Phoenix, a subcaliber (caliber .50) in-bore device, is available from TSC in Boise and has been used by Company D. However, it is not generally known in the Battalion that the Phoenix device is available for training.

### TopGun

Although TopGun is available at the Boise Field Unit of ARI for research, it is not regularly available to the Battalion for training.

### Telfare

Telfare is available from TSC at Gowen Field. Because Telfare requires live ammunition (.50 caliber), it can be used only at Gowen Field. It is rarely used, however. Various problems have been reported including unreliability, jamming, difficulty with boresighting, and the need to clean up the range after training.

### Thru-Sight Video

Thru-sight video is currently unavailable to the IDARNG for training.

### Brewster

The Brewster Device is available at TSC in Boise, but the device was not used by any of the companies.

### Stout

The Stout device is available at each armory and was used by all companies, except Company C, for Tank Tables I-IV.

### Hand-Held Tutor

The Hand-Held Tutor, an automated training aid developed by ARI, was not available for use by the IDARNG.



## Responses to Questions on Training

The questionnaire administered to the Master Gunner or Unit Readiness NCO in each company (Training Event and Training Device Data Collection Forms) contained three questions pertaining to armor training in the IDARNG. (See the Appendix for a copy of this questionnaire). The responses to these questions are described below.

### Sequencing of Training Devices and Aids During Training

The Master Gunner or Readiness NCO within each company was asked to recommend a sequence for the use of devices and the tank itself during gunnery training. Ignoring the recommendation for TopGun (three of the four NCOs stated that they were unfamiliar with TopGun), all respondents selected VIGS as the first device to be used and all selected the tank with live fire as the final piece of equipment to be used. Although there was no agreement concerning the other training devices, the trend was to use M-COPI second (three out of four NCOs made this recommendation), the tank with dry fire third (two out of the four NCOs made this recommendation), and MILES fourth (two out of four NCOs made this recommendation).

### Usefulness of Training Aids

The Master Gunner or Readiness NCO in each company was also asked to rate the usefulness of seven different training aids using a 3-point scale. The number of respondents making each judgment are shown in Table 3.

Table 3

Frequency of Usefulness Ratings of Training Aids

Training Aid	Usefulness Rating			
	Extremely Useful	Somewhat Useful	Not Useful	Don't Know
Hand-Held Tutor	0	0	0	4
Handbook for Sight Picture Training	2	2	0	0
M1 Fire Command Booklets	2	1	0	1
Tank Combat Tables (FM 17-12-1)	4	0	0	0
Operator's Manual for the M1 Tank (TM 9-2350-255-10)	4	0	0	0
Tank Platoon (FM 17-15)	2	1	1	0
Soldier's Manuals for M1/M1A1 Armor Crewman (Skill Levels 1-4)	1	3	0	0

No judgments were made of the usefulness of the Hand-Held Tutor, apparently because none of the respondents had used it for training. All six of the remaining training aids were judged to be at least somewhat useful. Tank Combat Tables M1, FM 17-12-1 (Department of the Army, 1986b) and the operator's manual for the M1 tank (Department of the Army, 1981) were rated by all four respondents as being extremely useful. All of the remaining training aids were judged to be extremely useful by two respondents except the Soldier's Manuals (Department of the Army, 1985a, 1989a, 1989b) which were judged to be extremely useful by only one respondent.

#### Training Problems

The Master Gunner or Readiness NCO in each of the four companies rated the seriousness of potential training problems on a 3-point scale and was asked to describe any other training problems that were present in his company. The number of respondents making each judgment is shown in Table 4 along with the other problems that were described.

Only four of the potential problems were described as serious, and none was described as serious by more than one respondent. One potential problem, insufficient time available for training, was judged to be a problem by all four respondents, but they agreed that it was not a serious problem. Three additional potential problems were judged to be a problem by three of the four respondents (too much time is required for administrative duties, new guardsmen are untrained in gunnery, and guardsmen miss training sessions), but again none were judged to be serious. The respondents were unanimous in agreeing that the condition of the tanks, the availability of manuals and other training materials, and morale were not problems.

#### Conclusions

The purpose of this research was to provide information on the 2d Battalion, 116th Cavalry Brigade that would be used as input in the development of a device-based training strategy for ARNG armor units. Information on training devices, training facilities conflicting training requirements, and constraints on gunnery training was obtained by examining STRAC, U.S. Army Armor School, brigade, battalion, and company level training materials; interviews with officers and NCOs in the 116th Cavalry Brigade; questionnaires administered to company-level NCOs; and observations made during a visit to Brigade, Battalion, and Company facilities.

The conclusions drawn from the information obtained from these sources were grouped into six categories: (a) the availability of training devices and training aids at the four armories, the LTAs, and the MTA; (b) access to LTAs and security problems at LTAs that limit their role in gunnery training; (c) environmental constraints that impact training at LTAs and the MTA; (d) the availability of a sufficient number of tanks at the armories and LTAs to train an entire tank company; (e) lack of sufficient time for training tank gunnery due to other training requirements and to administrative duties; and (f) problems in the implementation of the U.S. Army Armor School's macrostrategy for training armor skills.

Table 4

## Frequency of Seriousness Ratings of Training Problems

Training Problem	Seriousness Rating		
	Serious Problem	Problem, but No+ Serious	Not a Problem
Shortage of tanks	1	2	1
Poor condition of tanks	0	0	4
Shortage of ammo	0	0	0
Shortage of fuel	0	0	0
Shortage of qualified instructors	0	1	3
Lack of operators' manuals or other guidance on how to use training devices	0	1	3
Shortage of manuals and other training materials	0	0	4
Insufficient time available for training	0	4	0
Too many other tasks that must be trained	1	2	1
Too much time required for administrative duties	0	3	1
Lack of access to tank firing ranges	1	0	3
Distance to tank firing ranges is too far	1	0	3
New guardsmen are untrained in gunnery	0	3	1
Not enough hands-on training during IDT	0	1	3
Not enough MOS qualified tank crewmen	0	1	3
Low morale	0	0	4
Guardsmen miss training sessions	0	3	1
Other (IC/gunners miss training)			
Other (Lack of security for tanks at Kimama WETS)			

### Availability of Training Devices and Training Aids

The first conclusion pertains to the availability of devices and aids for training gunnery skills. As resources related to training become increasingly scarce, these devices and aids must play a larger role as a substitute for field training on actual equipment. The primary training devices that are currently available within the Battalion are MILES, the Stout device, and Telfare. MILES is readily available from TSC and is used frequently by the companies within the Battalion. Although the Stout device is also widely used, Telfare apparently is not used. The decision not to use Telfare appears to be based on environmental constraints (i.e., the need to clean up the ranges after training with Telfare) and its purported unreliability.

One U-COFT is currently located at Gowen Field. Although training plans specify that it is to be used by the companies during AT, the Battalion appears to have trouble gaining access to it. Even with ready access to U-COFT during AT, each crew would only be able to receive about 1-3 hrs of training on the device. Campshure, Witmer, and Drucker (1989) have shown that crews progress, on the average, only to Reticle Aim Level 3 (out of 39 total levels) after 3-hrs of U-COFT training when transitioning from the M60A3 tank to the M1 tank. Although it cannot be determined from these data how far crews would progress in the matrix in 3 hrs of sustainment training, the data suggest that crews would not progress very far in the training matrix during just 1-3 hrs of sustainment training.

Because M-COFT will be available at each armory, the limited availability of U-COFT will no longer be a problem. The training strategy developed by the U.S. Army Armor School (1990a) specifies that crews should receive 26 hrs of training on M-COFT per year. Although the optimal number of hours of M-COFT training may vary somewhat from this total, crews in the IDARNG may be unable to attain the prescribed number of hours during IDT. This is because some weekends would be spent at the LTA or MTA rather than at the armory. The solution to this problem appears to require additional training time (e.g., ATAs) that could supplement the training time available during IDT. Unfortunately, funds for ATAs may not be available this year from the NGB.

### Limited Access to LTAs

Two of the LTAs available to the 2d Battalion, 116th Cavalry Brigade have access restrictions that have limited their usefulness for training. Because of low weight limitations on a bridge leading to Gooding WETS, Company D cannot use tanks at its LTA. The Company seems to have overcome this problem to an extent by using the tank trail leading to Gooding WETS as a training area. More serious, perhaps, is the lack of security at Kimama WETS, the LTA assigned to Companies B and C. Because tanks cannot be stored at Kimama WETS, they have to be transported to the area whenever they are needed for training. The expense and difficulties involved in transporting tanks to Kimama WETS appear to have curtailed the use of the area for training. Fortunately, steps are being taken to secure the area so that tanks eventually may be kept permanently at Kimama WETS just as they are at Gowen Field. This outcome seems sufficiently likely that the training strategy for tank gunnery should reflect the permanent availability of tanks at Kimama WETS.

### Environmental Constraints

Environmental constraints enforced by BLM and by the IDARNG itself have resulted in the need to repair land damage at Gowen Field caused by tracked vehicles. Environmental factors have also caused BLM to declare certain areas of Gowen Field off limits to the IDARNG. Gowen Field is sufficiently large that any such BLM declaration is unlikely to have a major impact on training. Although the need to repair land damage may impact training if time normally used for training is used instead to repair the terrain, the problem may not be extremely serious because the NCOs repair the damage on the day after weekend training.

BLM has not yet monitored Kimama WETS. Members of the Battalion, however, assume that monitoring will take place when tanks are stored at the site. The severity of any ensuing problems cannot be determined at this time, but the possibility of a problem should be taken into account during the development of the training strategy. At a minimum, time should be allocated for damage repair.

### Availability of Tanks

Another problem that interferes with training conducted at the armories and LTAs is the lack of a sufficient number of tanks. The 2d Battalion, 116th Cavalry Brigade has 43 tanks with five tanks assigned to each company. Just one or two of the five tanks within each company are kept in the armory; the others are kept at Gowen Field. The remaining unassigned tanks are kept at Gowen Field where they can be used either by the Battalion or by other units.

Because each company has no more than two tanks available for training at its armory or its LTA (except Company A which uses Gowen Field as its LTA), individual tanks have to be shared by up to 14 tank crews. Although this would seem to severely limit a crew's access to a tank, the problem does not seem to be severe because ARNG units are experienced in sharing equipment. Nevertheless, the training strategy must take the limited availability of tanks into account. In the future, limited access to tanks may be a problem at the armory, but not at the LTA. Once tank storage facilities are available at Kimama WETS, some of the tanks stored at Gowen Field will be moved there. By using alternate weekends within a month, Companies B, C, and D would have access to all of the tanks stored at Kimama WETS. In this way, there would be a sufficient number of tanks available for LTA training.

### Additional Training and Nontraining Requirements

Additional training requirements established by STRAC, the Brigade, and the Battalion, combined with various nontraining requirements, limit the amount of time that each company can devote to gunnery training. The training schedule for the current training year emphasizes tank gunnery because the 2d Battalion, 116th Cavalry Brigade was reorganized as an M1 tank battalion in 1989. This emphasis on gunnery is intended as a temporary expedient to facilitate the transition from the M60 tank to the M1 tank. Once the transition to the M1 tank is complete, the 2d Battalion, 116th Cavalry Brigade would probably have to adhere to the STRAC (Department of the Army, 1988a) guidelines. These guidelines are based on a 2-year cycle in which the emphasis between gunnery and maneuver alternates on an annual basis. Any

training strategy for tank gunnery would have to allow for a reduction in the time and resources available for training gunnery every other year.

Various training requirements for nongunnery tasks imposed by the Brigade and the Battalion (e.g., NBC training, ODP/NCODP, METL tasks) will also have to be taken into account in the training strategy for tank gunnery. The specific amount of time required to meet these other training requirements could not be established from the training schedules because exact times were not specified. Given that there are fewer tanks available for training than the number of crews to be trained, nongunnery training requirements may not interfere significantly with gunnery training. Several crews could be trained concurrently on tasks unrelated to gunnery while the other crews in the Company are being trained in gunnery. On the other hand, if there is an increasing emphasis on platoon- and company-level gunnery as more tanks are available at Kimama WETS, the ability to conduct concurrent training at this LTA may be reduced.

The Battalion requires that 25% of all training time be devoted to nontraining events such as maintenance and preventive maintenance checks and services (PMCS). In addition, there are requirements for command inspections, inventories, and other nontraining events that must be performed during each IDT weekend. Because many of these additional requirements can probably be performed concurrently with maintenance and PMCS, their total impact may not be cumulative. Nevertheless, the training strategy must be based on the assumption that less than 75% of the IDT time will be available for training, and that a portion of this time must be allocated for training maneuver and other nongunnery related tasks.

In a survey of RC units conducted by Viner, Moore, Easley, and Hart (1988), soldiers stated that only 64% of drill time, on the average, is spent on training and that 24% of training time, on the average, is wasted. If these responses are valid, it would appear that only 50% of IDT time is devoted to productive training; the rest of the time is spent performing nontraining duties or is simply wasted. Given (a) the limited amount of time that is available for training in the IDARNG, (b) the requirements for training skills that are unrelated to gunnery, (c) the requirements for nontraining events, and (d) the importance of gunnery training for an armor battalion, there is an obvious need for an efficient strategy for training gunnery skills. This strategy must be sufficiently flexible to maximize the use of available training devices and aids and to minimize or eliminate completely any nonproductive training time.

#### Implementation of the Armor School's Macrostrategy for Armor Training

The macrostrategy described in Armor Training Strategy, ST 17-12-7 (U.S. Army Armor School, 1990a) provides information on the training devices that will be available for ARNG training through the year 2005. It also specifies the devices that can be used for various training events. Although this document provides useful guidance on the availability of training devices and the linkage of these devices to training events, it lacks much of the information needed to design an efficient and effective gunnery training program. For example, it does not specify how each device should be used, nor does it present the training objectives that can be achieved by using each device. It also fails to provide alternative approaches to follow whenever certain devices are unavailable. It is obvious that there is a need for a

microstrategy that can supplement the information contained in the Armor School's macrostrategy.

Some of the assumptions in the macrostrategy concerning the availability of training time may be superseded by current events. The macrostrategy, for example, specifies that one-third of the training on VIGS and almost one-half of the training on M-COFT should be conducted during ATAs. At the present time, no funds have been made available by the NGB for ATAs, and it is uncertain whether funds will be available later. If funds remain unavailable, then it probably will be impossible for the IDARNG to conduct the amount of training specified for M-COFT.

Some of the training time estimates contained in the macrostrategy may be unrealistic. For example, it would be impossible to schedule all of the crews in a company for 2 hrs of M-COFT training during a single weekend. If a company is fully staffed, it would have 14 tank crews. A total of 29 hrs would be required to train all 14 crews (28 hrs of M-COFT time plus 1 hr for the gunner of the first crew to train on VIGS). Because only 16 hrs of training time are available during a single weekend, it would not be possible to provide 2 hrs of training for all 14 crews. Training time estimates contained in the microstrategy for M-COFT (U.S. Army Armor School, 1990b) lead to a similar conclusion. According to this U.S. Army Armor School document, the capacity of the M-COFT with two instructor/operators (I/Os) is seven or eight crews (TC/gunner teams) per IDT. Given the other training requirements that must be met during IDT, as well as the other duties that must be performed (e.g., maintenance, inventories), this estimate of the weekend training capacity of M-COFT may prove to be too high. Although split training assemblies could help to overcome these problems, adopting this as a solution would interfere with the use of M-COFT by the other companies in the Battalion.

Another problem that would interfere with the implementation of the macrostrategy are the difficulties involved in transporting M-COFT among the four companies in the Battalion. Although M-COFT is transportable, transportation difficulties (e.g., bad weather, loading time) may interfere with plans to transport it to all four companies during the same month. Even if two or more companies were to share an M-COFT at a single site, training time would be lost due to the time needed to transport troops. These difficulties could be alleviated if ATAs were available for M-COFT training as assumed in Armor Training Strategy, ST 17-12-7 (U.S. Army Armor School, 1990a), but only if TC and gunner teams and an I/O were available during the week. If these personnel were available only on weekends, the ATAs would exacerbate the scheduling problem rather than alleviate it.

Another factor that would impact the difficulties involved in scheduling M-COFT training is the willingness of the four companies to schedule training on different weekends of the month. If two or more companies schedule IDT on the same weekend, then only one of these companies could have access to M-COFT during their weekend training. Training would have to be scheduled during ATAs to give the other companies access to the device during that month. Requirements to train at LTAs and the MTA would compound the scheduling problem because companies would not have access to M-COFT during these IDTs. Also compounding the problem are weekends that are lost to holidays and other special events (e.g., Mother's Day, Super Bowl).

A similar problem may also occur when scheduling training on GUARD FIST I. Although there will be a GUARD FIST I in each armory, and although only 1 hr of GUARD FIST I training is specified for each crew, it may be still be impossible to conduct training on GUARD FIST I once a month during IDTs because of the need to conduct training at LTAs and the MTA. This scheduling problem could be averted if ATAs were available for training on GUARD FIST I, but the macrostrategy does not specify that ATAs be used for training on this device.

The macrostrategy also specifies that VIGS, M-COFT, and GUARD FIST I be used during AT. Although all three devices are sufficiently transportable that they can be moved to an MTA, some units may not want to use the devices at an MTA. Many armor trainers contend that AT should be devoted exclusively to training in the field.

In summary, despite the usefulness of the Armor School's macrostrategy in setting training guidelines, there is a need for a microstrategy that takes into account both the armor training requirements of ARNG units and the specific constraints under which these units must operate.



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Appendix A  
Data Collection Instruments

DATA REQUIRED BY THE PRIVACY ACT OF 1974  
(5 U.S.C. 552a)

TITLE OF FORM

PRESCRIBING DIRECTIVE

AR 70-1

AUTHORITY

10 USC Sec 4503

2. PRINCIPAL PURPOSE(S)

The data collected with the attached form are to be used for research purposes only.

3. ROUTINE USES

This is an experimental personnel data collection form developed by the U. S. Army Research Institute for the Behavioral and Social Sciences pursuant to its research mission as prescribed in AR 70-1. When identifiers (name or Social Security Number) are requested they are to be used for administrative and statistical control purposes only. Full confidentiality of the responses will be maintained in the processing of these data.

4. MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION

Your participation in this research is strictly voluntary. Individuals are encouraged to provide complete and accurate information in the interests of the research, but there will be no effect on individuals for not providing all or any part of the information. This notice may be detached from the rest of the form and retained by the individual if so desired.

FORM

Privacy Act Statement - 26 Sep 75

DA Form 4368-R, 1 May 75

ARNG INTERVIEW - BATTALION LEVEL

TANK GUNNERY TRAINING

RESPONDENT'S NAME: \_\_\_\_\_  
Last First

GRADE/RANK: \_\_\_\_\_ DATE OF GRADE/RANK: \_\_\_\_\_

POSITION: \_\_\_\_\_ TIME IN POSITION: \_\_\_\_\_  
Months

UNIT: \_\_\_\_\_ TIME IN UNIT: \_\_\_\_\_  
Months

DATE OF INTERVIEW: \_\_\_\_\_

NAME OF INTERVIEWER: \_\_\_\_\_

1. Does your battalion follow a prescribed strategy for training tank gunnery?

YES \_\_\_\_\_ NO \_\_\_\_\_  
Go to 3 Go to 2a

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ASK THE REMAINING QUESTIONS ON THIS PAGE ONLY IF THE RESPONDENT'S ANSWER TO QUESTION 1 IS "NO." AFTER THE RESPONDENT ANSWERS THE QUESTIONS ON THIS PAGE, GO TO QUESTION 5.

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2a. Why doesn't the battalion follow a prescribed training strategy?

2b. Does the battalion develop and implement its own training strategy?

YES \_\_\_\_\_ NO \_\_\_\_\_  
Go to 2c Go to 2d

2c. (IF 2b = YES) Would you describe this training strategy?

2d. (IF 2b = NO) How does the battalion conduct gunnery training if it doesn't follow a prescribed strategy and if it doesn't develop its own strategy?

3. Who prescribes the training strategy that is used by the battalion for training tank gunnery? (PROBE for Brigade, Armor School, etc.)
  
4. Would you briefly describe this training strategy?
  
  
  
  
  
  
  
  
  
  
5. What role does the battalion play in gunnery training at the company level?
  
  
  
  
  
  
  
  
  
  
6. Does the battalion supervise gunnery training at the company level? (IF YES, PROBE FOR WHAT AND HOW IT SUPERVISES THE COMPANIES.)
  
  
  
  
  
  
  
  
  
  
7. Who determines what gunnery tasks are to be trained and where they are to be trained, that is, at the armory, at the local training area, or at the major training area?

8. Who determines what training devices and simulators are to be used for gunnery training?
  
9. Who determines what tank tables and other training events are conducted?
  
10. What role does the battalion play in deciding how much fuel or ammo each company receives?
  
11. What specific gunnery training devices and simulators are managed by the battalion?
  
12. Which devices or simulators currently used within the battalion for training gunnery seem especially useful? (PROBE for what characteristics makes them useful).





DATA REQUIRED BY THE PRIVACY ACT OF 1974  
(5 U.S.C. 552a)

TITLE OF FORM

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FORM

Privacy Act Statement - 26 Sep 75

DA Form 4368-R, 1 May 75

ARNG INTERVIEW - COMPANY LEVEL  
TANK GUNNERY TRAINING

RESPONDENT'S NAME: \_\_\_\_\_  
Last First

GRADE/RANK: \_\_\_\_\_ DATE OF GRADE/RANK: \_\_\_\_\_

POSITION: \_\_\_\_\_ TIME IN POSITION: \_\_\_\_\_  
Months

UNIT: \_\_\_\_\_ TIME IN UNIT: \_\_\_\_\_  
Months

DATE OF INTERVIEW: \_\_\_\_\_

NAME OF INTERVIEWER: \_\_\_\_\_

1. During the past 12 months, did your unit conduct tank gunnery training
  - a. in the armory? YES\_\_\_\_\_ NO\_\_\_\_\_
  - b. at a local training area? YES\_\_\_\_\_ NO\_\_\_\_\_
  - c. at a major range or maneuver area? YES\_\_\_\_\_ NO\_\_\_\_\_
2. (IF 1a = YES) What gunnery tasks are trained in the armory?

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3. (IF 1b = YES) What gunnery tasks are trained at your local training area?

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4. (IF 1c = YES) What gunnery tasks are trained at the major range or maneuver area?

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5. Where is your local training area located? \_\_\_\_\_

6. How far is this location from your armory? \_\_\_\_\_

7. How long does it take to drive from the armory to this location?

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8. What major range or maneuver area does your unit use for training?

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9. Where is this area located? \_\_\_\_\_

10. How far is this location from your armory? \_\_\_\_\_

11. How long does it take to drive from the armory to this location?

\_\_\_\_\_

12 Besides tank gunnery, what types of tasks does your unit train

a. in the armory? \_\_\_\_\_

\_\_\_\_\_

b. at your local training area? \_\_\_\_\_

\_\_\_\_\_

c. at the major training area? \_\_\_\_\_

\_\_\_\_\_

13. During the last 12 months, how many days did your unit train

a. in the armory? \_\_\_\_\_

b. at a local training area? \_\_\_\_\_

c. at a major training area or range? \_\_\_\_\_

14. How many of these days included gunnery training

a. in the armory? \_\_\_\_\_

b. at a local training area? \_\_\_\_\_

c. at a major training area  
or range? \_\_\_\_\_

15. What types of training facilities does your unit have at the armory?  
Include in your answer any devices or simulators that your unit can use  
to train tank gunnery.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

16. What types of training facilities does your unit have at its local  
training area? Include in your answer any devices or simulators that  
your unit can use to train tank gunnery.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

17. What types of training facilities does your unit have at the major gunnery range or maneuver area? Include in your answer any devices or simulators that your unit can use to train tank gunnery.

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18. What are the major problems involved in conducting gunnery training at the armory?

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19. What are the major problems involved in conducting gunnery training at the local training area?

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20. What are the major problems involved in conducting gunnery training at the major gunnery range or maneuver area?

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21. How many of the tank crews in your unit have qualified on  
Table IV? \_\_\_\_\_  
Table VIII? \_\_\_\_\_

22. How many hours per month does you unit devote to training tank gunnery during IDT?

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23. How many hours does your unit devote to training tank gunnery during AT?

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24. (SHOW RESPONDENT A COPY OF DA PAM 350-30) Does your unit attempt to follow the training strategy for tank gunnery that is prescribed in DA Pamphlet 350-30, Standards in Weapons Training?

YES \_\_\_\_\_ NO \_\_\_\_\_

25. (IF 24 = NO) Why not?

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26. (IF 24 = YES) Does your unit experience any problems when it tries to follow the training strategy prescribed in DA Pamphlet 350-30?

YES \_\_\_\_\_ NO \_\_\_\_\_

27. (IF 26 = YES) What kinds of problems does it experience?

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28. Which of the facilities that are available at your armory are the most useful for training tank gunnery? (PROBE--What makes them so useful?)

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29. Which of the facilities that are available at your local training area are the most useful for training tank gunnery? (PROBE--What makes them so useful?)

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30. Which of the facilities that are available at your major training area are the most useful for training tank gunnery? (PROBE--What makes them so useful?)

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31. What changes would you recommend in the way your unit trains tank gunnery?

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32. (A) What training requirements does your unit have in addition to tank gunnery?

(B) Is this requirement (specify which requirement) more important than tank gunnery, equal in importance to tank gunnery, or less important than tank gunnery?

_____	More	Equal	Less
_____	More	Equal	Less
_____	More	Equal	Less
_____	More	Equal	Less
_____	More	Equal	Less
_____	More	Equal	Less
_____	More	Equal	Less
_____	More	Equal	Less



33. Are there any specific gunnery exercises, tests, or events that crews must pass before they can continue their gunnery training or before they can participate in annual training?

YES \_\_\_\_\_ NO \_\_\_\_\_

34. (IF 33 = YES)

- (A) What exercises, tests, or events must they pass?
- (B) What training exercises would they be prevented from participating in if they do not pass the exercise, test, or event (specify)?
- (C) In your opinion, what training device, including live fire, would be best for preparing the crews to pass this exercise, test, or event (specify)?

MUST PASS:

TO PARTICIPATE IN:

BEST DEVICE:

MUST PASS:	TO PARTICIPATE IN:	BEST DEVICE:
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

35. Does your unit have access to an M1 VIGS?

YES \_\_\_\_\_ NO \_\_\_\_\_

36. (IF 35 = YES) Where? \_\_\_\_\_

37. (IF 35 = YES) How long has your unit had access to the M1 VIGS?

\_\_\_\_\_

38. (IF 35 = YES) How often does your unit actually train on the M1 VIGS?

\_\_\_\_\_

39. (IF 38 = NEVER) Why doesn't your unit train on the M1 VIGS if it has access to it?

\_\_\_\_\_

\_\_\_\_\_

40. (IF 35 = YES) If your unit were required to spend more time training on the M1 VIGS, would the unit have any problems getting additional access to it?

YES \_\_\_\_\_ NO \_\_\_\_\_

41. (IF 41 = YES) What kinds of problems?

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42. (IF 35 = YES) What are the most important benefits from training on the M1 VIGS?

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43. (IF 35 = YES) What are the biggest problems involved in training on the M1 VIGS?

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44. Does your unit have access to an M-COFT?

YES \_\_\_\_\_ NO \_\_\_\_\_

45. (IF 44 = YES) Where? \_\_\_\_\_

46. (IF 44 = YES) How long has your unit had access to an M-COFT?

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47. (IF 44 = YES) How often does your unit actually train on an M-COFT?

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48. (IF 47 = NEVER) Why doesn't your unit train on M-COFT if it has access to it?

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49. (IF 44 = YES) If your unit were required to spend more time training on the M-COFT, would the unit have any problems getting additional access to it?

YES \_\_\_\_\_ NO \_\_\_\_\_

50. (IF 49 = YES) What kinds of problems?

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51. (IF 44 = YES) What are the most important benefits from training on M-COFT?

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52. (IF 44 = YES) What are the biggest problems involved in training on M-COFT?

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53. Does your unit have access to MILES?

YES \_\_\_\_\_ NO \_\_\_\_\_

54. (IF 53 = YES) Where? \_\_\_\_\_

55. (IF 53 = YES) How long has your unit had access to MILES?  
\_\_\_\_\_

56. (IF 53 = YES) How often does your unit actually train with MILES?  
\_\_\_\_\_

57. (IF 56 = NEVER) Why doesn't your unit train with MILES if it has access to it?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

58. (IF 53 = YES) If your unit were required to spend more time training with MILES, would the unit have any problems getting additional access to it?

YES \_\_\_\_\_ NO \_\_\_\_\_

59. (IF 58 = YES) What kinds of problems?  
\_\_\_\_\_  
\_\_\_\_\_

60. (IF 53 = YES) What are the most important benefits from training with MILES?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

61. (IF 53 = YES) What are the biggest problems involved in training with MILES?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

62. Does your unit have access to PHOENIX?

YES \_\_\_\_\_ NO \_\_\_\_\_

63. (IF 62 = YES) Where? \_\_\_\_\_

64. (IF 62 = YES) How long has your unit had access to PHOENIX?

\_\_\_\_\_

65. (IF 62 = YES) How often does your unit actually train using Phoenix?

\_\_\_\_\_

66. (IF 65 = NEVER) Why doesn't your unit train with Phoenix if it has access to it?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

67. (IF 62 = YES) If your unit were required to spend more time training using Phoenix, would the unit have any problems getting additional access to it?

YES \_\_\_\_\_ NO \_\_\_\_\_

68. (IF 67 = YES) What kinds of problems?

\_\_\_\_\_  
\_\_\_\_\_

69. (IF 62 = YES) What are the most important benefits from training with Phoenix?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

70. (IF 62 = YES) What are the biggest problems involved in training with Phoenix?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

71. Does your unit have access to TOPGUN?

YES \_\_\_\_\_ NO \_\_\_\_\_

72. (IF 71 = YES) Where? \_\_\_\_\_

73. (IF 71 = YES) How long has your unit had access to TOPGUN?

\_\_\_\_\_

74. (IF 71 = YES) How often does your unit actually train on TOPGUN?

\_\_\_\_\_

75. (IF 74 = NEVER) Why doesn't your unit train on TOPGUN if it has access to it?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

76. (IF 71 = YES) If your unit were required to spend more time training on TOPGUN, would the unit have any problems getting additional access to it?

YES \_\_\_\_\_ NO \_\_\_\_\_

77. (IF 76 = YES) What kinds of problems?

\_\_\_\_\_  
\_\_\_\_\_

78. (IF 71 = YES) What are the most important benefits from training with TOPGUN?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

79. (IF 71 = YES) What are the biggest problems involved in training with TOPGUN?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

80. Does your unit have access to TELFARE?

YES \_\_\_\_\_ NO \_\_\_\_\_

81. (IF 80 = YES) Where? \_\_\_\_\_

82. (IF 80 = YES) How long has your unit had access to TELFARE?

\_\_\_\_\_

83. (IF 80 = YES) How often does your unit actually train with TELFARE?

\_\_\_\_\_

84. (IF 83 = NEVER) Why doesn't your unit train using TELFARE if it has access to it?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

85. (IF 80 = YES) If your unit were required to spend more time training using TELFARE, would the unit have any problems getting additional access to it?

YES \_\_\_\_\_ NO \_\_\_\_\_

86. (IF 85 = YES) What kinds of problems?

\_\_\_\_\_  
\_\_\_\_\_

87. (IF 80 = YES) What are the most important benefits from training using TELFARE?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

88. (IF 80 = YES) What are the biggest problems involved in training using TELFARE?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

88a. Does your unit have access to thru-sight video?

YES \_\_\_\_\_ NO \_\_\_\_\_

88b. (IF 88a = YES) Where? \_\_\_\_\_

88c. (IF 88a = YES) How long has your unit had access to thru-sight video?

\_\_\_\_\_

88d. (IF 88a = YES) How often does your unit actually train with thru-sight video?

\_\_\_\_\_

88e. (IF 88d = NEVER) Why doesn't your unit train using thru-sight video if it has access to it?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

88f. (IF 88a = YES) If your unit were required to spend more time training using thru-sight video, would the unit have any problems getting additional access to it?

YES \_\_\_\_\_ NO \_\_\_\_\_

88g. (IF 88f = YES) What kinds of problems?

\_\_\_\_\_  
\_\_\_\_\_

88h. (IF 88a = YES) What are the most important benefits from training using thru-sight video?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

88i. (IF 88a = YES) What are the biggest problems involved in training using thru-sight video?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



89. How many M1 tanks does your unit use for training?

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90. Where are these tanks located?

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91. How often does your unit actually train on M1 tanks?

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92. (IF 91 = NEVER) Why doesn't your unit train on tanks if it has access to them?

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93. If your unit were required to spend more time training on M1 tanks, would the unit have any problems getting additional access to them?

YES \_\_\_\_\_ NO \_\_\_\_\_

94. (IF 93 = YES) What kinds of problems?

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95. What are the most important benefits from training on tanks?

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96. What are the biggest problems involved in training on tanks?

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97. Is your unit able to get the full allocation of fuel and ammunition necessary to meet its requirements for training tank gunnery?

YES \_\_\_\_\_ NO \_\_\_\_\_

98. (IF 97 = NO) Please explain any fuel or ammunition shortages your unit is experiencing.

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99. Is your unit able to get the required support, such as maintenance, that is necessary to meet its requirements for training tank gunnery?

YES \_\_\_\_\_ NO \_\_\_\_\_

100. (IF 99 = NO)

Please explain what support your unit is unable to get.

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101. At the present time, how many of the crews in your unit are fully staffed with four crewmen?

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102. (IF ANY CREWS ARE NOT FULLY STAFFED) Of those crews that are not fully staffed, how many crews are missing:

a. only their tank commander? \_\_\_\_\_

b. only their gunner? \_\_\_\_\_

c. only their driver? \_\_\_\_\_

d. only their loader? \_\_\_\_\_

e. 2 or more crewmen \_\_\_\_\_

f. (If 2 or more crewmen are missing) What combinations of crewmen are missing and how many crews are missing each combination? For example, how many crews are missing both their driver and loader?

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103. (IF ANY CREWS ARE NOT FULLY STAFFED) How do you train tank gunnery when crewmen are missing?

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104. During the last 24 months, how often did you have to cancel gunnery training because of missing crewmen?

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105. Are there any crewmen in your unit that are not MOS-qualified as tank crewmen?

YES \_\_\_\_\_ NO \_\_\_\_\_

106 (IF 105 = YES) How many crewmen in your unit are not MOS-qualified as tank crewmen?

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107. (IF 105 = YES) How many crews in your unit have just one crewman that is not MOS-qualified, more specifically:

- a. a tank commander \_\_\_\_\_
- b. a gunner \_\_\_\_\_
- c. a driver \_\_\_\_\_
- d. a loader \_\_\_\_\_

108. (IF 105 = YES) How many crews in your unit have two or more crewmen that are not MOS-qualified?

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109. (IF 108 > 0) What combinations of non-qualified crewmen are there and how many of each combination?

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110. (IF 105 = YES) Does your unit have any problems training tank gunnery with crewmen who are not MOS-qualified?

YES \_\_\_\_\_ NO \_\_\_\_\_

111. (IF 110 = YES) What kinds of problems?

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112. During the last 24 months, how often did you have to cancel gunnery training because of having crewmen who were not MOS qualified?

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113. Does personnel turnover or crew turbulence create any major problems for training tank gunnery in your unit?

Yes \_\_\_\_\_ No \_\_\_\_\_

114. (IF 113 = YES) What specific problems does personnel turnover create for training tank gunnery?

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DATA REQUIRED BY THE PRIVACY ACT OF 1974  
(5 U.S.C. 552a)

TITLE OF FORM

PRESCRIBING DIRECTIVE

AR 70-1

AUTHORITY

10 USC Sec 4503

2. PRINCIPAL PURPOSE(S)

The data collected with the attached form are to be used for research purposes only.

3. ROUTINE USES

This is an experimental personnel data collection form developed by the U. S. Army Research Institute for the Behavioral and Social Sciences pursuant to its research mission as prescribed in AR 70-1. When identifiers (name or Social Security Number) are requested they are to be used for administrative and statistical control purposes only. Full confidentiality of the responses will be maintained in the processing of these data.

4. MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION

Your participation in this research is strictly voluntary. Individuals are encouraged to provide complete and accurate information in the interests of the research, but there will be no effect on individuals for not providing all or any part of the information. This notice may be detached from the rest of the form and retained by the individual if so desired.

FORM

Privacy Act Statement - 26 Sep 75

DA Form 4368-R, 1 May 75



## INSTRUCTIONS

The Human Resources Research Organization (HumRRO), under contract with the Army Research Institute (ARI), is developing a strategy for training tank gunnery in the ARNG. Included in the strategy will be guidelines for the use of training devices and simulators.

To develop this new strategy, we need information on the current procedures for training tank gunnery, the merits and problems associated with these procedures, and the role that training devices and simulators currently play in gunnery training.

This data collection instrument is intended to provide us with information on gunnery training as it is currently conducted. There are three forms that we are asking you to fill out. The first form concerns training events. The second concerns the use of training devices and simulators. The third form contains miscellaneous questions about tank gunnery training. The instructions for the first two forms are located on the page immediately preceding each form. The instructions for the third form are on the form itself.

## INSTRUCTIONS FOR QUESTIONS DEALING WITH TRAINING EVENTS

There are seven questions dealing with 23 different training events. Many of the questions are about training events that your unit does not conduct. If your unit does not conduct an event, write **NO** in response to the first question, and do not answer the remaining six questions for that event.

Question 1. The first question asks if the training event is conducted. If your unit conducts the training event, write **YES** in the appropriate space. If it does not conduct the event, write **NO**. Answer this question for each of the 23 training events.

Question 2. The second question asks if the training event serves as a GATE test. A GATE test is an exercise that an individual, crew, or unit must pass before moving on to the next training event. For example, Tank Table VIII would be a GATE test if crews must qualify on it before participating in gunnery exercises at the section or platoon level. If the training event is a GATE test for another training event, write **YES** in the appropriate space. If it is not a GATE test, write **NO**. If the training event is a GATE test, write the name of the event for which it is a GATE test. For example, Table VIII may be a GATE test for Table IX.

Question 3. The third question asks if the event is fired every year, every other year, or every third year. Write a **1** (for every year), **2** (for every other year), or **3** (for every third year) to indicate your answer.

Question 4. The fourth question asks how many times an event was fired during the past 24 months.

Question 5. The fifth question asks where the event was fired. Tell whether the event was fired at the armory, the local training area, a major training area, or some other location. Be specific.

Question 6. The sixth question asks what gunnery devices (such as MILES or TELFARE) were used for the event, and what types of ammunition (if any) were fired.

Question 7. The seventh question asks what problems the unit experienced when conducting the event.



TRAINING EVENT	1. TRAINING EVENT CONDUCTED?	2. GATE TEST? IF YES, FOR WHAT EVENT?	3. FIRED EVERY 1, 2, OR 3 YEARS?	4. TIMES FIRED LAST 24 MONTHS	5. WHERE FIRED	6. DEVICES USED AND/OR TYPE OF AMMO FIRED	7. PROBLEMS, IF ANY
TABLE I							
TABLE II							
TABLE III							
TABLE IV							
TABLE V							
CALIBRATION							
TABLE VI							
TABLE VII							
TABLE VIII							
TABLE IX							
TABLE X							
TABLE XI							
TABLE XII							

TRAINING EVENT	1. TRAINING EVENT CONDUCTED?	2. GATE TEST? IF YES, FOR WHAT EVENT?	3. FIRED EVERY 1, 2, OR 3 YEARS?	4. TIMES FIRED LAST 24 MONTHS	5. WHERE FIRED	6. DEVICES USED AND/OR TYPE OF AMMO FIRED	7. PROBLEMS, IF ANY
CALFEX							
TABLE A							
TABLE B							
TABLE C							
TABLE D							
TABLE E							
TABLE F							
TABLE G							
TABLE H							
TABLE I							

## INSTRUCTIONS FOR ITEMS DEALING WITH TRAINING DEVICES

There are six questions (Questions 8 - 13) dealing with 13 training devices.

Question 8. This question asks if the device is available in your company. Write **YES** if the device is available in the company. Write **NO** if the device is not available in the company.

Question 9. This question asks if it is available to your unit elsewhere. Answer this question only if the device is not available in the company. Write **YES** if it is available elsewhere, and **NO** if it is not.

Question 10. This question asks where the device is available. If your answer to Question 2 is **YES**, then tell where the device is available. Be specific.

Question 11. This question asks how many times the device was used by your unit during the past 24 months.

Question 12. This question asks on which gunnery tables the device was used. If the device was not used on any gunnery table, write **NONE**. If the device was used on one or more gunnery tables, indicate which tables.

Question 13. This question asks what major problems were experienced when using the device. If the device was used, and no problems were encountered, write **NONE**. If the device was used and some problems were encountered, describe these problems.

DEVICE	8. IS DEVICE AVAILABLE IN COMPANY?	9. IF NOT, IS IT AVAILABLE ELSEWHERE?	10. IF AVAILABLE, WHERE?	11. TIMES USED LAST 24 MONTHS	12. USED ON WHICH TABLES?	13. MAJOR PROBLEMS, If ANY
BREWSTER						
TELFARE						
STOUT						
MILES						
LTID						
HOFFMAN						
M1 VIGS					N/A	
M-COFT					N/A	
U-COFT					N/A	
M1 TANK						
THRU-SIGHT VIDEO						
HAND-HELD TUTOR					N/A	
TOPGUN					N/A	

14. Listed below are training problems that may be experienced by some ARNG units. Describe how serious each problem is for your unit. Use the following numbers to show your judgments.

1 = A serious problem

2 = A problem, but not serious

3 = Not a problem

- \_\_\_ Shortage of tanks
- \_\_\_ Poor condition of tanks
- \_\_\_ Shortage of ammo
- \_\_\_ Shortage of fuel
- \_\_\_ Shortage of qualified instructors
- \_\_\_ Shortage of training devices
- \_\_\_ Lack of operators' manuals or other guidance on how to use training devices
- \_\_\_ Shortage of manua's and other training materials
- \_\_\_ Insufficient time available for training
- \_\_\_ Too many other tasks that must be trained
- \_\_\_ Too much time required for administrative duties
- \_\_\_ Lack of access to tank firing ranges
- \_\_\_ Distance to tank firing ranges is too far
- \_\_\_ New guardsmen are untrained in gunnery
- \_\_\_ Not enough hands-on training during IDT
- \_\_\_ Not enough MOS qualified tank crewmen
- \_\_\_ Low morale
- \_\_\_ Guardsmen miss training sessions
- \_\_\_ Other ( \_\_\_\_\_ )
- \_\_\_ Other ( \_\_\_\_\_ )

115. How would you rate the gunnery skills of the tank crews in your unit?
- Better than in AC units
  - The same as in AC units
  - Worse than in AC units
16. Below is a list of training devices and equipment that can be used to train tank gunnery. Which do you think should be used first, second, third, and so on to train tank gunnery. Write 1 alongside the device that should be used first, write 2 alongside the device that should be used second, and so on. Write ? alongside any device or piece of equipment you don't know well enough to judge. (IMPORTANT: The purpose of this question is not to find out which device or piece of equipment is best. The purpose is to find out the order in which you think the devices should be used during gunnery training.)
- Tank, dry fire
  - Tank, live fire
  - TOPGUN
  - M1 VIGS
  - MILES
  - M-COFT (or M1 U-COFT)
17. Below is a list of training aids that can be used to teach guardsmen about tank gunnery. Rate the usefulness of each aid for this purpose. Use the following numbers to show your ratings:
- 1 = extremely useful
  - 2 = somewhat useful
  - 3 = not useful at all
  - ? = don't know
- Hand-Held Tutor
  - Handbook for Sight Picture Training
  - M1 Fire Command Booklets
  - Tank Combat Tables (FM 17-12-1)
  - Operator's Manual for the M1 Tank (TM 9-2350-255-10)
  - Tank Platoon (FM 17-15)
  - Soldier's Manuals for M1/M1A1 Armor Crewman (Skill Levels 1-4)