RESEARCH PAYS OFF FOR THE RESERVE COMPONENT: U.S ARMY RESEARCH INSTITUTE PRODUCTS FROM 1985-1998

Joseph D. Hagman

and

Ruth H. Phelps

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14. ABSTRACT *(Maximum 200 words)*: This special report summarizes selected research and development (R&D) products produced between 1985 - 1998 by the U.S. Army Research Institute (ARI) for the Army's Reserve Component (RC) (i.e., National Guard and Reserve). The product summaries cover the areas of individual, crew, unit, and battle staff training, distance learning, personnel turbulence, what we know from deployments, and the associated payoff, all keyed to the specific RC operational readiness constraint(s) (e.g., training time, geographical dispersion, personnel turbulence) that each product was designed to address. In providing this information, we hope to reveal not only what ARI has done up until now, but also the scope of what it is capable of doing in the future, to support RC R&D product needs of the 21st Century.

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FOREWORD

The mission of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is to maximize combat effectiveness through timely research in the accession, training, use, and retention of soldiers, and to support decision making by Army leaders through personnel performance and training research, development, and study and analysis programs. This mission extends to the Total Army, and thereby encompasses both the Active Component (AC) and the Reserve Component (RC) (i.e., National Guard and Reserve).

In performing this mission, ARI provides products of vital importance to both components as they seek to better understand, measure, predict, and enhance soldier/unit performance. These products are developed in response to expressed needs of sponsors and proponents, who are the initial beneficiaries. In addition, ARI's support for the Total Army includes technology transfer, technical advisory service, and the documentation of information for dissemination purposes.

This special report is written to provide the military and behavioral research communities with a summary of research and development (R&D) products produced by ARI from 1985-1998 with the potential for enhancing future RC readiness. We provide this report with the hope that it will reveal not only what ARI has done up until now, but also the scope of what it is capable of doing in the future, to support RC R&D product needs of the 21st Century.

ZITA M. SIMUTIS
Technical Director

RESEARCH PAYS OFF FOR THE RESERVE COMPONENT: U.S. ARMY RESEARCH INSTITUTE PRODUCTS FROM 1985-1998

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INTRODUCTION

How many times in the past as a Reserve Component (RC) policy maker or unit commander have you wanted to identify quickly what behavioral research and development (R&D) products are out there to enhance unit readiness? Sure, product information exists in various databases or document services, but the task of sifting through their voluminous, often technical, holdings for help is almost overwhelming. In addition, many of the products described in these sources are retrofits originally designed for use by the Active Component (AC). Consequently, they don't always work best in the resource-constrained RC environment.

We at the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) understand your situation and have done something about it. We've published a single-source catalog of our recent RC-oriented products that we hope you will find to be both thought provoking as well as useful readiness enhancers (Hagman & Phelps, 1998).

The present document is a condensed version of this catalog written in executive summary format. For the most part, product descriptions are keyed to the specific RC readiness constraint(s) that each product is designed to address and that you, as a policy maker or unit commander, must eventually come to grips with.

LIMITED TRAINING TIME

Perhaps the most obvious readiness constraint the RC must face is limited training time. At best, using 240 days as the basis of comparison, RC units have less than one-sixth the training time available (i.e., 38 and 39 days for the Army Reserve [USAR] and National Guard [ARNG], respectively) to their AC counterparts. Yet, the RC is challenged to attain and maintain comparable readiness standards.

To meet this challenge, the RC is looking more and more to the use of training aids, devices, simulators, and simulations (TADSS) as a way to increase home-station (armory or reserve center), weekend drill (Inactive Duty Training [IDT]) time productivity. Such productivity increases are possible because of the ability of TADSS to (a) reduce, and in some cases even eliminate, the travel time normally needed either to access operational equipment at local/major training areas (LTAs/MTAs) or to train collectively at battalion level or above, (b) minimize the need for access to live-fire range/maneuver areas and the associated expenditure of costly live-fire ammunition, and (c) maximize learning, retention, and transfer through increased opportunities for task repetition and variety during training.

Individual and Crew-Level Training

This section describes some of the TADSS-related research products that we've developed to help the RC maximize

payoff from the limited time available for individual and crew-level training.

Rifle Marksmanship Predictor

This product gives RC unit trainers an easy-to-use look-up table (Table 1) for predicting the chances of soldier 1st-run M16 rifle record fire qualification at the Marksman, Sharpshooter, and Expert levels (Hagman, 1998). Predictions are based on record fire scores obtained on a prototype marksmanship (and squad-level tactics) training device called the Engagement Skills Trainer (EST) (Firearms Training Systems, Inc., 1996).

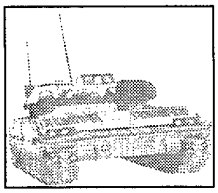
Using Table 1, a unit trainer can predict that a soldier with a simulated record fire score on EST of 9 (Column 1), for instance, will, on the average, shoot a live-fire range record fire score of 23 (Column 2) and have a 50% chance of successful 1st-run qualification at the Marksman level (Column 3). Analogous predictions can also be made at the Sharpshooter and Expert levels. Predicted live-fire outcomes can then be used to identify when soldiers have received enough prior EST-based training, and which soldiers should undergo remedial training *before* going to the range. Thus, scarce training time can be spent on those who need it, and not on those who don't. Our ability to develop such a predictor also supports the possibility of using EST, or EST-like devices, for yearly marksmanship qualification firing when RC access to outdoor range facilities is limited.

Table 1. EST-Based Tool for Predicting Soldier Probability of Record Fire Qualification at the Marksman (≥23), Sharpshooter (≥30), and Expert (≥36) Levels.

EST	Predicted Mean	Probability (%) of Live-Fire Score		
Score	Live-Fire Score	≥23	≥30	≥36
1	19	10	--	--
3	20	20	--	--
5	21	30	--	--
7	22	40	--	--
9	23	50	--	--
10	24	60	--	--
12	25	70	--	--
13	26	--	10	--
14	26	80	--	--
16	27	--	20	--
17	27	90	--	--
18	28	--	30	--
20	29	--	40	--
21	30	--	50	--
23	31	--	60	--
24	32	--	70	10
26	33	--	80	--
27	33	--	--	20
29	34	--	90	30
30	35	--	--	40
32	36	--	--	50
33	37	--	--	60
35	38	--	--	70
37	40	--	--	80

From "Using the Engagement Skills Trainer to Predict Rifle Marksmanship Performance," by J. D. Hagman, *Military Psychology, 10(4)*, 215-224. Copyright by Lawrence Erlbaum Associates, Publishers. Reprinted with permission.

Tank Gunnery Predictor



Similar in concept to that developed for rifle marksmanship, this product gives RC armor unit trainers an easy-to-use look-up table (Table 2) for predicting a tank crew's chances of 1st-run qualification on Tank Table VIII (Hagman & Smith, 1996). Predictions are based on scores obtained from the firing of simulated Table VIII exercises present on the advanced training and evaluation matrix of a tank gunnery training device called the Conduct-of-Fire Trainer (COFT).

Using Table 2, an armor unit trainer can predict that a crew with a COFT exercise score of 765 (Column 1), for instance, will, on the average, fire a Table VIII score of 700 (Column 2) on the live-fire range, and have a 50% chance of successful 1st-run qualification (Column 3). Predicted live-fire outcomes can then be used to (a) determine when each tank crew has received enough COFT-based training, (b) identify which crews should undergo remedial training *before* their arrival on the range, thereby maximizing the payoff from each crew's live-fire experience while conserving costly, main-gun ammunition in the process, and (c) help calculate the magnitude of main-gun ammunition savings associated with different levels of gunnery proficiency on COFT. Consequently, the RC can do now what it hasn't been able to do before -- determine what a "pound" of tank gunnery training is worth in terms of dollars and cents.

Table 2. COFT-Based Tool for Predicting a Tank Crew's Chances of 1st-Run Table VIII Qualification.

COFT Score	*Predicted Table VIII Score*	*Probability of Firing ≥700 on Table VIII*
620	562	10%
669	609	20%
706	644	30%
737	673	40%
765	700	50%
793	727	60%
824	756	70%
861	791	80%
910	838	90%

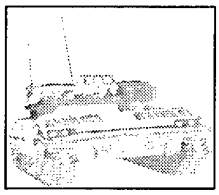
From "Device-Based Prediction of Tank Gunnery Performance," by J. D. Hagman and M. D. Smith, *Military Psychology, 8,* 59-68. Copyright 1996 by Lawrence Erlbaum Associates, Publishers. Reprinted with permission.

Live-Fire Prediction Software Program

As an extension of the above work, we've developed a Windows 3.x/95-based software program for helping RC unit commanders develop their own predictions specifically tailored to the particular devices and live-fire ranges they use for training and evaluation (Hagman, 1998). This program is not tied to the prediction of tank gunnery or rifle marksmanship performance. Rather it can be used to predict the outcome of any live-fire evaluation event that is simulated on a training device.

The program is easy to use. Once the required device and live-fire scores are collected and then entered, along with other identifying information, by the user (Figure 1 shows the program's data entry screen), a click of the mouse on the "View Predictions" button displays the desired predictions in tabular format similar to that shown in Tables 1 and 2. A copy of this program can be downloaded currently off the "New Products" section of ARI's Internet Home Page at www-ari.army.mil.

A Device-Based Tank Gunnery Training Strategy



The capability to predict live-fire performance from device-based performance has enabled ARI to develop a proficiency-based tank gunnery training strategy for the RC (Hagman & Morrison, 1996). In general, this strategy maximizes the efficiency of device usage, provides the opportunity for standardized, company-level implementation at home station, and promotes successful transition from device- to tank-based training and associated live-fire evaluation on Tank Table VIII. In doing so, it shows RC armor unit commanders how to complete the device-based portion of their tank gunnery training program in just three drill weekends, and afterwards be able to predict how many, and which, crews will

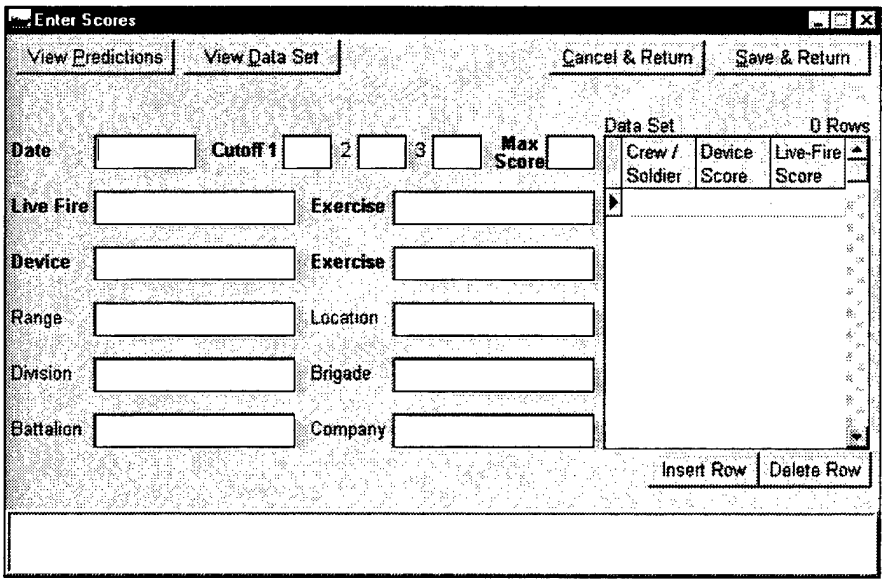


Figure 1. Data entry screen for prediction program

be 1st-run qualifiers. In doing so, it eliminates any guesswork in determining which crews to train, which devices to use, and which training and evaluation exercises to conduct for maximizing the payoff from the training time invested.

A Time-Compressed Gunnery Training Strategy

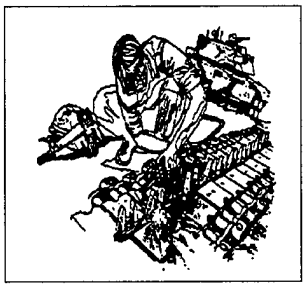
PROJECT SIMITAR

We've also just finished assessment of a device-oriented strategy developed under Project SIMITAR (Simulations in Training for Advanced Readiness) for gunnery training in armored and mechanized infantry units (Smith, 1998a). This strategy uses devices, such as the COFT and Abrams Full-Crew Interactive Simulation Trainer (AFIST), to augment and, in some cases, replace the use of Abrams Tanks/Bradley Fighting Vehicles and some traditional live-fire gunnery "tables" for training and evaluation purposes.

Our assessment findings reveal that the SIMITAR strategy successfully enables armored and mechanized infantry units to accomplish crew- (Table VIII), as well as platoon-level (Table XII), gunnery objectives during a normal 39-day training calendar year. Thus, the RC training year doesn't have to end like it often does -- with the firing of crew-level Table VIII qualification during the last few days of Annual Training (AT). In addition, the SIMITAR strategy enables using units to accomplish more without the demand for additional time or ammunition.

As part of the above assessment, we've developed an additional item that the RC training management community might find useful when trying to determine the impact of future training strategy interventions -- a database for keeping track of changes in unit gunnery performance over time (Smith, 1998b).

A Model Program for Maintenance Training



With support from Training and Doctrine Command's (TRADOC's) Training Technology Agency, we've also developed a computer-based, self-study, Model Training Program for RC Units (MTP-RC) designed to train/sustain M1 Tank mechanics on troubleshooting and maintenance skills when operational equipment (i.e., tanks) is unavailable (Graham, 1987).

Although this program was found to improve the maintenance skills of RC mechanics at both the Direct and General Support (DS/GS) levels, its courseware is now outdated because of recent RC tank modernization efforts. We've learned some valuable lessons from the development effort itself, however, that are worth mentioning here. Specifically, we've learned that:

1. A computer-based, self-study approach to the training of maintenance-related skills works well, even in the absence of operational equipment.

2. Just being able to understand and follow steps prescribed in technical manuals is a giant step toward sustaining maintenance proficiency.

3. A computer-based approach to maintenance training can be implemented at home station, thereby making more productive use of available drill time through elimination of travel to and from an operational equipment site (e.g., Mobilization and Equipment Training Site [MATES]).

4. Given a fixed amount of training time, greater task variety and more task repetitions can be accomplished under a computer-based, as opposed to an equipment-based, instructional approach. This should promote better learning, retention, and transfer, regardless of training content (Wells & Hagman, 1989).

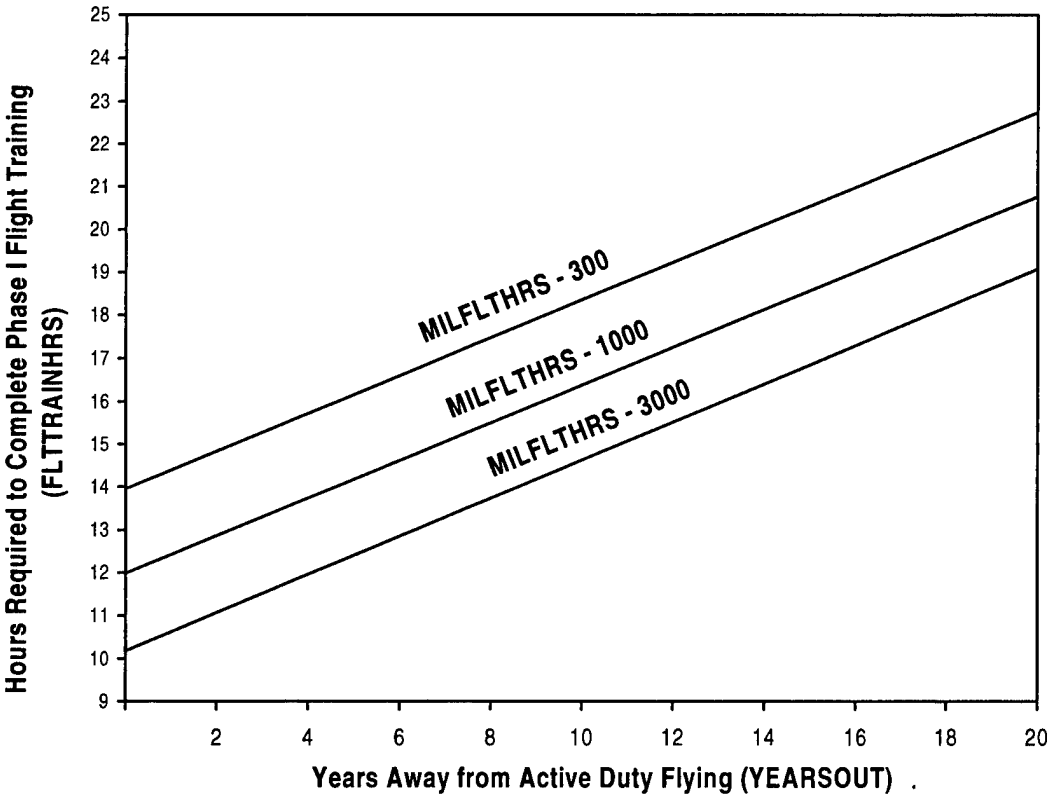
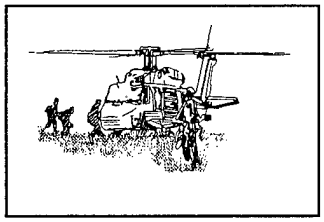
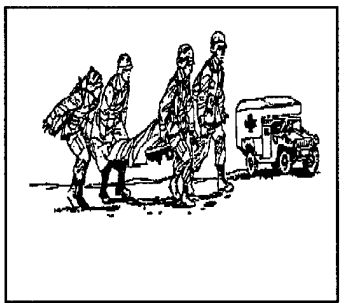


Figure 2. Relation between needed flight training hours (FLTTRAINHRS) and aviator years away from active duty flying (YEARSOUT) and number of active duty flight hours (MILFLTHRS).

Training of Individual Ready Reserve (IRR) Rotary-Wing Aviators and Field Medics



Rotary-Wing Aviators. Back in the '80s, we developed a flight training program that included voluntary home study of its academic materials segment prior to aviator arrival at the training site (Wick, Millard, & Cross, 1986). This program worked well and cut on-site training time down significantly. Perhaps of more current interest, however, we also found that it would be smart for mobilization planners to consider the extent of IRR aviators' active duty flight experience, as well as their length of active duty separation time, when deciding who should be called up for mobilization. If one wants to cut the amount of time and money needed for IRR aviators to regain their flight proficiency during pre/postmobilization training, then those with only a short separation from active duty, and/or who flew in the AC for many years, should be the first ones selected (Figure 2 shows the supporting data).

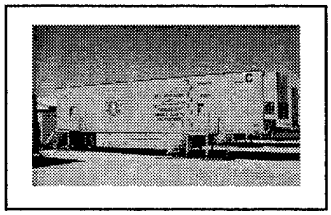


Field Medics. As a follow-up to our work with IRR aviators, we continued our efforts to identify factors predictive of sustainment training success, this time using IRR field medics (Wisher, Sabol, Maisano, Knott, Curnow, & Ellis, 1996). Our findings support the idea of extending the separation interval for calling up medics during a mobilization beyond the 12-month period currently used, especially when their military and civilian jobs match. They also suggest that mobilization retraining time could be cut down considerably by emphasizing the call-up of medics with high aptitude and full active duty tour experience. Lastly, and somewhat contrary to the results obtained with IRR aviators, the findings for IRR medics revealed that length of separation time from active duty may not be as important a predictor of IRR retraining success as once thought. Indeed, military-civilian job match, general aptitude level, and length of active duty experience appear to be the factors from which the biggest "bang for the training buck" can be predicted.

Unit Tactical Training

In this next section we switch gears from individual and crew-level products to those designed to maximize the payoff from available unit tactical and battle staff training time. In general, these products take the form of specially developed simulation-based exercises and computer-based instructional courseware lessons. At the end of this section we also provide research findings suggesting that considerable time and cost could be saved by delivering these products from a distance.

The Virtual Training Program



At the request of the National Guard Bureau (NGB), the Defense Advanced Research Projects Agency, and the U.S. Army Armor Center, we've developed an

extensive set of structured training exercises and after-action review (AAR) materials to enable efficient simulation-networking (SIMNET)-based, unit tactical training during IDT/AT periods spent at the Mounted Warfare Simulations Training Center, Fort Knox, KY (Campbell, Campbell, Sanders, Flynn, & Myers, 1995). About 100 exercises have been developed for platoon, company, and battalion/task force levels.

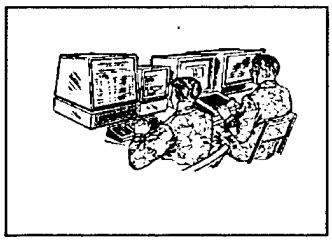
The platoon and company exercises, called SIMUTA tables because of their design under the Simulation-Based Multi-Echelon Training Program for Armor Units (Hoffman, Graves, & Koger, 1994), are designed as sequential segments of movement-to-contact and defense-in-sector battalion missions. Each table incorporates a prepared operations order (OPORD) with supporting graphics, actions of an intelligent opposing force (OPFOR), and instructions for setup.

The battalion/task force exercises are run from the unit's crossing of the line of departure to the resolution of the battle. Maneuver forces operate in SIMNET vehicle compartments, while the battalion staff operates in areas laid out like command posts, with radios providing the communications linkages. Thus far, we've found that participation in these tables/exercises produces steady improvements in unit tactical performance and associated staff operations. Efficiency has also been a plus with units being able to finish up to six platoon/company tables, or two repetitions of a battalion exercise, during an extended (12-14 hr) training day.

Battle Staff Training

The Janus-Mediated Staff Exercise (JMSE) and Staff Group Trainer (SGT)

In further support of the Virtual Training Program initiative, we've developed exercise materials for two battle staff training simulations: (a) the JMSE, which provides battalion/task force staff exercises in command post (CP) operations, and (b) the SGT, which is an automated tactical operations center designed to support the training of staff officers on techniques for facilitating the flow of information to, from, and between, higher, adjacent, subordinate, and supporting headquarters.



JMSE. We've developed JMSE exercises to be compatible with the SIMNET-based, battalion-level, tactical training described above. JMSE exercises focus on the execution phase of movement-to-contact and defense-in-sector missions, with both conducted on simulated National Training Center (NTC) terrain. The battalion being trained operates the Main CP (to include the intelligence officer [S2], operations and training officer [S3], the S3 section, and the fire support officer [FSO]), and the Combat Trains CP (CTCP) (to include the personnel officer [S1] and logistics officer [S4]). The exercises are conducted and monitored by an exercise control group and observers. The former operates the Janus computer workstations and controls the actions of the simulated

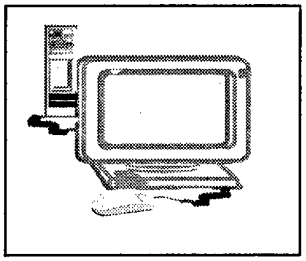
subordinate/supporting units, the OPFOR, and brigade headquarters. Subordinate and supporting unit controllers respond to directions from the CP/CTCP much like real units would. Observers record events and provide feedback to the participating unit.

We've designed JMSE's exercise structure and the needed supporting materials for the battalion and simulated brigade (e.g., planning materials, OPORD, the commander's intent, a decision support template, overlays, scripted message traffic, and guidance on how to deal with unscripted situations), as well as the intelligent OPFOR (e.g., the battle scenario, contingency plans, commander's intent, adjacent unit activities, reinforcement options, priority of fires, and decision points). To support control of the exercises, we've also developed individual workbooks for each of the nine required exercise controllers. These workbooks include guidance on operating the workstations, as well as information specific to each exercise.

Tryouts conducted thus far have shown JMSE-based training to be quite beneficial to participating Army National Guard (ARNG) staff officers (Hoffman, Graves, & Koger, 1995) and that both movement-to-contact and defense-in-sector missions can be conducted over an extended drill weekend. A sample schedule is shown in Table 3.

Table 3. Sample Schedule for a JMSE Extended IDT Weekend.

Friday Night		
	· Receive orientation from the JMSE team	1.0 hr
	· Begin preparing the JMSE CP/CTCP for the exercise	
	· Review orders and plans	
Saturday		
	· Complete CP/CTCP preparation	1.0 hr
	· Conduct orders brief/rehearsals	1.0 hr
	· Execute JMSE Movement-to-Contact Exercise	1.5-2.0 hr
	· Conduct AARs	2.5 hr
Sunday		
	· Complete CP/CTCP preparation	1.0 hr
	· Conduct orders brief/rehearsals	1.0 hr
	· Execute JMSE Defense-in-Sector Exercise	3.0-3.5 hr
	· Conduct AARs	2.5 hr



SGT. SGT exercises are designed to support the training of procedures needed to process information within the context of a movement-to-contact mission (BDM Federal, PRC, & Human Resources Research Organization, 1994). They involve the battalion commander, executive officer [XO], S1, S2, either the S3 or S3 air, S4, and FSO, who are connected via local area network.

An SGT workstation is shown in Figure 3. From the map display monitor, participants can create/edit digital overlays similar to acetate overlays used in the field, and from the message monitor they can receive incoming reports, create new reports, copy a report to a folder, or forward a report to another workstation over the network. Exercise difficulty is controlled by changing the speed of incoming reports.

Our role in the SGT project, thus far, has been to develop the tactical situation for the movement-to-contact mission, prepare all messages associated with its execution, and provide detailed AAR materials. Work continues to enhance further the effectiveness of the simulation, extend its application to brigade-level operations, and cover deliberate attack and defensive missions.

Because of JSME and SGT, the ARNG now has the ability to conduct progressive staff training during weekend drills, starting with low-difficulty staff training with SGT followed by a demanding, more realistic, full-staff exercise with JMSE.

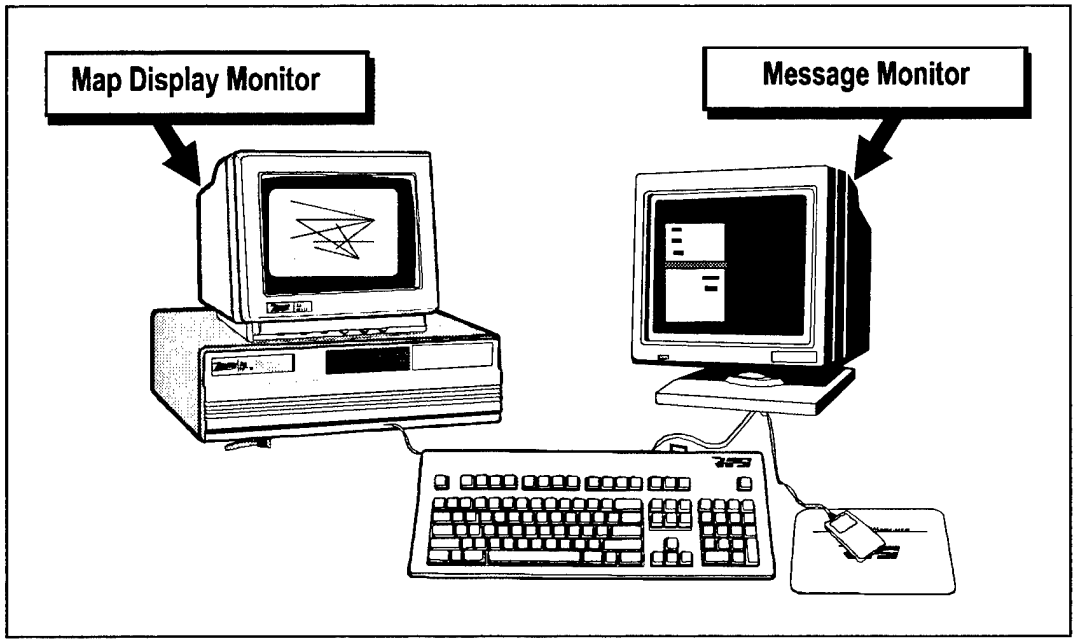


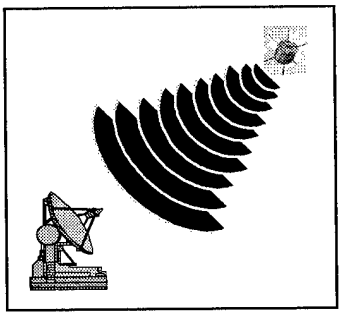
Figure 3. An SGT Workstation.

The Battle Staff Training System

Another offshoot of our involvement in Project SIMITAR has been the development of self-paced, computer-based instructional courseware, collectively known as the Battle Staff Training System (BSTS) (Andre & Salter, 1995, 1996). Its target audience includes battle staff officers of the mechanized infantry battalion and armored brigade, as well as CSS officers in the forward support battalion and its counterpart in the separate brigade - the support battalion.

In general, over 100 computer-based lessons (many of which include a combination of graphics, still photographs, text, full-motion video, and audio) have been developed thus far for delivery on CD-ROM. In all cases, this instruction is designed to be compatible with ARNG training schedules, combining on-demand home or home-station delivery capabilities.

Remote Delivery of a Command Post Exercise



The above unit tactical and battle staff training products have been developed with an eye toward their future remote delivery. The thinking is that, under the assumption that communications technologies can bridge the distance gap between participants without degrading their quality of training, remote delivery can significantly reduce, or in some cases even eliminate, the need for travel ("windshield time") to and from a common training site.

We first investigated the validity of this assumption back in the mid '80s by examining the feasibility and cost of conducting a remotely delivered command post exercise (CPX) wherein geographically dispersed battle staffs intercommunicate from their home stations through use of long-distance communications technology (Smith, Hagman, & Bowne, 1987). Command groups from three battalion-level units from separate states participated in a 3-day remote Computer Assisted Map Maneuver Simulation-driven CPX. CPs were established for each battalion-level unit, the brigade-level command, and the corps. Participants communicated over commercial telephones, fitted with external speakers and microphones, while slow-scan TV receivers and facsimile machines were used to transmit graphic and textual information.

Performance data showed that the CPX was effective, while cost data revealed that substantial savings could be achieved through its remote delivery. As shown in Figure 4, a similar remotely conducted CPX using leased equipment would be the least expensive option if only a single exercise were conducted. Under a purchase option, the first remote exercise would be more expensive to conduct than a standard exercise because of the initial equipment investment cost. This cost could be fully amortized, however, after only two exercise iterations. From then on, the cost savings would favor remote delivery. Thus, the results of our research suggest that the notion of remotely conducted training is one that promises future rewards for the RC as it strives to deliver effective training to its soldiers at a reasonable cost.

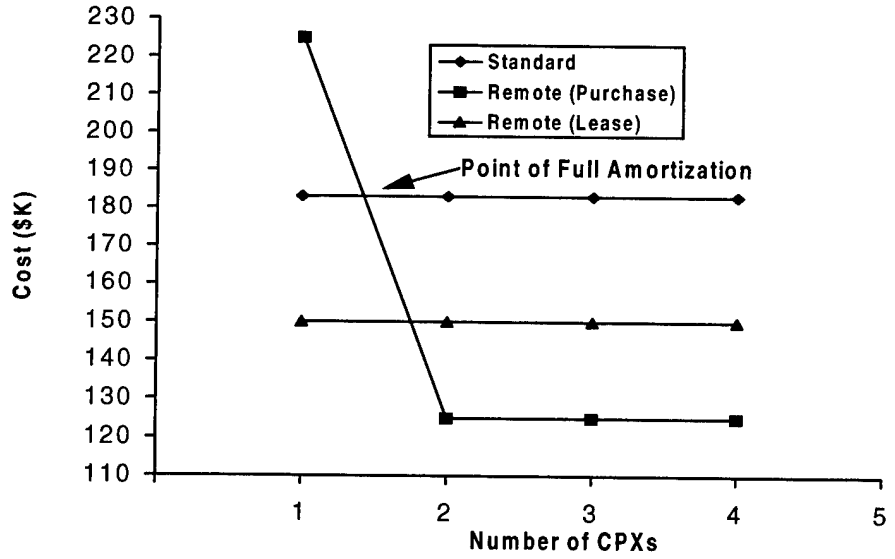


Figure 4. Cost per exercise iteration for standard and remote CPX with leased and purchased communications equipment.

GEOGRAPHICAL DISPERSION

As the RC strives to attain and maintain total force readiness standards, one of the major challenges it must face is how best to train its geographically dispersed soldiers and units. This dispersion exists in several forms. For instance, with over 4,200 separate armories/reserve centers in over 4,000 separate communities across the U.S. and its territories, RC units (i.e., battalion, company, detachment) must travel an average of 105 miles to reach their higher headquarters. At the battalion level, the typical RC unit is dispersed over a 150-mile radius, and, at higher levels of command (e.g., division), few RC headquarters have all of their subordinate units co-located in even the same state.

RC units must also travel considerable distances to reach their training support sites: 9 miles to reach a motor pool and 129 miles to train on their major equipment which is typically located at a MATES. They must also travel 40 miles to the nearest LTA and 154 miles to the nearest MTA for collective training. And lastly, RC units must travel 68 miles to reach a rifle range, and, if they want to draw devices for training, they must travel 150 miles to do so. These are all average one-way distances and whenever they apply, time is needed to make the trips.

As one can imagine, this geographical dispersion makes communication and coordination among RC units more difficult and reduces the frequency with which units can use training facilities and areas. As a result, most RC training is conducted at the local armory/reserve center where it is difficult to provide the kind and amount of realistic training needed to meet the readiness challenge.

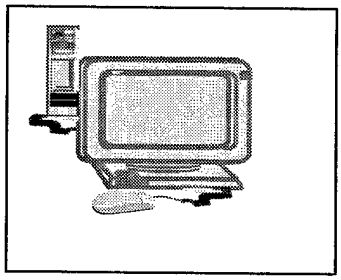
For some time now, we've recognized this challenge and have investigated the use of long distance communications technologies for bringing soldiers/units

"closer together" for training. The next section describes some of our products designed with this goal in mind.

Distance Learning

Our distance learning (DL) program has included three phases. In the first phase, we produced a decision tool to help match delivery mode with training course characteristics. In the second phase, we developed and conducted experimental computer-mediated courses to evaluate their cost and effectiveness. In the third phase, we are assisting the RC with establishment of a national-wide DL network.

Asynchronous vs. Synchronous Delivery



The first question that must be answered before developing a DL course from scratch, or converting an existing resident school course to a DL format, is whether the course should be delivered synchronously or asynchronously. Synchronous delivery requires simultaneous, real-time interaction between instructor and student using communications technologies such as audio/video conferencing. Asynchronous delivery, in contrast, does not require simultaneous, real-time instructor and student interaction and uses technologies such as computer-based instruction, interactive videodisc-based training, and computer-mediated conferencing. While both delivery options are possible in many situations, the question is when should one or the other be used for best results.

To help answer this question, we've developed a simple tool for training course developers to use in deciding which delivery option(s) to adopt on the basis of desired training course characteristics (Hagman & Dykstra, 1988). The multiple-choice questions asked by this decision tool, and the implications of their answers, are summarized in Table 4. Synchronous delivery should be considered a viable option, for example, when large numbers of trainees are available at the same time and location(s), when training is to be provided only at scheduled times, when progress is group paced, and when training is not automated. In contrast, asynchronous delivery should be considered to be a viable option when trainees are geographically dispersed, when training is to be delivered on demand, and when training is automated.

Table 4. Course Characteristics to Consider When Determining DL Delivery Mode.

Characteristics	*Synchronous*	*Asynchronous*
Training offered	Only at scheduled times	On demand
Number of trainees per site	Many	Few
Pace controlled by	Trainers or groups of trainees	Individual trainees and trainer
Feedback given to	Group	Individual trainees or group
Training sequence	Fixed	Flexible
Training automated	No	Yes
Training strategy	Lecture, group study, simulation	Group study, drill and practice, tutorial, simulation

Asynchronous Computer Conferencing

Because RC soldiers typically hold full-time civilian jobs and part-time military jobs, our research since the mid '80s has focused on DL technologies likely to fit into such demanding work schedules. Consequently, we've completed a 5-year programmatic effort to examine the use of a DL technology called asynchronous computer conferencing, or ACC for short. ACC enables trainees to communicate with an instructor and one another at different times and from different locations via computers and Internet-like networks. The result is creation of an "on-line," instructor-facilitated, electronic classroom wherein trainees participate in discussions, are assigned homework, take tests, and receive feedback from a distance.

The results of our two ACC implementation efforts involving a technical module of the Engineer Officer Advanced Course (EOAC) and the common core phase of the Basic Noncommissioned Officer Course (BNCOC) were encouraging (Phelps, 1993). Cost comparisons showed that ACC delivery saved almost half the expense of resident training when amortized over 10 course iterations (Phelps, Ashworth, & Hahn, 1991), and trainee performance in both ACC courses equaled or surpassed that of resident trainees.

Course completion rates weren't bad either. Those for the ACC courses were far above the traditional average of 44% found for home study via correspondence courses, lower (64%) than those found for resident EOAC, and about the same (90%) as those found for resident BNCOC. Lessons learned during administration of the EOAC module helped to improve the completion rate for BNCOC and are likely to produce relatively high completion rates for future ACC-delivered courses.

In general, our efforts to answer the question of how best to conduct ACC-based training for the RC have led to the following five recommendations:

1. Establish firm, instructor-imposed deadlines for trainee activities. As shown in Figure 5, trainee progress was slower than desired when trainees were allowed to self-pace (Topics 1-5) during

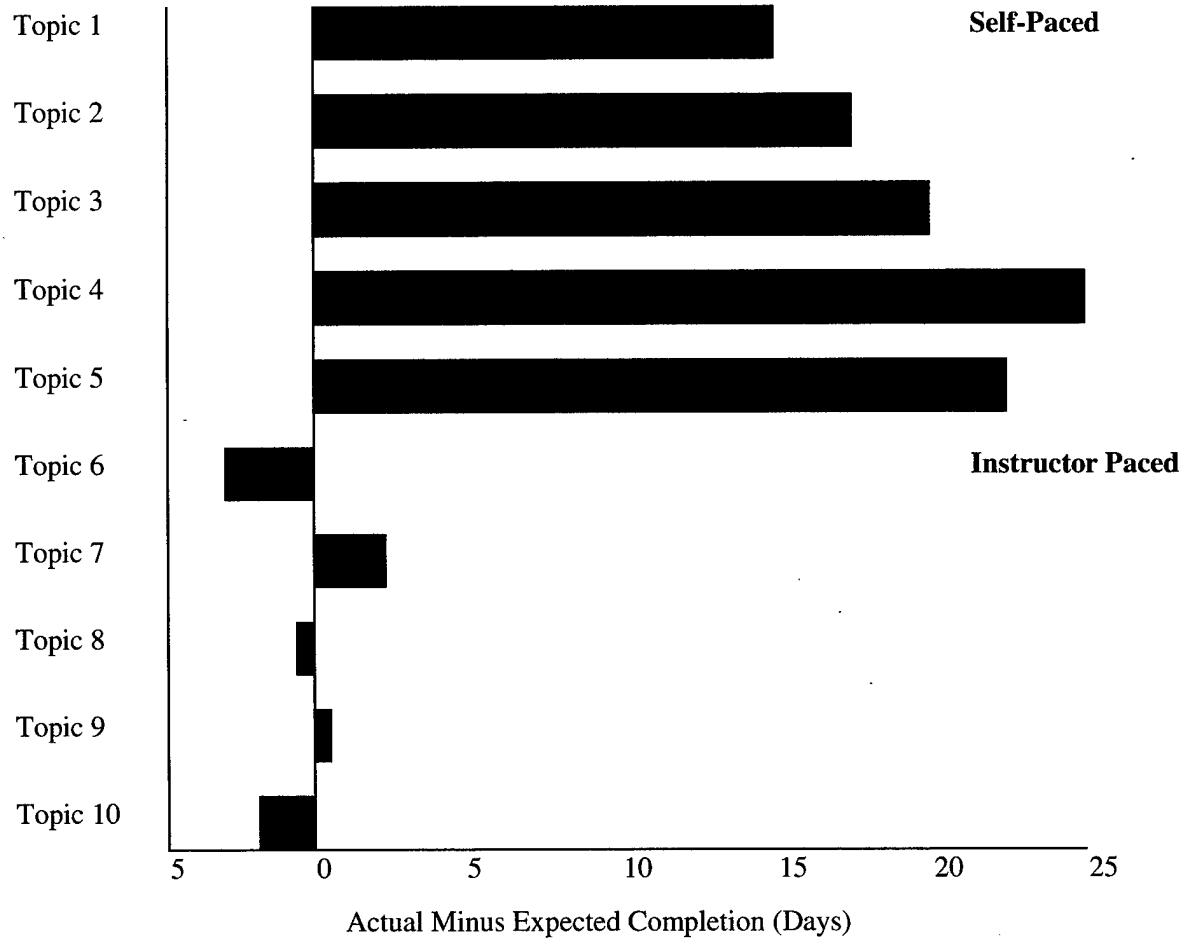


Figure 5. EOAC module progress under self- (Topics 1-5) and instructor (Topics 6-10) pacing.

the EOAC module, whereas deadlines were generally met when instructor pacing was instituted (Topics 6-10).

2. Incorporate high student-instructor interaction.

3. Expect no more than 10 hours of trainee time per week in addition to those hours already devoted to civilian jobs and weekend drills.

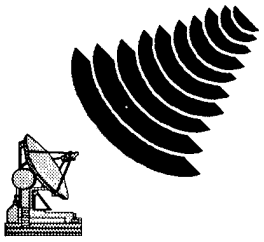
4. Establish incentives for early completion and sanctions for slow progress.

5. Incorporate group activities.

We've documented our experiences in designing and delivering ACC-based training in two handbooks: one for converting resident courseware to DL (Hahn, Harbour, Wells, Schurmann, & Daveline, 1990), the other for explaining

how to train instructors for their new roles in the DL "classroom" (Hahn, Ashworth, Phelps, Wells, Richards, & Daveline, 1991).

An Implementation Strategy for Distance Learning



Interest in DL has increased considerably since we completed our ACC work. In response to the National Defense Authorization Act of 1995, for instance, NGB is establishing a nation-wide network of DL classroom sites eventually to be located within a 60-min commute of all ARNG soldiers.

To this end, the first step being taken by NGB is to establish a demonstration network across Maryland, Pennsylvania, Virginia, West Virginia, and the District of Columbia (See Figure 6 for the location of specific sites.).

TRADOC is responsible for converting the military courses targeted for delivery over this network. Criteria used for determining which courses to convert, and when, include consideration of the number of Military Occupational Specialty (MOS)-unqualified soldiers, changes to unit missions, restructuring of jobs, changes to doctrine or technology, training load, MOS density, and the availability of existing training materials.

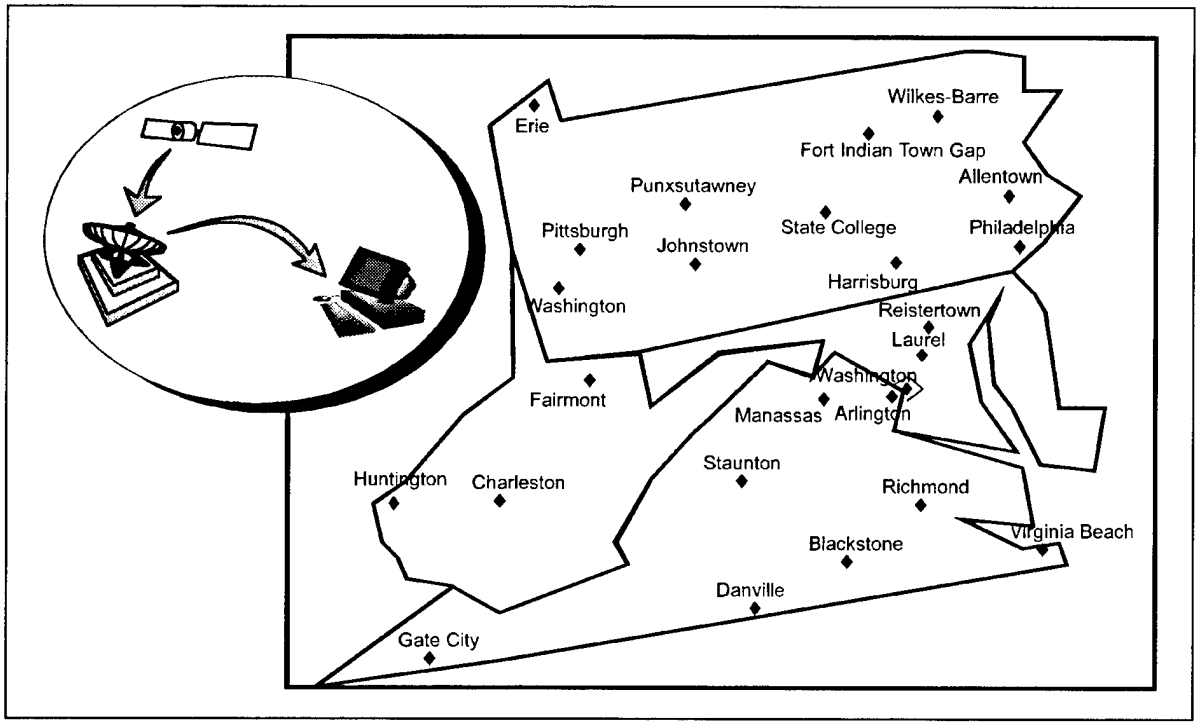


Figure 6. Sites for NGB's prototype regional DL network

We're assisting in this prioritization process and related activities by helping with the identification of existing courses available for remote delivery, development of the content of courses to be delivered, and creation of a model for shared (military and civilian) regional network usage (Ramsberger, Knerr, McKinnery, Sticha, Kronholm, & Gividen, 1996).

As more courses are delivered over this network, we currently plan to continue to assist the RC in evaluating their cost-effectiveness and in identifying lessons learned. This should enable a smooth transition to a wider, nation-wide DL network implementation.

PERSONNEL TURBULENCE

The New Recruit Surveys

Although RC units must train under more severe constraints than their AC counterparts, it is commonly thought that greater stability in the RC is an offsetting plus. While this perception may or may not be true depending on how stability is defined, the RC still must endure its share of personnel turbulence. For example, about 19% of ARNG, and 31% of USAR, enlisted soldiers leave the force each year (i.e., attrition). When one adds those soldiers who leave their units but stay in the force (i.e., turnover), these figures jump to 32% and 44%, respectively. At the E5 and below level, turbulence (i.e., attrition plus turnover) in units jumps further to 38% and 48% per year. These turbulence levels (and the adverse impact on readiness they bring with them), a shrinking candidate pool, diminishing national interest in military service, and an increasing demand for persons with advanced technical aptitudes have heightened Army interest in how best to recruit and retain high quality soldiers in both the AC and RC.

To help answer this question, we've conducted a considerable amount of attitude and opinion survey-related research. Although most of this research has focused on the AC, some of it has attempted to answer RC-specific questions such as (a) who tends to leave, (b) what determines job satisfaction, and (c) what aspects of family support need to be improved and how. The findings of this RC research are presented below.

Who Tends to Leave the RC?

Based on responses obtained from over 4,000 USAR and ARNG nonprior service accessions on the New Recruit Surveys that we administered back in the '80s, we were able to identify what factors are, and are not, related to soldier attrition (Dale, 1989). We found that attrition was not related to whether soldiers (a) were male or female, (b) enlisted for reasons of money or education, or (c) had different levels of educational aspirations.

In contrast, we did find that soldiers who had low grades in school, who enlisted because of their inability to find a civilian job, or who stated that they wanted to leave the RC after their initial enlistment were likely to have higher attrition rates. And lastly, we found that soldiers (at least those in the ARNG) who received enlistment bonuses were likely to remain in the force. To the extent that these results apply today, they suggest that Army efforts to recruit high-quality enlistees, and the continuation of the

policy to offer monetary bonuses for enlistment, should reduce RC soldier attrition.

Predicting Job Satisfaction

The Army Experience Survey

Back in 1990, then Secretary of the Army John Marsh noted that over the next 6 years the AC could expect to lose an annual average of 5,000 noncommissioned officers (Nicosia) and 10,000 commissioned officers through normal attrition and involuntary separation. Some of these prior service soldiers will opt to join the RC, thereby minimizing the need for additional training upon their arrival for duty in the unit. The likelihood of prior service soldiers choosing to transition from AC to RC, and then to remain in the latter, will depend to a large extent on how satisfied they were with their prior AC jobs and how satisfied they are with their subsequent RC jobs.

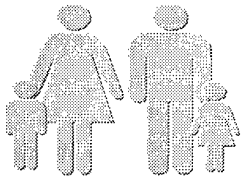
To assist the Army in its quest to provide job satisfaction, and thereby increase its chances of retaining high-quality soldiers via AC to RC transition, we conducted the 1985 Army Experience Survey to identify determinants of job satisfaction specific to the RC (e.g., Westat, Inc., 1986). Survey data were gathered from prior service enlisted soldiers who had joined RC units after leaving the AC. Respondents were asked how satisfied they were with their AC and RC jobs and with the military in general.

Overall, we found that RC soldier job satisfaction tended to be higher for respondents who (a) were patriotic, (b) attributed enhanced personal development (e.g., increased self-confidence, job skills, self-discipline, and the ability to work well with others) to prior AC service, (c) had enlisted initially in the AC to obtain education benefits or to earn money for school, (d) were satisfied with their spousal relationship, (e) had received bonuses to enlist or had increased their income since joining the RC, and (f) intended at the time of their AC enlistment to make the Army a career.

Not surprisingly, we also found that job dissatisfaction tended to be higher for respondents who reported being dissatisfied with their prior AC service. Some of the reasons found for dissatisfaction included officers who don't care about their troops, low pay, long working hours, no credit for good work, too many rules, unfair treatment, inadequate training, and uninteresting work.

These findings suggest some specific areas where the Army might concentrate its efforts to ensure job satisfaction among soldiers who opt to serve in RC units after leaving the AC. They also suggest that current AC efforts to support soldier development, offer enlistment bonuses, and foster positive family impact should continue to make a difference.

Looking Out for the Family



The Army Family Research Program

The intent of this effort was to collect information about the concerns of Army spouses, family readiness for member mobilization, awareness/use of Army family programs, and reenlistment intentions (e.g., Westat, Inc., 1990). We found RC spouses to be concerned primarily about benefits and entitlements and that concerns/program needs in other areas differed across RC member rank. Compared to enlisted members and their spouses, for instance, officers and their spouses reported more conflicts between reserve military duties and family. Concerns commonly shared by RC spouses centered around the long-term benefits of reserve service and the need for information about the unit's and family's role if mobilization were to occur. The most common complaints from spouses included unpredictable training times, training during special occasions and family vacations, and extra duties.

Answers to questions about mobilization readiness revealed that few RC spouses thought mobilization was likely and that few families had completed preparations for it. Regardless of rank, however, the spouses of RC members were very interested in receiving information about mobilization.

Answers to questions about spousal awareness of Army family programs revealed that, in general, RC spouses, especially those of junior enlisted soldiers -- a group that was most in need, indicated little awareness of the various Army family programs.

Answers to questions related to enlistment intentions revealed that although soldiers and their spouses had problems with RC membership, reenlistment intentions were generally favorable. The major factors cited by spouses for supporting the member's retention decision were relatively high job satisfaction/security and good retirement benefits.

We took the above findings to suggest that the Army should continue to identify the needs of RC families and to address their needs in the following ways:

1. Establish and/or improve existing support programs to increase family preparedness for mobilization.

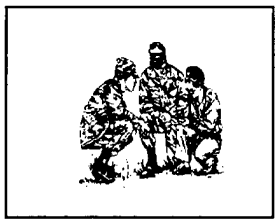
2. Increase awareness of existing RC family support programs and their benefits.

3. Establish and maintain predictable training schedules.

4. Educate unit leaders on how to identify and solve the unique problems faced by RC members and their families.

Recently, we've published a family support sourcebook that addresses these recommendations (Bell, Stevens, & Segal, 1996).

Attrition After NTC, Reforger, and Blazing Trails Exercises



The Army has taken several steps to raise RC training readiness levels. These include providing improved weapons and training equipment, increased levels of full-time manning, increased pay and benefits, and an increase in the number and type of training opportunities. The latter has included increased participation in NTC rotations, European (Reforger) mobilization exercises, and construction and logistics exercises in Central America (Blazing Trails).

Our research in the late '80s and early '90s (Grissmer & Nogami, 1988; Grissmer, Kirby, & Nogami, 1990) has revealed that RC units participating in these extra training opportunities tended to have higher soldier attrition rates than those of nonparticipating (comparison) RC units. As shown in Table 5, this difference was most pronounced for NTC rotations where units typically underwent an intensive year-long train-up and extended AT. Suggested reasons for this increased attrition rate included: (a) family conflicts, especially among junior enlisted soldiers and mid-level officers, resulting from the need for extra AT time, (b) employer conflicts resulting from extended soldier/employee work absences, and (c) loss of pay opportunities because of additional time spent on military training.

These findings suggest that RC participation in extra training opportunities may not only increase training readiness, but also soldier attrition. Many soldiers understandably opt to leave the RC rather than jeopardize their family situation and civilian job. By finding ways to reduce family and job conflicts associated with increase training opportunity participation, the Army should maximize its chances of having both a ready and up-to-strength RC.

Table 5. Attrition in NTC/Reforger/Blazing Trails Units Versus that in Comparison Units Over an 18-Month Period.

Type of Unit	*Unit Attrition (%)*
NTC units	29.95
Comparison Units	22.57
Reforger Units	28.42
Comparison Units	26.72
Blazing Trails Units	31.53
Comparison Units	30.62

WHAT WE KNOW FROM DEPLOYMENTS

A significant portion of our past RC-specific work has been devoted to assessing the impact of RC participation in overseas deployments. This work has included two assessments of Operation Desert Storm (ODS) mobilization impact on RC members and their families, a recent comprehensive look at the first deployment of a composite AC/RC unit for a 6-month rotational peacekeeping mission in the Sinai Peninsula, and an assessment of AC and RC soldier attitudes toward their deployment for Operation Joint Endeavor (Foley & Steinberg, 1998). Finally, another publication which applies to both AC and RC soldiers is based on several different contingency operations. It pulls together recurring lessons learned on people issues and provides recommendations (Steinberg & Folly, 1998).

In general, our deployment-related research has uncovered important findings of use to AC/RC planners and policy makers alike as they ponder the pros and cons of placing RC soldiers on prolonged active duty assignments. Many of the resulting recommendations have been implemented or have led to future research. In this final section, we summarize the work from which these recommendations have come.

RC Soldier Reactions to the Operation Desert Storm Call-Up

In 1991, we asked RC soldiers about their mobilization experiences, as well as their perceptions of unit readiness, leadership, and training during ODS (Harris, Elig, & Oliver, 1992). Although we found that, in general, respondents were satisfied with the ODS call-up and were confident in their ability to perform in battle, they did report having some problems (see Table 6).

Table 6. Identified Problem Areas

- o Disorganization during in-processing
- o Lack of information
- o Poor treatment by AC
- o Problems with pay and allotments
- o Loss of income/employment
- o Inadequate leadership
- o Underuse

For example, respondents gave their leaders negative marks. Only about half agreed, for instance, that their leaders would perform well in combat or that they were genuinely concerned about soldiers and their families. About half also indicated that they were underused during the call-up period. This left many feeling that they had been taken from their families and civilian jobs for no apparent reason.

Enlisted soldiers were more likely to complain about the accuracy of their pay and allotments, while both enlisted soldiers and officers tended to agree that the availability of personnel, medical, and dental records declined substantially during their call-up period. Many respondents also reported that they lost income as a result of being called up, with self-employed soldiers being the hardest hit. Many expressed feeling that (a) they did not receive accurate and timely information on the progress of military operations and on events impacting their ability to keep families and employers apprised of their personal situation, (b) their in-processing was disorganized, and (c) they were not treated like equals by the AC. In a separate data collection effort (Steinberg, 1991), we found similar problems reported by IRR soldiers who had been mobilized for ODS. Although our work was completed over 5 years ago, the more recent findings of others show that many of our findings still hold true today (AmerInd, Inc., 1997a, 1997b) and support the above-mentioned areas where the Army could improve the call-up experiences of RC soldiers. Such actions are likely to reduce attrition levels among mobilized RC soldiers.

Peacekeeping in the Sinai

Faced with an increasing need for troop support in world-wide peacekeeping missions at a time when reductions in force strength are taking place, the Army is exploring ways for using RC soldiers to help fulfill its peacekeeping commitments. One peacekeeping mission for which the U.S. has deployed an infantry battalion for 6-month rotations since 1982 is the Multinational Force and Observers (MFO) mission in the Sinai Peninsula. The purpose of this mission is to observe and report violations of the 1979 Egyptian-Israeli Treaty of Peace resulting form the Camp David Accords (Figure 7 shows the area of U.S. peacekeeping responsibility).

In response to a request from the Army Chief of Staff, the Army examined the feasibility of recruiting qualified RC volunteers and deploying a battalion-sized peacekeeping unit composed of AC and RC soldiers for this mission. The composite "test" battalion included 80% RC and 20% AC soldiers. The officer and NCO positions were equally divided between the two components, with most junior enlisted positions filled from the RC. We were asked to conduct an assessment of the volunteer recruiting process, training, unit cohesion, morale, effectiveness of family support, and home-unit impact associated with this peacekeeping mission (Phelps & Farr, 1996).

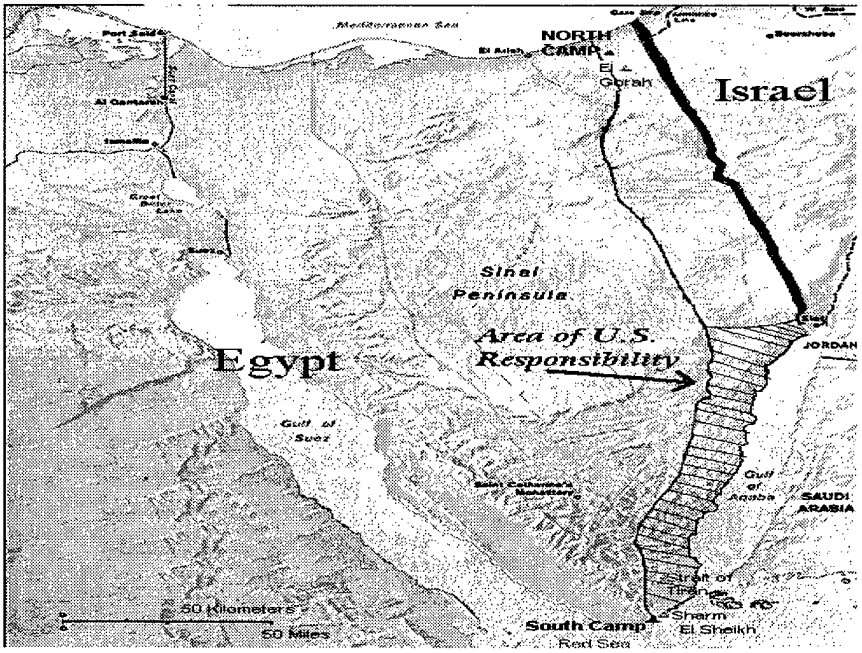


Figure 7. **The U.S. area of peacekeeping responsibility.**

The Recruiting Process. The primary lesson learned about the recruiting process was that, if the Army expects RC soldiers to show up when called upon to do so, then communication with volunteers needs to be maintained continuously between the time a soldier volunteers and is subsequently expected to report for duty.

Cohesion, Task Performance, and Morale. The test battalion showed a level and stability of squad cohesion, and task performance, comparable to that found for a previous AC rotation. Some soldiers did experience morale problems as well as problems resulting from discrepancies between what they were told during the recruiting/assignment process and what they experienced once on duty.

Family Support. Even though only 30% of the RC soldiers were married, their families were scattered across 31 states. As a result, a combined AC/RC family support system was established to energize existing support assets of each component. Although most RC spouses used family and non-Army friends as their primary means of support, those who did use the Army's family support system found the kind of support they needed.

Home Unit Impact. Although the 29th Infantry Division (Light) contributed the majority (294) of the test battalion's RC volunteers, we found that the division was proud to have been chosen to sponsor the peacekeeping mission, that home-unit morale was higher upon the return of peacekeeping volunteers, and nearly all junior and senior leaders endorsed future RC participation in similar peacekeeping missions.

Recommendations. The above findings suggest that RC and AC soldiers can be successfully integrated into a composite unit for the purpose of peacekeeping. Consideration of the following recommendations will allow the use of RC volunteers to remain a feasible option for the Army to entertain as it attempts to meet its overseas peacekeeping responsibilities:

Personnel:

1. Frequently communicate with RC peacekeeping volunteers about their status in the call-up selection process.

2. Identify in advance, and communicate in writing, exactly what the conditions, opportunities, and benefits are for the RC peacekeeping volunteer.

Training:

1. Emphasize peacekeeping tasks during soldier and leader training so that predeployment time can be shortened.

2. Develop unit measures of peacekeeping performance.

3. Include command and control synchronization training through use of TADSS.

Morale:

1. Train leaders to recognize (and address) problems unique to peacekeeping assignments, such as boredom and isolation, that may lead to morale problems.

2. Increase the frequency and accuracy of information provided during recruitment and training phases to ensure realistic soldier expectations.

3. Allow each soldier at least one free phone call home per month.

Family Support:

1. Ensure family support remains a high priority throughout peacekeeping missions.

2. Assign family support providers as geographically close to families as possible.

3. Maximize the use of current family assistance programs.

4. Ensure family addresses and telephone numbers are accurate.

WHAT'S THE PAYOFF?

So, how does the RC benefit from the R&D products just described? In general, we believe the payoff to be substantial and necessary for the RC to meet readiness challenges stemming from the interrelated constraints of limited training time, geographical dispersion, and personnel attrition that exist within the RC's unique operational environment. In this final chapter, we present some of the reasons for this belief and, in doing so, provide examples of how particular products can be used to minimize the negative impact of these constraints on RC efforts to attain and maintain readiness.

Overcoming Time Constraints: TADSS-Related Products

Perhaps the most significant payoff from our research has come from the development of TADSS-related products designed to help the RC make the most out of the limited time (i.e., 38/39 days) available for training each year. In general,

these products allow RC unit leaders/trainers to do things now that they've never been able to do before, and to do them more effectively and efficiently.

Individual and Crew-Level Training

In the area of individual- and crew-level training, leaders/trainers can now predict individual/crew-served weapons live-fire performance with the use of TADSS. This predictive capability can lead to live-fire ammunition savings through the targeting of unlikely first-run qualifiers for remedial training before their arrival on the live-fire range. It also allows the value of a "pound of training" to be calculated by plotting expected live-fire outcomes/costs for different levels of TADSS-based proficiency. The capability to predict live-fire performance from TADSS-based performance also suggests that TADSS could be used, in place of live-fire, for yearly individual/crew-served weapons qualification when outdoor range facilities are lacking or subject to restricted access.

Our strategy-related products go a step farther by showing just exactly how to incorporate these predictive capabilities within a proficiency-based, TADSS-oriented training program that ensures the most effective/efficient use of limited training time. These strategies are easy to implement at the unit (company) level and provide specific guidance on how, for whom, on which TADSS, and for how long training should be conducted for best results.

Our newly developed software prediction program can support accomplishment of the above training goals as well as the making of future TADSS procurement decisions. One could argue, for example, that no procurements should proceed until the performance of prospective TADSS has been shown to predict performance on the live-fire weapons system(s) being simulated. Our software program enables this predictive relation to be calculated quickly and accurately *before* a final procurement decision is made, thereby minimizing the chances of fielding TADSS that don't "work" as advertised.

Unit Tactical and Battle Staff Training

In the area of unit tactical and battle staff training, our development of TADSS-related products has extended RC capabilities to train tactical skills at the company- through brigade-level, and individual and synchronization skills at the battle staff level. This training capability exists at Fort Knox's Mounted Warfare Simulation Training Center and can be exported via long-distance distributed communications technologies to a unit's home station for use during weekend drill periods. Consequently, the RC can now conveniently train via TADSS at the local armory or reserve center in a collective mode at organizational levels never before possible. Such TADSS-based training promotes effectiveness and resource efficiency to the extent that either more task repetitions, more task variety, or more of both are possible for a given amount of time and money, thereby maximizing the levels of task/skill acquisition, retention, and transfer produced from the resources (e.g., time, OPTEMPO costs) expended.

Overcoming Dispersion Constraints: DL-Related Products

The impact of unit/soldier geographical dispersion would not be a problem for the RC if it weren't for the added resources (e.g., time and money) needed to bring soldiers together for training. The payoff

from our DL-related products, therefore, stems from their ability to bring training to soldiers, instead of vice versa, thereby reducing, and in some cases even eliminating, the need for these added resource expenditures. In general, these products demonstrate that many of the traditional RC training challenges associated with geographical dispersion of units/soldiers can now be overcome via DL. Indeed, by using DL, the RC can make better use of available training time by minimizing unproductive travel time and costs without sacrificing training effectiveness. More specifically, our research has shown ACC to be an exciting new approach to DL that can substantially increase the availability of training by enabling such training to be worked successfully into RC soldiers' busy schedules.

By-products of this work provide training course developers with needed background information on what sort of DL-related research has been done elsewhere in the past, and the kind of practical knowledge required for future successful design, development, and implementation of ACC as well as other DL approaches. And lastly, our more recent work has given the RC a boost toward the timely establishment of a nation-wide network of DL classroom sites by developing (a) an inventory of currently available DL courseware, (b) criteria for prioritizing courses for DL, (c) guidance on how to convert resident courses and evaluate their effectiveness/efficiency, and by (d) exploring the practicality of using the Internet for training purposes in the future. Once this network is established, RC soldiers will be within a 60-mile commute of a DL classroom.

Overcoming Attrition: Attitude and Opinion-Related Products

The challenges posed by limited training time and geographical dispersion are exacerbated by soldier attrition. Each time a soldier leaves the RC, a new one must be recruited and trained. This takes time and tends to reduce the overall level of training provided in the unit to accommodate soldiers with only entry-level skills. This has the potential effect of causing soldiers already in the unit to become dissatisfied with their less-than-challenging training, thereby further contributing to attrition. Thus, a thorough understanding of RC attrition is needed to guide future Army efforts to retain quality RC soldiers in the face of an ever-shrinking candidate pool.

To this end, our RC-related attitude and opinion survey research has provided the Army with a better understanding of which soldiers are likely to leave the RC, and why. Much of the information provided by our research has clear policy implications for actions that could be taken to reduce RC soldier attrition and, thereby, minimize the need for training new accessions.

Our findings have shown, for example, that many of the actions already being taken by the Army to recruit high-quality enlistees (i.e., enlistment bonuses, incentives related to education, retirement, and medical supplements), should also have a beneficial effect on attrition. In addition, actions designed to enhance AC job satisfaction (e.g., increased leader concern for soldiers/families, extension of AC low-cost health care programs, child care and development services, youth programs, family advocacy, and recreational programs to the RC) are all also likely to pay off, especially when measured by the number of prior AC soldiers transitioning to the RC.

Lastly, our research suggests that the AC must come to grips with the fundamental challenge of having to balance the positive impact that additional training opportunities (e.g., NTC rotations) have on readiness with the negative impact that these opportunities also appear to have on RC attrition.

Deployment-Related Products

Although our product development efforts have focused primarily on helping the RC with efforts to both reduce soldier attrition and enhance the effectiveness and resource efficiency of *pre*mobilization training, we've also provided the Army with considerable information on *post*mobilization training and the kinds of experiences reported by RC soldiers during the mobilization process and subsequent deployment overseas. This postmobilization information can help the Army to determine how, and with whom, to train for best results, and to minimize the impact of negative experiences on RC soldier morale, job performance, and willingness to remain in the force.

IRR Mobilization Exercises

Our work with the IRR demonstrates that using a rapid train-up approach involving voluntary prior at-home study can reduce the postmobilization training time needed to achieve Army standards. It also provides Army planners and policy makers with the kind of information needed to select prospective IRR candidates for post mobilization training based on success predictors such as the length of active army separation time, length of time spent on active duty, and the extent of military-civilian job match. Use of this information should ensure the effectiveness of soldier selection and the efficiency of postmobilization training after call up.

RC Soldier Reactions to ODS Call-Up

In general, our deployment-related research has uncovered useful findings for AC and RC planners and policy-makers alike as they ponder the pros and cons of placing RC soldiers on prolonged active duty assignments. Based on research conducted with RC soldiers called up for ODS, for instance, we've learned that the Army could take several actions that are likely to improve RC soldiers' satisfaction with the call-up process. Actions such as improving the efficiency of in-processing, providing more mission-relevant training at the mobilization site, ensuring better medical screening, and increasing Army sensitivity to the disruptions in civilian life associated with being called up for overseas deployment are just a few of the areas identified by respondents as influencing their satisfaction with the call-up experience. These actions should serve not only to increase the morale and job performance of RC soldiers once deployed, but also to reduce their attrition rate after stateside redeployment.

Peacekeeping in the Sinai

Our ground-breaking research in this area has demonstrated for the first time that RC volunteer and AC soldiers can be integrated successfully into a composite unit for peacekeeping purposes. In addition, our findings from the Sinai mission suggest that RC participation in peacekeeping missions is likely to engender increased pride and morale within units that contribute volunteers and that these units are likely to benefit in the long run from the presence of better trained soldiers upon their redeployment stateside after mission completion. And finally, our work has helped the Army target specific actions needed in the areas of recruiting, training, stateside family support, and home unit

impact to better ensure that RC participation in peacekeeping missions remains a viable option for fulfilling U.S. peacekeeping commitments in the future.

A FINAL WORD

In closing, we hope this report has provided a more comprehensive understanding of what ARI has done lately for the RC, as well as the wide ranging impact of the products it has developed. We also hope this report has produced an enhanced appreciation for the scope of work that ARI is capable of performing in the future to support the RC's R&D product needs of the 21st Century.

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