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Report to the Chairman, Subcommittee on Readiness, Committee on Armed Services, House of Representatives

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# ARMY TRAINING

# Commanders Lack Guidance and Training for Effective Use of Simulations



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GAO

**United States**
**General Accounting Office**
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**National Security and**
**International Affairs Division**

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The Honorable Earl Hutto
Chairman, Subcommittee on Readiness
Committee on Armed Services
House of Representatives

Dear Mr. Chairman:

The Army faces many constraints on the field training exercises that it has traditionally used to prepare its forces for wartime missions. Funding for the ammunition, fuel, and maintenance required for these exercises has been reduced, and environmental concerns restrict the use of ranges and maneuver areas. In response, the Army has turned to simulations to supplement field training exercises.[1] The Army estimates it will spend over $1 billion on simulations over the next 5 years.

Because of the Army's continuing large investment in simulation technology, you asked that we determine whether the Army (1) has an effective strategy to incorporate simulations in its training program and (2) has adequate controls to ensure that only approved simulations are developed and acquired.

## Results in Brief

The Army recently developed a training strategy to incorporate the use of simulations, but our review shows that the strategy will not provide unit commanders the detailed guidance they need to make the most effective use of simulations. Specifically, the guidance does not link simulations with the wartime tasks that units can expect to perform. In addition, the Army's professional development courses do not contain sufficient information on the availability and applicability of simulations. As a result, unit commanders must rely on guidance provided by higher commanders, which varies widely and is frequently vague, and their own experience to incorporate simulations into their training plans. Absent effective guidance and training on simulations, unit commanders will be unable to maximize the limited time and resources available for training.

In the past, Army units developed and purchased unapproved simulations and modified approved simulations. According to Army officials, commanders using unapproved or modified simulations ran the risk that

[1]The term "simulation" refers to the various devices that can substitute for or complement the training of soldiers and units in the field.

their units' training would be inconsistent with Army standards because these simulations might not have reflected the actual capabilities of weapons or opposing force doctrine and tactics. In 1992, the Army strengthened controls to ensure that only approved simulations are developed and purchased. These controls should prevent the recurrence of these problems.

## Background

The Army believes simulations are an effective tool for training its forces at many levels. Consequently, it is developing and acquiring new simulations to meet its goal of moving to a simulation-based training strategy. Between fiscal years 1993 and 1997, the Army expects to spend about $750 million to acquire simulations and another $400 million on simulation research and development.

The Army Training and Doctrine Command (TRADOC) has overall responsibility for developing simulations. TRADOC schools define simulation requirements and determine the validity of requests for new simulations. The Combined Arms Command Threats Directorate, a TRADOC component, confirms the accuracy of the opposing force doctrine and tactics to be incorporated in simulations. The Simulation, Training, and Instrumentation Command, a component of the Army Materiel Command, negotiates contracts for simulation hardware (computers) and software (programs) for newly developed and updated systems.

TRADOC also has key responsibilities for training commissioned officers. Officers attend TRADOC's schools and centers to receive basic and advanced training in their military specialties, which include air defense artillery, armor, aviation, engineering, field artillery, infantry, and logistics. The schools offer a variety of professional development courses that teach technical, tactical, leadership, and training skills. TRADOC's Command and General Staff College also offers courses to officers throughout their careers.

Unit commanders have the primary responsibility for the training of soldiers and units. Assisted by training officers, unit commanders at all levels of the Army prepare peacetime training plans to establish their units' proficiency in the tasks needed to perform critical wartime missions. After assessing the unit's proficiency, the unit commander develops a series of training exercises with specific objectives, scenarios, and resources that will develop and sustain a high level of proficiency in these wartime tasks.

Simulations can be used in training at many levels. At the brigade level and above, they can be used to improve the decision-making skills of senior battle officers before they command units in large-scale field training exercises. At the lowest level, simulations can be used to develop the basic skills of individual soldiers. Simulations commonly used to develop proficiency include

- conduct-of-fire trainers that replicate commander and gunner stations on tanks and Bradley Fighting Vehicles and have computer-generated images to test skills in target engagement techniques;
- the Multiple Integrated Laser Engagement System, which simulates direct-fire weapons from rifles to tank and helicopter gunnery systems; and
- the simulation network, consisting of tank and Bradley Fighting Vehicle compartments with computer-generated images of other vehicles on the battlefield, which provides crew-, platoon-, and company-level training.

We reported in 1991 that a consensus had developed among Army officials that simulations offer the potential for effective training. However, the report raised questions about whether appropriate procedures and funding sources were used to purchase simulations and about the adequacy of policy guidance, coordination, and Department of Defense (DOD) oversight of these acquisitions.[2] We also reported in 1991 that the Army had not determined the appropriate mix of field exercises and simulations, nor had it developed a comprehensive strategy for incorporating simulations into training. The report noted that the use of simulations among units varied depending on the interest of individual commanders.[3] Last year we reported on the training lessons learned from Operation Desert Storm. We noted that simulations added an important dimension to training at all echelons.[4]

[2]Army Training: Computer Simulations Can Improve Command Training in Large-Scale Exercises (GAO/NSIAD-91-67, Jan. 30, 1991).

[3]Army Training: Various Factors Create Uncertainty About Need for More Land (GAO/NSIAD-91-103, Apr. 22, 1991).

[4]Operation Desert Storm: War Offers Important Insights Into Army and Marine Corps Training Needs (GAO/NSIAD-92-240, Aug. 25, 1992).

## Training Strategy Lacks Detailed Guidance Needed for Planning Unit Training

The Army recently developed a training strategy to help unit commanders better incorporate simulations into their unit training plans. As designed, however, the strategy does not provide detailed guidance on which simulations can be used to train for specific wartime tasks. Training officers told us that the lack of linkage between simulations and specific wartime tasks is a primary impediment to effectively incorporating simulations into unit training plans. Accordingly, we believe the Army's training strategy will not resolve this issue.

## Development of New Training Strategy

In September 1990, TRADOC tasked the Combined Arms Command to lead the development of a new training strategy. The Army intended for the strategy to identify the training resources, including simulations, needed for training; serve as the basis for developing these resources; and help commanders better incorporate simulations into their unit training plans. The new strategy—called the Combined Arms Training Strategy—was approved by the Army on May 14, 1993, and published as Army Regulation 350-35. At the time of our fieldwork, the final draft of the strategy had been circulated throughout the Army.

The strategy provides unit commanders with a descriptive menu for training. Using this menu, a commander would develop a training plan tailored to the resources available at the unit's installation. The menu consists of gunnery and maneuver matrices describing the ideal annual training plan for each type and size of unit in the Army. The matrices list major exercises that should be conducted during the year. For each exercise, the matrices provide resource requirements; document applicable training standards; identify the "critical gates," or tasks, that a soldier or unit must perform and be evaluated on before progressing to more complex or difficult tasks or to field training; and list the simulations that may be available.

## Strategy Fails to Link Simulations With Specific Wartime Tasks

The Combined Arms Training Strategy will not help unit commanders incorporate simulations into their training plans because it is focused on exercises rather than tasks; that is, it identifies the simulations available for a training exercise but does not identify which simulations can be used for specific wartime tasks. These tasks are at the core of unit training plans. Because units are often assigned different missions, the tasks that they are expected to perform on the battlefield will vary according to their mission. One unit's mission, for example, might include the task of setting up a defense, whereas another unit might be expected to conduct an

assault. To determine the tasks that might apply to their type of unit, commanders and training officers regularly consult the Army Training and Evaluation Program manuals.

Different tasks may require different simulations. Also, training for some of the tasks, because of their nature, can incorporate simulations, whereas training for other tasks cannot. For example, the Army has simulations that can be used to train for the assault task, but no simulations are available to train all facets of the task of setting up a defense, such as placing obstacles to block or slow an enemy.

Thus, by failing to identify the simulations available for specific tasks, the Army's strategy may not prove useful to unit commanders. Of the 21 training officers we interviewed, 20 said that guidance linking simulations to specific wartime tasks would allow them to more effectively incorporate simulations into their training plans. They suggested that the strategy link simulations to the specific tasks in the Army Training and Evaluation Program manuals.

Further, the Army's strategy identifies neither the tasks to which the critical gates apply nor the simulations that can be used to train for a critical gate. The strategy's focus on exercises rather than tasks also will make it difficult for the Army to identify those tasks that are not supported by simulations and thereby establish a developmental need.

## Professional Development Courses Do Not Include Sufficient Information on the Use of Simulations

Professional development courses offered at TRADOC schools do not provide sufficient information on the use of simulations. Our review of the curricula at TRADOC's Command and General Staff College, Air Defense Artillery School, and Armor School and our discussions with school and course directors showed that officers did not receive training on the use of all simulations they were likely to encounter during their assignment to a troop unit. For example, the Armor School's course on the management and use of simulations covered only the conduct-of-fire trainers for the commander and gunner. The course did not include information on the Multiple Integrated Laser Engagement System or the simulation network. In addition, officials at all three schools said that none of their schools' training plan development courses address how simulations can meet unit training requirements.

Without more complete course information on simulations, unit commanders and their training officers may not be aware of all of the

simulations available to them when they develop their unit training plans. One battalion training officer told us he first became aware of a simulation to train brigade and battalion staff when he learned that his unit would be using the simulation in support of higher echelon training. Training officers at the divisions we visited told us that the professional development courses they completed did not provide them with adequate information on the use of simulations.

According to Army officials, TRADOC is aware of this gap in its training program and plans to direct its schools to incorporate more comprehensive training on the use of simulations in their curricula.

## Guidance From Higher Echelon Commanders Varies Widely

Officers of the 82nd Airborne, 4th Infantry, 2nd Armor, and 1st Cavalry Divisions said that although they used simulations, they lacked complete knowledge of the simulations available to train the specific tasks necessary to achieve mission proficiency—knowledge needed to incorporate simulations into training plans. As a result, they have had to rely on guidance from higher echelon commanders or rely on their own experience to determine how simulations should be incorporated into unit training plans.

Corps, division, brigade, and battalion commanders publish command training guidance to document their units' long-range training plans. This guidance provides information on wartime tasks, major training events and exercises, training evaluation and feedback, and training management. Concurrent with the command training guidance, commanders publish their units' long-range planning calendars depicting the schedule of events described in the guidance.

Training guidance provided by the higher echelon commands we visited varied widely in the depth of information provided on the availability and use of simulations. In one instance, the guidance simply recommended the use of simulations. However, the training guidance at another command identified the simulations available for use in the division and specified the training requirements that were to be met with simulations. In this case, officers attributed the detailed guidance to the higher echelon commander's knowledge of simulations and his personal commitment to their use.

In guidance issued by corps commanders, we noted a direct relationship between the quality of guidance on the use of simulations and the

availability of resources to conduct field training. The guidance was increasingly vague and less useful when field training resources were plentiful. That is, a unit with sufficient training funds and staffing focused their efforts on field training. On the other hand, a unit constrained by funding compensated by relying more heavily on simulations, and the corps commander's guidance reflected this by providing more useful information. For example, the commander's guidance on the use of simulations was abbreviated in a corps that was fully staffed and assigned a high priority for field training resources on the basis of its contingency mission. Units in this corps focused their training on field exercises. However, in a corps having fewer field training resources, the commander's guidance devoted an entire section to simulation-supported training. Moreover, the guidance stipulated that units should expand the use of simulations in their training programs to maximize the limited time and resources available for field training.

## Controls Over the Acquisition of Simulations Have Improved

Until recently, Army units developed and acquired unapproved simulations and modified approved simulations. Several units developed or modified simulations without validating weapons capabilities and the doctrine and tactics used by enemy forces. Also, major commands received Army procurement authorizations to independently purchase simulations. As a result, the Army had no assurance that these simulations were effective, were consistent with Army standards, and filled a training deficiency that could not be met by other means. However, we found that the Army has taken several steps to strengthen controls over the development and acquisition of simulations. If enforced, these controls should prevent a recurrence of these problems.

In 1992, the Army established the Simulation, Training, and Instrumentation Command and assigned it responsibility for acquiring and distributing simulations Army-wide. In addition, the Army established controls to ensure that organizations wanting to develop or buy simulations comply with all regulatory requirements. Under these controls, the TRADOC schools, acting as the proponents for their military specialties, develop functional requirements for new simulations. The requirements must justify the need for the simulation and show, for example, that the training deficiency cannot be met by other means, such as changes in doctrine, training methods, or organizational structure. TRADOC's Training Support Command and the Simulation, Training, and Instrumentation Command assist the schools in this effort.

Before the simulation can be developed, the TRADOC schools must obtain Army approval and funding. The funded proposal is reviewed by a working group consisting of representatives from the school; the Simulation, Training, and Instrumentation Command; the Training Support Command; and the user community. If necessary, the working group modifies the requirements to ensure that the simulation will meet all user needs within cost constraints. The Simulation, Training, and Instrumentation Command then contracts for the research, development, testing, and purchase of the simulation. TRADOC's National Simulation Center establishes the priority for distributing the simulation to installations.

## Recommendations

We recommend that the Secretary of the Army direct TRADOC to

- modify the Combined Arms Training Strategy, or develop an alternative means, to link simulations with specific wartime tasks and
- modify its professional development curricula to include instruction on the use of simulations, their linkage with specific wartime tasks, and techniques to incorporate those simulations into unit training plans.

## Agency Comments and Our Evaluation

We obtained official oral comments from DOD on a draft of this report. DOD generally agreed with our findings and agreed with one of our two recommendations. DOD did not agree with our first recommendation, stating that the Army's Combined Arms Training Strategy (1) purposefully does not link specific simulations to specific wartime tasks and (2) is intended to be descriptive rather than prescriptive. Also, DOD said that the constant changes now taking place in wartime tasks and types of simulation could not be institutionalized in a Combined Arms Training Strategy document that can be updated only on a relatively infrequent basis.

The Department may have misinterpreted our recommendation. First, our recommendation is not tied to modifying the Combined Arms Training Strategy; it recognizes that an alternative means of creating a linkage between simulations and wartime tasks may be used. Second, there is nothing contained in our recommendation that would prescribe the use of simulations to conduct training. Implementation of the recommendation would simply result in identification of the specific tasks that a simulation is capable of training. Commanders would still be free to select whatever training resources are available and appropriate for their purpose. Lastly, we are unable to reconcile DOD's disagreement with our recommendation

with its reference to the Army's Automated Systems Approach to Training program. According to DOD, the program will in the future allow unit trainers access to data bases that link available training resources, including simulations, to training tasks. According to an Army official, the system modules having this capability will be fielded, assuming that funds are available, in October 1994. We believe that this program will achieve the intent of our recommendation.

DOD agreed with our recommendation for modifying the Army's professional development curricula. It said that the National Simulation Center had written a plan to integrate simulation training into all levels of officer training. The primary training focus for certain simulations will be on how to plan and conduct a simulation exercise. The instruction will also include an explanation of the tasks that each simulation is appropriate to train.

## Scope and Methodology

To evaluate the Army's strategy for and control over the use of simulations, we interviewed officials from the Office of the Deputy Chief of Staff for Operations and Plans, Training Support Division, Washington, D.C.; the Simulation, Training, and Instrumentation Command, Orlando, Florida; and the Army Training and Doctrine Command, Headquarters, Fort Monroe, Virginia. We also interviewed officials from other TRADOC units, including the Army Training Support Command, Fort Eustis, Virginia, and the Combined Arms Command and Center for Army Lessons Learned, Fort Leavenworth, Kansas. We reviewed the Combined Arms Training Strategy and discussed the final draft of its contents with officials from these offices and with training officers.

To determine the amount and type of formal training provided to officers and noncommissioned officers on the use and integration of simulations in training plans, we interviewed officials at the various schools of the Command and General Staff College, Fort Leavenworth, Kansas; the Air Defense Artillery School and Sergeant Majors Academy, Fort Bliss, Texas; and the Armor School, Fort Knox, Kentucky.

We interviewed training officers of the following Army units about the training and guidance they received on the use of simulations:

- the I Corps Headquarters and 2nd Armored Calvary Regiment (Light), Fort Lewis, Washington;

- the XVIII Airborne Corps Headquarters and 82nd Airborne Division, Fort Bragg, North Carolina;
- the III Corps Headquarters, 1st Calvary Division, and 2nd Armored Division, Fort Hood, Texas; and
- the 4th Infantry Division (Mechanized), Fort Carson, Colorado.

We conducted our work between May 1992 and March 1993 in accordance with generally accepted government auditing standards.

We are sending copies of this report to the Chairmen, Senate Committee on Armed Services and House and Senate Committees on Appropriations; the Director, Office of Management and Budget; and the Secretaries of Defense and the Army. We will also make copies available to other interested parties upon request.

Please contact me on (202) 512-5140 if you or your staff have any questions concerning this report. Major contributors to this report are listed in appendix I.

Sincerely yours,

Mark E. Gebicke
Director, Military Operations
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