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ARMY RANGER TRAINING

Safety Improvements Need to Be Institutionalized



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Chairman
The Honorable Robert C. Byrd
Ranking Minority Member
Subcommittee on Personnel
Committee on Armed Services
United States Senate

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House of Representatives

In February 1995, four students from the Army's Ranger Training Brigade died of hypothermia while training in a Florida swamp. The Army's investigation of the accident concluded that a number of problems contributed to the students' deaths, including the loss of important lessons learned about safety controls built up over the years, shortages of personnel, and undocumented safety responsibilities.¹ The Fiscal Year 1996 National Defense Authorization Act requires us to assess the implementation and effectiveness of all corrective actions taken by the Army.²

This report provides our preliminary assessment of (1) the status of all of the Army's corrective actions, (2) the adequacy of Army oversight to ensure that the corrective actions instituted after the accident will be sustained in the future, (3) the Army's progress in implementing the authorization act's mandate to increase Brigade staffing to 90 percent of requirements, and (4) the Army's progress in establishing safety cell organizations at the Brigade.

¹The Army's investigation included separate legal, Army Safety Center, and criminal investigations. The Army's accident investigation discussed in this report is the legal investigation whose purpose was to determine the facts of the accident.

²The act (P.L. 104-106, Feb. 10, 1996) requires us to provide a preliminary report within 1 year of its enactment. A final report, including our recommendation as to whether the legislation's mandate for increased personnel staffing at the Brigade should be continued, is due within 2 years after the Brigade first meets the mandated staffing levels.

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Background

The Ranger Training Brigade, under the command of the U.S. Training and Doctrine Command (TRADOC) and the U.S. Army Infantry Center at Fort Benning, Georgia, conducts training to develop student skills in infantry, airborne, air assault, platoon, mountaineering, and waterborne operations. The initial training phase, conducted by the 4th Ranger Training Battalion at Fort Benning, focuses on basic Ranger skills. The second phase consists of training by the 5th Ranger Training Battalion in the Georgia mountains, and the third phase is conducted by the 6th Ranger Training Battalion in the swamps of Florida. The course is conducted in difficult terrain under mental and physical stresses, including nutritional and sleep deprivation, that are intended to approach those found in combat.

Ranger and other kinds of high-risk military training are dangerous by their very nature. Since 1952, 56 Ranger students have died, 7 of hypothermia. According to the Army's accident investigation report, the four casualties of February 15, 1995, occurred during what was expected to be a relatively easy exercise involving paddling boats 8 to 10 kilometers down the Yellow River, identifying a preplanned drop-off site, and navigating on foot about 1 kilometer through a swamp to an ambush site. The instructors were largely unaware of rising water levels in the swamp due to heavy rains upriver in Alabama and allowed the students to move into unfamiliar areas. The platoons encountered delays in evacuation and medical assistance, and the students were intermittently immersed in cold, deep water for over 6 hours.

The Army investigation recommended corrective actions to improve the systems the instructors use to predict and monitor swamp conditions, revise command and control procedures, and increase evacuation and medical support capabilities. The investigation also raised questions about how best to preserve lessons learned and corrective actions instituted, how to mitigate high turnover and shortages of officers, and who should fulfill the role of safety officer.

Corrective actions to improve the safety of Ranger training were also prescribed by the Fiscal Year 1996 National Defense Authorization Act. First, the act required the Army to staff the Brigade at 90 percent of requirements. Such requirements are defined by the Army as the minimum number of personnel a unit needs to perform its mission effectively. This mandate is to be continued for 2 years. Second, the act required the Army to establish at each of the three Ranger training locations an organization known as a "safety cell", comprising individuals with the continuity and experience in each geographical area needed to advise the officers in

charge of the potential impact of weather and other conditions on training safety.

Since the late 1980s, Army safety policy has required that commanders at all levels accept primary responsibility for integrating safety risk management in daily operations at the unit level. External oversight is provided by the Director of Army Safety, safety offices at major Army commands and installations, and the Army Inspector General.

Results in Brief

The Ranger Training Brigade has completed most of the corrective actions recommended by the Army. The Brigade has improved safety by developing systems to better monitor and predict swamp conditions. It has improved command and control by revising its procedures to move training exercises outside high-risk areas of the swamp, eliminate discretion to deviate from planned exercise locations, and incorporate the latest guidance on training safety. Evacuation procedures have been revised and rehearsed, new medevac helicopters and refueling capacity have been obtained, and medics have been assigned directly to the Brigade.

However, if the Army is to sustain the key corrective actions taken after the accident in the future, we believe that the actions must become institutionalized. At the time of the accident, important lessons about safety controls built up over the years by personnel assigned to the Florida training site had not been documented, were lost, or had simply atrophied over time. Formal, written inspections performed by the Infantry Center, Brigade, and the Fort Benning Safety Office do not monitor compliance with training safety controls—such as whether minimum air and land evacuation systems are in place before daily training is conducted and whether instructors are adhering to the rule prohibiting deviations from planned swamp training routes. The inspections are focused instead on checklists of procedural matters, such as whether accidents are reported and whether files of safety regulations and risk assessments are maintained. If the important corrective actions are to become institutionalized, we believe that formal Army inspections will have to be expanded to include testing or observing to determine whether they are working effectively.

The Army plans to fully staff the Ranger Training Brigade at the mandated 90-percent level by February 1997. However, it may be difficult to sustain the required number of officers beyond the mandated 2 years, and even

more than the required number of enlisted personnel may be needed. Although the Army raised the Brigade's staffing priority subsequent to our field work, high-risk training units generally are not recognized in Army personnel staffing priorities. And, the Brigade's long-term ability to sustain the required number of officers may be hindered by competition with Army priorities given to units who are first to fight and with other important noncombatant units, such as the National Training Center. The supply of qualified personnel is already limited because of Army-wide shortages of certain officers and legislative requirements giving priority for staffing to such positions as those involving joint duty and advisers to reserve units. Similarly, Brigade officials believe that current staffing models substantially understate needs for enlisted personnel in general support areas.

Currently, members of the Ranger Training Brigade and battalion chains of command serve as the safety cell organization established pursuant to the act. The act did not establish specific criteria to guide decisions on the makeup of a safety cell, and the option chosen by the Army represents little change from the safety oversight practice that was in place at the time of the accident. There is, however, a higher level of attention to safety at the Brigade, but the chain of command has long had dual responsibility for mission accomplishment and safety oversight. Personnel in these positions have limited experience in the local training areas due to the Army's policy of rotating them to new units every 2 to 3 years. The Army Infantry Center is considering requesting authorization for additional civilian and military positions to serve as full-time safety cell members. Authorizing additional personnel based on safety considerations raises questions about the desirability and affordability of expanding this concept to other high-risk training activities.

Most Corrective Actions to Improve Safety Are Complete

The Ranger Training Brigade has completed action on 38 of the 41 (93 percent) recommendations designed to improve training safety. The remaining three recommendations, involving increases in personnel and a Secretary of the Army-directed follow-up review of safety improvements, are expected to be completed by September 1997. Most of the recommendations were focused on improving (1) risk assessments of training conditions, (2) command and control of exercises, and (3) evacuation and medical support.

Risk Assessments Have Been Improved

All three training battalions have updated their overall assessments of training risks. For example, the 6th Battalion in Florida worked with the

National Oceanic and Atmospheric Administration and the U.S. Geological Survey to develop detailed information on terrain, water, and tidal patterns to better understand their impact on training. The 6th Battalion also developed procedures to obtain river level and weather information from local emergency forecasting organizations and incorporated reviews of those risks in daily instructor briefings.

Water depth markers and electronic weather sensors were installed along the Yellow River to measure water depth and temperature, air temperature, and humidity readings. In 1995, primitive water level markers, such as painted marks on a bridge and trees, were in place but provided no common scale to judge water depths along training routes. The Battalion also updated its water immersion safety guidelines to reduce student exposure time in water waist deep from 3 to 7 hours to 2 to 3.5 hours, when air or water temperature is in the 55 to 64 degree range. The Army's November 1995 review of the existing guidelines found that soldiers who had just completed the course had a core body temperature about 2 degrees lower than normal soldiers and would thus reach hypothermic conditions quicker than previously believed.

Command and Control Procedures Have Been Revised

The 6th Battalion completed a comprehensive standard operating procedure revision in December 1995 that references all training-related guidance, identifies key leader responsibilities, and defines the decision-making process to be used when conditions deteriorate to higher risk levels. The revised procedure includes adjustments to training routes to avoid the most hazardous areas and the elimination of student discretion to miss planned landing sites and choose their own. Comprehensive procedures for the other training locations are also being prepared.

According to the Army's investigation, at the time of the accident, written procedures were outdated and were disseminated throughout a variety of instructions. As new cadre were assigned to the Battalion during the normal personnel rotation process, training procedures were changed both formally and informally. On the day of the accident, water at the planned drop-off site was too deep for the students to disembark from their boats. While one student platoon chose to abandon the swamp movement and suffered no casualties, the other two platoons were allowed to continue downriver and select an unplanned landing site.

Moving to an unplanned landing site introduced many uncontrolled variables into the exercise, such as water depth, underwater obstacles, currents from underwater streams, and unfamiliar ground, the Army's investigation report said. The platoons quickly encountered water waist to neck deep, but the instructors moved ahead, believing that the water would get shallower and the platoon would have a short move to higher ground. However, they continued to encounter deep water obstacles and within 1 hour students began to enter the early stages of hypothermia.

The Brigade also developed a standardized, written instructor certification program covering all battalions. Instruction is provided at each battalion in areas such as training techniques and safety controls, emergency procedures and contingency plans, and combat lifesaving techniques. Emphasis is placed on a step-by-step progression from basic instructor up to principal instructor, and personnel must be certified at each level before serving in that capacity. According to Brigade officials, the program increased the time required for certification from about 1.5 to 4 months.

The Brigade has generally completed a \$1.1 million communications system upgrade to improve communications at both the 6th Battalion and the 5th Battalion in the Georgia mountains. The upgrade will connect virtually all cadre participating in Florida exercises directly with one another. Inadequate emergency communications slowed reaction times during the accident, as well as the ability of the cadre to know what was happening as conditions deteriorated.

Evacuation and Medical Support Capabilities Increased

The Florida camp has now revised and rehearsed air, water, and ground evacuation plans, and mass casualty and joint evacuation procedures with local medical services. According to Army officials and the investigation report, at the time of the accident, the camp had not documented preplanned surface evacuation routes and extraction points or standard operating procedures for handling mass casualties, and surface evacuation was not considered until late in the accident.

The camp has also obtained two new medevac helicopters, with more cargo capacity and speed than their predecessor, and aircraft fuel in a 2,000-gallon tanker is now available at the camp. Although the camp's only medevac helicopter responded quickly to the accident, bad weather and the lack of a refueling truck at the Florida camp delayed its second evacuation run by over 2 hours.

Full-time medics have also been assigned to the Brigade. Many of these medics are Ranger-qualified and routinely walk on patrol with the students. The Brigade was not previously authorized to have its own medics, and difficulties were encountered during the accident because the borrowed medics were not trained in some of the techniques used during the evacuations.

Additional key corrective actions are discussed in the following sections. The complete status of all corrective actions is included in appendixes I through V.

Army Oversight Needs Improvement to Preserve Key Corrective Actions

If the Army is to sustain the key corrective actions instituted after the accident in the future, it must institutionalize them. One important way to achieve this objective is to expand the focus of formal Army inspections to include testing or observing the key safety controls to determine whether they are working effectively. Neither formal Army Safety Program inspections, required to be conducted annually by installation safety offices, nor formal Army Infantry Center command inspections were conducted at the Florida camp during the 2 years prior to the Ranger student deaths. Even if such safety inspections had been conducted, it is not likely that they would have identified the erosion in safety controls because the inspections were focused on procedural issues such as whether accidents are reported.

Army officials told us that less formal reviews of Ranger Training Brigade operations were conducted by a variety of Army organizations both before and after the accident. However, we found little or no documented record of safety control inspections. Although important, these informal inspections cannot substitute for documented safety reviews in sustaining safety improvements over time.

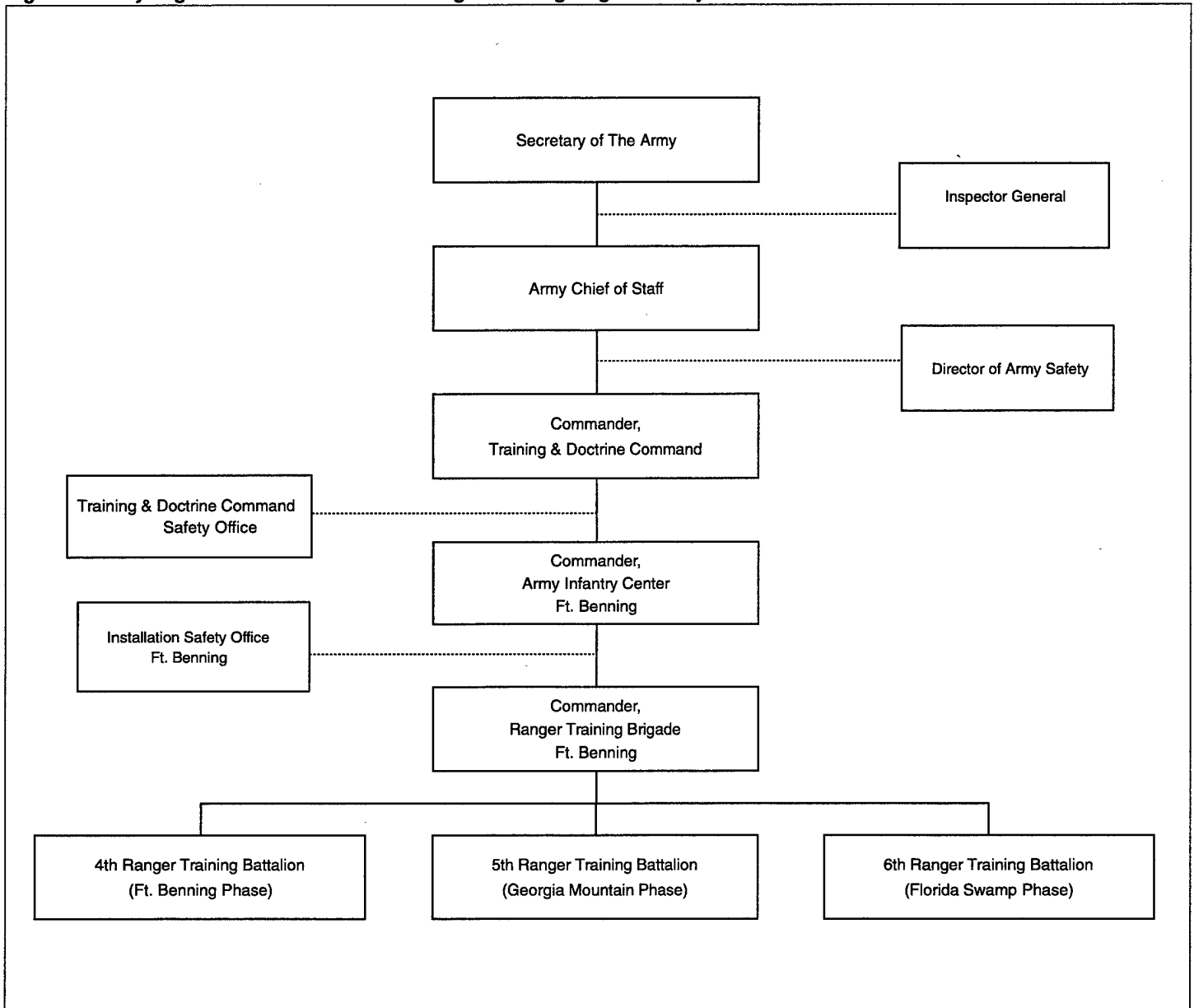
Formal Installation and Command Inspections of Training Safety Controls Are Limited

According to Brigade and other Army officials, there are two basic keys to ensuring that safety controls operate as intended over time in an environment of rapid personnel turnover. First, controls must be clearly institutionalized in written operating procedures. Second, leaders must visit training sites frequently and observe operations to ensure that the safety controls are followed.

At the time of the accident, many of the important lessons about safety controls that had been built up over the years by personnel assigned to the

Florida training site were not in written form and had been lost over time. For example, according to Brigade officials, at least until 1991 student platoons were not allowed to miss planned drop sites and pick their own routes through the swamp. Similarly, the Army investigation following the 1977 hypothermia deaths of two students recommended that an on-site refueling capability for medevac helicopters be made available at the Florida camp. However, these and other key safety measures were either not institutionalized or simply atrophied over time.

As shown in figure 1, a variety of organizations have exercised oversight over Ranger Training Brigade safety.

Figure 1: Army Organizations That Oversee Ranger Training Brigade Safety

Army officials told us that representatives from these organizations visited the Brigade a number of times, both before and after the accident.

However, we found little or no documented record of safety control inspections during these visits.

Although safety inspections are required at least once each year under the Army Safety Program, the Fort Benning Installation Safety Office conducted no inspections of training operations safety at the Brigade or its battalions between March 1993 and March 1996.³ Moreover, Fort Benning Safety Office officials acknowledge that even if the required inspections had been performed before the 1995 accident, it is not likely that they would have identified the erosion in safety controls. Formal inspections by the Safety Office under the Army Safety Program comprise checklists focused on procedural issues, such as whether accidents are reported and files of safety regulations and risk assessments are maintained.

The Army's process for identifying and controlling hazards in training operations is termed risk management. This program consists of a formal five-step process of (1) identifying training and other hazards, (2) assessing the magnitude of each risk, (3) making risk decisions and developing controls, (4) implementing the controls, and (5) supervising and enforcing the controls.⁴ Although the process requires units to identify safety controls as part of written training risk assessments, the controls considered most important by the unit are not identified. And, as illustrated in table 1, formal inspections by the installation Safety Office and the Brigade do not include requirements for testing or observation to determine whether the more important safety controls are working effectively. Examples of important safety controls are testing instructors' adherence to the rules requiring them to walk planned swamp routes before each exercise and prohibiting deviations from planned swamp training routes.

³Army Regulation 385-10, chapter 2-3.a., the Army Safety Program, June 1988.

⁴At our request, an official from the Army Safety Center, Fort Rucker, Alabama, reviewed the Brigade's risk management program and found it to be in accordance with the recommended approach. The Army Safety Center supports the Director of Army Safety in managing the Safety Program and integrating risk management into Army doctrine.

Table 1: Oversight of Selected Safety Controls During Fort Benning Safety Inspections

Inspected	Not inspected
1. Has a unit safety program document been published?	1. Are communications systems linking training instructors, supervisory personnel, and emergency assistance fully operational before each exercise?
2. Are unit personnel aware of the notification procedures in the event of an accident?	2. Are the minimum air and land evacuation systems in place before daily training is conducted?
3. Are risk management worksheets completed for all operations and training?	3. Are instructors adhering to the rule requiring them to walk planned swamp routes the morning of each exercise?
4. Are newly assigned personnel briefed on unit and installation safety policy within 3 days of arrival?	4. Are instructors adhering to the rule prohibiting deviations from planned swamp training routes?
5. Have part-time assistant safety officers been appointed?	5. Are fully qualified instructors used for each training event?

Safety office inspection responsibility includes a wide range of activities, including Occupational Safety and Health Act standards, ammunition and explosives operations and storage, and military training operations. According to Fort Benning installation Safety Office officials, they have not had the financial or personnel resources to inspect units as frequently as required. Since 1991, Safety Office personnel have been reduced from 13 to 8.

In 1993, the Army Inspector General found that resource constraints were impacting installation safety offices' ability to fulfill their required safety responsibilities.⁵ The report concluded that when commanders were forced to make difficult resourcing decisions, safety officers often had difficulty competing for resources because of their orientation toward prevention. At that time the average percentage of assigned personnel in installation safety offices was 67 percent of requirements. Under the Army's command and staff inspection program, individual units are also responsible for conducting periodic inspections of their subordinate commands' operations. However, the Army Infantry Center did not conduct a formal command inspection of the Brigade for over 22 months prior to the accident. Similarly, the Brigade did not conduct a formal command inspection of the Florida camp's operations for over 2 years prior to the accident.

⁵Assessment of Army Safety Program, Department of the Army Inspector General, April 1993.

Army inspection policy provides commanders flexibility to establish both the frequency and criteria for the inspections, with guidance from their major commands.⁶ Command inspections by the Infantry Center, and the Brigade in turn, cover a broad range of unit activities, including safety. However, these formal inspections use the same safety item checklist as the installation Safety Office, which is focused on procedural matters and does not evaluate the operation of important training safety controls.

The manager of Fort Benning's installation Safety Office told us that, without clear identification of the most important training safety controls, his office does not have the expertise for in-depth assessments of compliance. However, not all safety controls have been documented by the battalions, and the most important controls have not been highlighted to provide the foundation needed for effective external inspections. For example, at one battalion the minimum evacuation resources needed to conduct training safely were not identified. Some of these requirements, such as having two ambulances available before certain dangerous exercises can be conducted, were included in medics' personal documents—but not in battalion operating procedures.

Daily Oversight of Training Safety Has Been Improved

The 6th Ranger Training Battalion has improved its daily oversight of training safety by reinstating controls lost over the years, documenting many of them, and ensuring that they are followed. For example, instructors are now required to walk the planned training route through the swamp the morning of each exercise. A variety of safety controls are included throughout internal training risk assessments, individual training exercise procedures, and draft training operating procedures. These controls are enforced as part of the instructors' daily supervision of training, and compliance is generally documented in daily operations logs, after-action reports, and other internal operations documents.

The Brigade has inspected each training battalion and instituted a written policy of monthly visits by the Commander or other key leaders to ensure that safety controls are adequate and executed as intended. The Infantry Center Commander's approval is now required before any reduction can be made in the safety controls in place at the Brigade and its battalions. The Secretary of the Army has also directed a follow-up review of safety procedures at the school, currently scheduled for September 1997. In addition, according to Army Inspector General officials, the Secretary has

⁶Army Regulation 1-201, chapters 1-4, 3-3, and 3-4, Army Inspection Policy, May 1993.

asked their office to conduct periodic reviews of the Brigade, as well as other high-risk training units.

Priority for Officer Staffing Increased, but Enlisted Personnel Levels Are Lower Than Brigade Requests

The Army plans to staff the Ranger Training Brigade at the required 90-percent level by February 1997 and submitted its plan for doing so to Congress in November 1996.⁷ To meet the law's requirement, the Army placed the Brigade on the list of units excepted from normal Army staffing priorities and raised the unit's priority to the highest level. The plan also requires quarterly reports to ensure that the required staffing levels are maintained.

The Army's investigation of the 1995 accident concluded that officer shortages and personnel turnover contributed to the accident by draining the experience and insight of the 6th Battalion and by limiting its ability to keep operating procedures current, supervise standards and policies, and allow officers to accompany and observe field training exercises. At the time of the accident, the Florida camp had 8 of the 11 authorized officers, but only 32 percent (8 of 25) of the required officers.⁸ In addition, 42 percent (44 of 106) of the instructors were assigned only during the last year before the accident. According to officials at the Army Infantry Center, they attempt to limit turnover to about 33 percent of unit personnel each year.

As shown in table 2, enlisted personnel have been assigned to the Brigade at levels close to or above those mandated for years.

Table 2: Ranger Training Brigade Staffing (Fiscal Years 1994-97)

	Officers	Enlisted	Civilians	Total
Date	Percentage of required	Percentage of required	Percentage of required	Percentage of required
2/94	35	98	21	85
2/95	32	95	21	82
2/96	42	94	21	82
10/96	88	104	20	97

⁷The 1996 act required the Army to submit a plan to Congress for meeting the mandated staffing levels by May 1996.

⁸The Army allocates available personnel through a system that authorizes a percentage of the required number of personnel at each unit to be filled. The Army defines "required personnel" as the minimum number a unit needs to perform its mission effectively. Authorized personnel is the number that can actually be supported from the existing inventory of personnel. Actual assignments can be less than authorized levels.

Army policy gives staffing of enlisted personnel at the school priority over other units. However, until November 1996, staffing for Ranger Training Brigade officers did not receive Army priority and averaged about 36 percent of required levels between 1994-96.⁹ As of October 1996, officer staffing had been increased to 88 percent of required levels. Department of Defense officials told us that raising the Brigade's staffing priority to the highest level would also significantly reduce the difficulties it faced in competing for personnel resources and sustaining high staffing levels. The Brigade Commander assigned at the time of the accident told us that the unit needed about 50 officers to function safely and effectively. Staffing the Brigade at the required 90-percent level would increase the number of Brigade officers to 58, or 20 more than at the time of the accident. Despite the low percentage of civilian staffing, the Brigade Commander believed that the current number of civilian staff was adequate.

According to Army Infantry Center officials, the Center attempts to manage turnover of key Brigade personnel through quarterly reviews of upcoming officer changes. The Commanding General reviews all rotations at the rank of major and above. These reviews have been a continuous process over the years, but have received increased emphasis since the accident. During 1996, turnover of key leaders (commanders, executive officers, operations officers, and command sergeant majors) at each battalion was halted during the high-risk winter training months. However, the near-simultaneous replacement of the Brigade commander, executive officer, and command sergeant major during the spring and summer raised concerns at the Brigade.

Increased Officer Staffing Competes With Army Priorities for Allocating Personnel Shortages

Officer shortages, such as those experienced by the Ranger Training Brigade, are not unique. Our June 1995 report on the drawdown of military personnel found that most Army positions were kept filled at high rates during the early 1990s.¹⁰ However, certain specialties and ranks, particularly field grade officers (majors, lieutenant colonels, and colonels) were in short supply. According to Army officials, field grade officers, as

⁹Between fiscal years 1996 and 1997 the requirement for officers was reduced from 111 to 64. According to Brigade officials, this large reduction is due to long-delayed adjustments related to reduced student loads and the disbanding of desert training at the 7th Ranger Training Battalion at the end of 1995. Between fiscal years 1990 and 1996, the number of students authorized to attend the Ranger training annually dropped from about 3,700 to 2,400. Brigade officials chose to take most of the reduction in officers because the actual assignment rate of officers is much less than that of enlisted personnel.

¹⁰Military Personnel: High Aggregate Personnel Levels Maintained Throughout Drawdown (GAO/NSIAD-95-97, June 2, 1995).

well as branch-qualified captains, continue in short supply today.¹¹ For example, in 1997 the Army is expected to operate with about 1,200 fewer branch-qualified captains, 3,200 fewer majors, and 1,000 fewer lieutenant colonels than the nearly 24,000 authorized in force structure documents.

Army policy is that units that are first to fight are first to be resourced. However, available officers are limited first by Army-wide shortages, and then by legislative and other requirements such as giving priority to joint duty assignments, duty as advisers to reserve units, and other special considerations.¹² In 1997, for example, the Army expects about 40,000 officers to be available for assignment. For fiscal year 1997, about 3,000 officers were authorized for joint duty positions, 1,600 for duty as advisers to the reserves, and another 1,900 for acquisition positions. Following satisfaction of these initial priorities, allocations flow down through major commands such as TRADOC, to subordinate commands like the Army Infantry Center, and on to individual units. Each level may add its own priorities, further limiting the number of officers available to lower priority units.

For example, in 1996 TRADOC, a noncombatant command, received 73 percent of its authorization for branch-qualified captains through colonels, while the program providing advisers to reserve units received 104 percent. The Infantry Center then spread the officers allocated by TRADOC in accordance with Army-wide, TRADOC, and local priorities, including emphasis on all its high-risk training units. The officers remaining allowed a fill rate at the Ranger Training Brigade of only about 85 percent of the authorized level, 42 percent of requirements. Our analysis of allocations between 1991-97 found the Brigade's experience to be similar to that of other units at the Center. According to Army officials, officers are being diverted from duty at such units as the National Training Center, Joint Readiness Training Center, and Battle Command Training Program to provide the mandated increase in staffing at the Brigade.

Required Enlisted Staffing Levels Lower Than Brigade Estimates

Brigade officials believe the school needs about 624 enlisted personnel to operate safely and effectively. This number equates to about 112 percent of current requirements, or 68 enlisted soldiers more than assigned in October 1996. The extra personnel requested are based on studies of the

¹¹"Branch-qualified" officers are those who have had advanced training and served in certain positions, such as company commander, in the field to which they are assigned.

¹²Public Laws 99-433, section 401, Oct. 1, 1986; 102-190, section 414, Dec. 5, 1991 and 102-484, section 1132, Oct. 23, 1992; and 101-510, section 1202, Nov. 5, 1990; respectively.

Brigade conducted in 1994 and 1995. On the basis of these studies, the Brigade also called for a restructuring of staffing models for the unit.

Brigade officials believe that current staffing models are outdated and do not accurately reflect the need for medical, boat safety, air operations, and other general support personnel. The Brigade has diverted enlisted instructors to fill these shortages. According to Brigade officials, enlisted staffing would be sufficient if it were not for the drain caused by the lack of support personnel. Army-wide, enlisted duty positions such as recruiters, service school instructors, the operations group at the National Training Center, and certain schools such as the Brigade, Joint Readiness Training Center, and Special Warfare Center receive priority and are staffed at about 98 to 105 percent of authorizations. TRADOC has been studying the issues raised by the Brigade in schools across the command since early 1996, and officials expect the studies to be completed by April 1997.

High-Risk Training Not Defined or Recognized in Personnel Assignment Priorities

According to TRADOC and Army Safety Center officials, recognition of the high rate of accidental deaths and injuries has increased the emphasis on risk management in the Army. TRADOC currently is rewriting combat doctrine to recognize risk management and better integrate it into Army culture and decision-making.

Currently, however, the Army has no formal criteria to identify units considered to be high risk and serve as a framework for allocating personnel or other resource priorities to them. Following the death of a Navy recruit during rescue swimmer training in 1988, TRADOC conducted a study of high-risk/high-stress training (High-Risk/High-Stress Training Special Study, April 1, 1989). The study developed a definition of high-risk/high-stress training and identified a list of 92 courses categorized as inherently dangerous, including the course conducted by the Ranger Training Brigade. Similarly, the deaths of the Ranger students in 1995 spurred an ongoing review of high-risk training by the Army Inspector General (Special Assessment of High Intensity Training). The first phase of this review also developed a definition and identified a group of high-risk units. However, according to TRADOC and Inspector General officials, neither definition has been formally adopted by the Army.

We asked the Army Safety Center to provide information identifying units that have had the most training deaths and serious accidents over the past 10 years. However, according to Center officials, this information is not

readily available because of difficulties in aggregating data at levels below installations, changes in reporting formats over time, and the sheer number of units involved. Statistics such as those involving safety can be difficult to interpret because of behavioral and other variables. For example, some units may have superior safety programs, but higher rates of accidents due to higher levels of inherent risk in their activities.

Safety Cell Organization Status

Currently, members of the Ranger Training Brigade and battalion chains of command serve as the safety cell organization established pursuant to the 1996 act. Although there is a higher level of attention to safety, for the most part, the safety cell organization established is no change from the oversight practice that was in place at the time of the accident. At the close of our review, however, the Infantry Center and Brigade were considering requesting additional personnel to serve as full-time safety cell members.

Current Brigade Approach Mirrors Existing Army Policy

The act required the Army to

- establish an organizational entity known as a safety cell at each of the three phases of Ranger training,
- ensure that safety cell personnel at each location have sufficient continuity and experience in that area to understand local conditions and their potential effect on training safety, and
- assign sufficient numbers of safety cell personnel to serve as advisers to the officers in charge at each location in making daily "go" and "no-go" decisions on training.

The act, however, did not establish specific criteria to guide decisions on the makeup of a safety cell. The Ranger Training Brigade established its safety organization consistent with past operations and existing Army policy. The battalion commanders were named as safety officers, with dual responsibility for training operations and training safety. The Brigade Commander is the overall safety officer. Operations sergeants at each battalion were designated as assistant safety officers. The Brigade Commander also named each battalion command sergeant major, operations sergeant, and the primary instructor overseeing each day's exercise as part-time safety cell members.

The Brigade Commander chose these personnel because the personnel in those positions generally have a relatively high degree of experience and

knowledge of the area and close involvement in supervising and monitoring operations. Even so, we noted that the personnel in these positions have limited continuity and experience in the local training areas. For example, the Brigade and battalion commanders normally rotate to new units every 2 years and enlisted personnel every 3 to 3.5 years. At the time of our visits, the safety cell members had on average, 2.5 and 4.4 years of experience at the 6th Battalion in Florida and 5th Battalion in the Georgia mountains, respectively, including time from prior tours of duty.¹³ In comparison, a civilian training specialist at the Brigade has been employed continuously for 11 years.

The Brigade has a higher level of attention to safety than in the past. For example, the 6th Battalion Commander walks the planned route for swamp training the day before each exercise. However, according to battalion officials, the personnel and duties of the safety cell members are not markedly different than those of safety officers in the past. The battalion commander, command sergeant major, principal instructor, and operations sergeant/officer were also responsible for overseeing safety in past years. The Brigade's approach makes no provision for expert advice from outside the chain of command. According to the Brigade Commander at the time of the accident, ideally, the safety cells should be staffed with civilians with long-term continuity.¹⁴ However, budget constraints made the hiring of civilians impractical.

The specific duties and identity of the safety cell members are now defined in the draft Brigade operating procedures, unlike at the time of the accident. However, they have not been incorporated into written battalion procedures. We also noted that safety cell members in the Brigade are not required to undertake any special training for their duties. Safety cell members at the 6th Battalion were given the 4-hour Fort Benning assistant safety officer course following the 1995 accident. However, in contrast, safety officers in Army aviation units must take a 6-week safety course.

Since the late 1980s, Army policy has placed responsibility for safety in each unit's chain of command. The unit commander is the safety officer, fulfilling dual responsibilities for mission completion as well as safe operations. Unit commanders may appoint additional personnel at lower echelons to serve as part-time assistant safety officers in addition to their

¹³At the time of our field work, the 4th Battalion had not named safety cell members. The Battalion Commander was awaiting finalization of the Brigade standard operating procedure.

¹⁴A new Army Infantry Center Commander was assigned in July 1996, and a new Brigade Commander in August 1996.

normal unit duties. According to the Director of Army Safety, this doctrine was adopted at a time when accident rates were at high levels and responsibility for safety was largely considered to be the province of agencies external to the units. The new doctrine sought to make commanders primarily responsible for safety and to use risk management techniques to help identify and reduce unnecessary risks.

Changes to Current Safety Cell Organization Are Being Reviewed

Late in our review, the Brigade's approach to the safety cells was reviewed by the new Brigade Commander and the new Commander of the Army Infantry Center. Because of the need for long-term continuity and other considerations, the Infantry Center and Brigade are considering requesting that four civilian and seven military personnel be added to the Brigade's authorized personnel to serve as safety cell members. The request would authorize one civilian and one military position at the Brigade and one civilian and two military positions at each battalion to handle the 24-hour training operations at the camps and the possibility of temporary absences of safety cell members.

Our discussions with the Army Safety Center, TRADOC, and the Army Infantry Center identified a number of pros and cons with the use of civilians as full-time safety officers. A safety cell made up of civilians would provide a clear and highly visible professional advocate for safety with long-term continuity and experience at training locations. This approach also provides a measure of protection against commanders who may overzealously pursue mission accomplishment to the unnecessary detriment of safety. However, the use of civilians also includes some potential for undermining the unit chain of command and diluting commanders' feelings of personal responsibility for safety. TRADOC and other Army officials also raised concerns about a lack of experience in military plans and operations that could limit the effectiveness of civilians working in military units. This potential could be addressed by hiring retired Ranger instructors or other appropriate military retirees. Cost is also a significant concern.

According to TRADOC officials, authorizing additional personnel on the basis of safety considerations raises questions about the desirability and affordability of expanding this concept to other dangerous training activities. The Ranger Training Brigade estimated that each civilian would cost about \$30,000-\$39,000 annually. Authorizing TRADOC's 1989 list of 92 high-risk schools with an average of 2 personnel each would require about 200 additional civilians.

Alternatively, existing military personnel could be used in place of civilians. The advantages of this approach include the same highly visible professional advocate for safety without the increased cost. However, this approach would also represent an additional drain on the Army's limited pool of officers, without providing increased long-term continuity. In addition, officers we spoke to were concerned, again, that such positions could undermine the unit chain of command as well as commanders' feelings of personal responsibility for safety. The existing Army Aviation Safety Officer program could serve as a model for this option. Army policy authorizes formal positions for full-time safety officers at each Army aviation unit.¹⁵ Army regulations for the program specifically state that such officers will administer and monitor the overall safety program, including halting unsafe actions, but they have no command authority. There are currently some 900 aviation safety officers in the active Army and reserves.

The number of additional military or civilian personnel needed for these options might be reduced by training some of the existing 1,086 safety civilians in technical fields such as occupational health and safety, engineering, and health as unit operations safety personnel. The Army Safety Center is currently restructuring its Total Safety Professional Career Management Program to provide such training.

Recommendations

We recommend that the Secretary of the Army

- direct that the Ranger Training Brigade identify critical training safety controls at each training location;
- ensure that TRADOC, the Army Infantry Center, Fort Benning safety office, and Ranger Training Brigade conduct periodic inspections to determine compliance with the identified safety controls; and
- direct that inspections of critical safety controls be made periodically by organizations outside the chain of command such as the Army Inspector General.

We are deferring any recommendations on the issues of personnel staffing levels and the appropriate organization of safety cells until we have completed our final evaluation.

¹⁵Army Regulation 385-95, chapter 1-5.b., Army Aviation Accident Prevention, May 1991.

Agency Comments and Our Evaluation

In written comments on a draft of this report (see app. VI), the Department of Defense said that it generally agreed with our findings and recommendations and has completed or has in progress most of the planned corrective measures. The Department said that the Brigade has identified the critical safety controls and the Secretary of the Army has directed that the chain of command and the Army Inspector General conduct periodic inspections of the Brigade to ensure that the safety controls and corrective actions are effective. We believe that such periodic inspections, together with highly visible support for safety from the Army's leadership, will be critical to institutionalizing effective safety controls at the Brigade.

The Department also noted that its regulations require leaders at all other potentially hazardous training units to integrate risk management safety principles into their training. Nonetheless, difficult long-term policy questions remain regarding the appropriate priority for staffing and other resources to be provided to the Department's other high-risk training units, as well as the need for safety organizations at such units.

Scope and Methodology

To determine the status and implementation of corrective actions taken to improve Ranger training safety, we received briefings from Brigade officials, reviewed reports covering the Army's investigation of the Ranger students' deaths, observed each Ranger battalion's training facilities, interviewed Army investigating officers and Brigade and battalion commanders and instructors, reviewed training safety controls and inspection procedures, and observed the site where the deaths occurred. At our request, the Army Safety Center also conducted a review of the Brigade's risk management program. We did not review whether the Army's investigation of the accident was conducted in accordance with regulations.

We assessed the ability of safety inspection and oversight procedures to ensure that corrective actions will be sustained in the future through review of Army and Infantry Center regulations and inspection records, and interviewed officials at the Army Inspector General's Office, Army Safety Center, U.S. Forces Command, Army Special Operations Command, TRADOC, the Fort Benning Safety Office, and the Ranger Training Brigade.

To assess progress made toward increasing personnel staffing to legislatively mandated levels, we reviewed and analyzed personnel and policy documents and data to determine staffing priorities, changes in

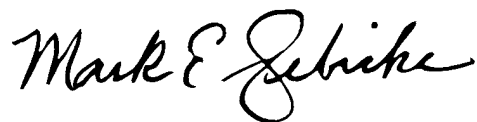
requirements, assignments, student loads, and changes in staffing at the Brigade and other Army Infantry Center units during fiscal years 1994-97.

We assessed the progress made toward establishing training safety cells by reviewing records and interviewing Brigade and battalion officials regarding the duties, qualifications, and experience of safety cell members. We also discussed safety cell organizations with the Director of Army Safety, Army Manpower and Reserve Affairs, TRADOC, and Army Infantry Center officials.

We conducted our review at Department of Army headquarters, TRADOC, Army Infantry Center, Ranger Training Brigade, the Ranger battalions, and the Army Safety Center. Our review was conducted from April through October 1996 in accordance with generally accepted government auditing standards.

We are sending copies of this report to the Chairmen, Senate and House Committees on Appropriations, Senate Committee on Armed Services, and House Committee on National Security and to the Secretaries of Defense and the Army. Copies will also be made available to others upon request.

The major contributors to this report are listed in appendix VII. If you or your staff have questions about this report, please call me on (202) 512-5140.



Mark E. Gebicke
Director, Military Operations
and Capabilities Issues

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Abbreviations

TRADOC Training and Doctrine Command

Status of Actions to Improve Safety Management: Risk Assessments

Planned action	Status	Comments
1. Develop a standard operating procedure to capture and use river level forecast information from local agencies.	Completed	Weather, river, and swamp information obtained from local and federal agencies is integrated in training decision-making. Also, three remote weather sensors on the Yellow River provide real-time water depth and temperatures.
2. Update risk management assessment.	Completed	Risk management assessments have been completed for all training activities.
3. Update daily risk assessment.	Completed	Daily risk assessments capture information on changing weather, water level, temperature, student conditions and readiness of support systems.
4. Update current immersion guide.	Completed	On the basis of the Army's November 1995 reevaluation of the original immersion guidelines, the Ranger Training Brigade lowered the guideline's water exposure times.
5. Standardize the in-walkers briefing for instructors.	Completed	Written standardized briefing formats are used for daily briefings of instructors at all three Ranger training battalions.
6. Provide commanders critical requirements analysis of class/platoon strengths and weaknesses as each class moves to a new training phase.	Completed	Medical and other information on selected students and student platoons is forwarded to each training phase's incoming commander.
7. Erect staff markers on the lanes.	Completed	The Army Corps of Engineers erected 32 water depth markers along the Yellow River and training lanes in the swamps.
8. Examine the effectiveness of the current buddy system.	Completed	System reviewed and remains a first line of safety defense. When assigned buddy not available, teams will move to three-person system.
9. Reinstate the system of assigning tactical officers to each class.	Completed	The 6th Battalion now assigns a captain or senior noncommissioned officer and a staff sergeant to each class with responsibility for class cohesion, student advocacy, feedback to battalion commanders, and other issues.
10. Conduct refresher training on the use of the immersion guide.	Completed	The water immersion guide is briefed at the beginning of each training day and updated as conditions change.
11. Identify and mark weak swimmers.	Completed	Weak swimmers are identified during the combat water survival test and marked on their headgear and equipment.
12. Obtain physiological monitoring software.	Completed	Experimental monitoring software was provided to Ranger medical clinics. Due to implementation problems, the Brigade has discontinued its use.
13. Conduct nutrition and immunization study.	Completed	The Brigade Commander has increased meals provided Ranger students from 1-1/2 to 2 per day based on Army nutritional studies.
14. Develop personnel status monitoring system technology for possible use in Florida.	Completed	Experimental monitors tested in June 1996, but no procurement made.

Status of Actions to Improve Safety Management: Command and Control, Equipment, and Training

Planned action	Status	Comments
1. Develop standard operating procedure for conducting training at the 6th Ranger Training Battalion.	Completed	Procedure for Florida training phase is completed. Rewrites for Brigade and remaining phases are in process.
2. Clearly identify each training lane.	Completed	The 6th Battalion identified specific lanes from the Yellow River through the swamps. The lanes were narrowed and adjusted to avoid hazardous areas. Students are no longer allowed to deviate from designated boat drop sites and training lanes.
3. Develop a training and certification program for instructors.	Completed	The Ranger Training Brigade developed a standardized instructor certification program. The program focuses on the development of instructor competency, experience, and application of procedures, safety, and risk management.
4. Upgrade tactical operations center ability to monitor operations.	Completed	Communications and computer upgrades installed at Florida and mountain phases. Installation of tower and microwave antennae scheduled for completion in Florida by January 1, 1997.
5. Purchase earplug/silent radios.	Completed	The 6th Battalion acquired whisper mikes for use with Motorola radios during training exercises.
6. Ensure that all patrols are equipped, trained, and prepared to conduct stream crossing operations.	Completed	6th Battalion students must demonstrate their ability to properly construct a one-rope bridge in 8 minutes prior to entering the swamp.
7. Develop a decision paper on the use of precision lightweight global-position receivers by instructors during emergencies.	Completed	A Ranger Training Brigade decision paper concluded that global-position receivers will be used by medical evacuation helicopters and Ranger instructors. The Brigade acquired 66 receivers to track the movement of students.
8. Develop standard packing lists for instructors, medics, and aeromedevac crews.	Completed	Equipment and supply packing lists for instructors, medics, and aeromedevac crews have been updated.
9. Review the winter rucksack packing list.	Completed	The winter packing list has been reviewed and minor changes made. Instructors inspect student rucksacks to ensure they have been tailored, weight distributed, and waterproofed.
10. Add a waterproofing class to program of instruction.	Completed	A waterproofing lesson has been added to the Ranger course program of instruction.

Status of Actions to Improve Safety Management: Medical Support and Evacuation Procedures

Planned action	Status	Comments
1. Determine system necessary to ensure safe medical evacuation.	Completed	Air, water surface, and ground evacuation procedures have been planned and rehearsed. Joint medical evacuation procedures have been established among the Ranger training battalions and local medical services.
2. Develop a mass casualty standard operating procedure.	Completed	Mass casualty procedures have been included in each Ranger Training battalion's standard operating procedure.
3. Initiate a project to build a road into the swamp area in Florida.	Completed	The 6th Ranger Training Battalion Commander concluded that the road is not critical for safe training and, following an environmental assessment, costly construction and environmental mitigation is not justified.
4. Determine fuel requirement for medevac helicopters at Florida training site.	Completed	A 2,000-gallon tanker is on hand at the Florida camp and two tankers with about 10,000 gallons fuel capacity are on hand at the mountain camp.
5. Implement plan to revert to full time ranger medic manning.	Completed	All three Ranger Training Battalions now have full-time, Ranger-qualified medics.
6. Obtain CO ₂ inflatable 1-man rafts.	Completed	The Florida Ranger camp acquired 21 CO ₂ inflatable rafts, which are used by each Ranger instructor team.
7. Obtain hypothermia bags.	Completed	Six hypothermia bags were issued to each of the Ranger training battalions.
8. Develop a system to check packing list for medevac helicopters.	Completed	All medevac emergency equipment is inspected for accountability and serviceability upon arrival at the training battalions.
9. Reinforce training and rehearsals of medical attachments.	Completed	Fort Benning Medical Command has developed training guidelines for medics and Physician's Assistants in each camp.
10. Ensure compliance with previous cold weather procedures.	Completed	Revised standard operating procedures outline cold and hot weather training procedures.

Status of Actions to Preserve Lessons Learned

Planned action	Status	Comments
1. Determine how best to preserve lessons learned.	Completed	1977 and 1995 accident summaries have been integrated into instructor certification program and are required reading for new members of the chain of command. VCR tape summarizing the 1977 and 1995 accidents was produced and is in use in the instructor certification program. Monument to students who died was erected at the site of the accident.
2. Continue formal command inspection program.	Completed	All battalions have been inspected, and a senior supervision plan has been instituted, that consists of frequent visits to each training site by Brigade chain of command.
3. Review complete waterborne procedures.	In process	Secretary of the Army directed a complete review of safety procedures and improvements now scheduled for completion in September 1997.

Status of Actions to Increase Personnel Staffing

Planned action	Status	Comments
1. Ensure that the number of officers and enlisted personnel is not less than 90 percent of required staffing levels. ^a	In process	The Army plans to staff the Brigade at the 90-percent level by early February 1997.
2. Obtain a brigade medical adviser, communications officer, and air operations officer.	In process	Increases currently under review in TRADOC. However, additional officers provided under the 1996 legislation may be used for several of these positions.
3. Phase rotation of key personnel to limit turbulence.	Completed	Army Infantry Center conducts quarterly reviews of all officer rotations to help limit turnover.
4. Establish safety cells at each of the three training school locations to advise the officers in charge, and assist in daily go/no go decisions on training. ^a	Completed	Brigade personnel named as safety cell members and Infantry Center is considering requesting additional civilian and military personnel.

^aRequired by the Fiscal Year 1996 National Defense Authorization Act.

Comments From the Department of Defense



ACQUISITION AND
TECHNOLOGY

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
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11 DEC 1996

Mr. Mark E. Gebicke
Director, Military Operations
and Capabilities Issues
National Security and International
Affairs Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Gebicke:

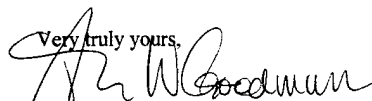
This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "ARMY RANGER TRAINING: Safety Improvements May Be Difficult to Institutionalize," dated October 30, 1996 (GAO Code 703138/OSD Case 1247). The Department generally concurs with the report.

As the GAO report points out, 38 of the 41 actions to improve safety management through risk assessment, command and control, additional or new equipment, procurement, training, medical support, evacuation procedures, institutionalization of lessons learned, and an increase in personnel staffing have been completed. Status of the remaining three actions is addressed in the report. Also, the Secretary of the Army has directed that in progress reviews of these corrective measures and critical safety controls be conducted and the chain of command continue to monitor and inspect to insure the actions taken are effective.

With regard to application of risk management principles to other potentially hazardous military training, DoD Instruction 6055.1, "DoD Occupational Safety and Health (OSH) Program," directs the DoD Components and leaders at all levels to ensure that safety requirements are integrated into all aspects of training and are not add-on considerations.

The detailed DoD comments on the report recommendations are provided in the enclosure. Technical comments and an excerpt from the DoD Instruction 6055.1 were provided directly to the GAO staff for consideration. The DoD appreciates the opportunity to comment on the draft report.

Very truly yours,


Sherri W. Goodman
Deputy Under Secretary of Defense
(Environmental Security)

Enclosure

Environmental Security



Defending Our Future

Enclosure

GAO DRAFT REPORT - DATED OCTOBER 30, 1996
(GAO CODE 703138) OSD CASE 1347

"ARMY RANGER TRAINING: SAFETY IMPROVEMENTS MAY BE
DIFFICULT TO INSTITUTIONALIZE"

DEPARTMENT OF DEFENSE COMMENTS
TO THE RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommended that the Secretary of the Army direct the Ranger Training Brigade identify critical training safety controls at each training location. (p. 33/GAO Draft Report)

DOD RESPONSE TO THE DRAFT REPORT: Concur. As indicated in the GAO report, 38 of the 41 actions to improve safety management through risk assessment, command and control, additional or new equipment procurement, training, medical support, evacuation procedures, institutionalization of lessons learned, and an increase in personnel staffing have been either completed or are in progress. These critical safety controls have been identified to the chair of command for periodic inspection and review. The Army plans to monitor, inspect, and review to insure these measures are effective.

RECOMMENDATION 2: The GAO recommended that the Secretary of the Army ensure that TRADOC, the Army Infantry Center, Fort Benning safety office, and Ranger Training Brigade conduct periodic inspections to determine compliance with the identified safety controls. (p. 33-34/GAO Draft Report)

DOD RESPONSE TO THE DRAFT REPORT: Concur. The Secretary of the Army has directed that in progress reviews of corrective measures and critical safety controls be conducted and the chain of command continue to monitor and inspect to insure those actions taken after the accident are effective.

RECOMMENDATION 3: The GAO recommended that the Secretary of the Army direct that inspections of critical safety controls be made periodically by organizations outside the chain of command such as the Army Inspector General. (p. 34/GAO Draft Report)

DOD RESPONSE TO THE DRAFT REPORT: Concur. Shortly after the accident, the Secretary of the Army directed that the Department of the Army Inspector General to periodically inspect the Ranger Training Brigade to insure corrective actions had been taken and were being compiled with. In addition, the Secretary of the Army directed that the Department of Army Inspector General provide the Senior Army Leadership in-progress reviews on those corrective actions taken to mitigate violations of prudent safety.

See p. 20.

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