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A yearlong Army test of a concept for providing basic and advanced training at one station under a single cadre was monitored. Findings/Conclusions: In order to implement the one station unit training, many current training centers would be closed and new construction costing about $300 million would be necessary. The test results show that under the one station concept the training cycle can be reduced by tailoring the training program to what is necessary for initial entry-level skills. The test did not, however, examine whether similar reductions in the cycle would be attained if a tailored program were used for basic training at one station followed by advanced training at another station. The Army did not attempt to shorten the duration of the present initial entry training for infantry to see if adequate training could be achieved with a savings of cost and time. The training centers did not control or measure the effect of unequal treatment or uncontrolled factors, which could have biased test results. Weaknesses in test design and implementation and the absence of control over other factors also produced test results which do not show the relative merits of alternate methods of training. Without data on whether this training is more effective and economical than other methods of training recruits, neither the Army nor the Congress can determine which method is better based on the Army's test. The results of the test are questionable. (Author/SC)

REPORT TO THE HOUSE COMMITTEE ON APPROPRIATIONS

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

The Army's Test Of One Station Unit Training: Adequacy And Value

Department of the Army

GAO monitored a yearlong Army test of a concept for providing basic and advanced training at one station under a single cadre. If this concept is adopted, new construction costs could amount to $300 million.

The test results show that under the one-station concept the training cycle can be reduced by tailoring the training program to what is necessary for initial entry-level skills. The test did not, however, examine whether similar reductions in the cycle would be attained if a tailored program were used for basic training at one station followed by advanced training at another station.

FPCD-76-100

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-146890

The Honorable George Mahon
Chairman, Committee on Appropriations
House of Representatives

Dear Mr. Chairman:

As requested in your December 9, 1975, letter, we have monitored the Army's test of its one station unit training concept. This report discusses our evaluation of the test and its results.

Sincerely yours,

Comptroller General
of the United States

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ABBREVIATIONS

GAO	General Accounting Office
OSUT	one station unit training

COMPTROLLER GENERAL'S REPORT
TO THE HOUSE COMMITTEE
ON APPROPRIATIONS

THE ARMY'S TEST OF ONE STATION UNIT TRAINING: ADEQUACY AND VALUE

Department of the Army

D I G E S T

In November 1975, a joint conference of the House and Senate Appropriations Committees asked the Army to test its new initial entry training concept called one station unit training and to report to the Congress before November 1976. The Committees were concerned that the Army, to implement this concept, planned to close training centers, move many people, and spend about $300 million for new construction without having tested the concept. The House Committee asked GAO to monitor the test. (See p. 1.)

The Army believes that its new concept reduces the time and costs for training recruits in entry level skills. For example, in the past the Army's programs of instruction for an infantry soldier have taken 16 weeks to teach basic combat tasks in one unit and advanced occupational specialty tasks in another unit--frequently at different training centers. Under the new concept the Army planned to reduce training time to 12 weeks by

--eliminating administrative and other non-instruction time from the program of instruction and

--integrating basic and advanced individual training so that there was no discernible break between the two.

The Army designed a test to determine whether soldiers could be taught entry level skill in critical tasks in reduced timeframes using one station unit training concepts. The Army compared the achievements of soldiers trained in one unit at one station with those trained by the longer traditional method. The test results showed that under either method the soldiers were equally qualified. (See p. 5.)

The test, however, provides only a portion of the information needed to deal with the Committees' concern. The Army does not have information concerning whether similar results could be achieved in the same timeframe at two stations by deleting nonessentials from traditional instruction programs. Therefore, it is unable to respond to the Committees' concern about closing existing facilities and spending money to construct new facilities. (See p. 5.)

The Army stresses that one station unit training is efficient because it eliminates nonessentials from instruction programs and effective because it integrates instruction programs and uses one cadre of instructors for each unit. Data from the tests at Forts Polk and Leonard Wood, however, suggests that these factors may not be as important as the Army believes. The training center at Fort Polk did not have an integrated program for the first five test units trained under the new concept. In addition, drill sergeants were not used at Forts Polk and Leonard Wood to teach both basic combat and occupational specialties, although the units were kept together and the drill sergeants remained with them throughout training. Trainees in both test and control groups from the two forts had nearly the same qualifications. (See p. 7.)

To overcome the shortcomings of the test, the Committees asked the Army in June 1976 to attempt to shorten the duration of the present initial entry training for infantry to see if adequate training could be achieved with a savings of time and cost. The Army did not address this request during the test, but said that it would respond to it separately in the justification for the fiscal year 1978 construction program.

The training centers did not control or measure the effect of unequal treatment or uncontrolled factors, which could have biased test results. For example, at Fort Sill, the units receiving one station unit training had more favorable ratios of trainees to drill sergeants than the basic combat training units and were provided more experience with equipment. (See p. 11.)

Also, because of weaknesses in test design and implementation and the absence of control over other factors, the test results do not show the relative merits of alternate methods of training. The Army views this problem as peripheral to the central issue: "Can one station unit training produce an acceptably trained soldier?" And the Army did not agree that the training centers did not fully test one station unit training. (See p. 5.)

GAO still believes the adequacy of test design and implementation directly affects whether the Army can attribute test results solely to one station unit training. Without data on whether this training is more effective and economical method for training recruits than other methods, neither the Army nor the Congress can determine which method is better based on the Army's test.

The Army also said that conducting a two-station test was not feasible and that this matter was superfluous, since the Committees had not required such a test. GAO contends that when advanced infantry training was moved to Fort Benning the Army had the opportunity to test two-station training, which it knew from extensive hearings concerned the Committees. (See p. 7.)

The Army said its analysis of uncontrolled factors showed that these did not "significantly" bias the test results. GAO believes that the Army should not have relied on the subjective judgments of installation test officers to determine how uncontrolled factors affected the test. It should have collected quantifiable data on these factors to objectively determine their importance. Because the Army did not control or measure these factors, the results of the test are questionable. (See p. 17.)

CHAPTER 1

INTRODUCTION

In November 1975, the House and Senate Appropriation Committees' conferees agreed that:

> "* * * The Army should carefully test one-station training and one station unit training at existing training installations. The analysis of this test should be based upon experience with initial entry training and upon the monitoring and evaluation of the graduates of this training by their Forces Command units. The Army should report its findings on the tests and evaluations to the Congress prior to November 30, 1976."

This agreement followed congressional concern that the Army planned to implement these concepts before testing them by closing three training centers; relocating many people; and, according to one Army estimate, spending about $305 million for new construction.

The one-station training concept provides basic combat training in one program of instruction and advanced individual training in another at one location. The traditional method provided for advanced training at separate locations. In one station unit training (OSUT)

- --the unit remains intact under one cadre of instructors,
- --part of the advanced training is integrated with basic training so that there is no discernible break between the two, and
- --the program of instruction is shorter because some administrative and noninstruction time is eliminated and some training time is reduced.

The Army planned to implement OSUT for high density skills where the number of recruits would justify dedicating separate training programs.

The Army's Training and Doctrine Command decided in July 1975 to test OSUT for training infantrymen at Fort Polk and in September 1975 decided to expand the test to Forts Sill, Bliss, and Gordon as well as Forts Leonard Wood and Knox for other occupational specialties.

The Army decided to compare the performance and morale of soldiers trained in 12 to 14 weeks using OSUT and those

of control units trained in the traditional basic and advanced training programs. The tests included the following high density military occupations.

Branch	Occupational specialty	Training cycle for OSUT units	Training cycle for control units
Infantry	Light weapons infantryman	12	16
	Infantry indirect fire crewman	12	16
Armor	Armor reconnaissance specialist	13	15
	Armor crewman	13	15
Combat Engineer	Combat engineer	13	17
Field Artillery	Field artillery crewman	12	15
Air Defense Artillery	Chaparral crewman	13	15
Signal	Lineman	14	17

The number of units in each branch tested are shown in the follcwing table.

Branch/location	OSUT units	Control units
Infantry/Fort Polk	7 companies	6 basic and advanced training companies 5 basic training companies 10 advanced training companies
Armor/Fort Knox	5 companies	5 basic training companies 5 advanced training companies
Combat Engineer/ Fort Leonard Wood	5 companies	4 basic training batteries 5 advanced training batteries
Field Artillery/ Fort Sill	6 batteries	6 basic training batteries 7 advanced training batteries
Signal/Fort Gordon	8 platoons	9 basic training platoons
Air Defense Artillery/Fort Bliss	3 platoons	8 basic training platoons 8 advanced training platoons

The training centers tested soldiers in critical tasks under specified conditions and standards for acceptable performance. For example, the U.S. Army Infantry School identified 21 critical tasks needed by an infantryman before joining his unit. The critical tasks identified were contained in four major categories, as follows:

Category	Number of combat critical tasks
Battlefield survival	4
Combat techniques	10
Weapons	6
Individual fitness	1
	21

The training center tests were followed by user-acceptance surveys to determine whether Forces Commands supervisors considered OSUT graduates qualified entry level soldiers. Questionnaires were to be used to obtain opinions of Forces Command unit commanders, platoon sergeants, squad leaders, and other supervisors of the graduates of the test.

Headquarters, Training and Doctrine Command, had overall responsibility for the test. The Training Command's Combined Arms Testing Activity was responsible for conducting the survey of supervisors and for seeing that the test followed acceptable scientific procedures.

The test began in August 1975 1/ and ended in August 1976, as shown in the table below. Installation reports and an executive summary were submitted to the Congress in November 1976.

Installation	Test period		Acceptance survey
	Began	Ended	
Fort Polk	8/4/75	12/11/75	4/1-16/76 6/1-15/76
Fort Knox	1/9/76	6/3/76	8/17-27/76
Fort Leonard Wood	1/9/76	4/29/76	8/17-27/76
Fort Gordon	1/9/76	5/20/76	8/17-27/76
Fort Bliss	1/9/76	6/18/76	8/17-27/76
Fort Sill	2/20/76	6/3/76	8/17-27/76

1/ Although the test actually began August 4, 1975, performance data was obtained on control units which began their training June 30, 1975.

The Chairman of the House Appropriations Committee in December 1975 requested that GAO monitor and evaluate the test to assure that it was conducted in a professional manner and was sufficient in scope to judge the concept's merits. (See app. I.)

SCOPE OF REVIEW

We monitored and evaluated the Army's OSUT test program from January 1976 to August 1976. Detailed work was done at: Headquarters, Training Command, Fort Monroe, Virginia; Headquarters, Combined Army Testing Activity, Fort Hood, Texas; Army Training Center, Engineer, Fort Leonard Wood, Missouri; and the Army Field Artillery Training Center, Fort Sill, Oklahoma. We also did limited work at Headquarters, Department of the Army, Washington, D.C.; Fort Polk, Louisiana; Fort Knox, Kentucky; Fort Gordon, Georgia; Fort Bliss, Texas; and Fort Riley, Kansas.

Our efforts included reviewing events leading to the test, test design, implementation plans, selection of test groups, programs of instruction, selected unit training tasks and performance measurements, data collection procedures and controls, and the systems analysis techniques and procedures used in the test. We also reviewed the data contained in the final report on the Fort Polk test and the draft report on the Fort Leonard Wood test. In addition, we observed the Army's user acceptance evaluation of selected Fort Polk OSUT graduates, and we made a limited review of the relationship of one-station training to the Army's requirements for training companies. Throughout our review we discussed our observations and findings with Army officials and obtained their comments. As of July 30, 1976, when we completed our fieldwork, only the Forts Polk and Leonard Wood reports on the training phase of the test were available for evaluation.

CHAPTER 2

ADEQUACY OF TEST DESIGN

The Army designed the test to show whether it could use OSUT concepts to teach recruits entry level skills in less time. The Army did not design tests of the individual characteristics of OSUT to determine which might be essential to reduced training time. Also, the test design did not address the Committees' concern about whether training time could be reduced by deleting nonessentials from instruction programs at two stations. (The Committees' direction for the test did not specify all of the alternatives that needed to be tested to satisfy their concerns.)

The Army agreed that the tests were limited as described above but said a plan including the test design was furnished to the House Appropriations Committee in February 1976. The Army said that since no formal response was received, it inferred congressional concurrence in its plan. The Army said that tests of the individual characteristics of OSUT were viewed as peripheral to the central issue which is, "Can OSUT produce an acceptably trained soldier?" GAO believes these matters are not peripheral since information on them is required to make a valid determination as to the most economical and effective program.

Moreover, the test results cannot be attributed completely to the OSUT concept because the training centers did not fully implement the OSUT concepts during training of the test units. For example, Fort Polk did not use an integrated program of instruction for five of seven infantry OSUT test units, but results from early tests at Fort Polk indicate that soldiers in the test units mastered critical tasks about as well in 12 weeks, without this OSUT characteristic, as others in units trained for 16 weeks in the conventional basic followed by advanced training method. These results indicate that OSUT is not the only feasible method of reducing training time.

The Army believes that the test results are attributable to implementation of the OSUT concept but acknowledged that the degree to which the various programs were integrated fell short of envisioned levels.

PRINCIPAL QUESTIONS NOT ADDRESSED

In July 1975, before the test began, the Army stated its position on whether reduced training time could be accomplished using two different installations:

"This is * * * undesirable * * * for several reasons. OSUT eliminates time consuming administrative hours which must now be added back in. It permits weapon training and tactics to be thoroughly integrated so that one reinforces the other. A split in the training disrupts that integration. The fact that a trainee is assigned to the same unit with the same cadre under OSUT permits more continuity and reinforcement of learning than is possible under a dual system. Further a split POI [program of instruction] denigrates the cadre supervision and personal attention that motivates trainees. * * * Such a dual system defeats the very purpose for establishing one station unit training."

Testimony by Army officials on the OSUT training concept indicates that the OSUT cadre was not only to teach common soldiering skills but also many of the advanced skills. This continuity of cadre, according to the Army, allows basic and advanced subjects to be integrated throughout the entire training cycle.

However, the Army now states that the drill sergeants will sometimes serve as principal instructors but more often as assistant instructors to conduct concurrent and reinforcement training. Advanced skill instruction will generally be taught by other (training committee) instructors.

The Army said that, although the test was not designed to evaluate the benefits of the single cadre concept, the results of the attitudinal survey indicate that the majority of OSUT respondents felt that the concept was desirable. Further, the Army says that a single cadre provides more time to properly evaluate and assist trainees.

A test designed to include measures of the influence of these two characteristics (integrated program and single cadre) on recruit performance would have required a different arrangement of test groups and corresponding data collection and analyses. For example, at Fort Polk the Army compared the skills achieved by seven 12-week OSUT companies with those of:

--Six companies receiving conventional advanced training.

--Five basic training companies and four advanced training companies receiving training in different units under different cadre.

--Six companies receiving basic and advanced training in the same units and under the same cadre.

However, without increasing the companies involved, the Army could have compared the skills of the 12-week OSUT companies with

--basic and advanced training companies receiving training over 16 weeks at two stations and

--basic and advanced training companies receiving training over 12 weeks at two stations.

Although this type of test would not have permitted judgments concerning an integrated program of instruction and use of a single cadre, it would have been more useful than the test the Army ran.

The Army did not agree that it could have conducted a two station test because training for each skill tested was conducted under the one-station training mode with basic and advanced training taught at the test installation. The Army said that only a few infantry trainees took basic training at a station other than Fort Polk. Thus, to implement a two station test would have required directing all enlistees destined for infantry training to another installation for basic training. The Army said this would not have been practical or feasible. The Army also said that such arguments were superfluous because the Committees had not directed the Army to test two-station training.

We contend that the Army had the opportunity to test two-station training at the time advanced infantry training was moved to Fort Benning--where no basic training was conducted. Even though the Committees did not direct such a test, the Army was aware of the Committees' concerns during extensive hearings on base closures and need for constructing new facilities to implement OSUT.

OSUT CONCEPT NOT FULLY IMPLEMENTED DURING TEST

At Fort Polk the first five companies trained under OSUT did not use an integrated program. Their 12-week program consisted of a "fill" (administrative processing) week followed by 6 weeks of basic training and then 5 weeks of advanced training. The Training Command then directed Fort Polk to use an integrated program, which was done in the training of two subsequent OSUT companies.

In October 1975, after visiting the five additional installations selected for testing OSUT training, the Combined Arms Testing Activity reported to the Training Command that in planning for the test

--the OSUT programs did not seem to be driven by a new or redefined set of entry level tasks; rather

--little substantive change had occurred in the basic and advanced training hours or in scheduling subjects, except to drop noninstructional administrative time.

After receiving this report, the Training Command instructed the training centers to reschedule selected advanced material and put it in the early weeks of training.

The extent to which advanced subject matter was moved forward varied extensively from one location to another. Fort Leonard Wood scheduled 34 percent of the hours in advanced subjects in the first half of the OSUT program, whereas Fort Bliss only rescheduled 11 percent in the first half.

In our opinion the responsibilities of the OSUT drill sergeant for instructing, counseling, and administrating the training had not been defined at the time of the test. Hence, implementation of this training concept was in a state of confusion. For example, at Fort Leonard Wood the role of the drill sergeants and other instructors was reversed. Drill sergeants instructed advanced control groups while other instructors taught OSUT trainees the same subjects.

The Army did not agree that the responsibilities of the OSUT drill sergeants were not defined. The Army said that under the OSUT concept the drill sergeants sometimes are the principal instructors but more often serve as assistant instructors. Also, under OSUT, training committees present some of the common skill instruction and a large segment of specialized skill instruction--often assisted by drill sergeants. The Army said the confusion we observed during the test was attributable to a new program being initiated rather than to a lack of defined responsibility.

We believe that had this aspect of OSUT been more clearly defined for those implementing the program, the situation observed at Fort Leonard Wood would probably not have occurred. Further, as stated earlier, the Army has revised the original OSUT concept as it relates to the role of the cadre.

The Army acknowledges that the situation reported above occurred but believes that it is easily explained. At Fort Leonard Wood, reorganization of training companies, concurrent with OSUT initiation and testing, resulted in the drill

sergeant and training committee instructional roles being somewhat reversed. OSUT companies were formed from basic training companies whose drill sergeants were not qualified in the OSUT skill being taught. Therefore, 55 percent of the OSUT program of instruction for five OSUT companies was taught by training committee instructors. Four control group advanced training companies had 78 percent of the instruction program principally conducted by a cadre of drill sergeants. This cadre had advanced training experience and was considered fully qualified to conduct the skill training. It was tasked to teach subjects normally taught by training committee instructors in preparation for the next cycle when these drill sergeants would form the cadre for an OSUT company. The Army concluded that this role reversal did not significantly affect test results.

TEST RESULTS

The Army's reports on test results from the training centers at Forts Polk and Leonard Wood show that graduates of the OSUT companies were about as well qualified as graduates of basic and advanced training companies. Results from surveying the Forces Command supervisors of Fort Polk graduates support this conclusion.

We analyzed the test results and reached the same conclusion even though five of the Fort Polk OSUT companies did not participate in integrated programs of instruction and none of the OSUT companies received instructions in advanced subjects from drill sergeants.

CONCLUSION

Because of weaknesses in design and implementation, we believe the test results cannot be relied on to show the merits of one station unit training or how it affects graduates' performance. And, while the Appropriations Committees' conferees did not specify all the alternatives that needed to be tested to satisfy their concerns, we believe the Committees should have been able to rely on the Army's experts to design and implement tests which responded to a clearly stated concern from extensive hearings about closing bases and constructing new facilities. One basic question not answered by the test is an evaluation using the same test criteria with a reduced program of instruction at two stations even though it may be necessary to use two cadre and separate programs of instruction for basic and advanced training.

To overcome this shortcoming of the test and to obtain information on the merits of a reduced program of instruction

at two stations, the Conference Committee on Military Construction Appropriations said in its June 1976 report that:

> "The House conferees feel that the Army should attempt to shorten the duration of the present Army initial entry training for infantry to see if adequate training can be achieved with a saving of time and cost."

To be responsive to the Conference Committee's needs, the Army should carefully consider the test findings at Fort Polk which showed that, in addition to a "fill" week, a 6-week basic training program and a 5-week advanced training program produced graduates as qualified as those trained under the traditional 16-week program. The results of the Fort Polk test suggest that using the reduced infantry program of instruction at two stations could produce qualified graduates.

ARMY COMMENTS AND OUR EVALUATION

The Army did not agree that weaknesses existed in test design and implementation which would prevent the test results from showing the merits of OSUT. The Army said that the June 1976 requirement to attempt to shorten initial entry training for infantry was presented to the Army almost 1 full year after the OSUT test had been initiated and would be addressed separately.

We believe the adequacy of test design and implementation has a direct bearing on the ability of the Army to attribute test results to the OSUT concept. Lacking data on whether OSUT is the most effective and economical method for training recruits, neither the Army nor the Congress can determine whether OSUT is a better method than other alternatives.

CHAPTER 3

UNCONTROLLED FACTORS IMPAIR TEST

In implementing the test, the Army did not control or measure the impact of outside factors which further impairs support for the conclusion that reduced training time depends on using OSUT. These factors independently or in combination suggest different explanations for the fact that OSUT graduates were about as well qualified as graduates of the 16-week program.

According to experts in the field of program evaluation, the preferred method for evaluating tests such as this is a set of conditions in which one group participates in the program while another group does not, but the two groups are the same in all other respects. If participants (recruits in this case) are randomly assigned to the test and control groups, measures showing the program to be effective can be accepted with high confidence. When these conditions are not met, there is greater danger that the appearance of program effectiveness can be due to other factors which are unrelated to program participation and which thus bias the measures of effectiveness. Authorities have identified the more common of these biasing factors and have suggested methods of reducing their influence. During our monitoring we noted a number of these biasing factors in the Army's test, but little effort by the Army to reduce their influence.

The uncontrolled factors which we observed (mostly at Forts Sill and Leonard Wood) are listed below.

--Test officials did not control the use of discretionary time for reinforcement and review.

--Training committee experts instructed OSUT groups while drill sergeants instructed control groups in advanced subjects.

--Training officials changed instructional methods and instructor-to-trainee ratios which did not equally affect OSUT and control groups.

--The size of units in OSUT and control groups varied widely. This resulted in

  a. variance in sergeant-to-trainee ratios and
  b. variance in equipment-to-trainee ratios.

--Test officials did not collect data on critical tasks in certain basic training subjects.

--Attitude questionnaire results and other information indicated that more command attention was paid to OSUT groups than to control groups.

--During basic training some control groups were composed of trainees designated for different occupational specialties than those of the OSUT groups.

--The control and OSUT groups were selected at different times, thus losing the benefit of randomization at one point in time.

--Test officials did not administer attitude questionnaires at a consistent time of day, day of the week, or week of training under consistent environmental conditions.

USE OF DISCRETIONARY TIME NOT CONTROLLED OR MEASURED

The Army's Fort Leonard Wood report states:

> "It was anticipated that trainee performance would be directly related to cadre (drill sergeant) use of discretionary time."

However, the Army did not control the use of discretionary time for reinforcement and review training at either of the installations we monitored. Drill sergeants or company commanders conducted review and reinforcement training sessions after normal duty hours or on weekends at Fort Knox, Leonard Wood, and Sill on the basis of what they determined the training needs to be. None of the installations we visited measured the amount of discretionary time used.

The Army's analysis of the attitude survey at Fort Leonard Wood indicates that the OSUT trainees perceived significantly greater use of discretionary time for extra training than did control group trainees.

USE OF TRAINING COMMITTEE INSTRUCTORS

At Fort Leonard Wood, training committee instructors generally taught advanced training tasks to the OSUT trainees while drill sergeants provided much of this instruction to control units. (The type of instructor could affect test results.)

The Army's draft report at Fort Leonard Wood states:

"The reliance on committee assistance was a function of turbulence generated as a result of test start-up and is not related to the OSUT program on any of the main tenets. The level of AIT [advanced individual training] cadre (Drill Sergeant) expertise is judged to be on a par with that of the committee instructors."

This statement contrasts sharply with the information we received at Fort Leonard Wood. A Fort Leonard Wood official told us that training committee members would continue to function as instructors. He said that the Army had found that the trainee retains his knowledge better when the subject was taught by a training committee member. The official explained that the committee member was a trained instructor whose only job was to teach the course and that the drill sergeant (who only teaches the subject once in 13 weeks) was not as proficient.

Fort Sill test officials, apparently recognizing the need to treat both groups equally, used separate instructors to teach their particular subjects to both OSUT and control groups.

CHANGES MADE IN TRAINING METHODS

At Fort Sill we observed changes which could have affected only the OSUT units because all advanced training control units had graduated when the changes were made, but five OSUT units were still in training. We estimated that the changes in training methods reduced the trainee-to-instructor ratio from about 14 to 1, to about 6 to 1. In addition, instructors used charts for teaching the use of technical manuals to advanced training units but provided actual manuals to the OSUT units. This allowed the OSUT trainees to practice using the manuals before being tested on their use.

We concluded that not only had changes been made in instruction during the test period but that these changes did not equally affect the test and control groups.

WIDE RANGE IN SIZE OF TEST UNITS

We observed a wide range in the size of OSUT and control units tested at Forts Sill and Leonard Wood. At Fort Sill, the initial unit size ranged from 91 to 212 trainees. Similarly, at Fort Leonard Wood the units ranged in size from 112 to 234 trainees.

The number of trainees per unit affects the use of facilities and training aids. For example, at Fort Sill, the number of self-propelled howitzers in use was generally six, regardless of the size of the unit. We noted the same situation at Fort Leonard Wood, where, for example, communications is ordinarily taught with 20 telephones and 38 radios regardless of the size of the unit. Thus, the opportunity to get practical experience was less for individuals in larger units.

The relative number of trainees to drill sergeants also varied from unit to unit. For example, at Fort Sill the ratio of trainees to drill sergeants ranged from about 8 to 1, to about 20 to 1, with an average of about 13 to 1. Four of the six Fort Sill OSUT units had ratios lower than the average, but only two of six basic training units and three of seven advanced training units had ratios lower than the average. Fewer trainees to drill sergeants affords more opportunity for individual attention.

We noted that the Army concluded in its report on the Fort Bliss test that a similar disparity constituted an appreciable bias.

DATA NOT COLLECTED ON SOME CRITICAL TASKS

Fort Leonard Wood did not accumulate data on 6 of 12 critical basic combat tasks required for combat engineers. Rather than identifying these tasks as not tested or not evaluated, the Fort Leonard Wood report shows 100-percent first time mastery on each of these tasks.

These untested tasks related to skills needed in combat:

--Camouflaging self and equipment.

--Preparing individual defensive positions.

--Reacting to or moving under direct/indirect fire.

--Selecting temporary battlefield positions.

--Using challenge and passwords.

--Observing and reporting information.

A Fort Leonard Wood test official said that it would be difficult to devise a test for these tasks. However, they were tested at Fort Polk and Sill.

Of the 12 basic training critical tasks, only 6 were actually tested at Fort Leonard Wood. Thus, when Army officials concluded in the Fort Leonard Wood report that the OSUT instruction program "does not result in a decrease in the mastery of the common tasks associated with BCT [basic combat training]," they reached this conclusion on the basis of a very limited frame of reference. They did not consider the total set of common tasks that the Training Command directed must be subjected to rigorous analysis as part of the evaluation program.

INDICATIONS OF MORE COMMAND ATTENTION IN OSUT GROUPS

The Fort Leonard Wood report states that command attention can be assumed to have been applied equally to both OSUT and control groups. However, this assumption is not supported by our observations or by the results of attitude questionnaires.

The Army's assumption of equal command attention could be important because, if true, it tends to reduce the possibility of a Hawthorne effect--a positive response due merely to the attention that participants receive. The Army report recognizes the presence of the Hawthorne effect at Fort Leonard Wood but argues that it is offset by the learning curve effect 1/ on the unit cadre. However, the Army does not present any evidence in the report to support this contention of offsetting effects. And, because the advanced training subjects were generally taught to OSUT units by instructors already familiar with the subject matter, we believe the contention is not supportable.

At Fort Leonard Wood, training evaluators made almost three times as many visits to observe OSUT test units as they did to observe control units. The Army's analysis of the Fort Leonard Wood attitude survey states that responses to one of the questions indicates more OSUT than control respondents felt that their commanding officers would help them with a personal problem. The Army's analysis further stated that this suggests that even if the trainees were not aware that they were in an experimental program, their commanding officers were and showed a greater sensitivity to their men's problems.

1/ The "learning curve effect" assumes that cadre ability to run the program will improve with repeated experience.

Army officials contend that such interest could be expected in any new training program. But, the display of such interest tends to dispute their assumption of equal command attention.

VALUE OF FORT BLISS AND FORT GORDON TESTS QUESTIONABLE

At Fort Gordon and Fort Bliss, the Army had problems in establishing test conditions that would generate meaningful data to compare performance of recruits trained under the OSUT program to performance of recruits trained under the conventional basic training and advanced training program. Relatively few recruits entered training in the test occupational specialties at these two installations, and the Army was forced to establish OSUT on a platoon basis (about 50 men) rather than on a company or battery basis (about 200 men). The small number of recruits entering the program forced the Army to compare performance of OSUT recruits in the basic training phase to performance of recruits being trained in other occupational specialties.

In the advanced training phase, the performance of the OSUT recruits was to be compared to performance of recruits who for the most part began training before the OSUT test. While at Fort Bliss information was available to compare advanced training performance between the OSUT and control groups; like performance data was not available at Fort Gordon. Consequently, no comparison between OSUT and control unit performance could be made at Fort Gordon.

Moreover, no separate OSUT organization was established at the two installations. Rather, the OSUT platoons were trained under the basic training structure for the first half of the training program and then transferred to the Signal and Air Defense Schools for advanced training. This arrangement is virtually indistinguishable from one-station training.

In its final report on the test, the Army acknowledged the limitations of the Forts Gordon and Bliss tests. Since no advanced training companies were in the control groups, the Fort Gordon data was excluded from comparisons involving military specialty subjects. The Army said that the Fort Bliss test did not constitute and objective evaluation of an OSUT program and that the data generated from the tests was not used in its report for comparisons between the different programs.

ARMY COMMENTS AND OUR EVALUATION

The Army said that the uncontrolled elements in its tests were not of sufficient frequency and magnitude to introduce significant bias into the test results. It said that the factors referred to were widely scattered, irregular, and typical of field tests of this magnitude. Army officials said that their conclusions were based on subjective judgments of installation test officers. Quantitative analyses of data were not made to arrive at objective determinations because the Army did not collect such data. Thus, the Army has made it virtually impossible to measure the statistical significance of uncontrolled elements on test results.

For example, the Army's report on the Fort Leonard Wood test discusses the fact that the OSUT test companies relied heavily on the training committee to teach advanced tasks, whereas the drill sergeants taught the control groups. The Army subjectively concluded that, for the purposes of this test, the level of expertise of the drill sergeants was equal to that of the training committee instructors. However, according to Army officials at Fort Leonard Wood, the committee instructors were better qualified to teach the advanced subjects because of their extensive experience. (See p. 13.)

In another instance we pointed out that the ratio of trainees to drill sergeants varied from unit to unit at both Fort Sill and Fort Leonard Wood. The Army subjectively determined that this bias was not significant; however, in commenting on the Fort Bliss test, the Army said that a similar disparity in the availability of instructors and training aids constituted an appreciable bias and caused the data to be of questionable validity.

The Army requested, since our report suggests that these factors were of sufficient importance to cast doubt on the reliability of the test results, that it be afforded the opportunity to examine any statistical analysis made by us. Unfortunately, because the Army did not collect statistical data on these factors, we were unable to quantify their significance. Nevertheless, it should be noted that the issue of uncontrolled elements remains because the Army did not control or measure uncontrolled factors' effects. Therefore, the test results cannot be accepted without question as to their validity.

CHAPTER 4

BASIC TRAINING REQUIREMENTS

The Army's projection of trainees who will be in the training programs of the various installations where OSUT is being implemented is changing, and there appears to be uncertainty about the number and location of required basic training companies. According to Army officials, basic training stationing plans will continue to change as requirements are revised and the length of OSUT cycles are adjusted.

The Army's original OSUT stationing plan that was to be implemented during fiscal years 1975 through 1978 would have reduced total basic training companies from 207 to 180, as follows:

Installation	Number of companies FY 1974	Number of companies in the original Army plan
Fort:		
Benning	0	27
Bliss	0	9
Dix	27	0
Gordon	0	9
Jackson	45	36
Knox	36	36
Leonard Wood	36	36
McClellan	0	9
Ord	27	0
Polk	36	0
Sill	0	18
Total	207	180

During fiscal year 1976, the Forts Ord and Polk Training Command missions were phased out and basic training companies were established at Forts Bliss, Gordon, and Sill. Army officials said that the most current stationing plan provides for keeping Fort Dix as a training center with a basic training workload of 36 companies. And, under this revised plan, the Army has increased its basic training companies to 216, as shown below.

Stationing at End of Fiscal Year 1978

Installation	Revised number of companies			
	Basic training	OSUT	Total	Basic training equivalent
Benning	0	39	39	27
Bliss	9	0	9	9
Dix	36	0	36	36
Gordon	9	14	23	18
Jackson	36	0	36	36
Knox	18	19	37	27
Leonard Wood	27	13	40	36
McClellan	0	15	15	9
Sill	9	13	22	18
Total	135	113	257	216

Army officials explained that the increase of 36 companies was the result of a greater number of recruits expected to be trained. They also explained the difference in total basic training and OSUT companies and basic training equivalent companies as due to differences in training cycles for various training branches. These cycles, we were told, will change as a result of current OSUT testing and thus affect the final number of OSUT companies required.

We did not attempt to verify the Army's stated requirements. To do so would, in our opinion, be of marginal value until the OSUT test is completed and plans to expand OSUT to other occupational specialties or reassessments of existing branch participation are confirmed. The current stationing plan suggests that the Army is contemplating some changes at Fort Bliss, where OSUT is being tested; and at Fort Gordon, where a planned increase in OSUT companies suggests an expansion of the concept.

APPENDIX I

Congress of the United States

House of Representatives

Committee on Appropriations

Washington, D.C. 20515

dms

December 9, 1975

B-146890

Honorable Elmer B. Staats
Comptroller General of the United States
General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Staats:

During hearings this past year and in its report, the Committee has expressed concern about Army's one-station training proposal. As a result, the Army has been directed to test one-station training at existing training installations and report its findings to the Congress by November 30, 1976.

To assure the Committee that the test was conducted in a professional manner and was sufficient in scope to judge the program's merits, you are requested to monitor and evaluate the Army's test. Also, you should determine the relationship of one-station training to Army's total training requirements and capabilities. A report on your findings and evaluation should be provided to the Committee shortly after the Army's report is submitted.

Sincerely,

George Mahon

Chairman

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, D.C. 20310

14 DEC 1976

Mr. H. L. Krieger
Director of Federal Personnel
and Compensation Division
General Accounting Office
Washington, D.C. 20548

Dear Mr. Krieger:

This is in reply to your letter of 5 October 1976 to Secretary Hoffmann regarding your draft report "The Army's Test of One Station Unit Training - Adequacy and Value" (assignment code 962065 and OSD case 4461).

Review of the draft report has been completed by the Office of the Deputy Chief of Staff for Personnel (ODCSPER). The following comments are keyed to GAO observations and conclusions contained in the various chapters and the digest of the subject draft report.

a. Chapter 2, Adequacy of Test Design.

(1) "The Army did not design tests of the individual characteristics of OSUT to determine which, if any, are essential to reducing training time. The test design did not address the committee's concern as to whether the training time could be reduced by deleting non-essentials from its BCT/AIT programs of instruction at two stations." (Para 1, page 6.) [See GAO note 1, p. 26.]

Concur with these statements but request that the following facts be included in this paragraph and paragraph 1, page ii of the Digest in the final report. The Army test of OST-OSUT was designed to determine if OSUT trained soldiers were prepared to perform entry-level duties on joining a unit. A plan for the OST/OSUT test, outlining this test purpose and the methodology to be employed, was furnished the House Appropriations Committee during the first week of February 1976. This plan clearly indicated the Army intention to "test One Station and One Station Unit Training at existing training installations" as directed in November 1975 by the House-Senate Appropriation Committees' conference report. No formal response was ever received by the Army to this test plan. In the absence of any objection to the test plan, the Army inferred Congressional concurrence in its efforts to determine if a manpower efficient concept

(OSUT) could produce soldiers trained as well as their cohorts who undergo a longer training cycle. Since there is general concurrence that the OSUT-trained soldier performs entry level critical skills in a manner comparable to the BCT-AIT graduate, the manpower benefit of OSUT is inherently demonstrated. Any other conclusions presume that the Army can afford to deprive the operational forces of manpower which can be made available by means of training under the OSUT concept. Therefore, the Army views aspects of test design and implementation with which the GAO takes issue is peripheral to the central issue which is, "Can a system which minimizes manpower expenditures, i.e., OSUT, still produce an acceptably trained soldier?" Since the test produced affirmative results in this regard, the Army necessarily must view two station training even with reduced POIs, in skills which lend themselves to OSUT, as a luxury which current manpower constraints will not allow.

(2) "Moreover, the test results cannot be attributed to OSUT because the training centers did not fully implement the OSUT concepts during training of the test units." (Para 2, page 6.) [See GAO note 1, p. 26.]

Nonconcur with this statement and request that it be deleted. As stated in paragraph 3, Chapter 1, of the draft report, OSUT differs from other initial skill training (IST) methods by employing the following distinguishing characteristics: "(1) The unit remains intact under one cadre, (2) part of the AIT is integrated with the BCT so that there is no discernable break between the two, and (3) the program of instruction is shortened due to the elimination of administrative and other non-instruction time." The Army acknowledges that the degree to which the various programs integrated basic combat and advanced individual subjects fell short of envisioned levels, particularly at Fort Polk where the integrated program was used during only two of the seven OSUT test cycles. However, the OSUT test units at Forts Leonard Wood, Knox and Sill used integrated programs of instruction for the entire 16 test cycles. Refinements to these POIs and the sequencing of integration were, and continue to be, made as requirements for product improvement became known. The other two distinguishing characteristics of the OSUT concept, use of a single cadre and use of a shortened POI, were fully implemented at all test sites. Having employed all three OSUT concept elements, two fully and the third during 18 of 23 cycles, the Army concludes that the test results are attributable to implementation of the OSUT concept.

(3) "Testimony by Army officials on the OSUT training concept indicates that the OSUT cadre was not only to teach common soldiering skills, but also many of the advanced skills. The continuity of cadre according to the Army, allows basic and advanced subjects to be integrated throughout the entire training cycle since the same cadre would teach each phase of the training." (Principal Questions Not addressed, para 2, page 7.) [See GAO note 1, p. 26.]

APPENDIX II

The Army agrees with the above statement, but believes that it imparts an incorrect impression of the amount of formal instruction for which the OSUT Drill Sergeant is responsible. The OSUT Drill Sergeant remains with his trainees through a complete training cycle, often serving as a principal or assistant instructor in common skill as well as specialized advanced training. While the Drill Sergeants may function as principal instructors, the conduct of concurrent and reinforcement training are critical areas in which he operates. Drill Sergeants, depending on the OSUT MOS being taught, may function as principal instructors for limited MOS subject training, but function primarily as assistant instructors during MOS instruction taught by committee. The OSUT test was not focused on or designed to isolate and evaluate the benefits of a single cadre (Drill Sergeant) compared to the use of multiple cadres. Although the OSUT test design did not specifically evaluate advantages and disadvantages of the single cadre concept, certain facts concerning cadre are clear. Attitudinal surveys at Forts Sill, Knox, Leonard Wood, Bliss, and Gordon indicate that over two-thirds of OSUT respondents felt that it is desirable to keep the same cadre throughout the entire training cycle. A single cadre also provides more time to properly evaluate and assist trainees.

(4) "Without increasing the companies involved, the Army, if it had been directed, could have compared the skills of the 12-week OSUT companies with

-- BCT and AIT companies receiving training over 16 weeks at two stations.

-- BCT and AIT companies receiving training over 12 weeks at two stations." (Principal Questions Not Addressed, para 2, page 8.)

[See GAO note 1, p. 26.]

Nonconcur with this statement and request that it be deleted from the report. During the period of the individual installation tests, (see Chapter I, page 5) training for each of the skills to be tested was being conducted under the one station training (OST) mode with all BCT and AIT for that skill taught at the test installation. As an example, at the time of the OSUT test for infantry (4 Aug 75 to 11 Dec 75), all BCT and AIT for infantrymen were being conducted at Fort Polk. Only 47 out of 3587 infantry trainees in the BCT-AIT control groups took BCT at a station other than Fort Polk. To have done what this paragraph suggests would have required directing all enlistees destined for infantry training to some installation other than Fort Polk for BCT. Concurrently, the BCT input at Fort Polk would have had to be limited to enlistees in skills other than infantry. Both groups of trainees would then have had to be shipped to a second station for AIT. Such a test scenario would have been not only impractical but also infeasible. Many of the trainees tested were enlisted under the delayed entry program with their training location set many months in advance of their reporting date. An argument

might be presented that the proposed test scenario could have been followed for infantry training after closure of the Army Training Center at Fort Polk and movement of AIT infantry to Fort Benning, where no BCT is conducted. Such an argument is superfluous in view of the draft report's acknowledgement (paragraph 3, of the Digest) that the Committee did not direct the Army to test training at two stations as part of the OST/OSUT test. The entire issue loses all relevance in light of the OSUT test conclusion that the OSUT trained soldier is aswell trained on entry level critical skills as the BCT-AIT trained cohort, and in less time. Even if the same performance level could be achieved by employing the 12 week POI at two stations, travel time between the two stations alone would make this scenario less cost effective when time is the measure of efficiency. The Army believes that this paragraph is inaccurate, speculative, and not germane to the test which was conducted. As such, it should be deleted from the report.

(5) "The responsibilities of the OSUT drill sergeant for instructing, counseling, and administering the training had not been defined. Hence, implementation of this concept of training was in a state of confusion." (OSUT Concept Not Fully Implemented During the Test, para 3, page 9.)
[See GAO note 1, p. 26.]

Nonconcur with that portion of the statement dealing with definition of the Drill Sergeant's responsibilities and request that it be deleted from the final report. Under the OSUT concept the Drill Sergeant remains with a group of trainees through their complete training cycle. He is also required to perform formal teaching assignments, sometimes as the principal instructor, but more often as the assistant instructor, in both common skill and MOS related subjects. Under OSUT, training committees will continue to present some of the common skill and a large segment of the specialized skill instruction, often assisted by the Drill Sergeant serving as the assistant instructor. One of the OSUT Drill Sergeant's most significant contributions to trainee instruction is through his ability to conduct supplementary, concurrent and reinforcement instruction. The OSUT Drill Sergeant must be a noncommissioned officer qualified in the MOS being taught. His knowledge and experience in that MOS allow him to assist trainees who are experiencing difficulty in a particular subject area. The confusion observed by the GAO in this regard was attributable to that normally encountered when a new program is initiated rather than to a lack of defined responsibility.

(6) "At Fort Leonard Wood, the role of the Drill Sergeant and other instructors was reversed. Drill Sergeants instructed advanced control groups while other instructors taught OSUT trainees the same subjects." (OSUT Concept Not Fully Implemented During the Test, para 3, page 9.)
[See GAO note 1, p. 26.]

The Army acknowledges that the observation reported above occurred but believes that an explanation is in order. At Fort Leonard Wood, reorganization of training companies, concurrent with OSUT initiation and testing, resulted in the Drill Sergeant and committee group instructional responsibility roles being somewhat reversed from what would normally be

observed. OSUT companies were formed from BCT companies whose Drill Sergeants were not qualified in the OSUT MOS being taught. Therefore, 55% of the total OSUT program of instruction for five OSUT companies were taught by committee group instructors. Four control group AIT companies had 78% of the program of instruction principally conducted by Drill Sergeants cadre. This cadre had previous AIT experience and was considered fully qualified to conduct the MOS training. They had been tasked to instruct subjects normally taught by committee group instruction during AIT in preparation for the next cycle when these Drill Sergeants would form the cadre for an OSUT company. It has been concluded that this role reversal did not have a significant affect on the Fort Leonard Wood segment of the test results.

(7) "Because of the weaknesses in design and implementation, we believe the test results cannot be relied on to show the merits of one station training or how the OSUT graduates' performance was affected by the distinguishing characteristics of the OSUT concept." (Conclusion, para 1, page 10.) [See GAO note 1, p. 26.]

Nonconcur with this conclusion and the paragraph of similar wording at para 3, page ii of the Digest. The issues raised here are those of test design and implementation of the OSUT distinguishing characteristics which are addressed in paragraph a(1) and a(2) of this response. The peripheral issue of uncontrolled factors impairing the implementation is addressed in paragraph b(1) of this response. Request that these paragraphs be deleted from the final report.

(8) "In order to overcome this shortcoming of the test and to obtain information on the merits of a reduced program of instruction at two stations, the conference committee on Military Construction Appropriations said in its June 1976 report that: 'The House conferees feel that the Army should attempt to shorten the duration of the present Army initial entry training for infantry to see if adequate training can be achieved with a saving of time and cost'". (Conclusion, para 1, page 10.) [See GAO note 1, p. 26.]

Nonconcur with the inclusion of this sentence and all portions of the paragraphs appearing on page 10a of the draft report. As has previously been explained in paragraphs a(1) and a(2) of this response, the June 1976 requirement quoted above was presented to the Army almost one full year after the OSUT test had been initiated. Further, and in compliance with the above Congressional request, the Army will address the quoted Joint Conference Report extract during the course of its justification of the FY 78 MCA program.

b. Chapter 3, Uncontrolled Factors Impair Test.

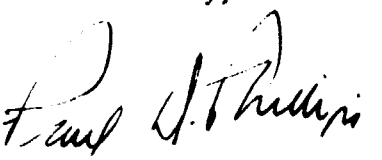
(1) "In implementing the tests, the Army did not control or measure the impact of a number of factors on the training which further impairs support for any conclusion based on the test that reduced training time depends on the use of OSUT. These factors independently or in combination suggest different explanations for the fact that OSUT graduates were about as well qualified in critical tasks as BCT/AIT graduates." (Para 1, page 12.) [See GAO note 1, p. 26.]

APPENDIX II

Nonconcur with this paragraph; paragraph 2, page iii of the Digest; paragraph 3 of Chapter 2, page 6; and the conclusions contained therein. The factors referred to were widely scattered and irregular, and are typical of field tests of this magnitude. The Army analysis of these uncontrolled elements concludes that they are of insufficient consequence, frequency, and magnitude to introduce significant bias into the test results. Succeeding paragraphs of this chapter list these factors, stating that they were observed mostly at Forts Sill and Leonard Wood. Although this report never so states, it suggests that these factors were of sufficient importance to cast doubt on the reliability of the test results. The report does not offer any statistical analysis to substantiate this contention; it only reports the observed factors and implies that bias introduced by them was statistically significant. Based upon the contents of this draft report, the Army must assume that this conclusion was based upon subjective judgment rather than statistical evidence. Army analysis shows that the bias introduced by the factors stated was not significant and, therefore, did not impair the test results or conclusions which might be drawn from those results. The Army requests that it be afforded the opportunity to examine any statistical analysis made by the GAO in order to review the methodology used and the validity of the conclusions derived therefrom, and to comment on that analysis prior to publication of the final report.

[See GAO note 2.]

Sincerely,



GAO notes: 1. Page references in this letter may not correspond to those of the final report.

2. The deleted comments relate to matters discussed in our draft report but omitted from this final report.