

PRESENTATION BY MG GORMAN
ARMED FORCES STAFF COLLEGE
NORFOLK, VIRGINIA
23 AUGUST 1976

Ladies and gentlemen, the existence of the command of which I am a member, headquartered just across the bay, owes its very being and livelihood to the fact that the Army requires a great deal more in the area of training and doctrine than do the other services. Without speaking invidiously to the problems of the other services, let me point out that an Army commander faces difficulties of command and control which are a quantum different from those which confront the commanders of the other services. There are no radar scopes where the elements that are maneuvering in an Army operation are evident to any level of command. There is no flag plot where all of the maneuver elements can be displayed with sure precision. Indeed, simple information on where the command is and what it is doing is often available to commanders at division, corps or higher echelons 24 hours or even 36 hours after the event.

DOCTRINE: A SHARED IDEA

If we were to take the fellows sitting here in the front row and arm them, I think you would all agree that we would not have an effective fighting force despite the fact that they all represent many years of military service. What makes an effective fighting force in the US Army is an ephemeral, a conceptual matter. What would transform this group of men into a squad or a platoon capable of a military operation would be shared ideas, not the equipment, although the equipment

would be important. But, more important, are the ideas, the notions around which they could build a scheme for cooperating in the dark, in the mud, in all of the wrinkles and folds of the infinitely variable terrain which is the environment in which the Army must operate, and it is the building of a shared idea which is essential to transforming mobs into armies.

Now this nation of ours has had repeated experiences throughout its history in committing mobs to battle against organized armed forces. Such was the case in the Civil War and 700,000 American males paid with their lives for our inability to anticipate the professional demands of armies in that era. Such was the case, unfortunately, in WWI. The citizen armies which were committed to battle in France had no idea what they were up against. The American tactics which were devised by the AEF were an invitation to murder. Four years of experience on the Western front were set aside by a group of doctrinaire American officers who thought that they knew better than any Europeans how to fight that combat and we committed our soldiers across the top at the blow of the whistle intent on bringing the Germans to defeat with the bayonets. We tried what the French had tried in 1914. We tried what the British had tried in 1915 and we paid for it dearly with a quarter of a million casualties.

In WWII the US Army produced 89 divisions from the United States, with an additional division formed overseas; we generated 90 divisions' worth of combat power. But we won WWII essentially because we outnumbered them. If any of you doubt my interpretation of history, I would ask you to read GEN Patton's book, War As I Knew It. Turn to the section where he deals with the debate on the quality of the American tank versus that of the German tank. GEN Patton was very clear on what tanks were for. Tanks were not for killing tanks; tanks were for killing infantry and artillery. Tanks were for getting into the soft rear of an enemy and carving him up. And yes, he said the American tank may be inferior in certain respects to the German Panzer IV or Panzer V or the Royal Tiger but he says, "I got three of mine for every one of theirs and we'll overwhelm them." And we did.

Now, we are an Army which will have to face combat against enemies whose equipment is qualitatively as good as ours or better, and who will have a hell of a lot more of it. The ideas, then, that we provide to our force in advance of the war may very well determine the outcome of the war. Those ideas, this notion of a common operational concept that I address is what we refer to in the US Army as doctrine, and training obviously is the process by which we communicate that idea.

What I have proposed to do for you this morning is to expose you to some of the ideas with which we work over in Fort Monroe, not necessarily to make you experts because you're all experts in training--all military professionals are--but simply to give you some notion of the approach we

are taking to solve the problems to which I have alluded.

Let me start by pointing out that all of you experts on training, particularly you Army officers, understand that we have to cope with problems such as are listed here.



THE SQUEEZE ON TRAINING

But that's not what the Training and Doctrine Command looks at. Rather, we have to address problems which are like these listed here.

SQUEEZE ON TRAINING

1. TIME — 6 TO 5 /DAY WORK WEEK
SOLDIER ORIENTED PROGRAMS
2. DOCTRINE — 2 UP AND 1 BACK
FM 100-5
3. MOS — MORE MOSs PER BATTALION
MOS PROLIFERATION
4. EQUIPMENT SOPHISTICATION
5. EQUIPMENT DENSITY
6. MAINTENANCE — HIGHER LEVELS OF EFFORT

It is a fact that the time available to the Army today to train is substantially less than it was ten years ago. That's a reality of the modern era.

It is a fact that the doctrine that we have got to teach the Army today is a lot more complicated than the two up, one back, feed them a hot meal, and attack up the middle which used to characterize our approach to tactics just 10 or 15 years ago.

It is a fact that there are more military occupational specialties per battalion and that the trend has been to complicate the training task facing any Army commander by giving him an ever richer mix of very high priced, highly skilled individuals who have to be kept current in an era of rapidly changing technology.

In the area of doctrine, military occupational specialties, equipment sophistication, density, maintenance, comprise the genre within which the Training and Doctrine Command operates habitually. This is our field. This is where we can make a contribution to the training of the Army.

SQUEEZE ON TRAINING

7. PERSONNEL TURNOVER
8. MANNING LEVEL
9. HEADQUARTERS OVERSTRENGTH
10. BASE SUPPORT
 - REDUCTION OF CIVILIANS/TROOPS
11. DIVERSIONARY MISSIONS
 - EMPHASIS ON NON-TRAINING MISSIONS

We can't do a great deal about personnel turnover, although we can operate with the Department of the Army to address certain steps which may make that easier. I'll come back to that point later on. Nor can we talk to manning levels except, again, to go to the Department of the Army and point out what happens when, for

one reason or another, the high command elects to man peacetime units at levels less than their wartime authorizations, what that does in terms of training and doctrine. We can deplore the fact that, as in wartime, peacetime headquarters are bloated and over-strength. That is a reality of the Army today as it has always been. We have to come to grips with the fact that the Congress has elected in its wisdom to dictate a substantial civilianization in years past and we went and replaced a lot of soldiers with civilians in our base support apparatus and then they took the civilian authorizations away and left us with no recourse except to take soldiers from structural units and put them to work on base support. And, of course, the 101 diversionary missions that in peacetime preoccupy us with missions not directly related to our wartime business. These are the realities of Army training with which the Training and Doctrine Command has to cope.

TRAINING: WHO AND WHERE

Now I'm going to impress on you here a little vocabulary because it is germane to our further discussion. Army Reg 350-1, which is the basic document which lays down Army policy on training--certainly all of you Army officers here should be familiar with that--uses four terms to describe training.

	INSTITUTION	UNIT
INDIVIDUAL		
COLLECTIVE		

Two of them say where the training takes place, and we draw a distinction between training conducted in an institution (the sort of business that's going on here at the Armed Forces Staff College) and training that goes on in a unit of the US Army. The unit is a very much more difficult and hostile training environment, but it is the place where most of our equipment is; it's where most of our soldiers are most of the time; and it is, therefore, the place where we in the Training and Doctrine Command see the greatest opportunities for communicating an effective doctrine. And, again, I'll come back to that theme.

We distinguish, moreover, in Army Reg 350-1 between training an individual and training a group, a team, a crew, or whatever. The difference between individual and collective training, who is being trained, dictates a series of very differing training techniques. For example, in our institutions in the Army we are moving very rapidly towards individualization of instruction. We have had marked success with our several attempts to bring about self-pacing in our schools and I would say over the next five years we should transform at least half of our present instructional methods to individualization and self-pacing. Obviously one cannot approach the training of a tank crew with those techniques. Training a collective is a little different thing, where interpersonal relationships are germane to the outcome of training; you have to use a different training strategy.

So we use these four terms to talk about the problem, and I think those of you who have been in the Army for years will recognize that

this is a more complicated vocabulary than we have had in regulations in the past. It's more complicated essentially because we've got a more complicated problem to deal with. If you want to know what the resource allocation is to these categories of training, this slide displays in terms of fiscal 76 dollars, Program 2 (which is the funds for the general purpose courses), Program 8 (which is the training account, largely individual training in institutions), and the Reserve Components, RC, expenditures. Total in the Army we

\$(P2, P8, RC) Expenditures
FY 76

WHO	WHERE		
	Institution	Unit	Total
Individual	25%	12%	37%
Collective	1%	62%	63%
TOTALS	26%	74%	100%

spend about 25% on individual training in institutions and about 62% on collective training in units; only 12% is spent on individual training in units.

And if I had to indicate to the Chief of Staff where his greatest opportunity for winning would be, it would be in the area of shoring up our approach to individual training in units. I think you can see immediately the importance of that in an era of the all-volunteer Army. The training of the individual in the operating units directly affects his attitude towards his job and, therefore, his attitude towards reenlistment. And we've got to operate a bit more effectively through

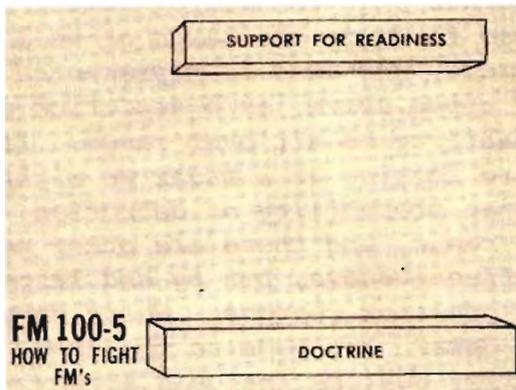
mechanisms that I shall describe in a moment.

GOAL

SUPPORT FOR READINESS

SUPPORT FOR READINESS

Overall, obviously, what we're interested in is what everybody else in the Army is interested in--a ready force. Let me start down at the bottom of this somewhat tortured structure that I'm going to build for you with some basic notions which are imbedded in our concepts for fighting the war. The latest version of



FM 100-5, Operations, is the basic field manual of the US Army. It is dated 1 July 1976 and distribution is now underway in the force. It embodies a number of concepts which are very different from those which have guided Army training in the past. For example, FM 100-5 talks

about winning the first battle of the next war. Now that's a phrase which brings upon us accusations of sloganeering but you should appreciate that what we're trying to say is the US Army can no longer depend upon a mobilization and a long period of fumbling as we learn tactics and techniques appropriate for the enemy and theatre in which war is going to occur. The next war will, in all likelihood, be a come as you are affair and we'll win and lose it with what we've got on hand when the war breaks. Now, if you want to argue that, that's the plane on which we're building our tactical concepts today.

The manual talks about the essentiality of being able to fight and win outnumbered. Again, the US Army has throughout its past been an army of mass. Even the Indian-fighting army, the expeditions that trotted over the desert in search of the Apache or any of the other tribes, depended upon mass to do a job. You may not appreciate it, but Geronimo's band numbered exactly 40 braves during most of the campaigns and we had 3 cavalry regiments and the better part of 2 infantry regiments out for 5 years trying to bring those 40 guys in line. What we're saying is that mass is no longer our tactical reliance. We're going to have to develop quality in force. That is a very different challenge from what we have had before. The purpose of our command is to develop concepts appropriate to those and other similar notions.

Let me give you one further example of concept and how it operates, simply to drive home a point. If you were to ask any artilleryman in the audience what the primary

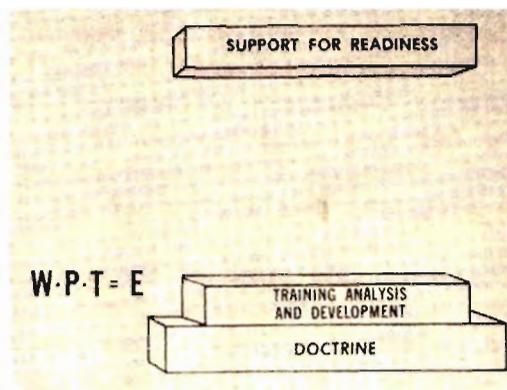
mission of the US Army artillery is, he would probably tell you it is to get the other guy's artillery. You know, that's sort of like the air power fellows are always first interested in getting superiority in the air. Counterbattery fire is the first thing you do. We believe that we're probably in an era where we're going to have to state the primary mission, the first priority target for US Army artillery, is the electronic warfare capability of the other side. The first mission of the artillery is to go after the jammers and the interceptors because if we don't get them, none of us are going to do our business, including the artillery. That's the important concept. Saying that and translating it into tactics and techniques is another proposition and that is, again, the process I will be describing to you.

Now, the word doctrine is an operational term. You do not have a doctrine by publishing a field manual. You do not have a doctrine by having somebody in Fort Leavenworth promulgate it; you can't speak ex cathedra from the chair of the commandancy at Fort Leavenworth. You do not have a doctrine until at least half of us believe it, believe the concept and are prepared to operate on it. Then you've got a doctrine. Doctrine is consensus in the Army, it is the shared idea. And so the building of consensus is what this command is all about.

TRAINING ANALYSIS AND DOCTRINE

Well, one of the mechanisms that we use to develop our consensus is to rest our propositions on solid analysis, quantified where we can, proved experimentally where we can,

tested with troop units where we can, demonstrated where we can. And what



I show you here is simply a concept that says that the efficiency or effectiveness of any weapon system in battle is a function of the materiel capabilities of said weapon system; the proficiency of the men or man who handles the weapon, points it, aims it, serves it; and the tactics or techniques with which the weapon is employed. And it is possible to a large extent, given current techniques for analysis and experimentation, to quantify those relationships and demonstrate the superiority of one particular combination of W, P and T versus another. And training analyses and development are the means by which we do that.

Now I want to show you some examples of current training analysis and development and I've taken here a set of slides which were shown to the Chief of Staff of the Army just three weeks ago. This is from a project called Net Assessment of US and Soviet Armor.

NET ASSESSMENT SOVIET vs. U.S. ARMOR

Tanks	Soviet	U.S.
Quantity	4	1
Productivity	6	1
Quality	++	+
Crews		
Institutional Training	Focused	Diffused
Leader Preparation	One Year as Crew Member	12 wks AOB
Stability	Good	Poor

You'll note that our Soviet adversaries have an inventory four times ours and a productive capability six times ours. Their tank lines can turn out tanks about six times as fast as ours. We give them a plus sign in quality because their latest tank, the T72 which we don't know much about, appears to us to have embodied several technological advances in armor, fire control and possibly some other advances which I think puts the T72, their main battle tank, one generation ahead of anything that we have on hand now. The Soviet institutional training for tank crews is focused in the sense that they train tank commanders, they train tank gunners, they train loaders, they train drivers and they school the man for a particular position within the crew which is all he does the entire time that he is in the service, thereby attaining a high degree of specialization.

In our force, of course, we are still operating on the WWII notion that we can take in a fellow, almost anybody off the streets, tell him that he is now a tankerman and start to familiarize him with the equipment. And then, over the years, let him rise through the ranks from driver to

loader or loader to driver; eventually he'll become a gunner and then eventually a tank commander. The problem with that is that in modern war you kill your tank commanders four times as fast as you kill drivers and loaders. So we've got a system for training tank crews in the US Army which will guarantee mediocrity on the battlefield. And we've got to change that.

The Soviets are a great deal smarter in having a training base that can produce trained tank commanders. They put a lot more training into their people and although they are on a two-year conscription pattern, the stability of their crews compared with ours is very good. Our crew stabilities in Germany, incidentally, are such that about 50% of the crews change every three months, which is not very good. Their's is much better than that; they keep crews together for a year or more for training.

The significance of the armor systems can be portrayed this way.

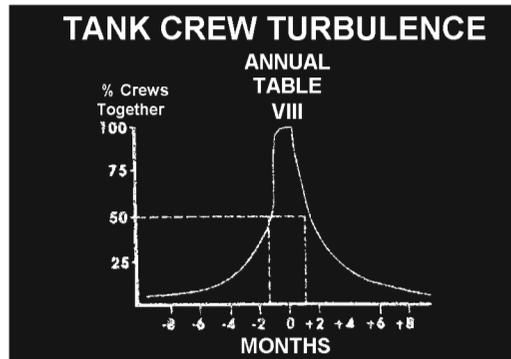


You have to understand that firepower scores are always a mushy way of comparing anything, but if you will accept that this is a reasonable analysis of firepower in West Germany,

in a situation in which the 7th Army is defending or delaying against a Soviet thrust, then approximately 36% of the firepower at the disposal of 7th Army would reside in its tanks. The anti-tank systems, the direct fire systems in the hands of infantry, count for another 16%; so fully half of the firepower that we have deployed in Germany is designed to counter the enemy armor threat and the tanks comprise the bulk of our capability. Now, only 2% of the Army is invested in the tank corps, so that 2% has a lot of leverage on the outcome of the war. Yet, when you look at the tank corps, you find--as I indicated when I started--sort of rampant confusion, maybe near disaster. Most of the tank crews of the US Army, even the tank crews deployed in Germany, are a pick-up game. They're not trained to operate together; they do not have standardized procedures.

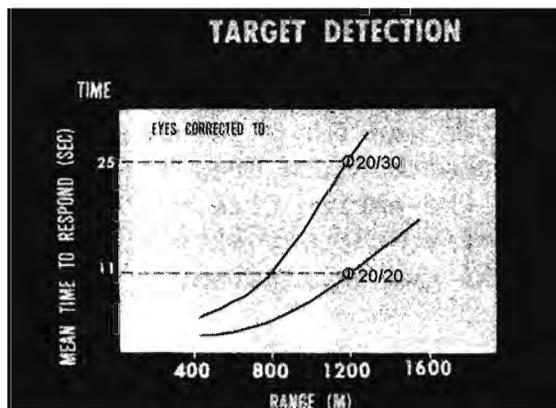
The analysis of the Middle East War which we made early on placed a lot of emphasis on the stability of Israeli tank crews. Well, it turns out in a further look that the stability, which is there, is less important to them than the fact that they have absolutely standardized crew drills within the tank to the point where almost anybody who has had this training can leap into any tank in the Israeli Army and function as a member of the crew.

We just haven't got that kind of proficiency. In any event, that's sort of a startling assertion, but we can back that up with pretty solid figures. For example, this is data collected from actual surveys of battalions that portrays this crew proficiency business. You have an



annual shoot and, of course, that produces all kinds of command interest in pulling crews together so they can do their thing and so what happens is they jell the crews right around the time that they're going to go out and have to do their gunnery measurement. But the fact of the matter is that when we go to war, the crews of most of the battalions in the US Army will have been together less than four months.

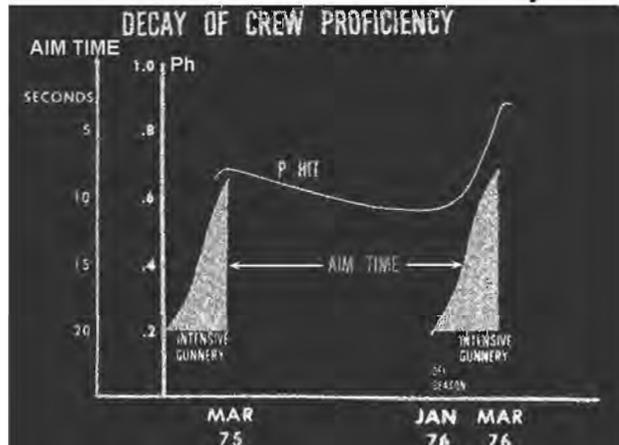
Here is the penalty for weak eyes. Army regulations say that tankers have to have 20/20 and this is the penalty you pay for even accepting guys with eyesight of 20/30.



These are data collected at China Lake in a series of experiments for us, and if we look at targets (tanks

or APCs) at range 1200 meters, the man with 20/20 eyesight will respond on the average within 11 seconds to a target. The guy with 20/30 takes 25 seconds, and we're dealing with the kind of warfare where that sort of difference, 10 or 15 seconds, is enough to spell death. The standard opening time we established for our tankers is seven seconds and they're achieving it. So a tank, once it identifies you, can gun you down in 7 seconds and at 1200 meters both forces possess tanks which have a very high assurance of first round hit.

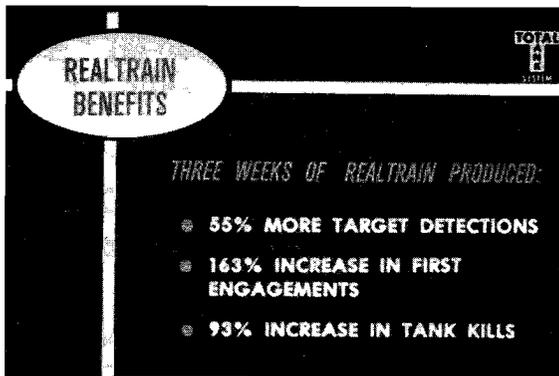
This is another depiction of the same business. It's a rather busy



chart, and I ask you to read two ordinates. One is time to aim in seconds and it pertains to the white portion of the chart. The other ordinate is probability of hit; again, this is a curve of an actual battalion. In March of 1975, with intensive gunnery practice, this battalion produced 100% improvement in its aiming time, bringing the average time to aim in the battalion down from 20 seconds to less than 10. The probability of hit, on which we did not get measurements out here, was about .75 on the average at all ranges. Now over time, because of

changes in the crews and lack of practice, these performances dropped off. The drop off in accuracy, the actual measurement from nadir to peak, was about 20%, but they lost completely their aim time improvement--a 100% drop off! Again, a period of intensive gunnery brought it back up. With improved training techniques in the gunnery department, which we had brought into the force by this time, they were able to bring the probability of hit up substantially. There's a good 30% improvement in probability of hit and, again, a good 100% improvement in aim time. There's no gadget or gimmick on the XM1 tank that provides that kind of gain in terms of accuracy or speed. You know, we could put automatic loaders and all sorts of fancy gimmicks to work and it wouldn't account for the time savings that are evident here for training. So this chart speaks for itself to the importance of training in terms of translating the inherent capabilities of the weapon system, W, through improved proficiency of the crew, P, into higher battle effectiveness.

We have some training techniques which address T as well and I'll come back to this later on. We refer to it as REALTRAIN. A number of the Army officers in the audience may be familiar with this but suffice to say for the purposes of my present discussion, except that we have a training technique that addresses T, how do you employ tanks in battle? With just three weeks of training in Europe this past winter, using this REALTRAIN technique, we got improvements in performance in these particular measures of effectiveness in the order of magnitude shown.

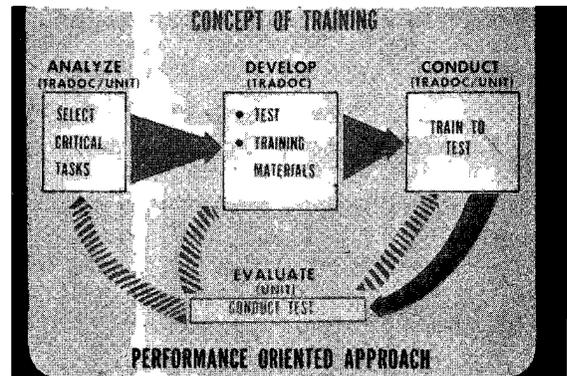


agree with me on the basis of what you've just seen that the Chief of Staff of the Army ought to be terribly interested in improving his tank force, and he is. He is taking steps to do that and we help sort that out.

CONCEPT OF TRAINING

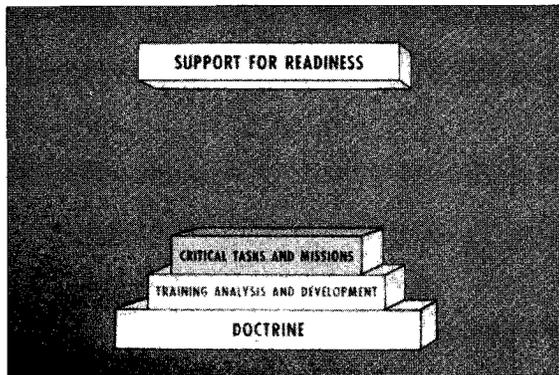
So, we bring to the training business the following conceptual approach. We try to isolate these

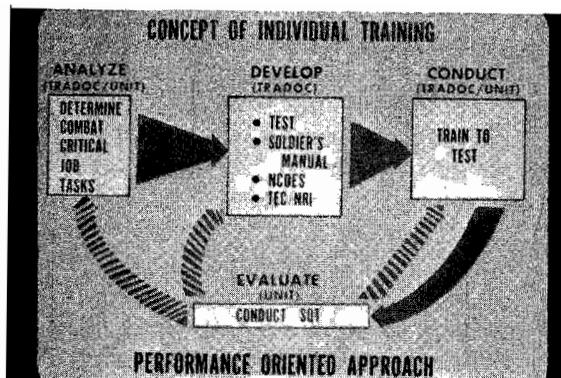
And again, I'll show you how that training technique works here in a moment. It is at once an indication that the Army can operate on P and T in this equation of battle effectiveness and it's also an indictment to the state of individual and crew training and tactical training in the force. If you can get those kinds of deltas in just three weeks, you were starting from a pretty low base line.



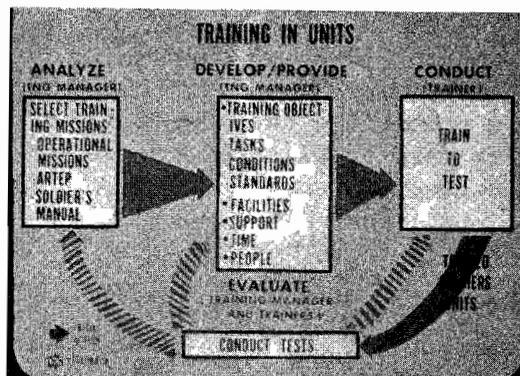
This is the sort of analysis that we undertake in the name of training analysis and development. From this we've derived some sort of notion of what's critical in the business, what we shall concentrate on, what particular mission we shall go after as a matter of urgency. I think you could

critical tasks. We take them and we develop a method of evaluation which would establish whether or not the fellows undergoing training can, in fact, handle the particular tasks that we've identified. And then we build some training approaches or materials which will enable them to pass such an evaluation. We tell them to go learn how to beat that system and then we conduct the test and then as the arrow suggests, we provide feedback.

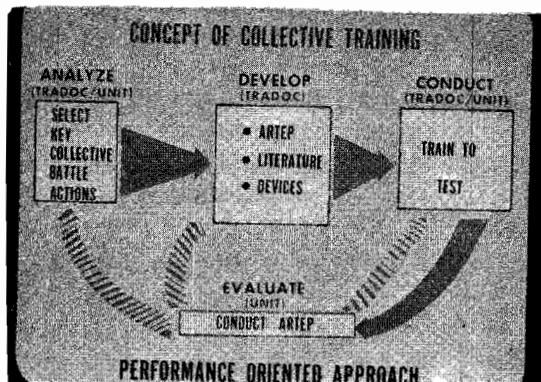




You can take that general approach into individual training and I'm going to talk to you about some of these mechanisms. That's the non-commissioned officers educational system, training extension courses, nonresident instruction, and we tell them to use those.



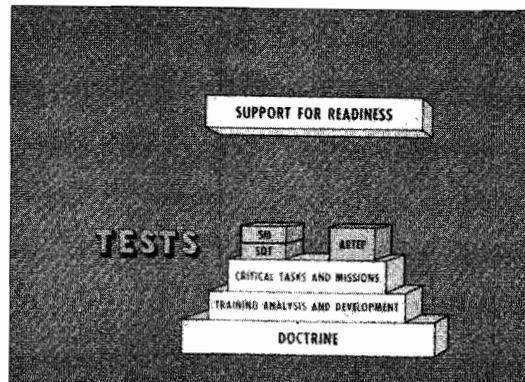
In units it gets a bit more complicated but obtains the same basic approach to training management. The training manager sets his objectives, the trainer trains to the tests and so on. It is the job of the TRADOC to deal with individual training and collective training, and I'm going to describe how we in both of these spheres build toward support of readiness.



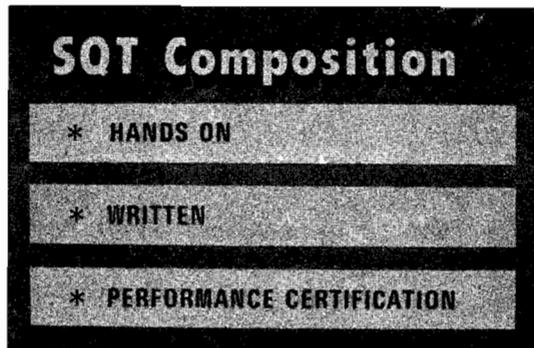
The terminology here is the Army Training and Evaluation Program which is our way of articulating to the force what it is we want them to focus on in collective training. Again, it's supported by various methods and mechanisms for making it possible for a unit to do well on the Army Training Evaluation Program.

SKILL QUALIFICATION TESTS

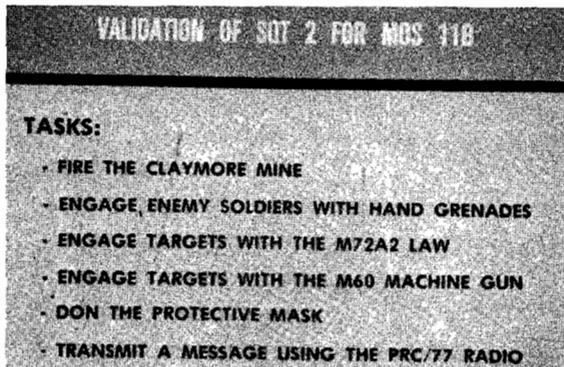
Let's talk some about this business of skill qualification tests. Like all of the services, we have had in the Army for years a way of measuring individual proficiency. But unlike the other services, our system had depended upon a 125-question, multiple choice, written test only.



We are now fielding a skill qualification test which has three components, including hands on work with the equipment and certification by the commanders that the man can perform more complicated and elaborate procedures.



To show you what we're up to here, and this is a trifle esoteric, but I think the soldiers in the audience can appreciate that we're talking about very basic root tasks that any soldier ought to be able to handle if he is going to be able to function efficiently in combat. SQT 2 refers to the skill qualification test for skill level 2 for the infantry, the basic infantryman. Every basic infantryman ought to be able to do that sort of thing like engage the enemy with a light anti-tank weapon.



Here are the results of validation tests that we have had in the Army for those particular events and it shows us that we've got a problem. For example, look at the machine gun. The machine gun was the mainstay of the AEF. It's the major element of firepower in the rifle squad and platoon; yet 34% of the fellows in this particular sample were unable to put that gun into action. In fact, the testing

VALIDATION OF SQT 2 FOR MOS 11B			
	PASS RATES (%)		
	23 JAN 76	26 JAN 76	21 JUL 76
CLAYMORE	37	54	49
GRENADE	71	71	66
LAW	65	67	87
M60	84	84	34
MASK	54	60	75
RADIO	56	70	62

produced some real surprises for everybody including the commanders. We were standing with one commander watching a group of soldiers who were being tested on the bazooka-like weapon, the M72A2 LAW, which you'll recall is fired sort of sitting up on your shoulder. One young soldier ran up, grabbed the weapon and inserted it between his legs and pointed it in the general direction of the putative enemy. Admittedly, we have a long way to go before we get this force of ours in shape to handle this weapon. But the beauty of the mechanism is that now this commander knows he's got a problem. The odds are that he simply didn't know he had a problem before that and we think he'll sort it out.

There's been a lot of concern expressed in the Army Times lately about the skill qualification test.

Is it fair? These are the results of the validation to date. We asked

VALIDATION OF SQT 2 FOR MGS 1TB

ACCEPTABILITY OF SCORING

	CLAYMORE	GRENADE	LANE	M60	MASK	TRADID
RATER AGREEMENT	93	93	85	86	93	93
EXAMINEE ACCEPTANCE	95	100	100	90	100	100
RATER ACCEPTANCE	83	90	85	86	93	93
SUPERVISOR ACCEPTANCE	90	97	95	94	95	95
COMMANDER ACCEPTANCE	95	95	94	96	97	93

everybody and his brother, "Do you think that that particular event was a fair measure of the man's ability to do the job or your ability to do the job?" And, as you can see, we're getting very high acceptance rates including agreement on the part of the soldiers who took the test that it is a fair measure of their ability.

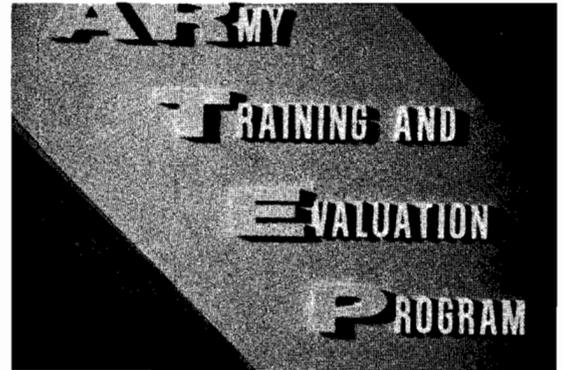
This system will be going Army-wide. The first pay runs are next spring and by 1979 we'll have all 400-odd military occupational specialties, about 1,200,000 soldiers in the active and Reserve Components, under the system.

SQT SCHEDULE

1975-76	DESIGN SQT SYSTEM
1976	DEVELOP AND VALIDATE FIRST TESTS
FEB - JUN	FORSCOM
JUN - JUL	USAREUR
MARCH	ESTABLISH ITEG
OCT - DEC	ARMY-WIDE SHAKEDOWN
1977	ADMINISTER FIRST TESTS TO EPMS GROUP I (ACTIVE ARMY AND RESERVE COMPONENTS)
1978	ALL MGS'S BEING TESTED (GROUPS II, III, IV) ON SCHEDULE

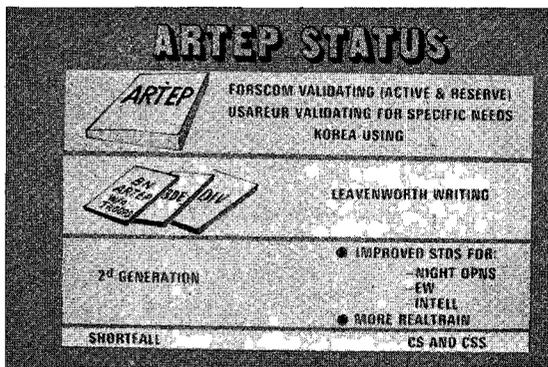
ARTEP

The Army Training and Evaluation Program serves for the collective what the skill qualification test does for the individual. It sets up

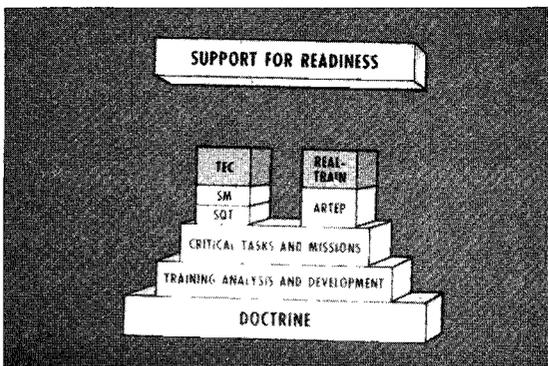


a series of standards which commanders have to meet with their units, and it has been validated now in USAREUR and FORSCOM. Korea has already implemented it. Incidentally, the Australian Army has adopted certain of the Army Training and Evaluation Programs, translated them into Aussie, approved them and now they've got them going. We are developing, at Fort Leavenworth, Training Evaluation Programs for battalion, brigade and division staffs which can be used or implemented without troops. These are very interesting mechanisms. I won't discuss them at length but you Army officers ought to follow that development with great interest. The second generation ARTEP which are already being written place a great deal of emphasis on fighting at night and handling the electronic warfare problem as well as intelligence collection. There will also be a good deal more emphasis in the ARTEP on engagement simulation, this REALTRAIN technique to which I earlier alluded in the tank case. Again, let me talk about that more in a moment. Our shortfall is in the combat support and combat

service support areas, a shortfall which we hope to remedy this fall. The Army is moving very rapidly on this business.



In order to handle the job that's set forth in the Soldiers Manual and the skill qualification test we have to provide for commanders in the field better training materials than the Army has had in the past. In order to do the job with the Army Training and Evaluation Program we have to improve the training techniques that are available to the commanders in the field. What I want to represent to you is that we have made a reasonable start in both directions.



TEC

Let's talk first about the training extension course program, which is a system for providing for field

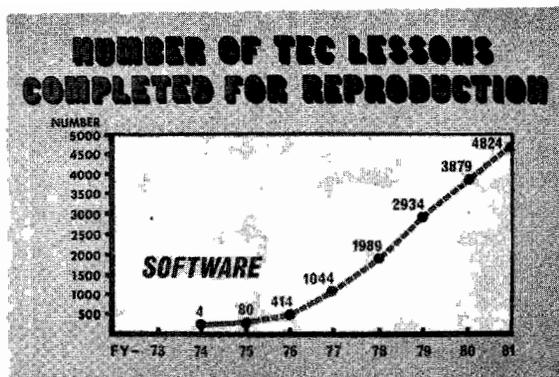
use soldier-tested, prevalidated programed instruction. There's nothing magic about this. This is old hat in the educational community; the technology has been around there for years. All we've done is package it up and get it into a form that the Army can afford and handle.

The training extension course materials sometimes appear packaged in program text form, sometimes in audio cassette form. The work horse of the system is a projector that can either present the information on a screen up front or, by opening a door on the rear, throw it up on a screen for use in group instruction. This

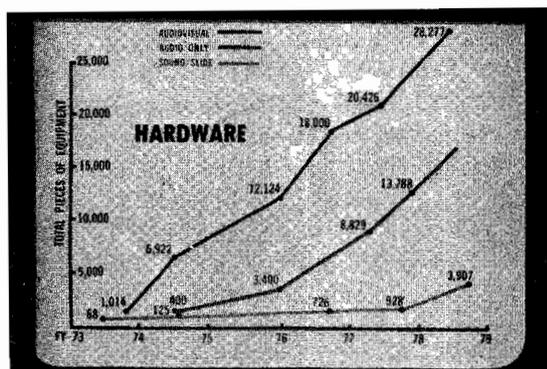


shows small group instruction, working with the squad radio following the material being presented from an 8mm cassette film loop and a Phillips type audio cassette which is inserted in the machine. Each lesson is accompanied by instructions for the student, pretests, and posttests. It's a fairly elaborate, individualized training vehicle. We're putting a lot of them out in the force.

We have about a million copies of these lessons completed and they're going to the force now in some substantial numbers.



The hardware distribution is represented by the audio-visual line.



Again, you can see we've got quite a number of them out in the force. The Marines are presently testing the TEC program and I think they have about 40-odd lessons under test; we have not yet heard from them whether they're going to buy into the program. Suffice to say, we know that TEC teaches. We know, further, from actual tests that it teaches as well as a live instructor. In fact, for soldiers of lower mental groups, it'll do better than live instructors and it's there all the time. It's a way of addressing individual proficiency, despite turnover, in a very real and vivid way.



ENGAGEMENT SIMULATION

Each of the services has, in one sense or another, entered into engagement simulation. The Navy went into the top gun program for its fighter pilots in the late '60s. The Air Force followed and the Red Flag operation out at Nellis AFB uses techniques comparable to the ones that I'm about to display for the Army. We are the latecomers in the game. We are just now getting into two-sided exercises in which weapon systems effects are somewhat accurately represented on the battle-field.

ENGAGEMENT SIMULATION SYSTEMS

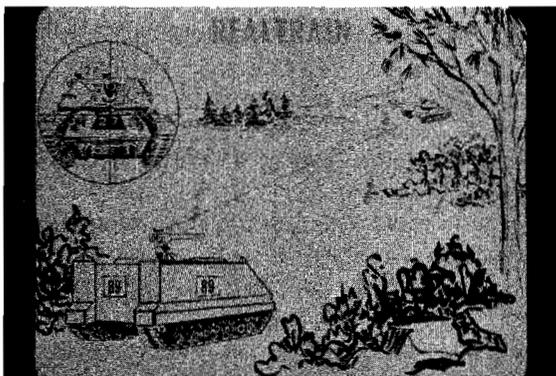
	SQD	PLAT	CO	BN
SCOPES	TELESCOPES			
REALTRAIN	TELESCOPES			
MILES		LASERS		

We have three systems working for us. One of them is a very simplistic system that's designed to teach fire and movement for the rifle squad. There is a more elaborate one that deals with the mounted platoon.

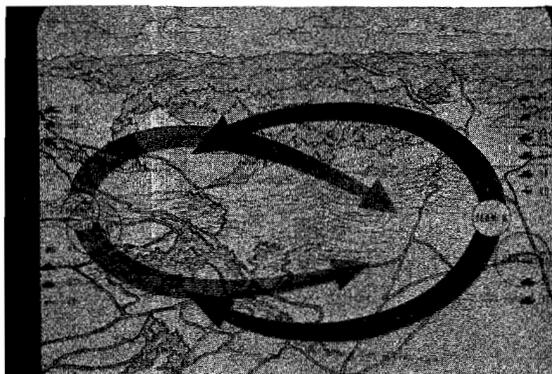
I'll show you how that goes in a moment. We are working on an even more elaborate and expensive one which uses lasers to present analogously the effect of the direct fire weapons and that system will apply to a platoon, company and battalion for teaching how to do combat.

REALTRAIN

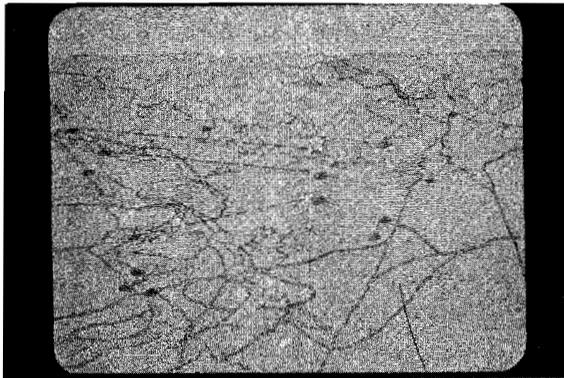
Here is the REALTRAIN system to give you a feel for what it is that I'm talking about. This is the training technique to which I earlier alluded that produced such great gains in performance of tankers. We fight a mounted combat in which all of the participants have a large number of a specific size geometry displayed on the vehicle. All participants, moreover, are equipped with telescopes and, of course, the name of the game is simply that the power of the optics in the telescope and the geometry of the numbers produce a crude approximation of the 50/50 hit probabilities of the weapons systems.



In brief, if you can look through the telescope and read that number, the chances are you would have zapped that tank and that's the way the control mechanism for the combat is developed.

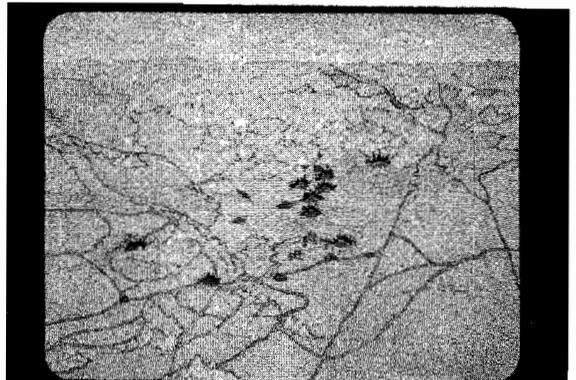


Here is an actual example in Germany last year, at Baumholder. We pitted two teams, Red (Team A) and Blue (Team B), against one another. To read this diagram and for subsequent discussion, understand that Team A are old hands. They've been at this racket for about three weeks. Team B is a tyro team. They've had only a couple of days of instruction. Both teams were given objectives on the opposite side of the maneuver area. Neither of them knew where the other guy was or what the other fellow's mission was. What we intended to do was to produce a meeting engagement somewhere out here in the middle. Both teams elected to pursue a kind of advance on two axes and, as you can see here, the Red platoon leader put two tanks, a squad of infantry and a TOW on his southern axis and a comparable force on his northern axis. The Blue commander, on the other hand, weighted his northern axis. He's got three tanks, two squads of infantry and a TOW and off they went. The plan adopted by this more experienced commander was to push forward some observation posts, hold his long range firepower on high ground back here and allow the other fellow to blunder into them.

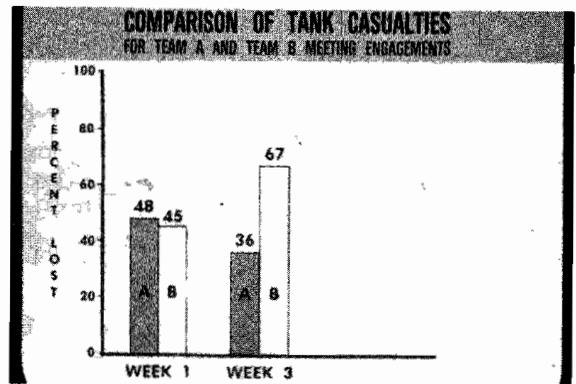


And, of course, what happened was that his expectations were fulfilled. He got his observation post up front and, sure enough, the Blue guys came barreling over the ridge line and permitted his TOWs and his tanks situated to the rear to pick off the three lead vehicles.

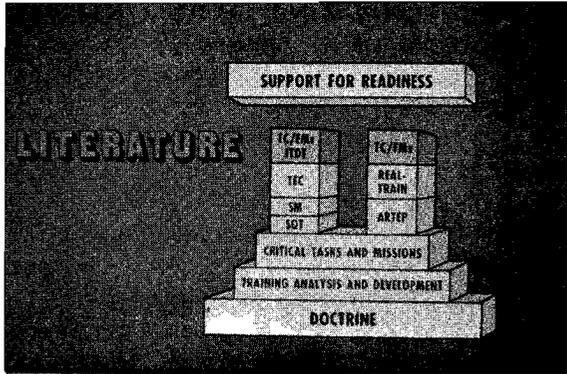
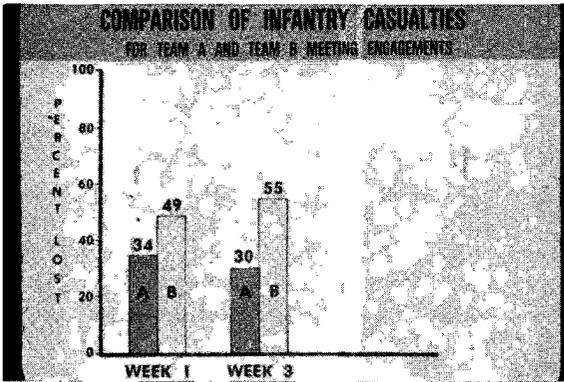
I won't walk you through the whole battle, although we have it recorded, but this is the way it came out. The Blue force was virtually annihilated. They kept pressing in, trying to get across that ridge line, and kept getting picked off. Then ultimately here is the Red infantry on foot moving in among disabled vehicles down here picking off the last of the survivors. The Red, of course, were clearly the winner in that particular engagement. Now we're able to do that in the time that an actual fight would have taken place on this ground and we're able to play it at the ranges at which this actual fight would have taken place.



What does that teach? Well, here is Red and Blue in week 1--no particular difference in their tank casualties. By week 3 the Red team sort of learned how to do it without losing tanks and they creamed the hell out of the Blue guys. We think we're beginning to teach our tankers the kind of crafty use of terrain and timing that they're going to need in order to handle the job ahead of them.



Look at the infantry. There the situation is comparable, not quite as dramatic, but still there. The more experience these guys got, the fewer casualties they took and the more casualties they inflicted.



It is that kind of an edge that we have got to build into the combat forces of the US Army. This technique is expensive--it takes a lot of money, it takes a lot of manpower to make it happen but my representation and GEN DePuy's representation is we can't afford not to. We have the dismantled

LITERATURE

I think you can all appreciate that the written word plays a large part in our ability to get out these notions and ideas, these concepts, these training techniques. But we have a large problem in the US Army in getting the word around and the written word is not an effective way to do it for a whole variety of reasons, not the least of which is the way that we put the written word together. One of the things you will notice about these manuals when you pick them up and look at them is that they are substantially different from the traditional US Army field manual. They are filled with graphs, charts, colors, diagrams; there's a deliberate attempt to visualize, depict and otherwise present information more dramatically.

SCOPES WORLDWIDE . NOW

REALTRAIN USAREUR NOW
FORSCOM . SPRING 77
KOREA . BEGINS SEPT 76

MILES LOW RATE OF INITIAL
PRODUCTION . BEGINS JAN 79

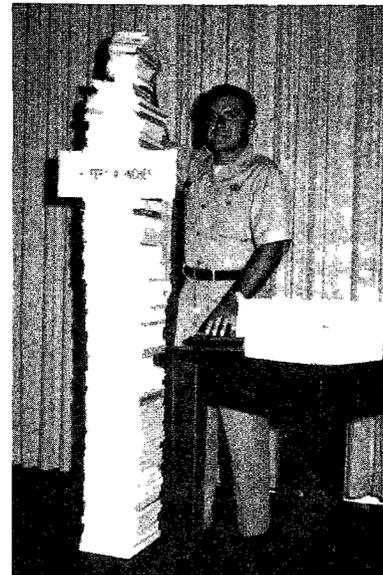
system world-wide. REALTRAIN will be later than shown on the slide but we'll be pressing that into FORSCOM and Korea just as rapidly as we can get the material to do so; USAREUR has it now. The Multiple Integrated Laser Engagement System has a low rate of initial production, sometime up in that time frame shown, so it's some time away. We'll be on these optical systems in the meantime.



These are the technical documents which a tank company commander is expected to carry around with him, be familiar with and master in order to do his job. Those are all of the field manuals, TEC manuals, lube orders, instructions, etc. that you need to run a US Army tank company today. That's merely 17 tanks, you know. But that's the paper the commander is supposed to have in hand. Now, obviously, you can take all of this stuff and reduce it to microfiche and put it in a package about two inches thick. I brought with me a packet which contains some 18 Army publications and a Navy lube order; somebody snuck that one in on me. It contains 18 of our latest publications packaged in a format that this company commander might find vastly more convenient. As a matter of fact, I represent to you, I could put all of those books in a package about the size of this small packet. Of course, you've got to have a reading mechanism and in the back of this folder is, in fact, a little reader so that the soldier can read

his own microfiche. We're moving ahead and putting this at the disposal of the force.

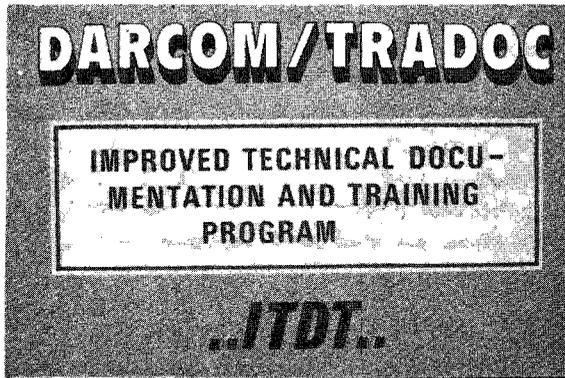
Out in the display area, you will see a microfiche reader which is a cut above this one. It is a little portable device about the size of a small suitcase and it has the capability of not only permitting an individual to read the material but one can take the cover off the back and project it on the wall so that one can use the diagrams in the book to conduct training and we want to do that as rapidly as possible.



Now most of these publications that you're looking at there are technical manuals. They deal with Army materiel and there's no field of publishing in which we do a poorer job right now than in our technical manuals. That's six feet four inches and you can translate that into 291 little pieces of fiche.

ITDT

We have a program underway with the Army Materiel Development and Readiness Command which will bring about improved technical documentation. We call it ITDT.



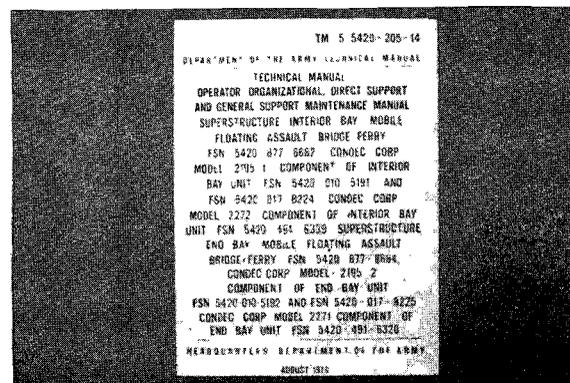
Let me show you what we're after there. The Secretary of Defense has a study which shows that by using a particular set of specifications for approaching technical documentation you can get improvements of this order out in the units. It costs more, maybe it's 100% more at the outset, but you can see readily that your payback just in terms of reduced spare parts would more than pay for the whole business.

ITDT	
ADVANTAGES (OSD STUDY)	
REDUCE ERROR RATE	75%
REDUCE SPARES DEMAND	30%
REDUCE MANPOWER DEMANDS	35%
REDUCE TIME IN TRAINING	25%
OVERALL MTTR REDUCTION	40%
DISADVANTAGES	
INCREASE FRONT END COST	50-100%

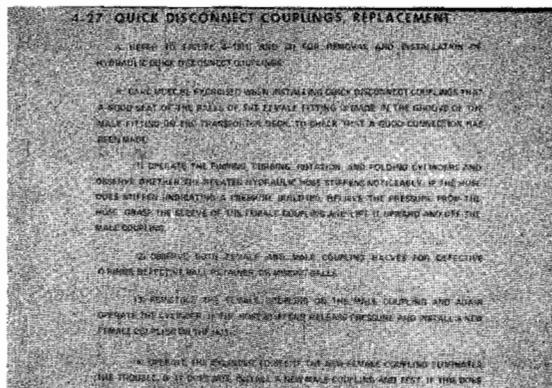
It is very important for foreign military sales, we hold. Those nations that are using American equipment are frequently just confounded by the complexity of the technical documentation that accompanies it.



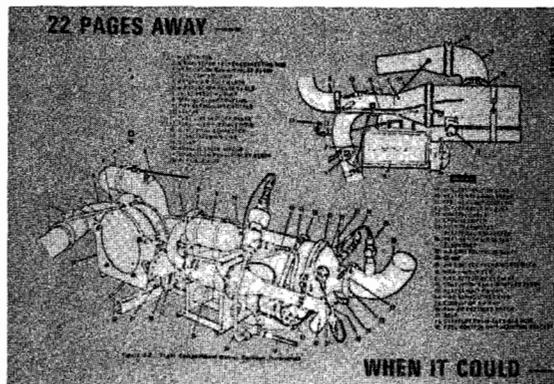
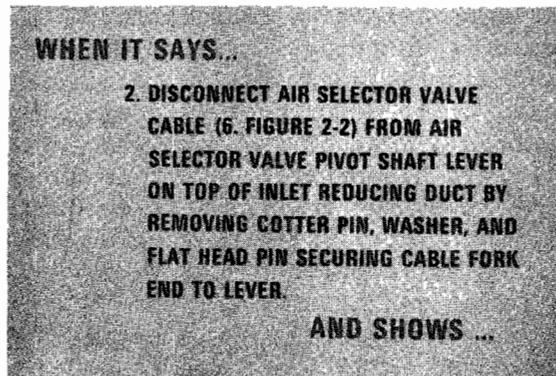
In the improved technical documentation specifications in manuals, the developer is restricted to a controlled verb list of 16 verbs, no more, and a controlled noun list of 200 nouns. This permits a much more precise translation, so we in the Army are putting a lot of emphasis on that sort of business. If you don't think we need help, this is the cover of a technical manual. Can you imagine sending somebody down to the orderly room to get a copy of that? What in blazes does he ask for?



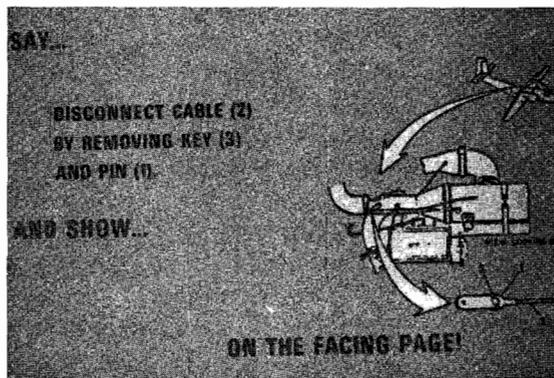
And look at the prose inside. I'm convinced that this was written by one of those drafted dissidents that got into the bowels of the system around 1973 and perpetrated this hoax on the Army.



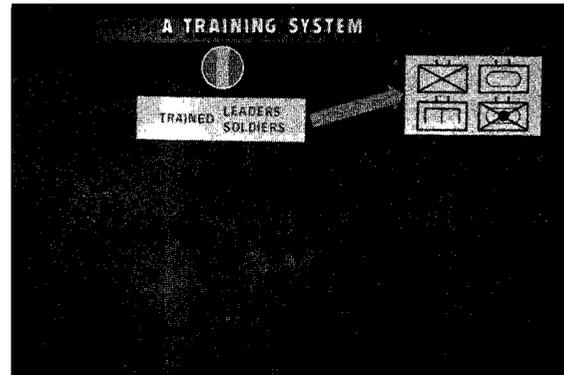
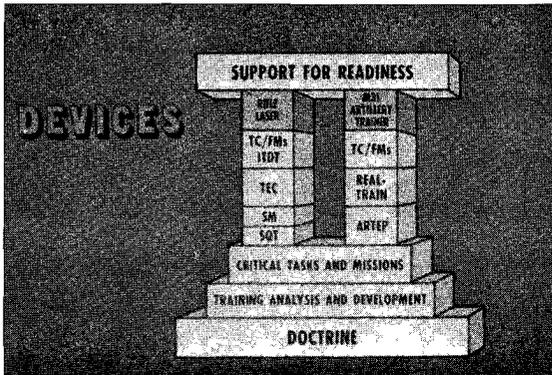
These next three slides are from the Air Force. This is an actual example from an old technical documentation, and 22 pages away you get a diagram like that and some poor son of gun is supposed to go back and forth and fix that up.



Should you think that the Army is in any better shape, let me remind you that in the TM for the M551 Sheridan the average distance between text and picture is 50 pages. The same information could have been presented like this, an actual case from the manual for the C141. The Air Force



has moved very boldly into this system already and we're belatedly following. In any event, the written word is one of the areas that we want to operate in.

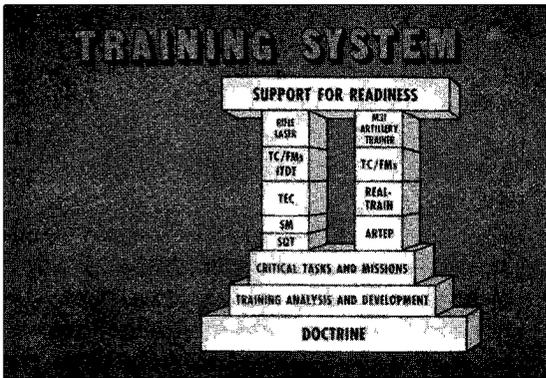


DEVICES

We're also deep into training devices of all kinds. I mentioned the MILES system. REALTRAIN involves a series of training devices. We're able to develop full systems trainers. Some of you are very familiar with the Mark 31 artillery trainer which is an adaptation of a German training device. We are now moving ahead with another major modification and improvement which will give us even greater utility with that basic device.

A TRAINING SYSTEM

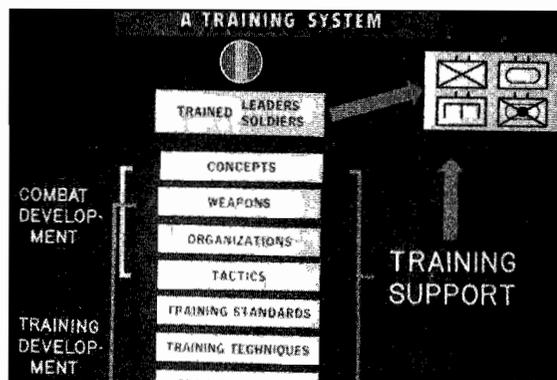
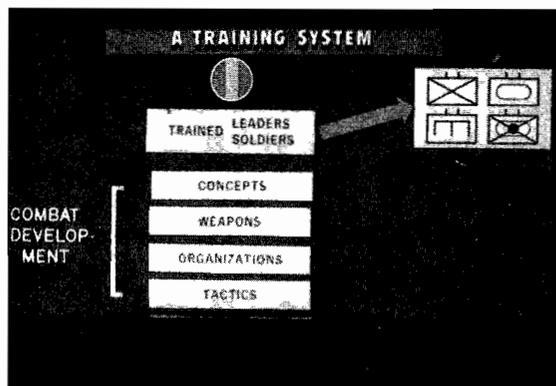
Let me try to cast this all now into a sort of general description of the command. The Army has always had, as do the other services, a school system. And it is clearly the responsibility of the school system to turn out trained leaders and soldiers for our divisions, the operating forces of the Army. Yes, and that remains the principal function, the most important thing that our command is doing. The difficulty is that today's students are not an effective conduit for tomorrow's doctrine. Most of you Army officers, upon leaving this course, will, unfortunately, not go to troops. Most of the guys who leave Fort Leavenworth do not go to troops; they get to troops three or four years later. The profession is changing so rapidly today that anything that you acquire in your course this year will almost surely be outdated by 1980 and you cannot expect to wander into a battalion sometime around 1981 and rest your ability to use the weapons systems and the men in that organization to their best advantage on the basis of anything you've picked up this year.



But you put all of this together and you've got an approach to individual readiness and collective readiness which we hope will put the Army in a better position to deal with the future that lies ahead.

The Army will acquire 60 or 70% more weapons systems in the next 10 years than in any comparable period, more new weapons systems and weapons systems of the revolutionary type than any comparable period in its past. So you've got to have something more than a school system to make a training system, and right here I'm beginning to describe why the TRADOC doesn't look like the Air Training Command or the Naval Training Command. We add to the command

Now we add to it training development and, again, I submit that that is a discipline. It is an analytical approach. It is important to the Army. And my organization does that, we add to the combat developments the field training standards, techniques and devices and we overlap them in our interest with today's weapons, today's organizations, today's tactics.



the process which we refer to as combat developments in which we are working systematically with the concepts, weapons, organizations and tactics for the future Army. There is a discipline and a large process within the TRADOC, headed up by MG Bill Vinson, to do that job for GEN DePuy.

And then, finally, we've got to get that out to the force. And that's the function of training support. One of the displays I noticed as I came in deals with some of the mechanisms that we are employing to bring about an effective system of training support in the Army. You put it all together and that's what the TRADOC is all about.

