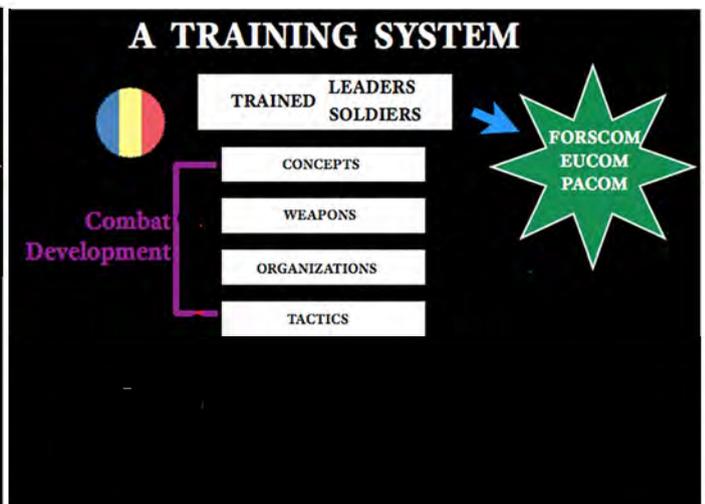


PRESENTATION BY MG GORMAN  
CENTO SEMINAR  
FORT MONROE, VA  
16 SEPTEMBER 1976

At the outset, I want to point out that we have assembled here the principal staff officers of the United States Army responsible for training. Over here to my left is Major General Jack Forrest, of Department of the Army, Office of the Deputy Chief of Staff for Personnel, responsible in the Department for all individual training programs. And over here, Colonel Dan Danford, from DA's Deputy Chief of Staff for Operations, responsible for all training in units throughout the United States Army. You may wish to button-hole these gentlemen, as I think they represent, more or less, your counterparts at the departmental level. And I, of course, am in charge of, as General Camm mentioned, of staffing training here at Training and Doctrine Command.

I want to begin by kind of describing to you how we view training as a system in the United States Army, because I believe it will help to flesh out the representations that were just made to you about the relationships among the several major commands. And I start with this board here, to my immediate left.

Everybody in the training business world-wide understands that units must be replenished. They must be replenished in peace time because conscripts are passing out of a period of obligatory service; or soldiers who have enlisted for a fixed term of service, leave and return to civil pursuits. In war time units must be replenished because you're taking combat losses. Moreover, soldiers progress in skill, knowledge and competence in their years of service, and they need training to prepare them for new responsibilities. Sergeants can be converted into lieutenants, soldiers converted into technicians of one kind of another. And for all of those serious and important responsibilities most nations have created training commands. We're no different from most. We have a training command, and the mission of our training command which is first and foremost in our concerns is to train the soldiers and leaders which we send to the forces. But in the United States Army we have gone a step further, and have amalgamated our training command with what we refer to as Combat Developments.

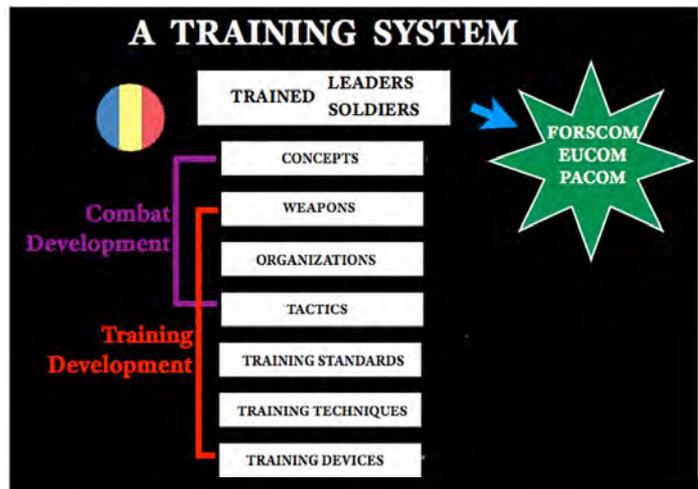


This produces a very interesting set of relationships.

The TRADOC is responsible in the Department of the Army for producing concepts on how to fight, for the requirements for the weapons with which to fight, for the organizations in which those weapons will be placed, for the tactics with which the organizations will be employed on the battlefield. This training command is working in these fields, as well as in the producing of trained leaders and soldiers.

Moreover, as I will attempt to show you this morning, it has a very direct responsibility for training techniques to teach soldiers how to put all of this together, or training standards which measure how well soldiers and units have mastered all of the foregoing, and for training devices which permit given training techniques to be applied regardless of where the force may be stationed, or regardless of constraints it may be facing. The upper range of these notions are what I refer to as combat development. Here at Fort Monroe there is a Major General, the Deputy Chief of Staff for Combat Developments, General Vinson, who is my counterpart. His building is located next door to me, and he has available to him a rich store of analysts, and test mechanisms, located throughout the United States. For example, we have out in California a Combat Development Experimentation Command where we can actually go out and try concepts, weapons, organizations or tactics. We have down in Texas at Fort Hood, the TRADOC's Combat Arms Test and Evaluation Agency where we can gain on a much larger scale, put to test, given notions.

Importantly, these combat development activities contribute to and underwrite virtually everything that we do in the training field. Much of what I am going to be saying to you today depends upon knowledge that we have gleaned from the combat development process. We insist, as a matter of fact, that there is a field of endeavor that is parallel to the combat development process and we refer to it as training development.



I am going to talk to you about how training development works and what it contributes to the force. So this training command can draw upon resources that go well beyond just training soldiers. And indeed, the training of soldiers can be richer because of the resources within each of our schools and training centers that are devoted to combat developments.

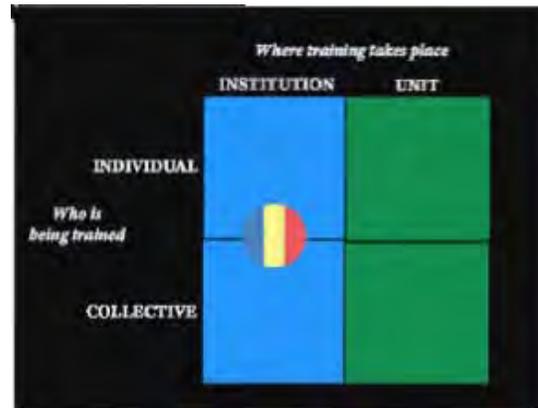
This is a very important point. You will be visiting Fort Benning. You will be visiting Fort Knox. Recognize that at those schools, as part of the staff and faculty at those institutions, there are a large number of officers and noncommissioned officers who are in the combat development business,



Training support is the pulling, from the entire resources of Training and Doctrine Command, that information that is needed for training, and the transmitting of that information in real time, today, next week, next month, to the force out there in the field. I'm going to talk to you about some of the means and the mechanisms for first of all organizing the information so that it can be transmitted, and I'm going to show you some of the ways that we communicate to the force. Certainly, the function of training support for you must include, if you're going to use any of our materiel, translating into the language of your soldiers, and putting information in a format that fits your training needs. Your training functions I would hold are, if anything, more complicated than ours. And I will talk to you a little bit about what I think might be done there.

Let me make one other point by way of introduction. We have recently altered our vocabulary for addressing training in the United States Army, which reflects I think an increasing

sophistication on part of the US Army in the training business. Borrowing a term from our colleagues from the United Kingdom, we now distinguish in our regulations when talking about training between "individual training" -- where we're talking about giving skills, knowledge, competencies to one soldier -- and "collective training" -- where we're talking about training teams, crews, units of one type or another. Each of these undertakings calls for different training strategies.



And we now draw a distinction between where the training takes place. It does make a profound difference whether you are in a school or a training center, where one can control very carefully the quality of the instruction, and where instructors can be very expert, give repetitively their classes over and over again. That is distinct from the kind of training which takes place in most tactical units, where the experts are not there, where the sergeants have to give a different class every day of the year, where they're training the same group of soldiers towards readiness. As a matter -

and who day-to-day make direct contributions to the training development process. Each of our schools then is a center for production of combat development and training development for the United States Army.

Now I need to make one other important point from this chart. If we depended upon the trained leaders and soldiers to transmit ideas from the combat development process, to the force, if we depended upon them to bring to the force out there, the latest concepts on how to fight or the latest information on weapons systems, or on how to organize or deal with terrain and enemy, we would be in one sense depending upon an inefficient communications mechanism, because in our Army, as I'm sure it is true in yours, not all graduates go directly to the unit. And many, or indeed most of the graduates of the school system are very junior, and have a great deal of difficulty making an impression upon the more experienced and more senior soldiers in the units that they join. So, it is important for us to provide other conduits into the force.

Let me make that point again in this fashion. A graduate of our Command and General Staff College of 1973 would have a great deal of difficulty recognizing the course that is being taught at Fort Leavenworth this year, 1976. There have been very profound changes in that course. An officer graduate of the infantry advanced course at Fort Benning, Georgia three years ago would find the present advanced course almost unrecognizable. The reason is that war is

changing -- profound have been the changes that have been introduced because of new and better ideas on how to do the fighting job, and because of the new weapons systems that have been introduced into the force in that intervening time.

Gentlemen, no factor is so pervasive, important, pressing, in the field of training as change. We are in a profession that is undergoing change almost yearly. As a matter of fact, over the next ten years there will be many new weapons systems brought into the United States Army. (And when I say that, incidentally, I mean that of any advanced force. We know surely that the Soviets are modernizing very rapidly, and any modern force will be meeting a similar impress of the weapon systems.) There will be more new weapon systems over the next ten years than in any period of our history, with the single exception of the years of World War II. Ground warfare is changing, and is changing at an ever increasing speed. Now this poses profound problems in particular for those of you who are using weapons systems developed abroad and dependent upon therefore training materials in a different language, all of which have to be updated and changed constantly.

The simple updating of graduates is and updating units is a continuing and a pressing problem. You feel it more acutely perhaps than do we, but its there for all of us. And so we concluded that we have to make provisions and we call it training support.

of interest to you, if you look at the total expenditures for training throughout the United States Army, about 25% of the money spent in our Army on training is expended on individual training in institutions.

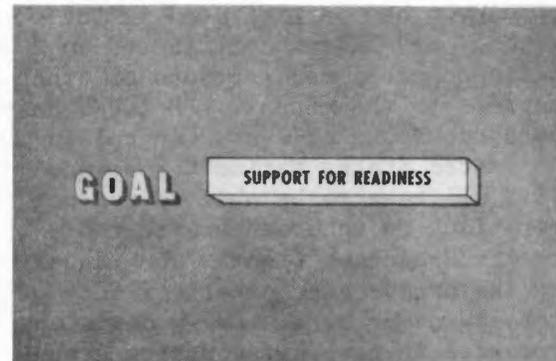
**\$(P2, P8, RC) EXPENDITURES**  
(FY 76)

WHO	WHERE		
	INSTITUTION	UNIT	TOTAL
INDIVIDUAL	25%	12%	37%
COLLECTIVE	1%	62%	63%
TOTAL	26%	74%	100%

About 62% of the resources spent in the United States Army on training goes on collective training in units. Only about 1% is spent on collective training in institutions and only about 12% is spent on individual training in units. Now, as the gentlemen from the Department of the Army are well aware, the TRADOC holds that that resource allocation may be wrong, that maybe we need to lay out more investments for individual training in units. That maybe very important in a volunteer force environment. But the fact of the matter is, this chart shows where we are today. So, since as you can see, most of our concern is for the collective training -- readiness -- of tactical units, and that's indeed what I'm going to spend most of my time talking about here today.

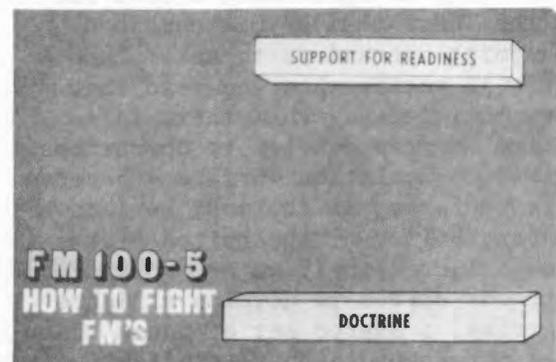
Let's first of all accept that the readiness of Army units is what it

is that the TRADOC is all about. As General Camm has indicated, that is what the FORSCOM is all about, and that is what USAREUR, our Army in Europe, is all about, and what US Army forces in Korea are all about - "Readiness".



That is our goal, that's what combat developments serve, that's what training developments serve.

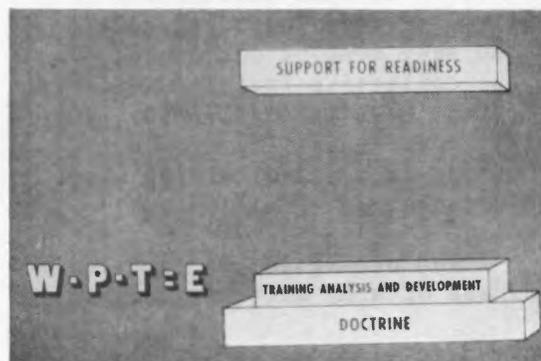
Now we start out to build toward readiness with this notion of doctrine - we are the Training and Doctrine Command, and all of you have before you a statement of doctrine - the green book labeled Field Manual 100-5.



This is the latest and best expression of how the United States would go about conducting warfare. The producing of that manual was an interesting exercise and it will be of interest to you to know that at the time of its publication - 1 July 1976, we had the full concurrence of the Commander of the US Tactical Air Force, who had participated in the writing, had indeed contributed an entire chapter, and sections of other chapters to the manual. FM 100-5 has the concurrence of every General in the United States Marine Corps, who after all have to be able to conduct operations in accordance with the precepts which we fight. The manual has the concurrence of all of our overseas commanders. Every division commander in the United States Army had an opportunity to read and to contribute to it. Now all of that makes several important points. A doctrine, Gentlemen, is not a document or manual; a doctrine is not what is taught from the platform at your staff college; a doctrine is not what is embedded in a study. A doctrine is an idea that is shared by the whole profession, and unless and until battle concepts are agreed to by at least the majority of the people in the field, you don't have a doctrine. A doctrine is consensus; a doctrine is agreement; a doctrine is the ideas that permit combined and joint operations to take place. You will notice when you read that document, indeed, that there is an entire chapter devoted to operations in NATO - coalition warfare - because this we regard as the most serious responsibility of the United States Army. Increasingly we are working with our allies to develop alliance doctrine, a shared set of ideas that will permit us to operate effectively together in warfare. I would say

that this document represents the most progress ever made in the United States in terms of inter-service agreement and cooperation. We've gotten further with the United States Air Force on this one, General Brett, than on any other comparable document in my career, and I think we've really got now a set of notions that would permit the Tactical Air Force and the United States Army to go to war together tomorrow, and do an effective job, even against the kind of complicated sort of circumstances that obtained in the recent fracas in the Middle East. So that's an important contribution to the Army's business that we make. And that's whence our name of Training and Doctrine Command; the doctrine is the first and fundamental step toward readiness -- without shared ideas, you have nothing.

Now, I mentioned to you earlier that training development was an analytical process of which we were fairly proud and deeply concerned. I have put on your table also a book labeled, "Analyzing Training Effectiveness" a TRADOC pamphlet which describes that analytic process. It's important for me to tell you that we approach this analysis just like we approach the analysis of a weapon system. We have indeed a mathematical construct or idea that we use in describing our thinking in terms of that equation.



What that equation says is that effectiveness in battle - the "E" there - is a function of the capability of the weapon system - the "W" - ; and the proficiency - "P" - of the men who man that weapon system, the crew, the individual who fires the weapon system, the gunner. And "T" -- refers to the tactics or the techniques for employing that weapon system in battle. "T" is the sort of contribution that the leader - the commander - may make to the positioning of the weapon system, to the orders that he gives for employing it for the decisions on when to fire, what to shoot at, etc.

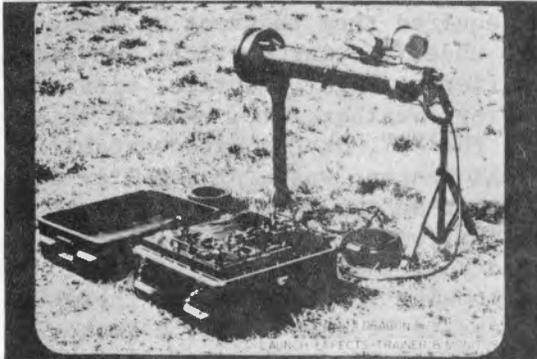
I want to give you a thoroughly humble example now of training development in order to show you how that equation works.



These are the results of a test of our medium range anti-tank weapon called the DRAGON and it refers to operational tests, OT #3, Roman Numeral III. In DRAGON OT III, which is one of the sorts of tests

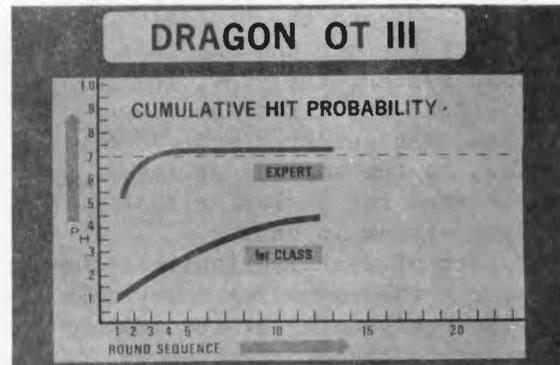
of new materiel that TRADOC conducts with the Development and Readiness Command, we took groups of soldiers from the 2d Armored Division at Fort Hood, Texas, trained them on the use of the new weapon system, and then put them into the field against a force equipped with tanks. We gave them DRAGONS with inert warheads, and required them to shoot at these tanks under varying tactical conditions of different light, tactics, missions, different weather, etc. Now in this case, the "W", or the rated capability of that weapon, was a probability of hit (over on the left hand side) of .7. That was the goal. The dotted line across there, the "W" that we were looking for. We wanted those soldiers to be able to hit a tank under all of the various conditions, on the average 7 times out of 10. Well, it turned out that on the average, the tested soldiers didn't get there - the average hit probability was only 6 out of 10 or .6. Moreover, as the line along the bottom suggests, we discovered that for the first round that the soldier fires - his hit probability was very low - it was down around .3 - 3 rounds out of the first 10 rounds fired were hits. And that told us immediately that our training system was no good, because we couldn't train the man on the training system to get anywhere near the kind of capability out of the weapon that we were looking for. Now, as the average soldier fired a second round, he got a little higher average hit probability; third rounds - a little higher; fourth rounds were beginning to get up onto the learning plateau. But each of those missiles, gentlemen, cost over \$3,000 per copy, and we can't afford a training system that requires a fellow to fire 3 live

missiles or 4 live missions in order to learn his job. Now here is where the training development process comes into play. We went in and analyzed the DRAGON training system. It depends upon a simulator - I'll show it here - .



I'm not going into it's technical characteristics - suffice to say that it's not a very good simulator, it could be significantly improved. But with this simulator, we are able to measure rather precisely the accuracy with which a soldier can track a moving target, and we were able to give a numerical score to each soldier training, that assessed his accuracy in tracking a moving target. Based on that score we classified our trainees as experts - first class, second class, or unqualified. Now gentlemen, the difference between an expert gunner, so classified on the launch effect trainer, and a first class gunner is only 10% on the scale measured by this device. A very modest difference. Yet, when we compared the performance of expert gunners classified by this device, and first class gunners, we discovered profound differences in

their actual performance as measured out on the test -- far more than 10%.



As you can see, for the first class gunners, the first round fired achieved a hit probability of only one tenth. That improved as they fired successive rounds, but it never got better than .4. Whereas, the expert gunners, the fellows who did 10% better with the simulator, started out with a hit probability of 1 out of 2 of their first rounds fired. Every other one was hit. By the third round they were achieving .7 -- the rated goal of the weapon system. They had achieved the "W". So we found a way now of finding "P". Now that told us several important things. First of all, we were wrong in the United States Army when we made the decision to allow DRAGON to be anybody's weapon. You know, it was supposed to be one of those "Hey you" weapons. "Hey Brett get the DRAGON and kill the tank." You know, it doesn't work like that. You've got to be a DRAGON expert in order to make the system go. It has to be an assigned weapon and indeed it has to be assigned to a very carefully selected fellow because not

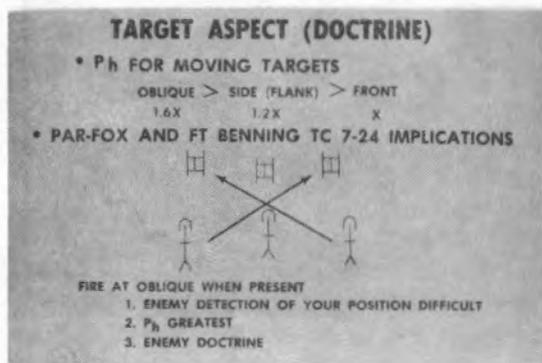
everybody has the psycho-motor skills to do tracking with this weapons system. So the US Army was wrong there; we had to change our policy. Indeed, it turns out that only about four soldiers out of 10 can master this weapons system; its not everybody that can do it.

Secondly, training development told us that we are going to have to build a better simulator. We think we can do that. We've been working all this past summer on a better simulator which we think is going to solve the problem of getting the expert's first round up to the rate of "W" and we'll put all of that together here very shortly.

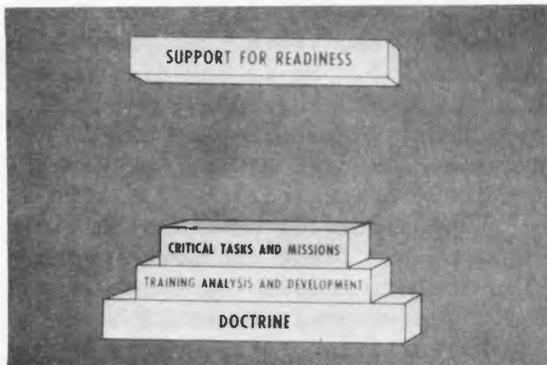
Well, how about the "T" factor - the tactics. Well we got some data on that too. This is the result of a separate DRAGON operational test conducted down at the 82nd Airborne Division this year. Here we were inquiring into a number of other aspects of the weapons system, and the first bit of information up there tells you that there is a difference in probability of hit depending upon how you attack the target.

If the probability for any given gunner is X for a head-on frontal shot, a flank shot will give him about 1.2 X probability of hit. But if he hits the target from the oblique, he can raise that probability of hit to 1.6. So in the diagram that we show down here below -- assuming three equal gunners -- the middle gunner attacking that tank head on, might have a probability of hit of let's say about .7, whereas the two fellows on the flank who were taking oblique shots across the front of the defensive position would have hit probabilities better than .85. Now that's a very important discovery to make, and to be able to teach your lieutenants - "Lieutenant, develop in your unit the teamwork to take on an attacking tank formation with oblique shots. If you do so, you'll get much more out of your DRAGON weapon system."

Now that's the sort of analytical process that one follows in pursuing training development, and I think you can see how that fits back into the combat development process. We want to go back and make the material better. We want to insure that the manuals that we put out reflect information like this, and we've got to insure that our test information is communicated efficiently and effectively to the force. And indeed, much of what I'll be telling you here this morning is related to how do you get such efficient and effective communication on training to the force.



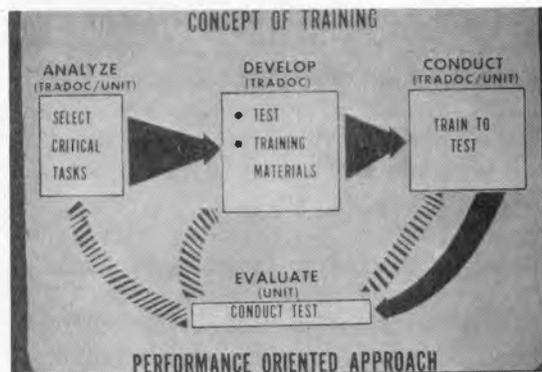
Inherent in training development is deciding what the critical task or mission is.



In the foregoing examples the critical task is to find the expert gunner as measured by the simulator.

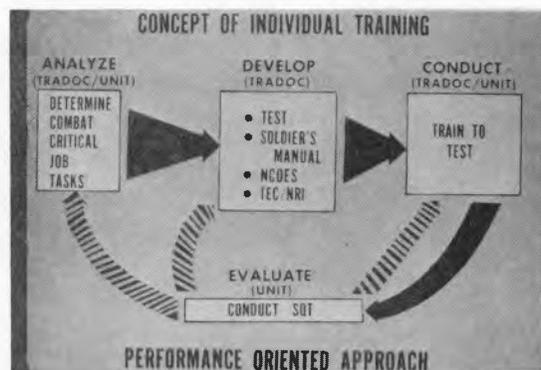
Another critical task is oblique engagement. One small example related to the development of a better simulator for that DRAGON system was the discovery that at the moment of firing, the soldier's critical task is to exert about 150 lbs of pressure downward and back at the shoulder. Since we now know that, and since it's now pretty clearly critical to successful engagement with the system, we can build a shoulder pressure gauge into our further development of the training device for the system.

But in the larger sense, here is a construct or diagram; it's very busy, but it suggests to you how we think about the training process.

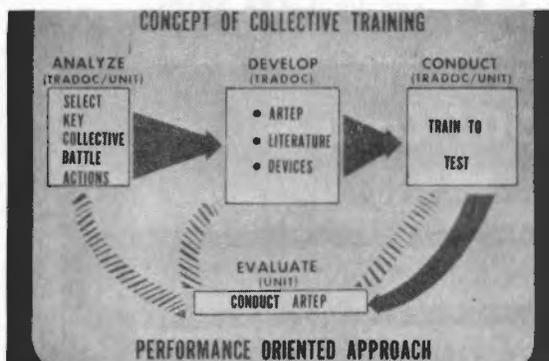


Once we determine the critical tasks, we proceed to develop a test which illustrates whether the soldier has mastered the critical tasks or not. And then we build training materials that permit the soldier to pass that test.

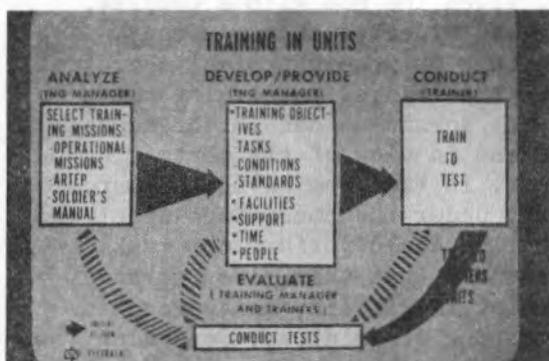
We then provide those to the unit and tell them to train to the test. Then they evaluate to determine whether in fact they've met those standards, and we obtain feedback - the dotted lines -- into the rest of the process to insure that it is improved and updated.



One can apply this to individual training (I'll explain what all this alphabet soup is about in a moment) or one can apply this to collective training, and again, I'll be talking to you about the ARTEP and all of that here in a moment.

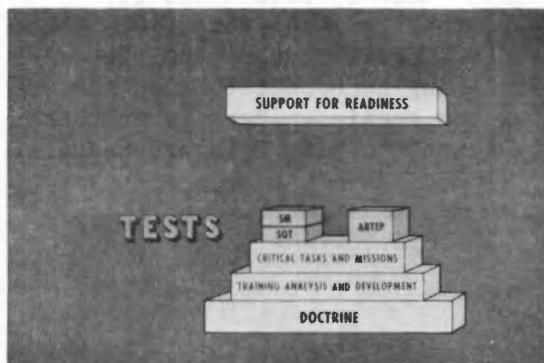


The main point here is that what we're interested in is getting performance out there in those units, out there where the readiness has got to be. We tell the unit commander that he should use the same analytical process in his training management.



Now I have provided in your packet, a manual on training management in the United States Army. This manual is in draft, and I do so with the explanation to you that this is the kind of a manual that represents the process of developing consensus. This draft manual has now gone out to the field in this form, and we've asked people to tell us what's right or wrong about that. We are actively soliciting contributions from commanders in the field and we thought that you might be interested in seeing it in its formative stages. We'll be happy to put you on our list to get the final copy of it, which should be out later this year. But it will give you some idea of exactly what it is that we say to unit commanders concerning how they bring to bear on their training job all of what the TRADOC has to offer.

Now we can then begin to approach the support of readiness via two avenues or columns in this somewhat clumsy training aid here.



On the left I'm going to be talking about individual training and on the

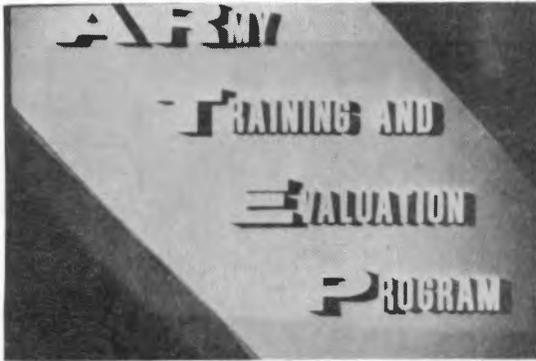
right about collective training. As far as individuals are concerned, our principal method of communicating to the force - what it is that we expect of individual soldiers -- is through the medium of the Soldiers Manual or the SM as I've got it there. I have provided to you principals a copy of a page from the Soldiers Manual, and there are actual copies of the Soldiers Manuals over there on the side of the room. If you pick up the page that starts at the top with the word, Tasks, where it's talking about set, lay the cannon for quadrant with range quadrant. This is a task for an artillery gunner. You will notice that it describes the conditions and standards for the evaluation or tests and underneath it. It talks about the specific type of cannon that the fellow might be practicing on, and then down at the bottom it makes reference to references, manuals that the soldiers should use in order to prepare for that particular task. The Soldiers Manual for the artillery gunner is just a compilation of sheets just like that - task by task - all of the tasks that he is expected to know at each skill level, from the very beginning cannoneer through the chief of gun section. Here is another example common to many Soldiers Manuals.

SOLDIERS MANUAL		
TASK	CONDITIONS	STANDARDS
NAVIGATE FROM ONE POSITION TO ANOTHER	EQUIPMENT - a. 1: 50,000 MAP b. LENSATIC COMPASS c. SCALE AND PROTRACTOR d. DURING DAYLIGHT e. ABOUT 3000 METERS DISTANCE.	MOVE FROM START POINT TO FINISH IN 1 HOUR.

The skill qualification tests of the United States Army are simply the mechanism by which we assess how well soldiers are able to do these tasks. The Soldiers Manual describes precisely what it is that's expected of them. The skill qualification tests might test that soldier on a task in any one of three ways.



We might test him by actually giving him a compass and a map, posing a problem to him as just described and asking him to demonstrate to the testing officer that he in fact could use the thing. We might give him a written test. He might be sat at a desk, given the map with a compass, etc., and expected to run a map exercise. Or we might simply require the unit commander to certify that Sergeant so-and-so had in the recent past, and in view of the certifying officer, in fact, so navigated across country under the conditions specified -- that he could perform the task. You can see that this gives us some degree of flexibility in approaching the testing of soldiers, depending upon whether they are in a combat arms MOS, a technical MOS, or a service MOS.

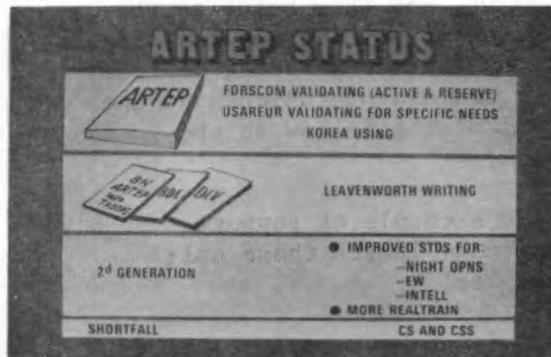


The Army Training Evaluation Program is also a way of expressing what it is that we expect of soldiers, only in this instance, we are talking about the collective - the unit. It describes the tasks, conditions, and standards expected of groups or teams.

ARTEP		
TASK	CONDITIONS	STANDARDS
CONDUCT A ROUTE AND AREA RECONNAISSANCE.	DAYEIGHT FRAG ORDER GIVING ● ROUTE ● TIME FOR COMPLETION ● INFORMATION NECESSARY	TIME COMPLETES WITHIN TIME SPECIFIED INFORMATION 90% OF SPECIFIC ELEMENTS OF INFORMATION NEEDED ARE REPORTED DETECTION UNDETECTED BUT IF DETECTED PATROL AVOIDS CONTACT.

Again, I've given you two extracts from an Army Training Evaluation Program. Complete ARTEP are on the side. I'd ask you to look for the moment at the handout that is

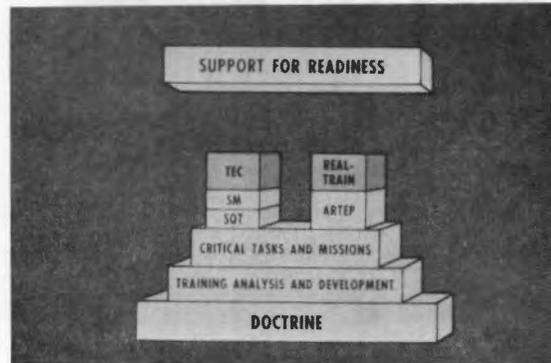
labeled Training and Evaluation Outline for the Rifle Squad, Forced March, Live Fire Exercise. By this document we have informed the force that every rifle squad in the United States Army - minimally - must be able to conduct a forces march under the conditions stipulated. The outfit will conduct a dismounted 6 kilometer force march along a designated route; squad personnel will carry all their weapons, equipment and ammunition; and at the end of the march they will be put into a hasty defensive position and required to engage targets. The target array is displayed at the end, and the specifications include how many hits they have to have achieved by the end of that exercise. Now we say minimum - we tell the commanders in the field if you want to make that exercise more rigorous - feel free, but your squads have got to be at least that good. That's a very important contribution, we feel, to the business of training, in that it tells CINCUSAREUR in Europe that any Infantry that he receives from the United States by way of reinforcement under wartime conditions, or for exercise purposes, have been trained to this standard.



And of course ARTEP assigns many other standards that each unit has to meet. We feel, also, that ARTEP is a contribution to training management in the unit, in that it explains to the Sergeant exactly what is expected of him in training the squad. ARTEP gives us standardization, or interoperability within the United States Army, and it helps bring to bear, on the training problem, the energies of our non-commissioned officers in very specific ways. The NCO knows exactly what's expected of him.

The second ARTEP example that is one that is labeled anti-tank section platoon - 106mm rifle and the TOW provide anti-tank fire support for REALTRAIN. This is an example of a training and evaluation outline in which we are using a training technique referred to as REALTRAIN. Let me talk to you a little bit about ARTEP and how that all goes and I'll talk to REALTRAIN in a moment. Again, you see an array of tasks, conditions, standards in the Army Training Evaluation Program very similar to what we saw in the Soldiers Manual. The ARTEP indexes the training materials that are available from the TRADOC, and they serve as the mechanism for putting our training standards and our training devices and our training techniques at the disposal of the fellow in the field.

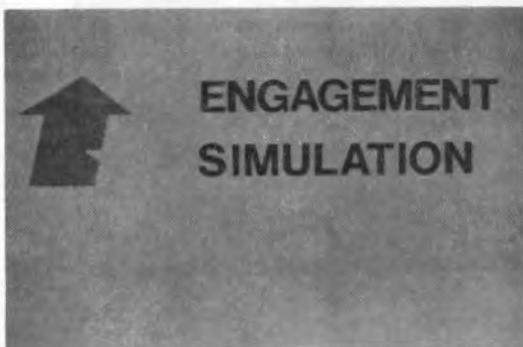
Here are a couple of support mechanisms - I cite these only as examples.



In individual training you saw on the Soldiers Manual handout sheet reference to the Training Extension Course or TEC program. To my left is one of the mechanisms by which we communicate ideas to the field via TEC. These are audio-visual lessons, each of those little gray boxes contains a film cassette and a standard Philips sound cassette. The little machine that you see there is just a way of tapping those in. This is a lesson in the use of the light anti-tank weapon, LAW. For large group instruction, there is a door in the rear, and the image can be projected on a wall. It has a set of headphones so that a single NONCOM can listen to these lessons and get updated. He hears the words and he sees the picture, and it walks him through the teaching material, step by step. Now the important point about this is that these materials were prepared in our service schools (this particular one at Fort Benning) by experts. TEC lessons are guaranteed to teach. We don't put one of these out until we have taken the lesson into a tactical unit and

successfully demonstrated that a soldier, by using that lesson, can, in fact, master the skills that are purported to be taught by the lesson. Unless and until it is validated, it does not go to the field. And we're putting a lot of these to play in the tactical units of the United States Army. It is one way that the soldier can acquire the skills listed in the Soldiers Manual.

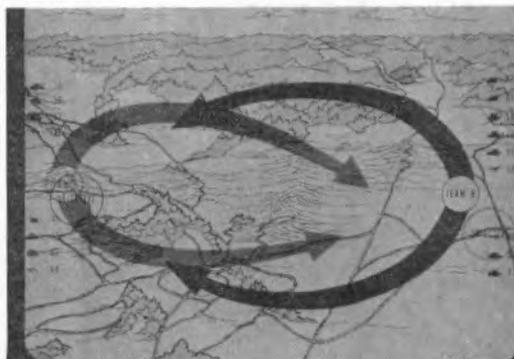
As far as collective skills are concerned - REALTRAIN is an example of a technique we devised, the technique that we listed here in this ARTEP sheet.



We are encouraging the force to use what we call Engagement Simulation, which simply means two-sided field exercises in which weapon systems effects are carefully played out. Basically, REALTRAIN, which is one of these engagement simulation techniques, uses telescopes and numbers.



Some of your armies have seen these techniques demonstrated. The size of the number and the power of the telescope are so selected as to crudely approximate the 50-50 hit probability of the weapon system being employed. And REALTRAIN, which is designed for armor engagements, has proven to be fairly effective. Here is an actual exercise that was conducted at Baumholder, Germany last December.

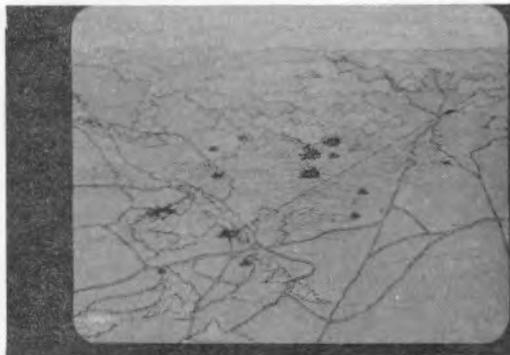


In this instance two teams were assigned objectives on each other's start point; the umpires had arranged for a meeting

engagement in the center of the terrain. The two commanders, not knowing where the other fellow was or what his mission was, each elected to attack on two axes. Each broke his team up as shown there. If you look over here on the right hand side, #27, and 01 are squads of infantry; 15 and 23 are tanks, 11 is a tank, and the symbol on the bottom labeled #10 is a TOW anti-tank missile system. So Team B goes after Team A; Team A goes after Team B. You have to understand further about this diagram that Team A has been at this for 3 weeks. They're fairly expert; they are at least very well trained for this particular mission. Team B, on the other hand, are novices, having just started out in training. The order from the commander of Team B stipulated that he wanted his team to get on that ridge down the middle of the picture, and when they were all up on the ridge, he would give them a further order which would take them on to their objective, which is the blue circle shown over on the extreme left of the picture, as you look at it. Well, the battle unfolded as follows.



The experienced team set up its long range weapons systems on high ground overlooking the ridge and pushed forward on OP -- you can see the APC #20, and a group of individuals going up through the woods; pushed forward an observation post and waited. The observation post indeed detected the arrival of the initial elements of the Blue Team, alerted the fellas that were sitting back there in waiting, and they got off three quick shots which got three kills almost immediately.



There was then an exchange from the over-watching elements of the Blue Team which got a couple of kills, but by this time Red is beginning to close in.

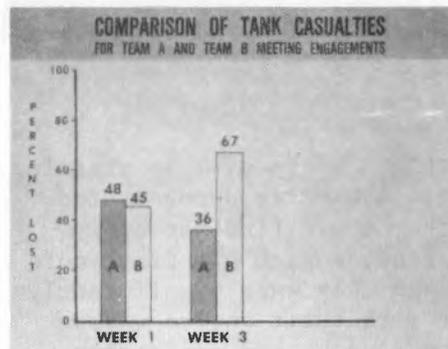


You can see this dismounted squad had come up by this time around the flank and had gotten off some shots from close in, and had begun to take out the Blue vehicles. The Blue leader was killed, early on, and the rest of Blue simply followed his original orders: they all tried to get up on that ridge to wait for subsequent orders, and were killed one at a time as they approached. Here is the end of the battle.

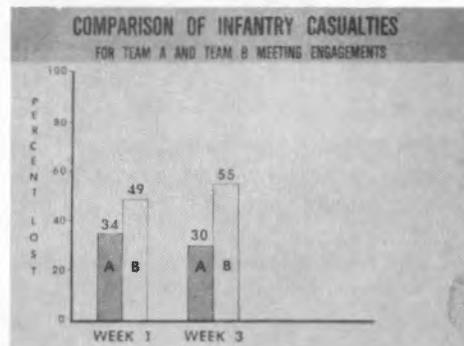


The Blue force nearly extinguished; Red, with his infantry dismounted moving into the kill down on the bottom. And, as a bit of added realism, you can see APC #20, who had been instructed to rejoin his platoon, which is dismounted down here at the bottom of the screen, got lost, turned the wrong direction and went up to the north end of the ridge. And as you can see here, he is in the midst of a friendly artillery concentration. He was, in fact, eliminated a few minutes later by his own fire. Now the point is that REALTRAIN teaches, Gentlemen, it teaches soldiers vivid lessons about the use of weapons on terrain. It teaches

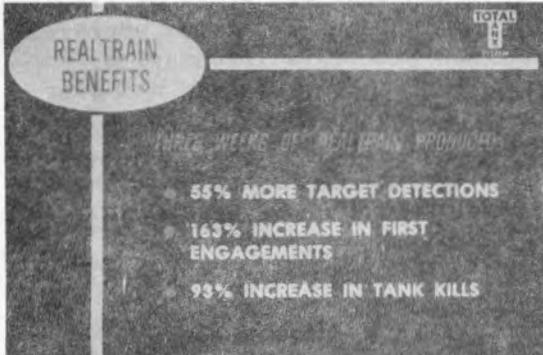
most effectively by means of the critique which followed immediately, wherein the participants all got together on the hill Kill-by-kill, they decided who it was that shot who and why, and what was wrong or right about the particular tactics employed. Then armed with this information, they go back and do it over and over again. Does REALTRAIN make a difference? Well indeed it does. Here is the chart which summarizes the results in four divisions of USAREUR.



Hundreds of repetitions of these sorts of engagements. The B teams were changed every week; the A team was left there for three weeks, so the A team are experts. As you can see at the end of the three weeks, the A team is far more survivable in terms of tanks lost, and more lethal as tank killers.



The same thing is true as far as infantry casualties are concerned. These are generalizations overall.



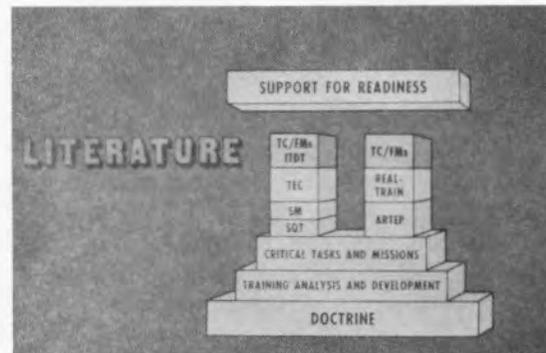
After three weeks of this training, the Team A experts demonstrated that they could find the enemy more often, engage him first more often and they were significantly better with their entire weapon systems - tanks and anti-armor weapons systems.

**ENGAGEMENT SIMULATION SYSTEMS**

	SOD	PLAT	CO	BN
SCOPES	TELESCOPES			
REALTRAIN	TELESCOPES			
MILES		LASERS		

We have three such engagement simulation systems under development. There is a very simple one for infantry soldiers dismounted, which we call Scopes. There is a more complicated one for mounted warfare, REALTRAIN. Both of these are designed to operate at very low echelons - squad or platoon. And we are working on MILES, which is the Multiple Integrated Laser Engagement System which will bring into play platoon, company, and battalion. But that system is some years away from fruition.

Now I think you would all agree that TEC audio-visual mechanisms, television, and other advanced media are today not the best or the most cost effective way to communicate with the field. Your Armies, as ours, depend fundamentally on books, paper, literature.



We think we have learned in recent years how to put our literature together to make it more readable and understandable, to command the attention of the soldiers more effectively. I would encourage you to leaf through some of the literature

that's over there on the side. We have tried to bring to this project the best kinds of talent that we can find in the United States, either in the services or in civil industry, to portray ideas, to explain relationships. Our training circulars and field manuals have been reformed. More importantly, we have gone to the Development and Readiness Command - the DARCOM, the middle command that General Camm talked about at the outset - and have proposed to DARCOM that each weapon system that is being developed shall have accompanying it, an improved technical documentation and training program.



We are proposing that the technical manuals that accompany equipments going to the field shall be in advanced formats, and that they shall have with them training systems like the training extension course that are designed to teach soldiers how to use those equipments. And that's what we mean by ITDT. It is a joint program. We have several millions of dollars in it this year, more going in next year and I must report, General Brett, that ITDT is

a direct lift from the United States Air Force. We in fact took U.S. Air Force contractual specifications, translated them into Army, and are applying them. The Office of the Secretary of Defense has conducted a number of experiments with improved technical documentation of training, and they make these representations on the advantages of improved technical manuals over the conventional manuals.

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

The bottom entry there, the MTTR, is mean time to repair, a 40% reduction. ITDT is more expensive at the outset. You've got to do the kind of task analysis that the TRADOC says we all should. At the outset, you've got to take the time to validate it with soldiers. By doing so it costs more to produce ITDT. But there is some major advantages downstream when you do that. First of all, even in English, we restrict the word lists. Contractors are allowed to use only a certain fixed number of verbs. Some of the specifications say 17 verbs only. You never use a work when you can use a picture. If you can with a diagram show what it is that you

want, you don't try to substitute nouns. With a very restricted vocabulary, ITDT lends itself to bilingual presentations.

**ITDT**  
**FOREIGN MILITARY SALES ADVANTAGES**

- FORMAT LENDS ITSELF TO BILINGUAL PRESENTATION
- RESTRICTED VOCABULARY AIDS TRANSLATION
- PERMITS SHARING OF ITDT DEVELOPMENT COSTS
- TOTAL PRODUCT MORE APPEALING BECAUSE OF GREATER USABILITY
- WILL FILL A CRITICAL GAP IN OUR SALES PROGRAM

The U.S. Air Force has produced such manuals in two languages, Vietnamese and English, during the Vietnam War, helicopter manuals for maintenance which were very successful. The cost sharing business refers to the fact that the Development and Readiness Command has got to turn out the technical manual anyway. We've got to produce materials for use in our schools and for training in units. If we can get together in the development process, we can produce a manual together, and share the outcome. And we think the bottom entry refers to the fact that all over the world there are Armies using our equipment. If we had ITDT programs incorporated in them, we would be able to serve our customers abroad far more easily.

**WHEN IT SAYS...**

2. DISCONNECT AIR SELECTOR VALVE CABLE (6. FIGURE 2-2) FROM AIR SELECTOR VALVE PIVOT SHAFT LEVER ON TOP OF INLET REDUCING DUCT BY REMOVING COTTER PIN, WASHER, AND FLAT HEAD PIN SECURING CABLE FORK END TO LEVER.

**AND SHOWS ...**

Here's an example of what we're talking about - this sort of confusing English with a picture related to that

22 PAGES AWAY

**WHEN IT COULD**

prose some 22 pages away. Then a complicated diagram like that - very difficult for an American to follow that - almost impossible for somebody educated abroad.

When you could say it like this -

**SAY...**

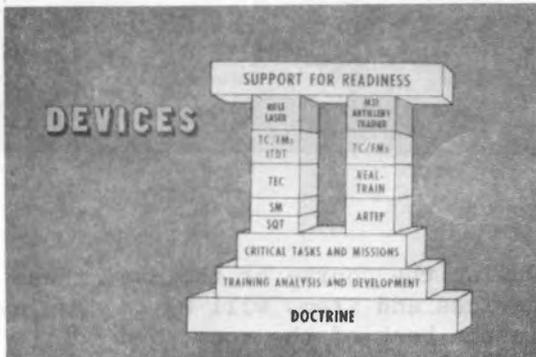
DISCONNECT CABLE (2) BY REMOVING KEY (3) AND PIN (1).

**AND SHOW...**

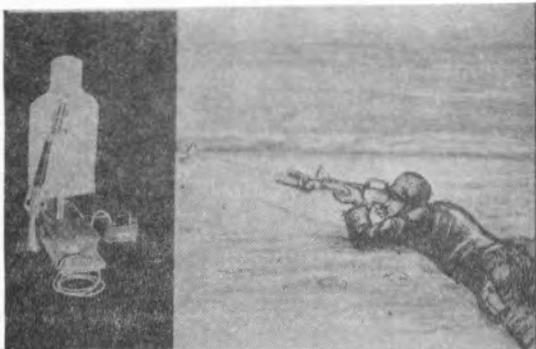
**ON THE FACING PAGE!**

using just those few words up there on the right and show facing that - a simple diagram like we've got there. These are actual examples, incidentally, from a U.S. Air Force manual for the C141A.

Now, finally, TRADOC wants to bring to bear on its business, training devices.



We're going to talk to you later today at some greater length about the training devices that your colleagues saw here earlier in the meeting. Let me demonstrate to you this one - this is what we call the laser rifle. How do you train that squad that we showed you here on the force march live fire? How do you give to the Sergeant the opportunity to train his fellas in that defensive fire exercise, if you can't make available to him ranges and ammunition?

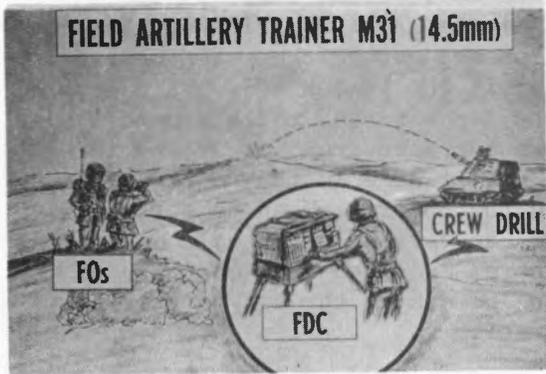


Well, one of the answers is that you give him this device. This is produced, incidentally, within the Training and Doctrine Command in our Army Training Support Center. It's a replica of the M16, it is not a real weapon - does not have to be secured, locked up in an Arms Room. It is harmless/has a little laser attached to the front end, but the laser is completely eye safe. And we can use this device with miniature targets of this sort. The targets can be set up in an array very much like we describe there in the Training and Evaluation Outline that I showed you before. We can then permit the leader to run his guys out for a forced march around their own barracks area, or around the block if he's in the Reserves, back to the Armory. When he gets back he can have an array of those things there, and then they can turn to and he can go through the firing drill.

We have satisfied ourselves that the laser can handle that type training: it teaches the line of sight, size of the target, the relationship of the front sight blades, so that just practicing with these the soldier can shoot the weapon pretty well. We have found with this particular weapons system that we don't pay any penalties for not having the recoil and the sound accompanying the firing. What we have here, in fact, is a training device which teaches a soldier to shoot. Later on this afternoon, Colonel Shay of the Army Training Support Center will talk to you about some other devices which are available to us in the field.

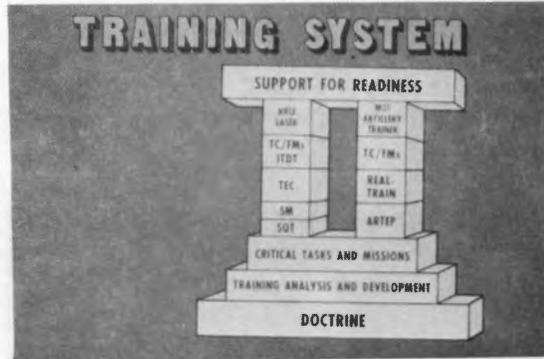
Look to the rear, you can see a large

man-size laser target - one of the major options is that you can set those up outside the barracks area - on the golf course, in the park, anywhere around, and again you've got a pop-up target, and they're responsive to the laser. In this case, we've given the field a rather interesting array of approaches to the ARTEP. Of course, you are familiar with the subcaliber artillery trainers of one kind or another. We have one which is of German origin - 14.5MM.



We're bringing the system along. As we have introduced computers into our artillery, we have integrated computer play with the Mark 31. We feel, ultimately, we will have a full system of trainers, which will enable the soldiers in the artillery battery out there to use the full system, from the forward observer, to the fire direction center, to the gunner. We can put it all together in training so that the soldiers can understand.

Put this diagram all together, Gentlemen, and you have a full training system called TRADOC.



During the course of the day, these devices and items will be on display in the back of the room, and we'll have personnel available to answer any questions you may have.