

Combined Arms Training

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The Chairman of the Joint Chiefs of Staff just returned from a visit to the Middle East, which included a day with the 1st Battalion, 502d Infantry, the U.S. infantry unit with the international peace keeping force in the Sinai. General Vessey reported that he found 1/502 spread in squad-size positions across a hundred miles or more of harsh desert terrain, appropriately known in the Bible as "the Wilderness." Nonetheless, morale and military proficiency were high, because each squad leader was capitalizing on the training, discipline, and leadership opportunities presented by taking seriously the task of reinforcing terrain in and around the squad's position. I'll comment more on terrain reinforcement in a moment, but first let me pass on a report which may be of professional interest to this group.

One of the 1/502 squads, in digging out a bunker site, uncovered a large crock in what may have been a grave. The crock contained two parchment scrolls which could constitute a major archeological breakthrough, because they appear to be the authentic unit journal of the Israeli 2d Cavalry Regiment during Operation Exodus. The journal records how under the command of Moses, the children of Israel marched away from the Nile Delta out into the desert, and contains a particularly vivid account of engineer support for combined arms operations on the western shore of the Red Sea.

One afternoon, after a particularly hard day's march Moses held his PM Command Briefing. His cavalry commander got up and reported that the advance guard had encountered a very large water obstacle, and that reconnaissance had failed to find anyway around or fords. Moreover, about 1400 the rear guard had had a brief contact with Egyptian light chariots, probably part of a much larger force about 48 hours on the back trail. Moreover, the G-2 reported that he had a humint report that the Pharaoh himself had led a large mobile strike force eastward.

Moses was a bit distressed, so he called front and center his engineer, James, son of Ellis, and said, "Ellison, fix it."

"Not to worry Moses," said Ellison, "I'll get out there tonight, recon bank conditions under the light of the Pillar of Fire, put together some rafts with our Mobile Assault Bridges, and tomorrow we can raft the children of Israel to safety."

Now Ellison was your model engineer, oozing charm and inspiring trust and confidence even when there was only the slenderest factual basis for same, so Moses had a good

sleep that night, got up at the usual time for breakfast, had his SOS and java, and then walked over to the AM briefing to hear the plan for crossing the water obstacle.

Well, there was James, Son of Ellis, looking a little less confident. "Moses, sir, there are some maintenance problems I have to report. You know our MABs were built in Egypt copying the Ethiopian design, and we used hippopotamus hide on the hulls. We have now discovered that hippo-hide hulls crack in the desert, and while we plan to acquire some lighter, crocodile-skin hulls which tests show won't crack, all your MABs are deadlined."

"But not to worry, Moses. We're going to reinforce the terrain here. If you'll move the Pillar of Cloud to the rear, under cover of cloud obscuration we'll put in strong points and obstacles which will stop the Egyptians dead in their tracks, and save the children of Israel."

That sounded O.K. to Moses, so he made terrain reinforcement first priority task for everyone in the command, and told his commanders to give their full cooperation to James, son of Ellis. Unfortunately, Moses had to receive a camel driver union grievance committee, listen to a GAO team outbrief, make an Officer's Wives Club speech, and spend three hours with his JAG on General Court Martial matters, so he wasn't able to get out to see the terrain reinforcement.

But of course he told his G-3 to be sure there was a full-statistical report ready for the PM briefing.

At the PM briefing the cavalry commander confirmed that an Egyptian heavy division with 600 chariots was moving forward, about 24 hours away, and the G-2 reported an intercepted Egyptian pigeon with a message about the entrapment of the Israelites. All eyes turned to James, son of Ellis, who for the first time looked worried.

"Moses," he said, "We've got problems. When you ordered load-lightening back on the Plain of Reeds, the children of Israel chucked out all their D-handled shovels. And the women have made dresses and curtains of the sandbags. And, Moses, the children of Israel have been using our dozer bulls to make fatted calves, and all but two dozer bulls are down for maintenance."

Moses was mightily wrathful. He told Ellison then and there he'd send him to be the Sinai District Engineer, and he appealed to his other commanders for advice on what to do next. There was a long silence. Then a young staff officer in the rear row put up his hand.

"O.K., Sapperstein," said Moses, "If these green tabbers can't hack it, I'll listen to you. What should I do?"

Sapperstein was Moses' PAO, having been a flack for Pharaoh's country music operation in Memphis.

"Moses, baby," he said, "I can't hype myself as part of the combat arms, and I don't even wear funny buttons, but I can tell you this situation calls for *chutspah*. You've got to

pull all the stops. You remember the long pole I gave you to work out with as part of your image *stuck*? Well, you get the long pole and you go down to the water, and you plant your pole with one hand, and you stretch your other hand over the water. Then the water will back off, and the children of Israel can walk across on dry land."

"Sapperstein," said Moses, "you *Klutz*. What makes you think a flim-flam like that would work?"

"Well," said Sapperstein, "I don't know whether it would work or not, Moses. But I can tell you this. If it does work, I'll absolutely guarantee you two pages in the Old Testament."

Incidentally, OCMH believes that this record of Moses and Sapperstein's pole may be the origin of the term "military staffwork," and one of the earliest case histories of combined arms cooperation.

Since you have convened to talk about engineer contributions to the combined arms, I suspect that I can safely stipulate that training of your colleagues in infantry, armor, cavalry, or artillery units often fails to assign a realistic role to engineers, or frequently displays defective knowledge of skills and knowledge which engineer assistance might ameliorate. I think I know how to remedy such lapses, but first let me comment that there are at least three fundamental training undertakings in which, if realism governs, it is difficult to avoid facing up to the proper engineer role. These are crossing water obstacles, breaching minefields, and terrain reinforcement. My first bit of advice would be to persuade your commander to make one or another of these a training centerpiece; if he does so properly, combined arms cooperation will flow naturally. My own preference is terrain reinforcement.

The exploitation of terrain has long been a task uncongenial to American soldiery. We are an army conditioned by history to think of ourselves as moving, striking, pressing inexorably onward - conceivably mirroring a cultural restlessness and impatience. We are uncomfortable, even inept, when we are called upon to hold ground or deny it to an enemy. This observation holds true in 1982 despite the fact that the American Army is led by officers and NCO's battle experienced in Viet Nam or Korea, or both, to appreciate the value of reinforced terrain, and advantaged by thirty years of peacetime training in defending West Germany and South Korea. Indeed, today the Army is in the throes of its dialogue with the Congressional Reform Caucus and its "maneuver warfare" fellow-travelers. Hence, it is an inherently difficult training task which faces any commander who sets out to teach his unit how to prepare for battle in which it shall need every advantage it can wring from the land to counter enemy forces which outnumber and outgun it. But that sort of training teaches the engineer role in combined arms uniquely well.

In 1977 I was fortunate enough to be given command of the 8th Infantry Division, a large mechanized formation of some 20,000 men and women, with over 1000 major anti-armor weapons, including 400 main battle tanks, missioned to defend the Fulda Gap. My early estimate of the situation led me to conclude that I could not hope to fight the formidable Soviet and East German forces arrayed against us without substantial recourse to

terrain reinforcement. In particular, I became convinced that only by assuring that my infantry could build and hold strong points covering obstacles by fire could I free my armor for countermoves to gain and maintain the tactical initiative. Yet I learned that:

First, my infantry leaders expected supporting engineers to plan, emplace, and record minefields, build obstacles, and prepare fortifications. I was unable to find any infantryman who had ever handled a mine, let alone emplaced and armed one.

Second, my infantry leaders were therefore woefully ill-trained and ill-equipped for the most rudimentary pioneering tasks: most of them allowed their troops to leave their entrenching tools in garrison, let alone seeing that they carried on-vehicle D-handled shovels, picks and axes in operationally meaningful numbers.

Third, my engineers were far short in numbers and equipment of any real capability to respond to aggregate demands for their services. Our war plan was a recipe for piecemeal commitment of engineer-assets, virtually assuring that my organic and general support battalions would have little or no effect on the outcome of the battle.

Fourth, inevitably, our war plans at all echelons lacked a unifying concept for fire and maneuver, and were seldom under-girded with practical individual skills and teamwork, practical logistic preparations, reliable communications, or sound rehearsed arrangements for executing demolitions, or transferring obstacles.

How does a commander go about redressing such shortcomings? How can he bring about true combined arms operations? I am going to offer answers based on my own experience, but I preface my remarks that, then and now, I never considered the measures I shall describe anything more than a beginning. I knew that we were so far from proficiency in the effective integration of engineering into the combat arms team that years of effort would be required to inculcate, preserve and hone the skills and knowledge essential for this realm of the military art. I can only trust that my successors have persisted in what we who served in the 8th Division in 1977 through 1979 began. And if the start was not exactly as I describe it, I prefer to so remember it

The *point d' appui* is the mindset of major subordinate commanders. I have often had occasion to observe that the world of training would be rendered less complex and stressful if each of us would tend, first and foremost, to the training of his immediate subordinates. For a division commander, these are his brigadier general assistants and the colonels who command his line brigades and artillery. There is no group more difficult to train, unless it be major generals and lieutenant generals. Far more fortunate is the trainer who can work with younger, more responsive trainees, unburdened by prideful misconception, experiential misapprehension, and age-based obstinacy. Billing my training sessions as Commander's Conferences, I began with imparting rudimentary knowledge, moved on to concepts, and then to practical exercises. By the way, at some early sessions, we had with us visiting groups of National Guard division commanders and Adjutants General.

I told my trainees that the most numerous tank killer available to the 8th Division was the antitank mine. There were available to us a very large number of M15 mines, and a lesser number of M21 with tilt-rod fuzes. I had the Division Engineer break out service mines from the division's basic load, and required each attendee to handle each type mine and fuze. Then we discussed mines as a system, from out loading them from their storage places, through the supply system, to their being removed from crates, to their being emplaced and recorded. We then watched several methods of emplacing mines, beginning with a method using an infantry platoon and its APCs, then an engineer squad using the plow-type planter behind a five-ton truck, and finally an M56 helicopter dispenser. Using smoke mines, we then demonstrated probability of kill by having a tank platoon traverse a 1-0-0 minefield, first with pressure fuzes, then with tilt-rods. Finally, we required each participant to work through a problem of calculating the transport, manpower and time required to achieve a stated probability of kill across the terrain compartment in which we were situated.

At the same conference, incidentally, we looked at tank ditches. As the mine work began, an engineer platoon went to work digging a tank ditch across the same compartment. As a *finale* I had the tank platoon tackle the ditch, which it did with some dispatch, making the point that ditches can be dug quickly in soft soil, but are as quickly penetrable, and underscoring the importance of covering such an obstacle by fire, and combining it with minefields.

I then closed on the real purpose of the conference, which was to announce that thereafter my commanders, only at hazard of my grave displeasure, would relegate to their supporting engineer plans and operations for terrain reinforcement: mines, obstacles, and fortification. Note, I told them, that the word I used was precise for what had been the case: the usual commander relegates. The principal dictionary definitions of that word are (1) **to send into exile**; and (2) **to assign a place of insignificance or of oblivion, put out of sight or mind**. Both, in my judgment applied to what I had observed in the division, and I wanted them to cease and desist forthwith to relegate. I told them I expected them to be the principal architect of such plans, and that I would look for coherency of concept from top to bottom when next I inspected their war plans. Above all, I said, when I evaluated their training, I would be looking for evidence that they had developed through training a real capability to do what their plans said they would do.

Shortly thereafter we implemented a series of steps designed to support the foregoing. These included:

- Directives to increase substantially the amount and kind of pioneer equipment carried aboard each tactical vehicle, effectively tripling the numbers of shovels, axes, and picks among combat and combat support elements - these incidentally were "country store" stock items. We also issued, more selectively, chain saws.
- Announcement that each monthly alert would thereafter feature a show-and-tell of some element of their ability to reinforce terrain. When we were called

out, division would announce inspection items, and promptly dispatch evaluators to randomly spot check compliance. Major subordinate commanders were also required to evaluate and report. Each inspection item was described in a published Training and Evaluation Outline. For example, we required each rifle and cavalry platoon to carry a chain saw, and each evaluation involved a large log and time standards for cutting same. Or we expected every unit issued minesweepers to put same into operation and locate a buried mine in a specified area in a given time, using specified procedures for sweeping and marking.

- Authorization to use service mines for training, under specified safety constraints.
- Demonstrations by personnel of *Wehrbereichskommando* (WBK), the German Area Command responsible for supporting the division, of the demolition chambers built into roads and bridges, and of the associated explosives stored in their vicinity.

A few months later I held another Commanders Conference, during which we looked in detail at a defensive position constructed by a rifle platoon reinforced by a section of tanks and supported by an engineer squad. It was just before Christmas, and the constructing unit had to cope with mud, frozen ground, water in the holes, and snow in the 48 hours we gave them to build the position. My commanders and I walked the position and discussed its construction in detail with the men who had done the job—an illuminating trek for us all. The position was astride a tank range, so after we had walked through it, I assembled the commanders on a hill to the rear and we had the platoon leader actually shoot defensive fires against an approaching “enemy” represented by pop-up targets—and shoot he did, from 155mm artillery down to his rifles. Once again we stressed the interrelationship among those fires, the hasty mine fields the unit had emplaced, and the scheme of subsequent maneuver intended by the battalion task force commander.

The next step was to announce that the following summer we would construct an entire company team strong point. I told my commanders that each infantry battalion would participate, but that no battalion would know which of its companies would get the task until the order for deployment were received. In March we issued Training and Evaluation Outlines to supplement the ARTEP which included training tips. In late June we began the actual operation, which extended over seven weeks. Each week two maneuver battalions were alerted and directed to move by road to a forward assembly area, under control of a designated brigade. En route they were required to pass through a simulated ammo depot, and to draw and stow actual crates filled with sand or dummy rounds, representing the unit’s basic load. In the assembly area the units were task organized; then while the bulk of the force moved down toward the French border to take up defensive positions, one company team, consisting of a rifle company reinforced by a tank platoon and supported by an engineer platoon, was selected at random to dig a strong point to the rear to dominate terrain around which the brigade commander expected to fight a mobile battle 72 hours thence.

We had selected a hill at a training area, and had prestocked behind it stores of construction materials such as logs, empty ammo boxes, evergreen branches for camouflage, sheets of plastic and the like. On the hill a division evaluation team met the company team, and thereafter responded to any legitimate request for material, assessing an appropriate time delay to account for obtaining it. From time to time the Assistant Division Commander would visit the position to review progress, urging the team commander to think through his concept and to reach for better solutions to his problems. For example, sturdy beams for bunkers were an immediately recognized need. If the unit had chain saws and men who could demonstrate their use, they were allowed to draw logs — men were foreclosed from cutting trees. But after they had struggled with snaking logs around and man-handling them into position, the ADC suggested that there were other, easier solutions to the beam requirement, such as moving the metal guard rails along the nearby highway. These rails were both light and strong, could be detached with a wrench, and were far easier to handle than the logs. If the company team commander bought the suggestion, he was then allowed to draw from a pile of these rails we had obtained from the *Autobahnmeisterei* for that purpose.

We started in dry weather, and the ADC had to prompt the builders with questions like “what are you going to do about rain? Won’t you have a drainage problem?” But after the second week or so we had plenty of rain, and water disposal became very much a matter of prime interest.

At the end of the stated 72 hour period, a halt was called to the work, and I assembled all officers and senior NO’s of both task forces in the field at the strong point. The company team commander was required to present his concept to the group, and then to lead them through the position, showing them its principal features. Aided by the evaluators, the ADC and I brought out for all to appreciate the strengths of the position, as well as goofs or half-baked solutions. As you can imagine, lively debates took place, particularly among peers. The constructing team was then allowed to rejoin its task force, and the maneuver continued. I should add that it was common for the team commander to work everyone of the strong point for 72 hours straight, so that the team was incapable of doing much except rest for 12 hours or so upon release. Two days later we started another two battalions into the maneuver, and when the new constructing team arrived to the strong point, we flew in the previous team commander to advise his successor how to carry forward the work on, and to fight from, the strong point. Often the new commander would receive specific guidance from the ADC on flaws which had to be remedied. In all we ran seven company teams through 72 hours of intensive construction each, culminating in a Commanders Conference in which all senior officers and sergeants major walked the position from the enemy side in and listened to a detailed final critique.

Looking back, there is more I might have done to insure that lessons learned were captured for training subsequent cadres of the division — more photos, TV tapes and diagrams, more effort on a pamphlet describing the exercise. I still have some of the documents and sketchers which reported on the experience. One in particular, written by the division evaluators and the company team commanders is worth quoting in part:

“An area in which combat units need more work is the ability to visualize the

oncoming battle and to carry out the troop leading steps necessary to meet the visualized situation. In other words, we need more work on “gaming out” what the enemy is likely to do, and in forming our own game plan.

“A team commander should never simply give the platoon leader a left and right coordinating point and leave him to work out the rest. The fire of any platoon in defense is a coordinated effort that other elements of the company depend on, and the team commander should know exactly what he wants from each element under his control.

“It is impossible for the team commander to establish a strongpoint – or indeed any position – without a clear concept of the defense. A team commander, for example, must know precise mission and also know the task force commander’s detailed view (or ‘visualization’) of how the battle is likely to develop in his sector, phase by phase. Obviously, this is not something the task force commander can predict with 100 percent accuracy, but it is a framework of mutual understanding that forms a battle plan. The team commander can then develop a visualization that lays out the probable course of the action in each platoon sector. He can paint the picture of the battle so that his subordinates will understand their interacting roles.

“Although the strongpoint is a static position, the conduct of the defense has a number of dynamic aspects. The commander must adjust to the changing enemy situation and to visibility conditions. In deep fog he will lose much of his ability to observe, and he will have to adjust. He must carefully pick GSR positions to offset his disadvantage. When one side of his position comes under dismounted attack, he may have to move forces to meet it. As weapons systems go out of action, he must reposition the remaining weapons.

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“Some techniques that were worked out on the strongpoint appear promising for the betterment of our General Defense Plan efforts. First of all, we may be able to make more effective tactical use of the strongpoint in planning. Other considerations are the following.

- Time-work factors for terrain reinforcement indicate strongly the importance of practical, workable, and realistic arrangements between the Division and WBK elements. Successful efforts here could give us quantum jumps in capability (staying power).
- We need to prestock far more construction material.
- Engineers need more active roles in small units GDP planning and practical work with small combat units.
- GDP troop leading steps definitely should get all the way down to give-

and-take discussions on actual individual fighting positions and the integration of all weapons and systems—to include a solid concept of priorities of effort.

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“To the question, ‘Is it important to dig in?’, this experience, seven times repeated, indicates that the answer is ‘yes.’ When the small unit is faced with the actual requirement to dig in, all the multifaceted theory of terrain reinforcement in defense comes into play. Commanders see the results of their troop leading steps, adjust through trial and error, and realize the full extent of small unit defensive operations. Plans are executed 100 percent and the resulting lessons are deeply engraved. Digging in is essential to realistic training, and, indeed, to our GDP. It can and should be done without any diminution of the concept of mobility and the offensive spirit.”

There is much more to this training undertaking, but for the purposes of our discussion here, let me report that I perceived operational payoff almost immediately:

- Small unit commanders evidenced keen awareness of drainage and soil compaction problems, and were demonstrably familiar with techniques for draining or pumping emplacements dry using APC bilge pumps.
- We looked for and found ways of prestocking construction material forward where we would need it early in the battle, a project in which local governments found it possible to cooperate under the guise of contingency planning for floods or other natural disasters.
- One of the infantry units positioned in front of Fulda located a lumber mill in its sector, and made a point of keeping a current inventory of beams and other lumber germane to planned construction in the mill yard. The same unit, noting that one of the products of the mill was dowels, proposed, and we accepted, supplying the Division with quantities of OD painted dowel for use in simulating M21 minefields.
- Having, during the strong point exercise, demonstrated the utility of the backhoe equipped UNIMOG, we found that units paid particular attention to locating UNIMOG distributorships, repair shops, or vehicle parks with UNIMOG equipment.
- All units caught onto the availability of autobahn safety rails, and schooled NCOs down to squad on how to unbolt and transport same. One unit found that the *Autobahnmeisterei* had its own buried cable along the road for use in emergency repairs, and that with a key to the switch boxes that were located every kilometer or so, they could patch-in their telephones, and thereby acquire a hardened, jam-proof communication system. Soon the whole DISCOM was using such communications.

- Most importantly of all, we found, throughout the division, battalion task force and company team commanders with well-detailed work plans, with priorities, bills of material, time estimates, and realistic provisions for manpower and transport. Pre-prepared minefield records were on hand. Lane markers were prepared. Obstacle turnover was anticipated and rehearsed. While their engineers clearly played a major role in developing these plans, I became confident that theirs was a supporting role, and that relegation was no longer condoned.

Now, by way of conclusion, let me attempt to generalize from this experience. Let us say, for the purpose of discussion, that the problem in hand is combined arms training for crossing a river or breaching enemy minefields. First and foremost, it is important to disabuse commanders at all echelons that these tasks can be relegated to engineers. While engineers may be a part of crossing effort, or of a breaching team, all should realize that there will be cases where engineers will not be able to get to the action. Rather, the main concept for the operation, the covering fires, most of the manpower and equipment for the operation itself, and its exploitation must be supplied by the maneuver arm commander. Once all understand this, then the task can be broken up into key components, Training and Evaluation Outlines devised, (in which the engineer should play a major role), and a training program established. Demonstrations, drills, partial evaluations and eventually full scale evaluations should follow. With MILES equipment, these latter could be vivid evocations of combat. The results should be captured, and passed as lessons-learned to offset subsequent personnel turnover.