Joint Engineer Training

"I'm not surprised to find out that your Navy has its own Army, but I am surprised to find out that your Navy's Army has its own Air Force."

—Israeli officer undergoing Joint Professional Military Education at Command and General Staff College

"Our Navy's Army has its own engineers too."

—Engineer officer's reply

Here's an interesting thought. In Europe, we send engineer captains to courses to introduce them to the engineer formations, capabilities, procedures, and doctrine of fellow NATO countries. Yet there is no such training for our engineers on the other services of our own country. The point is not that we should eliminate the training at the Euro-NATO Training Engineer Center. The point is that we do more training on NATO engineer procedures than we do on our sister services.

This article opens the issue of joint engineer training, with four authors—with very different backgrounds—providing thoughts on it. We have viewpoints on how we do business now, what we saw during Operation Iraqi Freedom, what implications we see from that, and what we see coming tomorrow that will define the joint engineer training environment.

Joint Training Today

By Colonel Thomas E. O'Donovan

Today the primary vehicle for joint engineer training is found in two places. For leaders, we have embedded joint training in the programs of each service (Figure 1). That training is limited to general understanding of other service organizations and capabilities.

For example, Army lieutenants get two to three hours of joint training in the basic course, including an overview of concepts such as joint doctrine and organizations, and a brief introduction to joint fires. Captains in the career course get five to seven hours about the organizations, functions, and capabilities of Air Force, Navy, and Marine Corps engineer assets. Noncommissioned officer training has a similar structure and content. Additionally, we train about eight Marine Corps officers annually in the Engineer Captain's Career Course and have a Marine Corps officer on the faculty at the U.S. Army Engineer School. But until an officer reaches field grade rank and begins Joint Professional Military Education (JPME), there is no other joint engineer training, and JPME includes very little engineer training.

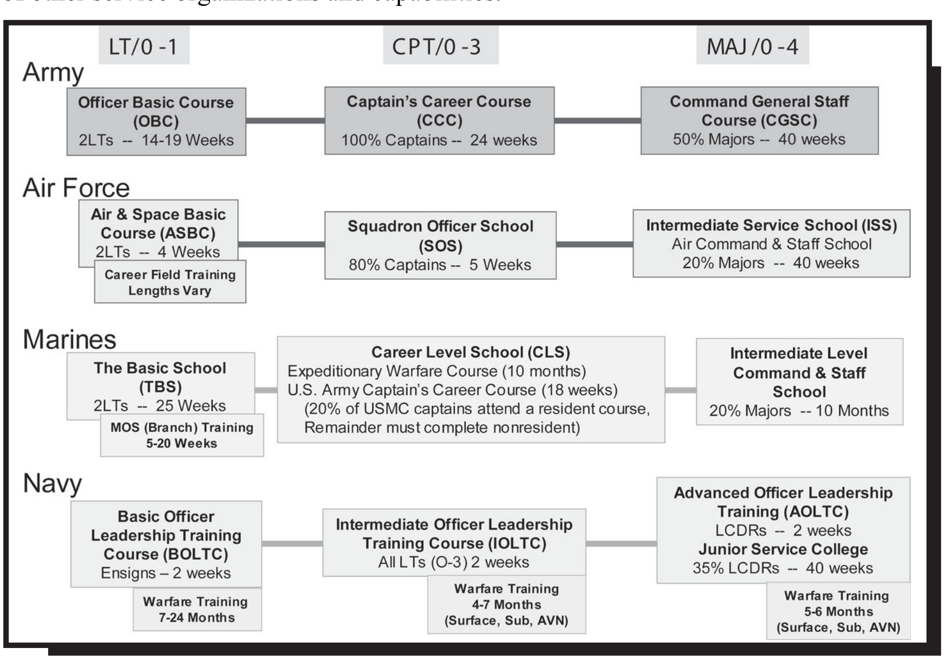

Figure 1. Officer Education Timelines for the Services

For enlisted training, we have the Interservice Training Review Organization (ITRO) system and all three forms (consolidated, unique, and colocated) train enlisted engineers. For example, Army firefighters train at an Air Force school. This program was a long time in development, has been in action since 1996, and is described in more detail in *Engineer*, February 2000, page 11.

The bottom line is that we conduct some leader joint training and common enlisted training. But does it achieve the "jointness" required for tomorrow? If not, what are the key pieces today's joint training is missing? We'll look at what joint engineering meant in Operation Iraqi Freedom and what it will mean in the future and then come back to that question.

Joint Engineer Training Aspects of Operation Iraqi Freedom

By Colonel Charles Smithers

The joint fight is with us to stay and there's no looking back. For years we've schooled on it during training events and contingencies, but it matured during major combat operations of Operation Iraqi Freedom. It's no longer good enough to stay in your "service" lane—it's time to be better and develop applicable skills to employ everything—and everyone—that comes to the fight. Joint engineer vision is driven by concepts being implemented now. In Operation Iraqi Freedom, today and in its earlier combat phases, joint engineer skills are a key part of the success.

As we look across the services at doctrine, organization, training, materiel, leader development, personnel, and facilities (DOTMLPF), what do we "jointly" grab that will be the catalyst for joint engineer efforts? As we saw in Operation Iraqi Freedom, most of the components of DOTMLPF are different. But leader development is the common component—engineer leaders who will lead the way as we learn and put our new joint engineer skill into practice.

A model for developing this skill comes from Department of the Army Form 67-9, *The Officer Evaluation Report.* The "Skills (Competence)" section for assessing leaders rates technical, tactical, conceptual, and interpersonal attributes. Consider the tenets of breaching operations—suppress, obscure, secure, reduce, and assault (SOSRA)—and analyze them according to those attributes. Our formations, and we as leaders, are technically trained in each step. We apply that training to the tactical situation using mission, enemy, terrain, troops, time available, and civilian consideration (METT-TC). We conceptualize with judgment and critical thinking, while exercising interpersonal skills to communicate, teach, motivate, and lead.

Nothing is different in joint operations as it relates to skill and skill development. Operation Iraqi Freedom lessons learned by our engineer battle staff relating to this skill can easily be broken down using the model above. For example, at the beginning of ground operations, Coalition Forces Land Component Command (CFLCC) had three Marine Corps multirole bridge companies (MRBCs), one British M3 bridge company, and four Army MRBCs to assure mobility of ground forces as we attacked north to Baghdad. We allocated these critical bridging assets against the respective V Corps and 1st Marine Expeditionary Force (1MEF) missions. This bridging allocation plan received the highest level of attention, because without success in tactical bridging operations, the entire ground campaign could have been at risk. We found tremendous similarities between Marine and Army equipment, organization, operations, and training. Call that joint interoperability.

As integral members of the joint team, we had five Marine Corps officers on our battle staff, along with a Navy Seabee and an Air Force engineer. Before the start of the ground campaign, as we taught each other (interpersonal) about the capabilities and limitations of our materiel (technical) and the intricacies of our doctrine (tactical), we spent countless hours synchronizing (conceptual) our bridge plan to make sure it was right. It had to support the CFLCC plan and get the force quickly to the Iraqi Center of Gravity—Baghdad.

It came as a surprise to all the Army planners involved when we discovered toward the end of months of planning that though the three Marine MRBCs were ready for the fight, they were loaded on ships, but had only one set of bridge trucks, not three complete MRBCs as we knew them. What did that do to our plan? Where would we get CH-47 Chinook helicopters to sling bridge bays instead of ammunition forward in the zone? Where would the forward bridge park go, and who would secure it while the bridge crew built the bridges? What truck assets would be available when we needed to move the bridge bays?

Did we fail? Certainly not. But in a more time-compressed planning situation, or if the enemy had been successful in destroying fixed bridges, we would have had significant challenges to overcome. We didn't show the same inherent skill with this situation as we did with the SOSRA example. Maybe it was a harder problem, but the lesson learned was that we had to apply the same skill set—but with a joint engineering flavor.

Army engineers provided extensive support to the Marine Corps in Operation Iraqi Freedom, including the attachment of multirole bridge companies.

We also learned about command and control arrangements and how the different services really interpret and implement them. Changing task organizations between Army and Marine formations during the fight was tough. We discovered what it means to move an Army MRBC with 54 bridge trucks and other assorted vehicles from V Corps across the CFLCC zone to the 1MEF, rather than on paper or in a computer. And finally, we learned that with the speed of the battle and its ever-changing, ever-increasing requirements, we needed inherent joint skill to pull this and many other joint engineer challenges together.

So what are our key conclusions? Service engineers in a joint context must obviously be proficient in the skills of their service, but must also be joint skill-capable. The model above for establishing joint skill works, but we must get better at it because learning it in-theater is not a good approach. We may not have as much time to get it right when we do this again.

We can get there. In fact, recognizing that fact and talking about it begins the journey. The application of our model, using our four words above—interpersonal, technical, tactical, and conceptual—is critical. We must know ourselves and be able to employ our assets in any environment—our service engineer skill. But we must also know what's available and how it is employed in the other services. That's the power that makes us better than our opponent—our joint engineer skill.

Joint Doctrine Developments

By Lieutenant Colonel Reinhard W. Koenig

Can joint doctrine fix joint training and operational issues like those described above? Aren't we first supposed to look at the "D" in DOTMLPF for solutions? The answer is a qualified "yes" to both questions. As we look more to joint solutions in operations and training, the qualified "yes" should become much less qualified. Joint transformation implies a shift in the way we conduct unified action and in the way we train. It therefore requires changes in doctrine that will drive further changes in training, leader development, and even materiel development. Joint engineer doctrine clearly will need to transform as the force undergoes fundamental changes as part of that transformation.

Joint Publication (JP) 3-34, *Joint Doctrine for Engineer Operations*, is the overarching publication for planning and synchronizing the engineer effort in unified action. JP 3-34 is now being revised and will be combined with JP 4-04, *Civil Engineering Support to Joint Operations*, with an estimated publication date in 2006. JP 3-34 establishes the engineer battlespace functions of combat, topographic, and general engineering and directs the engineer effort to use these functions to help the joint force achieve assigned objectives and end states. The combat engineer function is further defined as mobility, countermobility, and survivability. JP 3-34 also guides planning, establishment of engineer staff organizations, and conduct of engineer operations. This manual extensively addresses the capabilities of each service's engineer organizations and how to integrate them into the operational plan of the joint force commander. Intimate understanding of this doctrine is required for a joint engineer officer to be successful, yet we do little or no training on these concepts.

JP 3-34 reflects and suffers from the way services now train and equip their engineer forces. Current engineer formations are structured to support the specific needs of their particular service, not the joint force, in an operational environment. This limits the ability of the joint force commander to focus engineer efforts at the time and place of his choosing. Joint engineer doctrine also recognizes the service Title 10 requirements that must be satisfied outside the joint environment. Ultimately, JP 3-34 is an effort to deconflict service requirements and at the same time gain synergy from various service capabilities. JP 3-34 is a manual that all services can live with, but it does not place the requirements of the joint force commander at the forefront, so it is going to change.

Unlike the past, when requirements were service-generated, the Joint Capabilities Integration and Development System (JCIDS) is now top-driven by the needs of the joint force and will drive doctrinal and other changes. The outlines of those changes are seen in current efforts to establish the needs of the joint force (Figure 2, page 19).

Engineer force developers from all services analyzed the established Joint Functional Concepts at the top and cross-walked them with the operational and tactical tasks in the Universal Joint Task List to establish the Joint Engineer Capability Elements (JECE). These codify the discrete warfighting effects that engineers from all services should provide to the joint force commander at all levels and throughout the spectrum of operations. Engineer DOTMLPF solutions need to focus on requirements established through analysis of these requirements. It is reasonable to assume that in the future, resourcing that does not address these needs is unlikely to be fulfilled.

The effect of the JCIDS process on future joint engineering doctrine, although unclear now, will be profound. Unlike current joint engineer doctrine, which gives the concepts of employing service assets in the joint fight, future engineer doctrine will assume much greater interdependence among the services. We will likely maintain an overarching set of joint engineer doctrinal principles, but doctrine will direct how each service will specifically support the joint force commander through application of the JECEs. For example, cross-service modularity of engineer capabilities will further increase the joint force commander's ability to employ engineer assets as needed, and doctrine will reflect this increased capability. Ultimately, these changes will give the joint force commander more options to employ joint engineer forces, because he will be focused on the desired effect and apply an engineer module to achieve that effect. The service providing the module should be transparent to the warfighter. This has tremendous implications for joint engineer training.

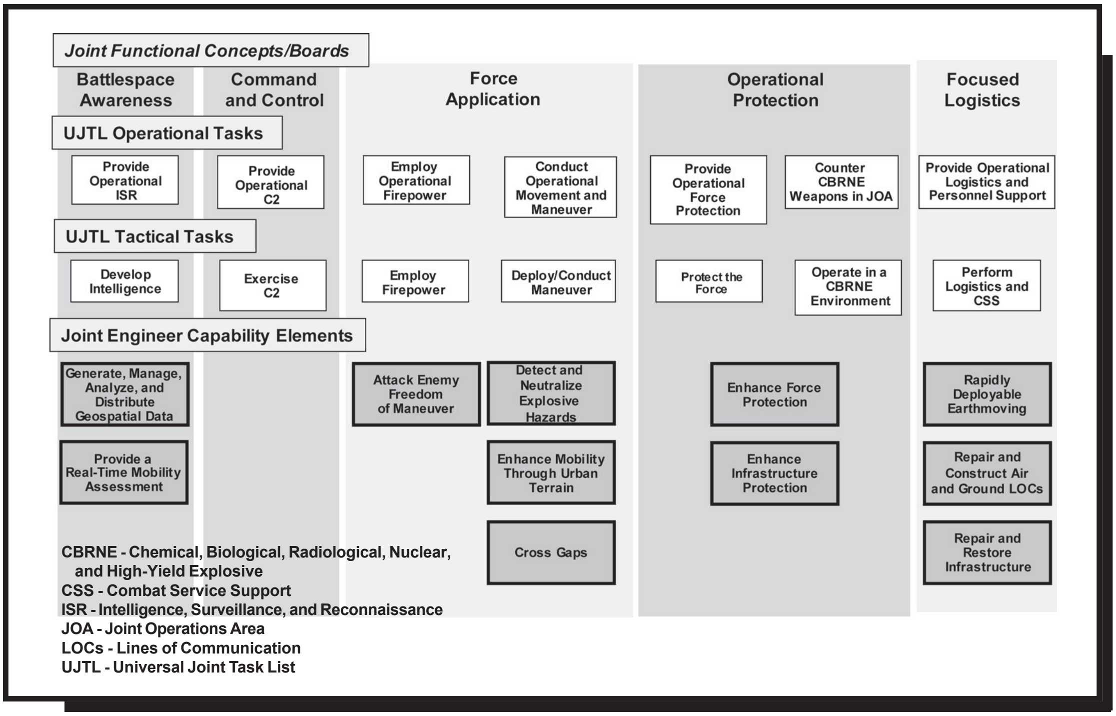

Figure 2. Top Down Crosswalk—Joint Functional Concepts to Engineer Capability Elements

Joint Officer Education of the Future

By Commander Steven C. Fischer

Engineer capabilities are in high demand, engaged in operations in Afghanistan and Iraq while supporting combatant commander theater engagement plans, routine training, and garrison support missions. To meet these challenges, the services have developed force rotation plans in which engineers perform missions traditionally executed by engineers from sister services. This is not only a challenge for the unit on the ground, it has also proven to be a challenge to engineer planning officers assigned to joint task force and combatant commander staffs. Most personnel newly assigned to joint engineer positions have little knowledge of engineer capabilities beyond their own service, limiting their effectiveness until they acquire experience on the job. Operation Iraqi Freedom showed this problem, but it isn't new.

Except for intermediate service schools, junior field grade engineer officers have few formal education opportunities to prepare them for joint engineer operations. Also, JPME has little or no engineer content. By default, most officers assigned to joint task force and combatant commander engineer staffs initially rely on their own experience and self-education. This clearly presents a steep learning curve before officers can contribute effectively by providing options and recommendations and implementing them in a joint engineer environment. An after-action review from Operation Iraqi Freedom noted, "Early planning efforts within the C-7 (staff engineer section) were hampered by a lack of knowledge of capabilities, requirements, and limitations of other service and coalition engineer forces, particularly among junior members of the staff. Action officers are often junior field grade or company grade officers who do not have sufficient joint engineer education or experience to be effective at the beginning of their assignment." To provide the combatant commander with options to meet their requirements, it is critical for engineers in a joint environment to fully understand the capabilities of each component engineer force.

The Joint Staff, J-4 (Logistics Directorate) sponsored an engineer capabilities study that examined this and other issues in detail. Involving the participation of the engineer community throughout the services and combatant commanders, the study concluded that the lack of formal education in joint engineer operations limits the ability of engineer officers to integrate their services' capabilities into missions involving joint engineer planning and operations. The study recommends that engineer officers be introduced to joint engineer operations earlier in their careers to prepare them for service with a combatant commander, joint task force, or other joint staff.

As recommended in the study, a general officer/flag officer forum—the Joint Operational Engineering Board (JOEB)—was established. The JOEB, which first met in January 2004, is the premier advisory group and proponent for operational engineering issues. Composed of senior logisticians and engineers from the Joint Staff, services, and combatant commanders, the JOEB is chartered to serve as a "board of directors" overseeing efforts to enhance joint engineer processes and capabilities to meet combatant commander requirements. One of the JOEB's first actions was to create a Training and Doctrine Working Group to address joint engineer training. This group is now organizing, prioritizing issues, and developing action plans.

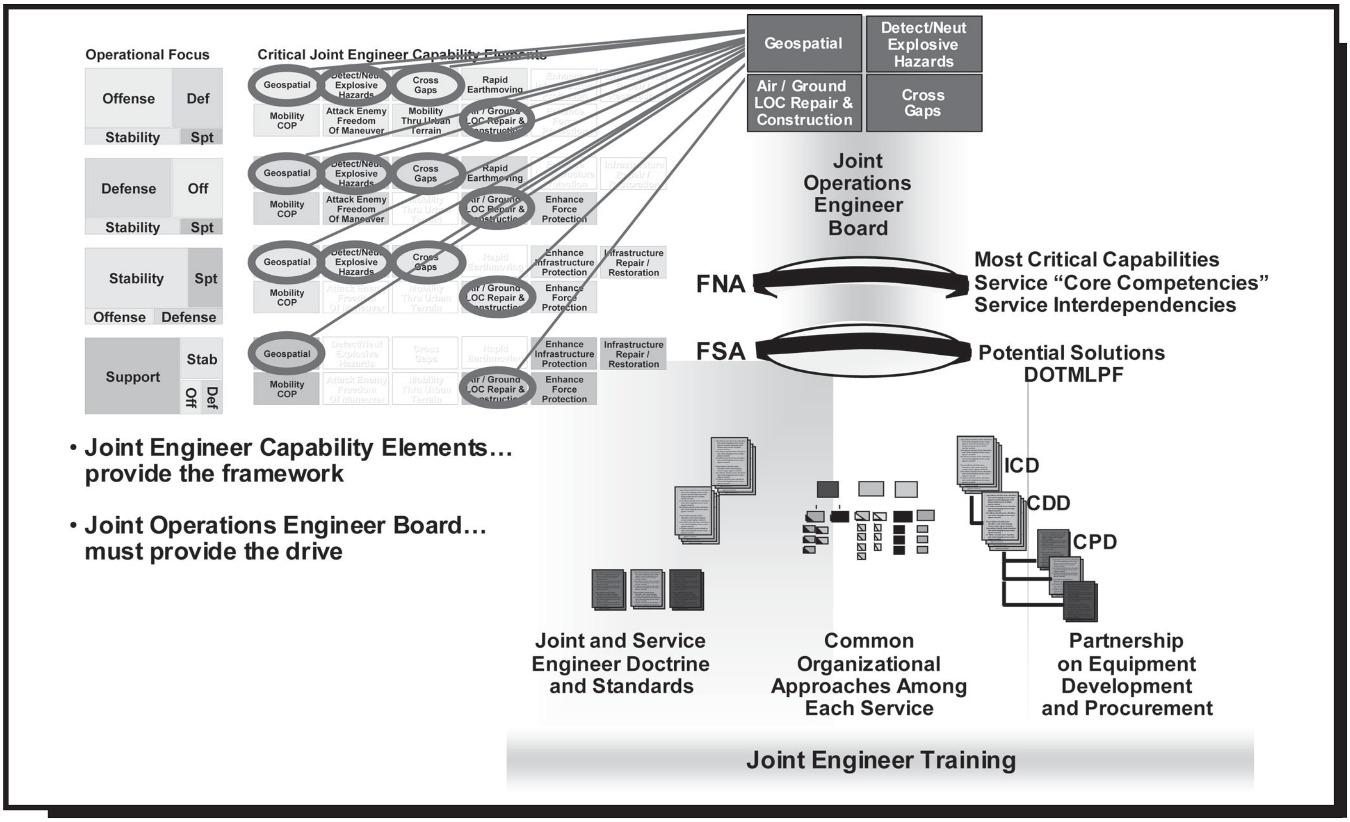

Figure 3. The Work to Be Done. . .to Fully Realize the Joint Engineer Vision

In the coming months, this working group will coordinate the details of putting together a joint engineer officers curriculum. Considerations include the following:

- At what level of professional development should joint concepts be introduced to the engineer officer corps?
- What skills do our combatant commanders expect in their engineer officers?
- Do we need a basic and/or an advanced training version?
- Will it be Web-based, taught in residence, or both?
- Where will it be taught, and by whom?

While these may be difficult questions, the joint engineer community should begin training officers to more effectively serve as joint engineers by fiscal year 2005.

Jointness used to mean "deconfliction"—ensuring sister forces weren't stepping on each other. Today jointness means services working together to ensure interoperability. At the staff level, that has been implemented through service officer representation. Tomorrow, jointness may mean interdependence, and that means leader responsibility for implementing joint engineering on the battlefield. In that evolving context, several things are clear:

- We must ensure that the hard-won lessons of today's operations are not lost.
- We must work to ensure that the leaders who will implement the joint engineer concepts of tomorrow are developed today.
- We must train our leaders and develop our doctrine to ensure that such joint approaches are implemented to accomplish the mission given to us by the National Command Authority.

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