The Joint Engineering Way Ahead

By Ms.Rachel M. Walkenbach

Current theater operations necessitate the integration of all Service engineers if full-spectrum joint engineer functions are to be attained. From combat to general engineering, our engineer Services are sharing the battlefield and expanding their capabilities to address a broad range of planning and execution efforts. Joint engineer planning can include simultaneous planning for an extreme range of engineer requirements, to include—

- Combat mission planning support.
- Improvised explosive device (IED) defeat.
- Base camp planning and development.
- Contingency contracting.
- Infrastructure assessment.
- Reachback capability utilization.
- Construction management.
- Contractor and industry relations.
- Reconstruction and stabilization engineer operations, including joint interagency, intergovernmental, and multinational (JIIM) support.
- Humanitarian operations support.

Joint engineer planning is the key to bridging the gap in full-spectrum engineer operations. Engineering capabilities from across the Services are uniting to bring high degrees of expertise to theater mission planning. Engineers are no longer able to maintain Service-centric focus areas. The entire theater is now the focus. Thus, it requires an expanded engineer knowledge and skill base, increased training, and the ability to execute large-scale theater operations. Current engineering missions indicate a demand of such magnitude that it will require all U.S. engineer forces to support the joint mission. The force multiplier in joint engineer theater operations is having technically and tactically competent engineers who comprehend the expertise and capabilities the joint engineer Services and their civilian counterparts bring to bear.

Joint Training Initiatives

The "way ahead" for joint engineering identifies training and education gaps and promotes the integration of new programs throughout the Services. Engineers from all ranks and echelons of operations are identifying the joint requirements and training gaps throughout multiple theaters. The Joint Engineer Training and Education Working Group, composed of engineer training and education leaders from across the Services, is working to mitigate these gaps by discussing key joint engineer considerations and the mechanisms to program and integrate them into our training and education systems. These senior leaders then take these considerations and recommendations for joint application to the Joint Operational Engineering Board (JOEB) to support the effort to update existing—or implement future—joint engineer programs. The joint initiatives will help integrate theater lessons learned and practical applications into our Services' training and education systems with a joint perspective and formalized education. This senior working group has generated five initiatives that address gaps within training and education and joint organizational leadership of engineers and point the way ahead in joint engineering:

- Joint Engineer Training
- Engineer Leader Competency
- Joint Engineer Training and Education Center of Excellence
- Construction Leader Exchange Program
- Military and Industry Strategic Alliance Program

Joint Engineer Training

In-theater, the joint task force (JTF) engineer cells are using the capabilities of our engineering assets from the joint perspective. JTF engineer senior leaders, planners, and mission executors are expected to understand the varied capabilities of joint engineer assets and the roles of civilians on the battlefield with them. Joint training encompasses aspects

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of planning, synchronizing, disseminating, and executing the mission. The JOEB established the Joint Engineer Operations Course (JEOC) to answer the call for joint engineer training. (See article on page 26 for a JEOC overview.) Designed for noncommissioned officers, warrant officers, and officers, JEOC teaches future JTF engineer participants the primary elements for joint staff organization, Service engineer capabilities, general engineering, and outside-the-wire considerations. JEOC is a two-phase course with a 40-hour Distributed Learning (dL) Phase open to all engineers at any time for self-development and also serves as the prerequisite for the 1-week Resident Phase course, exercising joint engineer comprehension and planning. Beyond JEOC, a wealth of joint engineer resources and opportunities await. The efforts of the Joint Engineer Training and Education Working Group are identifying the future of joint engineer training programs and mitigating gaps to establish more effective joint engineer programs and better reachback capabilities.

Engineer Leader Competency

Engineers are required to perform simultaneous combat and general engineering mission planning while maintaining the joint perspective. For those who are both planning and executing the operational mission, the engineer knowledge requirements are expanding. To prepare our forces for full-spectrum engineer operations, engineers need more cross-Service engineer training and formalized civil engineer education and training to perform joint duties with technical competency. The forward movement for our engineers integrates civil engineer degree programs or professional technical certifications into the military curricula, thus establishing technically competent engineers. Achieving engineer leader competency requires establishing Service engineers with a civil engineer education and technical performance skills. They must possess the ability to—

- Comprehend the engineering capabilities of the joint Services.
- Participate in facilities engineering and infrastructure planning.
- Conduct base camp design and planning.
- Utilize construction management programs.
- Execute contingency contracting and procurement requirements.
- Establish diplomatic relations.
- Utilize large-scale construction planning knowledge for outside-the-wire missions.

These skills require the accuracy of formal training and expertise of joint experience in theater operations. The Service engineer institutions recognize this requirement and are answering the call to provide support to combatant commanders with trained professionals.

Joint Engineer Training and Education Center of Excellence

The Joint Engineer Training and Education Center of Excellence (JENTEC) concept is derived from the Joint Center of Excellence concept and would serve as the training and education center for joint engineer training programs. The intent is to implement a greater "joint context" into collective, individual, and staff functions to enable engineers to meet theater operational requirements. The purpose of the JENTEC is to provide joint engineer Service input and oversight to joint programs with participation and recommendations to the JOEB and coordinating working groups. The JENTEC would encompass three engineering directorates—the Joint Engineer Combat Directorate, the General Engineering Training Directorate, and a Joint Education Directorate—to manage the joint engineer courses. Senior engineer training and education leaders would oversee joint training and education. They would support the establishment of organizations, develop and maintain existing programs established to support multi-Service and joint training agreements, and establish and maintain joint accredited engineer military education.

JENTEC would offer full-spectrum joint training opportunities to train engineers and civilian counterparts in all aspects of joint engineering. Joint training should include—

- Combat leader and training courses.
- Accredited joint engineering dL and resident courses.
- Assignment-oriented training.
- Joint construction management programs.
- Joint base camp planning and development programs.
- Engineer support to JIIM operations.

The JENTEC would also support Interservice Training Review Organization (ITRO) growth and provide a joint staffing process for the joint and ITRO organizations.

Construction Leader Exchange Program

The Construction Leader Exchange Program is being designed for enlisted personnel, warrant officers, and officers to establish expert engineers. They will be capable of providing engineer support within combat situations and horizontal and

vertical general engineering missions; meeting contingency and contracting requirements; and conducting reconstruction, humanitarian, and JIIM operations, regardless of Service. This program supports the leader competency effort by sharing knowledge of military construction skills and capabilities. Engineer training centers will collaborate to teach Service cultures and languages to all exchange members. This concept establishes Service engineer partnerships with civilian educational institutions to establish an engineer degree program and professional technical certifications for our engineers to develop a Department of Defense (DOD) system of expert engineers.

Military and Industry Strategic Alliance Program

This concept enhances the commonality and interoperability of DOD engineer joint equipping and procurement processes. The alliance program would establish ways to develop a common equipping process to provide like engineer equipment to all Services. Most notable is the partnership with industry to build a civilian equipment-training program. Within military organizations, the program identifies the strengths of each Service's engineers and includes ways to minimize challenges based on unique strengths, capabilities, and skills the other Services possess. Equipment standardization agreements allow forces to train on the same equipment within the training centers, matching the equipment systems currently used in theater operations.

Conclusion

Today's fight demands that engineers have expertise in planning war, peace, and reconstruction operations. The common thread is joint training and education. The type of mission support being performed also drives the process differences to perform engineering tasks. Engineers have to be educated and trained on combat engineering, contracts, procurement processes, project funding, project management, construction management planning tools, large-scale infrastructure planning, base camp planning, general engineering skills, and more. The personnel working these tasks are becoming more junior in grade, and yet joint billets require them to be smarter in operational planning and arrive in-theater with technically competent skill sets and joint engineer knowledge. This is the key to assisting combatant commands with engineer capabilities both inside and outside the wire. Leaders from the joint engineer community recognize the gaps and are taking great initiatives to provide the appropriate level of training and education to every echelon of the force.

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