UNIFIED ENDEAVOR 97-1

JOINT TASK FORCE STAFF ENGINEERS

By Captain Calvin Hegeman

The leader of a foreign country has abruptly left office, creating instability in the region. The U.S. government is very interested in maintaining peace in order to protect U.S. personnel and property. In response, Joint Task Force (JTF) 780 is formed for "Operation Unified Endeavor 97-1." The mission is to deter or, if deterrence fails, enforce peace to protect U.S. interests.

This scenario-driven computer simulation is performed at U.S. Atlantic Command's (USACOM's) Joint Training, Analysis, and Simulation Center (JTASC) in Suffolk, Virginia. The JTASC offers a unique technical infrastructure for conducting realistic joint task force exercises. It has a full array of high-tech resources, including state-of-the-art computers, large display screens, secure telephones, and audiovisual and interactive video teleconferencing systems for use internally and externally.

The series of Unified Endeavor exercises was developed in 1995 to train potential JTF commanders and their staffs to respond to crises in a realistic joint environment using computer-driven simulation. The cost per exercise is about $3 million—substantially less than the approximately $40 million it costs to conduct a large-scale, multiservice field exercise.

XVIII Airborne Corps was the JTF headquarters for Unified Endeavor 97-1. The exercise was conducted in three sequential phases over a three-month period from September to December 1996.

Phase I involved one week of classroom instruction. Staff and general officers gained an academic foundation in joint doctrine, tactics, techniques, and procedures. The seminar emphasized joint lessons learned and current and emerging issues in joint operations.

Phase II was a 2-week crisis action planning session involving more than 300 personnel from joint planning sections. After

Photo courtesy of JTASC, Suffolk, VA

The Joint Training, Analysis, and Simulation Center (JTASC) located in Suffolk, Virginia, is USACOM's automated JTF training center.

receiving the scenario and the operations order from USACOM, the JTF staff began the deliberate decision-making process. The staff then presented the JTF Operations Order and a finalized Time-Phased Force Deployment Database (TPFDD) that shows the timing and movement of military forces into the area of operation.

Phase III is Unified Endeavor's execution phase. The JTF implements the operations order in response to scenario events generated via advanced computer simulation models. Leaders and staff respond to changing circumstances that place the events in all ranges of the operational continuum—peacetime, conflict, and war. For this exercise, success meant to—

- Avoid going "kinetic," the term used for full combat operations.
- Develop "triggers," which are certain enemy actions or events that tell the commander a pre-emptive strike is necessary.

The early focus on operations other than war and deterrence missions adds credibility and legitimacy to the exercise. A full range of political and diplomatic decisions influenced military decisions throughout the operation. Information warfare is a key focus during Unified Endeavor exercises, and participants take media and world opinion into account. For instance, frequent press conferences are held and televised throughout JTASC. Anyone caught walking in the hallway may be asked by simulated reporters for an interview. Later that evening, the interview is broadcast on the Unified Endeavor News Network, a simulated news program.

Today's military actions are most likely to be contingency operations, whether they are combat operations or operations other than war. JTF doctrine is still evolving, and engineers must be part of this evolutionary process to ensure that they are postured to provide unity of effort and mission accomplishment for future contingencies.

The XVIII Airborne Corps Staff Engineer Section and personnel from other services manned the joint engineer cell during the exercise. The following considerations, compiled by the cell and the USACOM engineer observer/trainer, should improve efficiency for future joint engineer cell operations.

Joint Engineer Cell Component

Understanding how other component engineers function and their mission and equipment is important for a smooth-functioning organization. The Navy, Marine Corps, Air Force, and Army engineer units have specific skills that—once understood by the JTF engineer and his staff—can be used to their fullest potential. This is especially critical during Phase II, when the Joint Planning Group is developing courses of action. Each course-of-action planning group should include an engineer who is familiar with the capabilities of each service.

NAVFOR. Navy engineer support consists of one naval mobile construction battalion (NMCB) with 726 personnel. The NMCB can quickly deploy to force-projection theater locations to construct and improve naval facilities. The NMCB's main mission is to provide responsive military construction support, conduct battle damage repair operations (including rapid runway repair), and construct base facilities. Other missions include constructing rotary-wing airfields; airfield support structures; petroleum, oil, and lubricant systems; ammunition supply points; and lines of communications.

The NMCB can provide an air detachment that deploys by strategic airlift within 48 hours. The air detachment, a lead element of the NMCB, is composed of 91 personnel. The detachment repairs immediate war damage and constructs projects urgently required by major operational plans. For many construction missions, only an air detachment needs to deploy.

MARFOR. Marine air ground task forces (MAGTF) are integrated combined arms forces structured to accomplish specific missions. The Marine expeditionary force (MEF) is the principal Marine Corps warfighting organization. It ranges in size from less than one to multiple divisions and aircraft wings, together with one or more force service support groups. An MEF is self-sustainable for up to 60 days but may be deployed longer with external support.

The Marine engineer mission is based on the way the Marine Corps fights—as a task-organized MAGTF consisting of four elements. Each element has organic engineers, who provide mobility, countermobility, survivability, and general engineering support.

Command element (CE) engineers serve as special staff officers to the MAGTF commander. They are responsible for coordination between the subordinate element engineer units and external elements.

Ground combat elements (GCE) range in size from a battalion to one or more divisions. Marine engineers and their assets in the GCE are sourced from the combat engineer battalion (CEB) organic to the Marine division. Division engineers primarily exist to support the maneuver of the GCE. Their missions include engineer reconnaissance, assault breaching, bridging, and demolition. They also provide limited general engineering support to the division.

Aviation combat elements (ACE) vary in size from one aircraft squadron to one or more wings. Engineer assets organic to the ACE are in the engineer operations divisions, which are located in four Marine wing support squadron (MWSS) units of the Marine wing support group (MWSG). Wing engineer missions include constructing, maintaining, and improving expeditionary roads, base camps, drainage systems, and vertical and short takeoff and landing sites. They also assess bomb damage and provide rapid runway repair.

Combat service support elements (CSSE) draw engineers from the engineer support battalion (ESB) organic to the force service support groups. The ESB provides expeditionary general engineering support and engineer combat service support for the entire MAGTF. An ESB consists of a bulk fuel company, a headquarters and service company, an engineer support company, a bridge company, and three engineer line companies.

AFFOR. Air Force engineers are organized into three basic types of units:

RED HORSE (rapid engineer deployable heavy operational repair squadron) squadrons are mobile, self-sufficient, and

organized by regional responsibility. They can construct facilities for major force bed down, repair extensive damage, develop bases, and perform heavy engineering operations. RED HORSE squadrons are the lead joint engineer resource for force projection. Their missions are solely wartime related. RED HORSE squadrons form three types of deployment echelons.

RH-1 Echelon. This 16-person team deploys within 12 hours and prepares for the reception of follow-on RED HORSE elements. The team performs advance airfield surveys, including evaluations and assessments of airfield pavement, water supplies, utility systems, and existing facilities. It prepares a bed-down plan for establishing a force-projection base and compiles a list of materials required to accomplish the plan.

RH-2 Echelon. This 93-person element can deploy within 48 hours with heavy equipment capable of clearing land, stabilizing sites, performing drainage earthwork, and erecting structures essential for force bed down. This element also can perform rapid runway repair and repair bomb-damaged facilities and systems. It provides initial civil-engineering support, including well drilling.

RH-3 Echelon. This 295-person element can deploy within 6 days. It can repair heavily bombed areas and construct facilities, including expanding essential utility systems, power generation systems, heavy earthwork, and concrete operations.

Prime BEEF (base engineer emergency force) units are organized as combat support squadrons and teams. They are assigned to all major Air Force bases to provide peacetime civil-engineering and maintenance support. A large-scale Prime BEEF combat support squadron can be organized into eight types of combat support squadrons to support theater requirements. These squadrons can fully support AM-2 matting and concrete-slab rapid runway repair operations. Small specialty teams can be organized into nine teams of 3 to 48 personnel, with varying compositions to fit the mission. Skills in a specialty team range from fire fighting to construction management or whatever staff augmentation is necessary to fill known requirements.

Prime RIBS (readiness in base support) units provide combat morale, welfare, and recreation support.

ARFOR. The Army engineer organization may consist of several different packages to support the JTF commander. Engineer combat battalions perform mobility, countermobility, and survivability missions. Each battalion is structured to support a specific Army division and is organized as either light, air assault, airborne, or mechanized to support that division. Divisional engineers have limited construction ability.

The following units are most likely to be used for contingency engineer operations:

Engineer combat battalions, corps are organized as either airborne, light, wheeled, or mechanized units. The units perform horizontal, vertical, and combat engineering missions. They are designed to augment division assets and support corps rear operations.

Engineer combat battalions, heavy construct and maintain facilities and lines of communication and assist in preparing protective positions. Tasks include constructing and repairing airfields, command posts, main supply routes, and critical facilities.

Engineer battalions, prime power provide electrical power. They have two teams: power plant teams operate electrical generators, and power line teams construct and maintain up to 60 miles of high-voltage electrical power lines.

Engineer companies (combat support equipment) perform horizontal construction and sustainment engineering. They are self-supporting and include maintenance, mess, and administrative sections.

Engineer companies (assault float bridge) (ribbon) construct floating bridges up to 210 meters long for crossing traffic up to military load class (MLC) 70. For gaps longer than 210 meters, they conduct rafting operations to reduce the load capacity to MLC 60 traffic.

Engineer port construction companies develop and maintain port facilities. They construct and maintain piers, wharves, ramps, and related structures required for loading and offloading cargo.

Engineer companies (topographic) conduct topographic and geodetic surveys and terrain analysis and reproduce maps. In a JTF operation, one or more companies may support the JTF headquarters to provide terrain analysis products and tactical decision aids.

ARFOR engineers may also provide salvage diving, well-drilling, surveying, and fire-fighting teams to the JTF.

Organization

A joint task force engineer cell includes officers and noncommissioned officers from each of the services involved. The cell organized for Unified Endeavor 97-1 was located under the J3 (Figure 1, page 38). The organization is tailored to fit the mission and meet the commander's intent.

Traditionally, the engineer cell was located under the J4. This alignment may be effective in JTF operations requiring primarily civil engineering skills. When engineers are needed to conduct combat operations, it is more practical for the engineer staff element to fall under the J3.

Ideally, the engineer cell should be established as a separate staff element. Joint engineer operations are intertwined throughout the joint operational area and range from repair of critical facilities to combat operations. Also, engineers are networked to several sections of the JTF staff. They are part of the J5 planning group, J3 operations, J2 terrain analysis (including battlefield visualization), and J4 infrastructure repair and development (Figure 2, page 38).

The Joint Operations Cell (JOC) is the heart of the JTF staff. The JOC in JTASC is located in a movie-theater-sized room with three large screens in front and networked computers on every desk. All situational updates and operational decisions flow to the JOC, which includes operations and liaison officers from all sections and services of the staff and the components. The engineer operations officer, also located in the JOC, passes information to the engineer cell so timely decisions can be made. Having an engineer liaison officer in the JOC is not part of current doctrine; however, it benefits joint engineer cell operations.

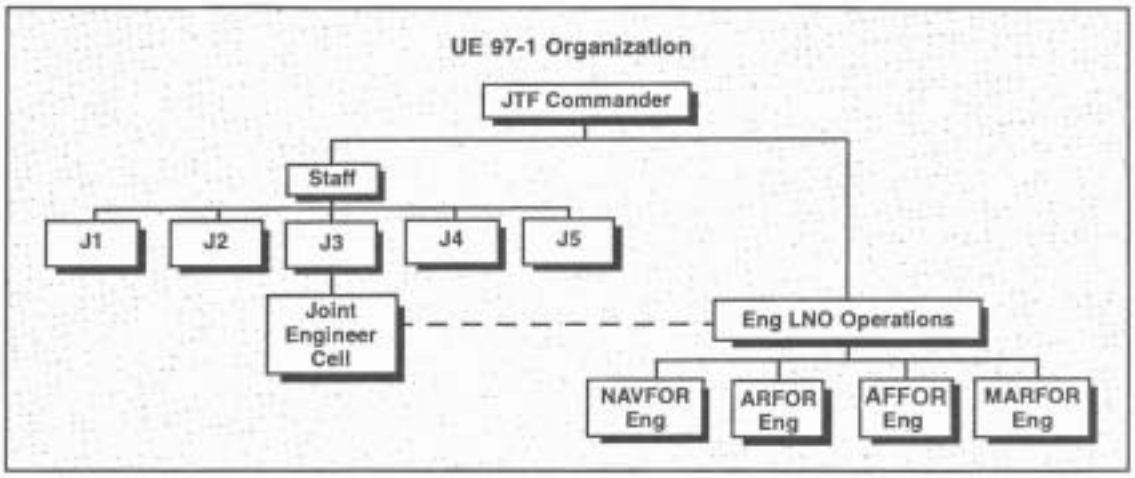

Figure 1

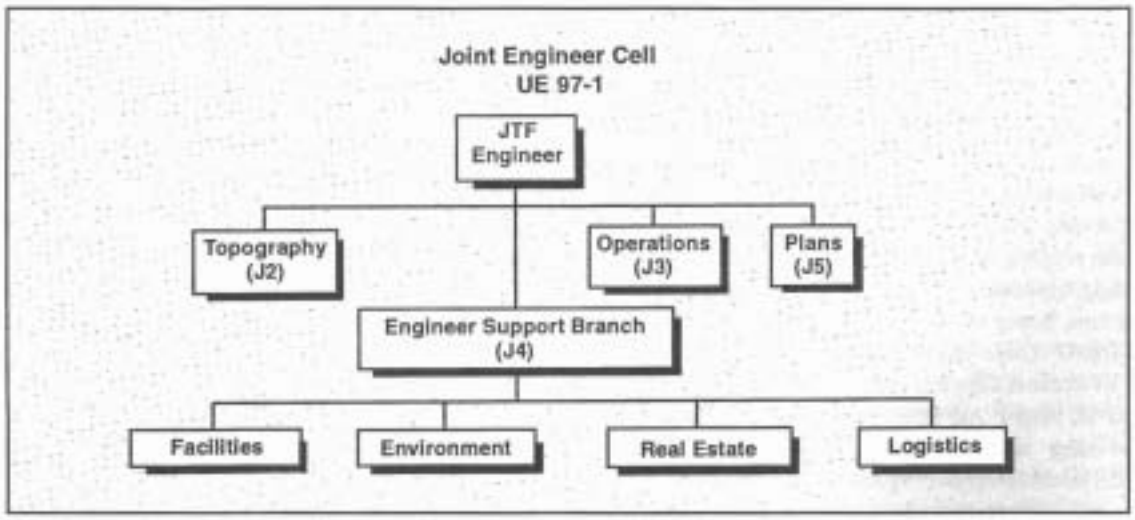

Figure 2

Explosive ordnance disposal (EOD) is not an engineer mission in the Army, although it is in the Air Force and the Marine Corps. During Unified Endeavor 97-1, the joint engineer cell was responsible for writing the EOD annex for the JTF operations order. No EOD section was created within the joint engineer cell, but EOD issues were handled throughout the engineer staff. In the future, EOD should have a staff section located in the J4 with representatives from each service. The alternative is to leave EOD as an engineer mission and add EOD personnel to the engineer manning roster.

The engineer cell topographic section provides many products for the JTF staff. One topographic team cannot provide all the products requested, so a minimum of two teams should deploy—one located with J2 Intelligence and the other in the joint engineer cell. The Marine Corps terrain teams are experts in beach topography and are required if a beach assault is part of the plan. The team has additional terrain data that can be cross-referenced with Army data to augment the picture of the operational area. Due to budget reductions, the Marine terrain team did not participate in Unified Endeavor 97-1.

Engineering Boards

The joint engineer cell is responsible for coordinating three boards:

- *The Joint Civil-Military Engineering Board* provides oversight by establishing policies, procedures, priorities, and overall direction for civil-military construction and engineer requirements.
- *The Joint Facilities Utilization Board* manages facility requirements. It evaluates and reconciles use of facilities, real estate, interservice support, and construction.
- *The Joint Environmental Management Board* establishes policies, procedures, priorities, and direction for environmental management. It includes personnel from joint staff, components, engineer units, host nation representatives (if applicable), other government agencies, and contractors.

It is important to decide early who will attend these boards and the meeting time and place. For the Unified Endeavor exercise series, consider holding one or more of these boards during Phase II. Phase III is very fast-paced, and it becomes increasingly difficult to gather the necessary personnel to attend. Consider holding more than one board simultaneously, because many of the attendees are on several engineer boards.

Automation

The JTASC is a unique building, with outstanding automation and communication platforms. The primary means of communication within the JTASC is e-mail and newsgroups. For example, once a fragmentary order is approved, it is placed in a newsgroup file. Anyone in JTASC can access the file, read it, and then store the information on their computer's hard drive. This streamlined system almost eliminates paper copies for distribution, saving time and supplies. However, considerable time was spent learning how the information flows and how to capture and catalog it for future use.

The software package used for Unified Endeavor 97-1 was *Netscape Navigator* for newsgroups and *Eudora Pro* for e-mail. Newsgroups became a cyberspace dumping ground of information, with hundreds of files. An operator worked full-time to read newsgroups, decipher what was relevant to the engineer cell, then e-mail the information to the appropriate staff members.

The preferred communications system used the "push-pull method." In theory, if someone created a document that was important for another cell, we "pushed" it to them via e-mail. That same document was also posted on newsgroups. If another cell wanted the document, they "pulled" it from the newsgroup engineer file. Not everyone used the push-pull method. Some important information was placed in newsgroups, and it was up to the cell to locate it. As a result, much information was not read. Everyone on the engineer staff should be experienced with computers and the software used during the exercise.

Global Command and Control System

The Global Command and Control System (GCCS) is a powerful new system that replaces the Worldwide Command and Control System. GCCS uses a secured Internet connection to provide a user-driven, widely distributed view of military operations. All government and military agencies can use this system to transfer and store secret data worldwide in a near real-time environment. The Secret Internet Protocol Router Network provides connectivity between GCCS sites.

Seven GCCS terminals located in the JOC were used to access information on—

- Enemy weapons systems.
- Enemy engineer equipment (with photographs).
- World weather satellite photographs.
- Current positions of friendly military units.
- Location of airports and landing strips worldwide.
- Intelligence updates from national assets.

GCCS includes a Netscape browser with limited interactivity to the Worldwide Web. Within the GCCS environment, each command center has its own home page with links to other command centers and other vital information. Netscape is a powerful program used to access this information. The GCCS version of Netscape is similar to the civilian version, making this system relatively user friendly.

The GCCS contains the Joint Engineer Planning and Execution System (JEPES). This planning tool helps the commander in chief and the service components determine the civil engineering support requirements and document their civil engineering support plan. The JEPES program extracts unit and personnel data from the TPFDD and factors in facility planning data. Then it subtracts existing facilities and computes the total facility requirements. JEPES also generates reports and graphics to illustrate requirements and provides data for Logistics Sustainability Analysis and the Logistics Sustainment Analysis and Feasibility Estimator System.

USACOM conducted a one-week GCCS user's course prior to Phase II of Unified Endeavor. GCCS provides a unified and fused picture of the battlespace, bringing joint command and control support capability into the 21st century. The full value of GCCS will not be known until the system is distributed and its capabilities are incorporated into all staff-level operations.

Compatibility

Subordinate components and the JTF staff must use compatible software systems. Presently, II MEF uses Lotus, not Microsoft Office, which makes it difficult to send and receive charts and graphs across the JTF.

Subordinate engineer elements among the components sent different types of situation reports (SITREPs). As a result, much time was spent translating information. A standard JTF engineer report should be developed early and distributed to each of the components. The joint staff J4 is developing a publication for engineers that addresses this issue. In the interim, USACOM engineers have written a standard SITREP, which will be added to the Joint Task Force Standing Operating Procedures.

Conclusion

Unified Endeavor provides a unique training medium. It places engineers from all services into a JTF configuration and teaches them how to conduct joint operations using a real-world mission on real terrain. Engineers use this experience to organize, deploy, and employ Navy, Marine, Air Force, and Army engineer forces during overseas crises. Doctrine and technology continue to evolve, forcing engineers to rethink how to conduct joint operations. USACOM allowed us to test doctrine by providing the most advanced training facility available and then assisting engineers with supportive personnel. USACOM is striving to improve efficiency and productivity for future joint task force contingency operations. Unified Endeavor is an excellent vehicle to accomplish this mission.

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