

# Revising Engineer Keystone Manual for Full Spectrum Operations

By Lieutenant Colonel Edward Lefler and Lieutenant Colonel Barry Supplee (Retired)

**F**ield Manual (FM) 3-34, *Engineer Operations*, which has been revised many times over the years, will soon be revised again. Last published in January 2004, the intent of this 21st edition is to update keystone doctrinal guidance for full spectrum engineer operations and support the new FM 3-0, *Full Spectrum Operations*, to be published in the near future. (FM 3-0 is one of the two Army keystone manuals; FM 1, *The Army*, is the other one). FM 3-34, the engineer keystone manual, also supports joint engineer doctrine in the upcoming revision of Joint Publication (JP) 3-34, *Joint Engineer Operations*, and serves as a reference document for commanders and staff, leaders, training developers, and doctrine developers throughout the Army and the joint, interagency, and multinational community.

## Evolution of FM 3-34

**W**hile many remember that FM 5-100, *Engineer Combat Operations* (previously *Engineer Operations*) preceded FM 3-34, the full story and history behind this key reference material isn't fully known to most.

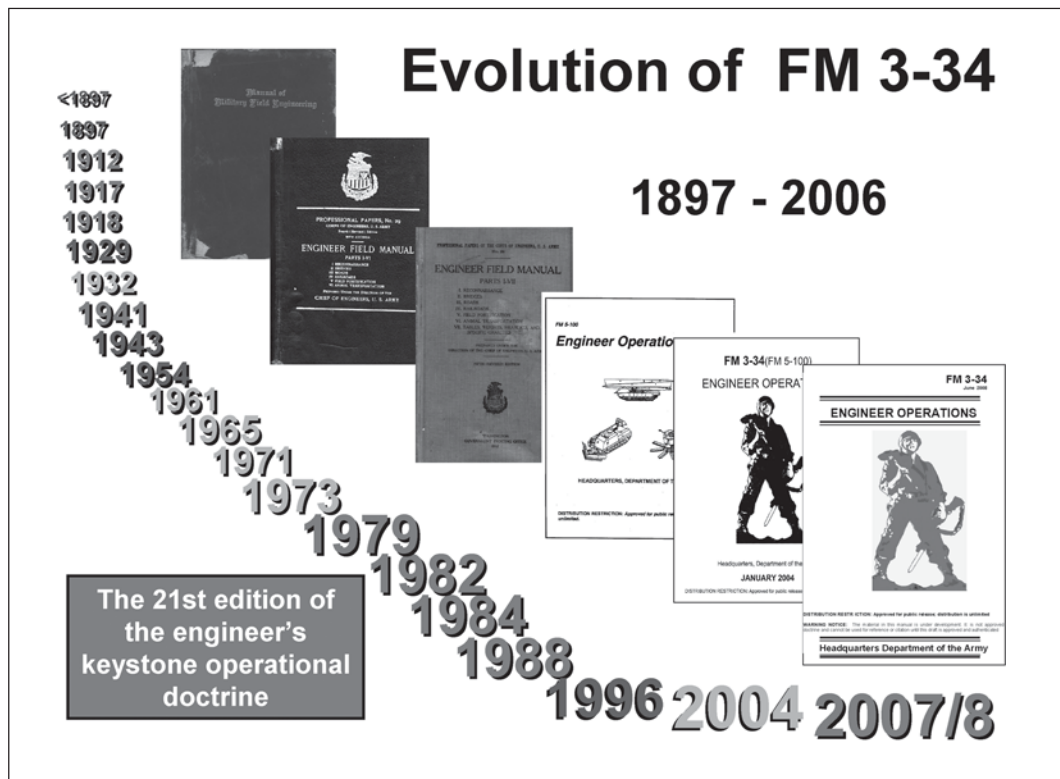
FM 3-34 was first published as the *Manual of Military Field Engineering* before 1897, and the second edition was published in August 1897. The material was prepared by the Department of Engineering at the Infantry and Cavalry School by a Captain William D. Beach, 3d Cavalry. In those days, it was printed by a civilian publishing company with the expectation that engineers would buy it at their own expense.

In 1912, it was printed as professional papers by the Chief of Engineers and simply entitled *Engineer Field Manual, Part I* through *Part VII*, and was revised in 1917 and 1918. The parts were as follows:

- I - Reconnaissance
- II - Bridges
- III - Roads
- IV - Railroads
- V - Field Fortifications
- VI - Animal Transport
- VII - Tables and Reference Data

The first numbering of the field manual (the field manual designation) occurred during the period between World War I and World War II. The August 1929 version—FM 5-5, *Engineer Field Manual, Volume I* and *Volume II*—contained information on engineer troops (Volume I) and military field engineering (Volume II). It was revised in 1932 and 1941.

Before World War II, there were very few manuals throughout the Army. The basic engineer field manual, like many others, was general in context and content. It was expected that units would train and develop their own detailed tactics, techniques, and procedures (more generally called standing operating procedures [SOPs]) to accomplish specific tasks. With the mechanization and expansion of the Army during World War II, and the lack of time for units to individually “mature” doctrinally, it was imperative that manuals become more detailed. This was when the development of specific manuals on river crossing, route reconnaissance, explosives, and demolitions began. In essence, field manuals were moving toward being more “how-to” than general in nature. Also before and during World War II, most field manuals were pocket-size with the expectation that a unit leader, officer, or noncommissioned officer would carry them around.



Being pocket-size also made it easy to keep the manual in a field locker or field desk.

In 1943, as the material grew in content and nature, FM 5-5 was split into two manuals: FM 5-5, *Engineer Field Manual: Engineer Troops*, published in October 1943, and FM 5-6, *Engineer Field Manual: Operations of Engineer Field Units*, published in April 1943. FM 5-5 and FM 5-6 were revised in May and August of 1954 respectively. In May 1961, the two manuals were combined into one again and changed to FM 5-1, *Engineer Troop Organizations and Operations*, and later revised in 1965, 1971, and 1973. In March 1979, the designation and title were changed to FM 5-100, *Engineer Combat Operations*, and it was later revised in 1982, 1984, 1988, and 1996. In 1996, the title was changed again to *Engineer Operations*. The current published version (January 2004) is still titled *Engineer Operations*, and its designation changed to FM 3-34 as the Army adopted the joint and North Atlantic Treaty Organization doctrinal hierarchy system for its numbering system.

### Current Revision of FM 3-34

The Doctrine Division at the United States Army Engineer School is leading the development of the revised manual. The development team includes writers who are former engineer officers, subject matter experts from the Engineer School and around the Regiment, as well as the community of combined arms doctrine developers who review and comment on the drafts. Senior engineer leader input

from across the Regiment is critical to the development of the manual.

Early in the revision process, a targeted working group of senior engineer leaders was created that provides guidance and ensures that all relevant information is identified and included. They initially corresponded through e-mail and Army Knowledge Online (AKO), but assembled with other key engineer leaders at Fort Leonard Wood in December 2006 for a Council of Colonels. The first council resulted in formulating and confirming the initial guidance for the writing team and the development of the detailed strawman for the table of contents and the program directive.

While the field manual doesn't seem that old, significant content and material changes are needed because of significant operational experience through our participation in the Global War on Terrorism, current operations in Afghanistan and Iraq, and other worldwide operations such as those in the Philippines and during Hurricane Katrina relief. Evolving policy and doctrine, coupled with joint and Army transformation that impacts on the Engineer Regiment, led to the development of the modular engineer force structure that we have converted to. Our doctrine and other key joint and Army manuals (recently revised or under revision) need to be synchronized with increasing focus and emphasis on stability, coupled with the recognition that the Army conducts simultaneous full spectrum operations. This impacts conducting multiple operations simultaneously with distinctly different objectives on forces in the field, the revised force structure and how it is employed, and the modified way that the Army conducts its

operations. The battlefield operating system (BOS) construct was deleted, and Army warfighting functions (WFF) were developed, making it necessary to update assured mobility.

Because of these changes, this revision will link from the three engineer functions of combat, general, and geospatial engineering to the six warfighting functions. These functions (first introduced in FMI 5-0.1, *The Operations Process*) replace the BOS construct and link to the joint functions in the new FM 3-0, and will be reflected in a soon-to-be-revised version of FM 7-15, *The Army Universal Task List*. The revised FM 3-34 will highlight and describe the critical engineer staff integration at all echelons and the importance of functional as well as multifunctional command and control for engineer elements. The manual recognizes the transformation to a modular brigade combat team (BCT)-focused Army and describes engineer capabilities within that context. In conjunction with these changes, the manual also updates integration into the Army and joint planning processes, to include considerations in the rapid decision-making and synchronization process (RDSP).

This revision will complement and integrate other recent and ongoing doctrinal updates within the engineer doctrine proponent as follows:

- Engineer reconnaissance (FM 5-170, *Engineer Reconnaissance*, will be republished as FM 3-34.170/MCWP 3-17.4) and the related infrastructure reconnaissance.
- Explosive hazards operations (FM 20-32, *Mine/Countermine Operations*, will be republished as FM 3-34.210).
- Gap (river) crossing operations (FM 90-13, *River Crossing Operations*, will be republished as FM 3-90.12/MCRP 3-17.1).
- Survivability operations (FM 5-103, *Survivability*, will be republished as FM 3-34.300/MCWP 3-17.6).
- General engineering operations (FM 5-104, *General Engineering*, will be republished as FM 3-34.400/MCWP 3-17.8).
- Environmental considerations (FM 3-100.4, *Environment Considerations in Military Operations*, will be republished as FM 3-34.500/MCRP 4-11B).

These other updates to doctrine are scheduled to be complete and available on AKO within the next six months.

### Framing the Revision

**T**he December 2006 Council of Colonels validated a basic framework for the revised FM 3-34 and confirmed the soundness of the writing team's initial outline and plan for the production of this keystone document. The manual will be framed in two major parts:

#### Part I

Part I is focused on linking engineer operations to the full spectrum framework identified in FM 3-0 and JP 3-0 and is targeted for a combined arms audience for a better understanding of what engineers bring to the fight and how to maximize those capabilities.

- Chapter 1 answers the question “Why do we need Army engineers?” and describes the implications of the operational environment and their focused effect on engineers.
- Chapter 2 answers the question “Who provides engineering?” and describes the Regiment as well as joint, interagency, and multinational engineer capabilities. A discussion on the United States Army Corps of Engineers® (USACE) will be included.
- Chapter 3 answers the question “What are engineer operations?” and describes foundations of engineer operations, including principles, functions, integration requirements, and other primary considerations for engineers.

#### Part II

Part II provides more of the “how-to” of engineer operations, but remains within the framework of FM 3-0. This part is targeted more for an engineer audience and discusses specific engineer roles, functions, and techniques:

- Chapter 4 answers the question “How do we plan?”
- Chapter 5 answers the question “How do we execute (full spectrum operations)?”
- Chapter 6 answers the question “How do we sustain (our engineer elements)?”

Currently, it has been identified that ten appendixes should be developed for the manual:

- Appendix A – Civil Support Considerations
- Appendix B – Selected Combat Support Organizations and Organic Engineer Staffs
- Appendix C – Field Force Engineering and USACE Capabilities
- Appendix D – Army Engineer Organizations and Capabilities
- Appendix E – Sister Service Engineer Organizations and Capabilities
- Appendix F – Civil Affairs, Multinational, Interagency, Nongovernmental Organization, and Host Nation Considerations
- Appendix G – Contract Construction Agents
- Appendix H – Contingency Authorities and Funding
- Appendix I – Explosive Ordnance Disposal Organizations and Functions

- Appendix J – Engineer Field Manuals and Related Joint Publications

Additionally, the December council recommended that two overarching themes guide the development of this revision:

- Primacy of the Warfighting Functions
  - Leverage engineer links to the warfighting functions to define the Regiment.
  - Adopt warfighting functions as our common language.
- Criticality of Engineer Command and Control and Staff Integration
  - Include functional and multifunctional command and control structures.
  - Emphasize engineer staff participation at all levels (to include sustainment-type units). Define doctrinal requirements, even if specific engineer staff and command and control structure doesn't currently exist organically at the proper locations in the force.
  - Broaden the description of engineer staff responsibilities to include new roles and selected historical roles that have not been focused on in the past.

### **Production and Publication**

**T**he writing team is currently preparing the first draft (author draft), which will be completed in time for a presentation and discussion during ENFORCE 2007. Based on the guidance from the review of this document and this meeting, a second draft (initial draft) will be completed in June 2007. The initial draft will be sent out for Armywide staffing, to include a focused review within the Regiment. After the comments from that staffing are received and adjudicated, a final draft will be prepared in time for a final Council of Colonels in late 2007. Other working group actions and council dates will be developed as necessary to support the production of the manual for the Regiment. The publication of this latest version of FM 3-34 is projected for fall 2008. Your participation is necessary to help make this 21st edition of the Regiment's keystone manual relevant and used by all leaders in the Regiment and the Army.



*Lieutenant Colonel Lefler is the Chief of the Doctrine Development Division at the United States Army Engineer School, Fort Leonard Wood, Missouri. He is a registered professional engineer in Nebraska and a Project Management Professional.*

*Lieutenant Colonel Supplee (Retired) is a senior military analyst with the Army Program Office of Advancia Corporation, based in St. Robert, Missouri. His last active duty assignment was as the Operations Branch Chief for the Office of the Chief of Engineers at the Pentagon.*