The *Air Force Civil Engineer* Covers 1960 - 2010

Printed on recycled paper (30% post-consumer waste)

Air Force Civil Engineer

Vol. 18
No. 1
2010

THE AIR FORCE CIVIL ENGINEER MAGAZINE TURNS FIFTY!

Air Force Civil Engineer
Vol. 18
No. 1
2010

Features

Technology

Top Photo: *SrA Mark Stidham, 577 EPBS, smoothes down cement at Bagram AF, Afghanistan. (photo by TSgt Jeromy K. Cross)*

Center Photo: *SSgt Harold Muniz, connects a receiver to a GPS base station at Port-au-Prince, Haiti. SSgt Muniz and other members of the Airfield Pavements Evaluation Team from HQ AFCESA, Tyndall AFB, Fla., surveyed runways in Haiti following the January 2010 earthquake. (photo by Capt Timothy Barnard)*

Bottom Photo: *At the RED HORSE Demolition School at Nellis AFB, Nev., two trainees from the 567 RHS, Seymour Johnson AFB, N.C., attach TNT blocks to a telephone pole during an exercise. (photo by MSgt Joseph Hajik)*

On the Cover

Since the first issue appeared in February 1960, the Air Force Civil Engineer *magazine has evolved with the engineers, the events, and the mission it records. This "cover of covers" represents a timeline of this evolution.*

The Civil Engineer
Maj Gen Timothy A. Byers

AFCESA Commander
Col Max E. Kirschbaum

Chief, Professional Communications
Dr. Ronald Hartzer

Editor
Ms. Teresa Hood

Graphic Designer
Mr. Michael Hopper

Special Graphics Support
Mr. Jim Monhollon

Air Force Civil Engineer is published quarterly as a funded newspaper by the Professional Communications staff at the Air Force Civil Engineer Support Agency, Tyndall AFB, Fla. This publication serves the Office of The Civil Engineer, HQ U.S. Air Force, Washington, D.C. Readers may submit articles, photographs, and artwork. Suggestions and criticisms are welcomed. All photos are U.S. Air Force, unless otherwise noted. Contents of *Air Force Civil Engineer* are not necessarily the official views of, or endorsed by, the U.S. government, the Department of Defense, or the Department of the Air Force. Editorial office: *Air Force Civil Engineer*, AFCESA/CEBH, 139 Barnes Drive, Suite 1, Tyndall AFB FL, 32403-5319, Telephone (850) 283-6242, DSN 523-6242, FAX (850) 283-6499, and e-mail: cemag@tyndall.af.mil. All submissions will be edited to conform to standards set forth in Air Force Instruction 35-101 and The Associated Press Stylebook. *Air Force Civil Engineer* is accessible on the Internet from AFCESA's home page: http://www.afcesa.af.mil. Individual subscriptions available via GPO (http://bookstore.gpo.gov).

50 Years of Air Force Civil Engineer

When our founders published the first issue of *Air Force Civil Engineer* in 1960, we were already building our proud heritage. Aviation engineers played key roles in World War II, even before the Air Force was established as a separate service in 1947. During the 1950s, engineers continued to serve honorably in the Korean War as the career field gained momentum and prominence.

In the 1960s, leaders within the Civil Engineering functional continued to promote civil engineering as a discipline, a profession, and a passion, and made it a top priority to ensure that our Airmen had the knowledge, skills, experience, and respect critical not only to their own personal professional development, but to the overall mission of a rapidly maturing Air Force. To facilitate the exchange of ideas and information, and inform our engineers about the latest technologies and lessons learned, 50 years ago, Maj Gen Augustus M. Minton began publication of the *Air Force Civil Engineer.*

In the introductory issue of the magazine, Maj Gen Minton wrote

> *The first issue of the* Air Force Civil Engineer *is another step forward in our Professional Development Program. The purpose of the* Air Force Civil Engineer *is to provide a medium of exchange of professional ideas and information which will result in a more effective civil engineering function in the Air Force….Through the frequent exchange of ideas in a medium such as this magazine we can accomplish the gigantic task of obtaining more efficient use of our personnel and a more economical expenditure of our construction and maintenance operation dollars.*

These words were written 50 years ago, yet you still hear me echo them today. The professional development of our Airmen continues to be one of my top priorities — to "Build Great Leaders" we must ensure that we get the training, experience, academic education, and continuing professional military education to stay current and relevant. Every Airman in our total force, military and civilian, should be seeking new opportunities to learn. Find mentors, be mentors, join professional organizations, continue your education, and continue to read this great publication, the *Air Force Civil Engineer.*

Today, we not only celebrate a milestone for our magazine, we also honor 50 years of our proud heritage and the accomplishments of all the engineers who paved the way to where we are today. The *Air Force Civil Engineer* has journeyed with us, dedicated to chronicling Air Force Civil Engineering and recording the tremendous impacts our engineers have made around the world in peacetime and in contingency operations. The magazine has been a force in promoting our career field, as well as an important tool in sharing news, knowledge, and ideas across the career field. It has been a place for Airmen to contribute their experience, discuss relevant issues, and communicate when other means were very limited. Along the way, writing an article for the *Air Force Civil Engineer* became a prestigious and recognized opportunity to demonstrate proficiency and leadership in a civil engineering subject.

On this 50th anniversary of our magazine, I tip my hat to the men and women who have been its stewards, and to the individuals who have spent their time contributing, reading, and sharing. I look forward, with all of you, to the magazine's indispensable contribution to our promising future, and what the next 50 years hold for our Civil Engineering Airmen.

Timothy A. Byers
Major General, USAF
The Civil Engineer

The *Air Force Civil Engineer* Magazine Turns Fifty!

50 YEARS

Dr. Ronald B. Hartzer
AFCESA/CEBH

The year 2010 marks a milestone for Air Force Civil Engineers. Fifty years ago, the first issue of the *Air Force Civil Engineer* (*AFCE*) magazine was published and quickly became a mainstay of Civil Engineering professional development, crosstalk, and career-field pride. One of the Air Force's oldest publications of its kind, the *Air Force Civil Engineer* magazine has been an integral part of Civil Engineering's history, reflecting the changing face of the career field.

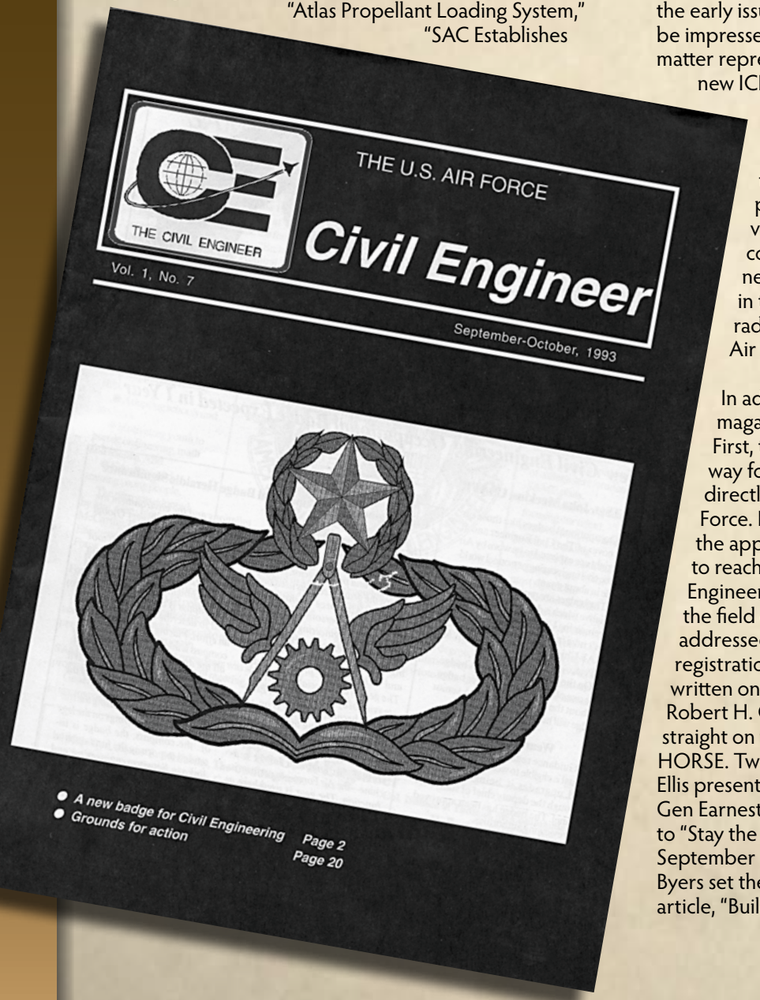
The publication has a fascinating history, with its origins closely tied to a major change in Civil Engineering and a significant push for professionalism. The person most responsible for the *AFCE* magazine is the late Maj Gen Augustus M. Minton, the director of Air Force Civil Engineering from 1957 to 1963. In the late 1950s, the people responsible for the operation and maintenance of Air Force bases were known as Installation Engineers, and had a reputation of being "handymen" rather than engineering professionals. Maj Gen Minton set out to change that mindset. In 1958, he asked the major commands "to undertake and pursue an active plan to have our eligible engineers become registered as Professional Engineers and affiliated with professional societies." Later that year, he asked Col Clarence A. "Bud" Eckert, director of the Installations Engineer School at Wright-Patterson AFB, Ohio, to brief on professionalism at the Worldwide Installations Engineer conference. A key part of his proposal was to establish a journal that would tie together the entire impetus for professionalism. Throughout 1959, Maj Gen Minton and Col Eckert worked to gain approval for the new publication, which was given in September 1959.

The Installations Engineer School was given responsibility for the professional development program and the fledgling journal. The career field had a small newsletter called "*The Beacon*," with limited distribution and scope. Col Eckert proposed eliminating *The Beacon* and replacing it with the new publication—the *Air Force Civil Engineer* magazine.

The first issue was published in February 1960 with an initial distribution

of 5,000 copies of the 32-page journal to the 100,700-person career field, which had been renamed as Civil Engineering just a few months earlier. It was introduced by a letter from Air Force Chief of Staff Gen Thomas D. White that appeared on page two. He wrote, "Air Force Civil Engineers have played a most important role in the growth of the Air Force. . . . I am confident that in the future your professional knowledge and abilities will continue the fine tradition of success already established." This sentiment was echoed in Maj Gen Minton's accompanying letter: "The purpose of the *Air Force Civil Engineer* is to provide a medium of exchange of professional ideas and information which will result in a more effective civil engineering function in the Air Force."

The cover of Volume 1, Number 1 reflected the theme of professionalism, with large "AF" letters surrounded by a dozen emblems from various professional engineering organizations. It featured articles on topics such as "Atlas Propellant Loading System," "SAC Establishes Protective Construction Branch," and "New Cost Accounting System for Civil Engineering." Of course, it also included an article on how to become professionally registered, book reviews, and even a "PE Exam Corner" that challenged the readers to solve an engineering problem similar to one found on the exam itself. The first issue also introduced the new insignia for Air Force Civil Engineering, which was used until the 1990s.



The *Air Force Civil Engineer* magazine was an immediate hit throughout the Air Force. Numerous "Letters to the Editor" from the Secretary of the Air Force down to all levels of the Air Force commented on the publication's quality and value. They also began an ongoing, professional dialogue on various topics proposed in articles, making the publication a true marketplace of ideas.

The publication was everything Maj Gen Minton had in mind — it exemplied professionalism. Reading through the early issues of the magazine, one cannot help but be impressed with the breadth and depth of subject matter represented in the articles. In the 1960s, the new ICBM program ushered in a revolutionary change in the career field. At a time when Air Force engineers were searching for increased respect and acknowledgment of their professionalism, their work on the ICBM project was a turning point in how the Air Force viewed its civil engineers; they were considered co-equal with the weapon system designers. This new-found respect — and pride — was evident in the articles that described work on Alaskan radar stations, rocket testing, and the Sundance Air Force Station nuclear power plant.

In addition to promoting professionalism, the magazine has also served three other purposes. First, the magazine has been the most effective way for Civil Engineering leaders to communicate directly with their colleagues throughout the Air Force. Because of the wide-spread distribution and the appealing format, the magazine has a potential to reach a large readership. Since the first issue, Civil Engineering leaders have written personal messages to the field on chosen topics. Maj Gen Minton's first letter addressed the topic of — you guessed it — professional registration and continuing education. Others have written on equally important topics. In 1966, Maj Gen Robert H. Curtin used his column to set the record straight on the difference between Prime BEEF and RED HORSE. Twenty years later, Maj Gen George E. "Jud" Ellis presented his famous "Nine Commandments." Maj Gen Earnest O. Robbins, II, encouraged civil engineers to "Stay the Course" following the catastrophic events of September 11, 2001. More recently, Maj Gen Timothy A. Byers set the tone for his tenure as The Civil Engineer in his article, "Build to Last … Lead the Change."

The General Minton Award

As part of the drive for excellence and professionalism, the Air Force Association began sponsoring a "Best Author Award" for contributors to the *Air Force Civil Engineer* magazine. Mr. A. H. Zonars won the first award in 1960 for his article "Sonic Boom," which addressed base civil engineers' responsibilities when citizens claimed damages resulting from sonic booms. The next year, Col Samuel Young won the award for the article, "NORAD COC—Our Modern Malta," which covered the design and construction of the NORAD facility in Cheyenne Mountain, Colo. In 1974, Maj Gen M.R. Reilly, Director of Civil Engineering, approved renaming the award in honor of Maj Gen Augustus M. Minton. The 2009 General A. M. Minton Award winner was 1Lt Christopher Smith for his article, "Facilities Engineering on the Front Line."

Second, cross-talk among engineers has also been an important byproduct of the *Air Force Civil Engineer* magazine. Authoring an article in the magazine has always been the best method to quickly get a new idea or innovation out to the career field. Thousands of copies go to every active duty, Reserve, and Guard civil engineer unit in the Air Force. Copies are also sent to engineers at Air War College, joint commands, or other non-traditional assignments; these engineers comment that the magazine is the best way they have to keep in contact with events, changes, and trends in the career field. Many senior officers can point to an article they wrote for the magazine as an important part of their career progression and professional development: Found in the pages of the magazines are articles written by Capt Jud Ellis, Capt Joseph A. "Bud" Ahearn, Maj James E. McCarthy, and Capt L. Dean Fox.

Finally, the magazine has served as a source of esprit de corps and pride for engineers. Readers were able to vicariously experience building Tuy Hoa AB in Vietnam, constructing facilities in South Korea in 1968 in response to the seizure of the USS Pueblo, managing the Israeli Air Base program in the 1980s, and providing humanitarian support to thousands of Kurds during Operation Provide Comfort. They have shared in the pride of promotions and awards earned by their colleagues. Sadly, they have also shared in the grief experienced by family and friends of fellow engineers killed in the line of action.

The magazine is a point-in-time snapshot of the career field for five decades. Just viewing the covers is a walk through the history of Civil Engineering, the Air Force, the U.S. military, and sometimes even the world. A 1961 cover depicted a Titan ICBM site under construction; a 1962 cover included a photograph of the newly constructed Berlin Wall; an issue from 1966 showed a Prime BEEF team laying aluminum matting at Tan Son Nhut AB, Vietnam. A 1975 magazine was dedicated to the "Energy Crisis and the Air Force," while a subsequent issue answered the question, "Why Engineering and Services?" In the 1980s, an issue heralded that "E&S Enters the Computer Age," while another cover highlighted "Survivability," reflecting the move to construct hardened aircraft shelters. The 1990s were ushered in with covers on the Gulf War, Air Expeditionary Force, and RED HORSE in Somalia. More recently, Iraq and Afghanistan have dominated the covers.

During the past 50 years, the *Air Force Civil Engineer* magazine has featured groundbreaking articles that made history and changed the face of the career field. Here are just a few examples.

Prime BEEF Introduced

The November 1964 issue introduced the Prime Base Engineer Emergency Force program and changed how engineers respond to contingencies and natural disasters. Authored by Lt Col William T. Meredith, who had been intimately involved in the Civil Engineering, Manpower, and Organization Study Group to evaluate how engineers respond to emergencies, the article explained how and why the program was developed. Readers throughout the Air Force learned about the four different types of Prime BEEF teams and how the military career structure had been completely revised.

RED HORSE

In 1966, the Air Force learned about a second important contingency capability for civil engineers. "Project RED HORSE" described the activation, training, and deployment of two new squadrons: the 554th and 555th Civil Engineering Squadrons (Heavy Repair). It clarified the new units' mission and how they complemented, not replaced, Prime BEEF teams. Air Force Civil Engineers now had two new symbols — a bull and horse — to represent their new contingency capability.

Engineering and Services

In 1975, the Civil Engineering and Services functions combined and an article explained this change to the two career fields. Mr. Gary Vest and Mr. Lester Henriksen explained that the consolidation was designed to "provide, through a single manager, improved customer services and the livability at Air Force Bases…. Underlying the concept is the strong belief that Air Force national defense responsibilities can be better achieved by improving the

residential and community environment of air bases." This article is indicative of the importance of the family under the all-volunteer force established in 1973.

Renewed Emphasis on Readiness

In an article from 1985, Col Harry W. Glaze challenged civil engineers to reject the "Keep Off the Grass" mentality that had developed through years of focus on customer service and quality of life; instead, readiness should once again be their number one mission. This article summarized what he described as a Readiness Renaissance within Engineering and Services led by Maj Gen Clifton D. "Duke" Wright and his deputy and later successor, Maj Gen Ellis. Wrote Col Glaze, "If there is one thing you take from this article, let it be this: Readiness is not a piece of our business; it is our business! I challenge you to step on the grass!" The aphorism, "Keep off the grass," is still used by engineers to challenge the status quo.

Battlefield Airmen

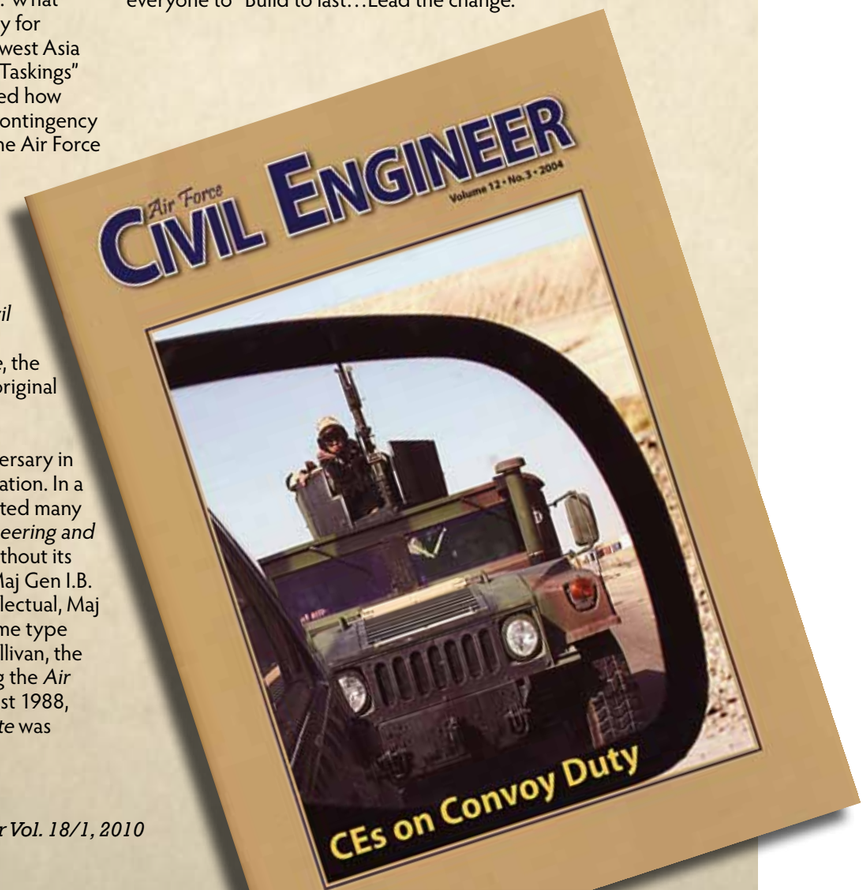
In 2004, Lt Col Jeffery Vinger's article, "Airmen-Soldiers in Iraq," described a revolutionary change for engineers. In Iraq, his unit, the 732nd Expeditionary Civil Engineer Squadron, had been working "outside the wire" and embedded with Army units providing their expertise as engineers, craftsmen, surveyors, and firefighters. What he described in this article soon became a reality for thousands of engineers who deployed to Southwest Asia under "In Lieu Of" or later "Joint Expeditionary Taskings" for the next several years. Lt Col Vinger described how history had changed from the Army providing contingency support to the Air Force in the Korean War to the Air Force returning the favor to its sister service in Iraq.

The magazine has experienced a number of name changes over the years, reflecting similar changes in the Air Force and Civil Engineering. Over the years it has been known as the *Air Force Civil Engineer* magazine, the *Air Force Civil Engineer Journal*, the *Engineering and Services Quarterly*, the *Engineering and Services Update*, the *CE Update*, and *The CE*; in 2001 it regained its original title, *Air Force Civil Engineer* magazine.

While the magazine is celebrating its 50th anniversary in 2010, it has not been an easy ride for the publication. In a 1986 cost-cutting exercise, the Air Force eliminated many of its recurring publications, including the *Engineering and Services Quarterly*, which left the career field without its own publication. Supported and prodded by Maj Gen I.B. Holley, a renowned Air Force historian and intellectual, Maj Gen Ahearn made it a priority to reestablish some type of publication for civil engineering. Mr. Perry Sullivan, the *Quarterly*'s editor, began editing and publishing the *Air Force Engineering and Services Update* in August 1988, a photocopied, desktop publication. The *Update* was produced until 1992, gradually improving in appearance and quality of articles. In 1992, it regained the name, *Air Force Civil Engineer*, and began being published in more of a magazine-style format. In 1995, the first color edition was printed, intended as a one-time feature to cover the Readiness Challenge competition. But, the response was so overwhelming that all issues since then have been printed in color.

The Air Force Institute of Technology was home to the editorial office for the magazine until 1979, when it moved to the new Air Force Engineering and Services Center (now AFCESA) at Tyndall AFB, Fla., where it continues today. The office's location enables the staff to stay in day-to-day contact with personnel working major issues for the career field.

Mark Twain has been quoted as saying, "History does not repeat itself, but it does rhyme." This may be one of those times as this magazine reaches its half-century mark. Much about the Air Force and Civil Engineering has changed since 1960. However, pursuing professionalism, stressing technical proficiency, offering unflagging dedication to the Air Force mission, and taking pride in a job well done never go out of fashion. These were found in the pages of the first issue of the *Air Force Civil Engineer* magazine 50 years ago and are still embodied in Maj Gen Byers' challenge for everyone to "Build to last…Lead the change."



Connecting the Transformation Dots

Asset Management • NexGen IT • Program Groups

Maj Gen Timothy A. Byers
The Civil Engineer

I take great pride in the fact that our Air Force Civil Engineers are in greater demand now than ever before. Our high OPSTEMPO is a testament to the direct impact we have in supporting the Joint and coalition mission, and a credit to the expertise and dedication of our outstanding Airmen. As The Civil Engineer, part of my job is to look at the challenges ahead and steer us on the best course to continue to provide this unrivaled support to the installation commander and the warfighter. Toward this end, we have launched many ongoing initiatives, often referred to collectively as "CE Transformation," that are helping us adapt and overcome our day-to-day challenges by using the best ideas available, from within our community and from the commercial world. Collectively, our efforts focus on three areas: Build Ready Engineers, Build Great Leaders, and Build Sustainable Installations.

I want to take this opportunity to connect the dots between a few of our key CE Transformation initiatives: Asset Management, NexGen IT, and Program Groups, which are an important element of our new Governance Structure. All of our CE Transformation initiatives are interrelated and build on each other to deliver fundamental improvements in how we do business, but the connection between these three is especially important for the overall success of our transformation.

Asset Management helps us determine our top mission priorities to more effectively allocate resources and funds

NexGen IT will improve our access to information necessary to make those decisions

Program Groups allow base-level needs to be captured in refined processes and IT capabilities

Asset Management

Asset Management is really about taking a broader, more holistic view of our entire facility and infrastructure assets, how they should be integrated, and what service or support they're intended to provide. It involves everyone, not just those in the Asset Management flight; leaders from Programs, Operations, and Resources must also be actively and collaboratively engaged. Ultimately, this new approach will help integrate functional stovepipes, strengthen resource advocacy, and optimize resource allocation.

Over the last year, we've come a long way in implementing our Asset Management approach and it's paying off. So far, approximately 83 major installations have developed Activity Management Plans (AMPs), which capture the underlying assets, issues, and requirements to support an expected level of service for each of Civil Engineering's five main activities. These AMPs are now beginning to fuel resource decisions and drive priorities for work orders and facility projects. AMPs are supporting requirements advocacy for the FY12 POM through the "Fix Infrastructure" Strategy currently in development. For the first time, we can "roll up" all of our requirements within specific activities, such as airfield pavements, across bases and MAJCOMs, and produce an integrated priority list across the Air Force. The AMPs are helping drive a "worst first" effort that targets assets with the greatest need first, for better allocation of our limited funds, putting our dollars where we need it most. Your efforts in the AMP builds are helping us show senior leadership what impact the years of taking risk in infrastructure and reduced funding has had on our installations.

Asset Management is how we get the job done every day and where we spend the next dollar. Asset Management principles will help us Build Sustainable Installations, by allowing us to make more informed decisions on how to best use our resources based on respective costs, risks, and benefits.

NexGen IT

Critical to making these decisions is having access to relevant, real-time data and information, which is why our NexGen IT program is such a significant component

of Asset Management. The data collected and reported by our new IT tools will be used at every level — base, MAJCOM, and headquarters — to make smarter decisions, justify funding requests, determine shop priorities, and prioritize "worst first" facility projects and MILCON.

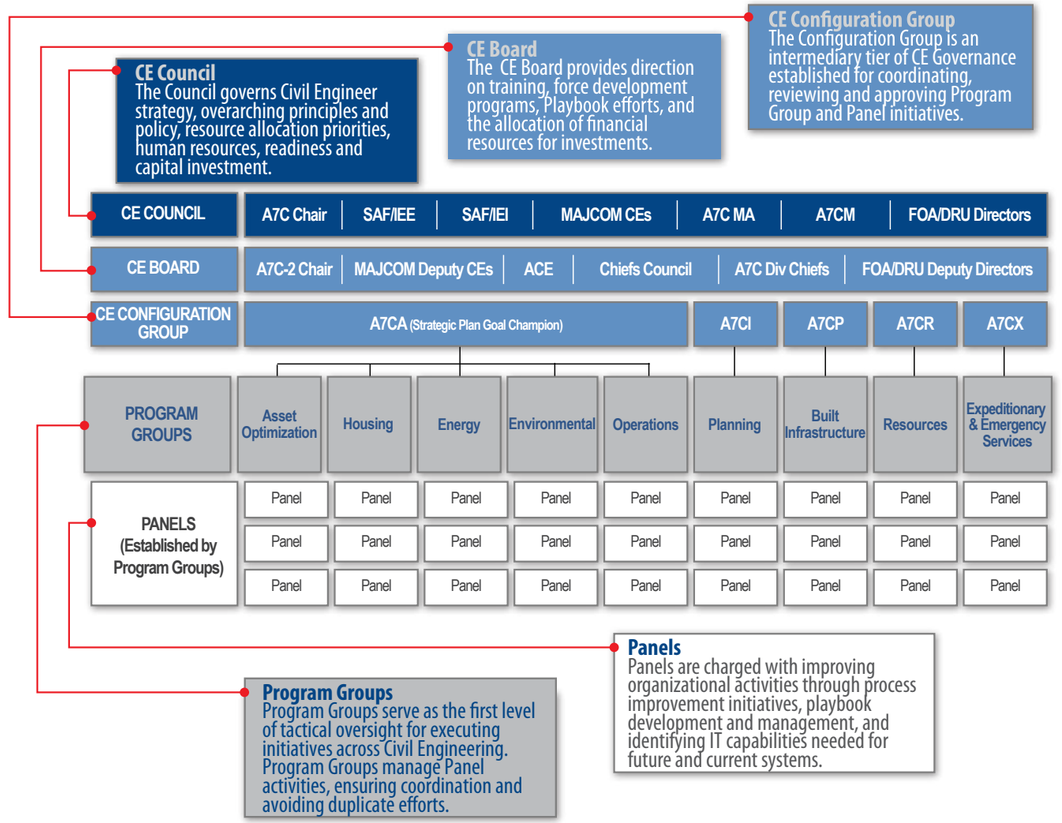
In January 2010, I approved our NexGen IT Program Management Plan as one of my top priorities for the new year and it is currently scheduled for deployment in 2012 (see "NexGen IT to Deliver Mission-Focused Capabilities in 2012" on page 12).

NexGen IT will integrate our existing resources and upgrade our IT capabilities with the latest technology. We realize that commercial IT systems offer significant improvements to our current legacy systems, and we now have a formal plan in place to close that technology gap and better enable our ongoing transformation initiatives.

Personnel at all levels are working hard to understand how civil engineers can better manage our data, joining the ongoing efforts to indentify only the data we need, standardize it, and clean it up in our legacy systems. Resources like the A-File and S-File pull data from both ACES and IWIMS, and provide us with a critical bridge solution until NexGen IT comes online and takes installation management to another level. Until then, we must work hard to make sure the data in our current systems is up to date and maintained properly.

NexGen IT will offer us capabilities we have never had before within the Civil Engineering community. It will give us access to total cost of occupancy data in one user-friendly environment. NexGen IT will also project Real Property Installed Equipment and built infrastructure requirements automatically. These projections will be based on the age of the equipment and the facility, and will automatically program the required Recurring Work Program and projects in the appropriate program year.

Figure: New CE Governance Structure.



Program Groups within the New CE Governance Structure

As we implement our Asset Management culture and continue to work toward NexGen IT, your collective experience and expertise is critical to help us solve our greatest challenges. This is why Civil Engineering has reorganized its leadership bodies to facilitate a more inclusive and transparent decision-making process, and to provide a greater means for civil engineers at the installation level to share their best ideas.

In September 2009, I approved a new CE Governance Structure (See Figure) to help communicate Civil Engineering policy and doctrine; manage process and information technology improvements; and execute initiatives across a variety of programs. The new governance structure is designed to better manage the progress toward our strategic goals to Build Ready Engineers, Build Great Leaders, and Build Sustainable Installations, and the associated objectives outlined in the 2009-2013 CE Strategic Plan.

One important new element to this Governance Structure is the establishment of Program Groups across Civil Engineering's nine core business areas (see "New Program Groups Align Strategy with Base-level Ops" on page 13). Program Groups ensure processes are reviewed from the highest level and across Civil Engineering to identify and drive efficiencies, while providing a means to bridge the gap between policy (the "what") and Playbooks (the "how").

A key role of Program Groups is to commission Panels that examine CE activities and, as necessary, execute directives from the CE Council and Board. Panels are composed of personnel from the A7C Divisions, FOAs, MAJCOMs, installations, and associated Secretariat and DOD agencies with the expertise to develop and carry out a specific initiative. These Panels represent you, and if you have a better idea or innovation, you can recommend this new process to a Panel to be evaluated and possibly raised to the Program Group level. These Panels work to ensure new policies and directives are aligned with the reality of our day-to-day operations. Some Panels will be established indefinitely to work on continuous or sustained issues; others will be closed at the completion of their work. The work of some key initiatives Panels may include identification of best practices, development of Playbooks, and definition of IT capabilities.

Looking Ahead: CE's Strategic Initiatives Ensure Mission Success

The Air Force is facing operational and resource challenges that are driving its most significant changes since the post-Cold War drawdown of the early 1990s. We've sought to address these challenges by integrating best practices from industry; standardizing business processes; and embracing an Asset Management approach to managing our built and natural infrastructure. As we move forward with these initiatives, we've also recognized the need to implement a new IT capability to close the technology gap and institute a new governance structure to facilitate improved decision making and continuous process improvement. Our ongoing efforts are interconnected, and build on each other to deliver fundamental improvements in how Civil Engineering does business.

I can't do it alone. I need you to be innovative, to identify new technology tools and equipment, and to improve our processes, to help us be smarter, faster, better, and cheaper.

The new Governance Structure is designed to better manage the progress toward our strategic goals to Build Ready Engineers, Build Great Leaders, and Build Sustainable Installations

NexGen IT to Deliver Mission-focused Capabilities in 2012

Mr. Alexander Earle
HQ USAF/A7CRT

On Jan. 11, 2010, Maj Gen Timothy Byers, The Civil Engineer, approved the NexGen IT Program Management Plan, formalizing an ambitious, long-term program that will replace legacy systems including IWIMS and ACES and implement the latest commercial information technologies to better support civil engineers everywhere.

"The strength of our information technology is critical to our mission success," said Maj Gen Byers. "It must provide us with the reliable, up-to-date information we need to prioritize our projects, validate our funding requests, and support our Asset Management culture. We need to think and be more like Wal-Mart — delivering supplies and equipment to our Airmen when and where they need it," he said.

SrA Edgar DeNard, 316 CES, Andrews AFB, Md., uses a hand-held digital scanner to streamline acquisition of data related to HVAC maintenance. (photo by Ms. Katrina Tavanlar)

NexGen IT will be implemented in a series of six spirals, with initial efforts focused on providing an integrated work management capability that will include Real Property Management, Work Management, Supply Management, Energy Management, and Project Management.

"The approval of this plan is an important milestone that puts us on the right path toward an integrated IT and data solution that will better meet our operational and strategic priorities," Maj Gen Byers said, noting that the Civil Engineering community will begin to see new capabilities no later than 2012.

NexGen IT will deliver robust, mission-focused capabilities to help civil engineers work more efficiently, while providing the real-time data necessary to make important daily and strategic decisions.

- **No more redundant data entry.** NexGen IT will consolidate and integrate data and IT resources to provide greater "data transparency," which means computer systems will communicate with each other so data will only have to be entered once. For example, data entered by the Programs Flight can be seen by the Asset Management or Operations Flights or at the MAJCOM.

- **High-tech data collection.** NexGen IT will leverage high-tech devices for capturing and uploading information more efficiently, like hand-held scanners and digital pens used by shop craftsmen and engineer assistants to download information directly to the network.

- **Simplified data calls.** NexGen IT's integrated approach will also put real-time information in one user-friendly environment. This will simplify time-consuming data calls by the MAJCOM by putting critical information just a mouse click away versus spending hours and hours reconciling spreadsheets.

- **On-site supply orders.** With real-time supply information at their fingertips, personnel will be able to check for available parts, either from a laptop computer or hand-held device, and reserve and order them without ever leaving a job site.

- **Automated Real Property Installed Equipment requirements.** NexGen IT will automatically project Real Property Installed Equipment, or RPIE, and built infrastructure requirements based on the age of the equipment and facility, and program the required Recurring Work Program, or RWP, and projects in the appropriate program year for the Operations Flight.

- **Total cost information in one place.** NexGen IT will give personnel easy access to the up-to-date cost information that currently resides in separate or disconnected systems. For example, this will present energy, custodial, and waste removal costs in one user environment, providing a complete site picture that will support more informed decision making at all levels.

Over the past year, functional and technical experts from across the Civil Engineering community have worked together to identify current IT challenges and determine what new capabilities are needed to support you at the base and MAJCOM, and to support the mission. These insights will help ensure NexGen IT will effectively meet current and future requirements as the program moves forward.

Mr. Earle is the Chief Information Officer, Office of The Civil Engineer, Headquarters U.S. Air Force, the Pentagon, Washington, D.C.

New Program Groups Align Strategy with Base-level Ops

Maj Christopher Meeker
HQ USAF/A7CIS

In September 2009, Civil Engineering approved an updated Governance Structure that established an inclusive and transparent decision-making culture with new Program Groups to manage initiatives across nine core activities: Asset Optimization, Housing, Energy, Environmental, Operations, Planning, Built Infrastructure, Resources, and Expeditionary and Emergency Services.

"Program groups will serve as workhorses to identify the best practices and innovations that will make our day-to-day work activities better," explained Maj Gen Timothy Byers, The Civil Engineer.

As the "building blocks" of Civil Engineering, Program Groups are the first level of tactical oversight for executing initiatives across the community, driving coordination and partnership in base-level improvements.

The concept of Program Groups is not new to Civil Engineering. Civil Engineers have long leveraged their combined expertise to provide insight to leadership on matters such as strategy, IT management, and resource allocation. Program Groups align Civil Engineering's strategic vision with base-level operations, and were formed to manage the continuous improvement of policy, process, IT, performance measurement, Playbook processes, and communication, as well as the impacts of these efforts on Civil Engineering.

"Every one of us has a job to do on a day-to-day basis, and that has not changed as a result of this new Governance Structure," Maj Gen Byers said. "What has changed, however, is that there is now a mechanism in place to ensure what you do is helping Civil Engineering meet its mission more directly, and that your leadership has the visibility and insight to give you the tools you need to achieve success. More importantly, a good idea at one base can be shared and benefits reaped at all our installations."

This new Governance Structure will involve a broad range of experts from across Civil Engineering through the development of targeted "Panels." A primary role of Program Groups is to commission Panels that will examine day-to-day activities to identify and adopt best practices; define IT requirements; and recommend policy revisions. Installation-level personnel will make up the majority of Panel members and will provide expertise to develop and carry out these specific initiatives.

In essence, the new CE Governance structure formalizes the process by which civil engineers collect information and coordinate efforts, reducing possible redundancies and ensuring efforts are in line with Civil Engineering's overall strategic direction. The Governance Structure makes Civil Engineering's leadership more capable of properly organizing, training, and equipping civil engineers for the challenges ahead. Moving forward, the new governance process will help avoid duplicative initiatives and reporting while improving overall transparency of decision making. Civil engineers engaged in governance will have visibility on work occurring across the community, and will have the opportunity to actively contribute to transformation projects, business process reengineering, and other continuous process improvement initiatives.

Maj Meeker is Programs Manager, Strategic Initiatives, Office of The Civil Engineer, Headquarters U.S. Air Force, the Pentagon, Washington, D.C.

Mr. Jerry Vesey, 37 CES, observes the settings on a non-surge check valve, part of a system that delivers fuel to aircraft flying to and from the Kelly Field Annex. (photo by Ms. Robbin Cresswell)

History in the Making:
Birth of the Expeditionary Prime BEEF Squadrons in Afghanistan

Maj Kevin Osborne
52 CES/CEO

Few will have the greatness to bend history itself, but each of us can work to change a small portion of events, and in the total of all those acts will be written the history of this generation. *Robert F. Kennedy*

It is a dynamic time to be an Air Force civil engineer. With the war in Iraq nearing the mandated withdrawal of U.S. troops, and the war in Afghanistan ramping up, we have proven to be critical enablers in support of the warfighter. Recently, more than 60 percent of deployed Air Force engineers were in Joint Expeditionary Taskings (JETs), and the DOD joint engineering force has capitalized on this by aggressively pursuing our skill sets.

Few of us during a military career will ever be given a chance to close down a detachment, let alone stand up a squadron. With a move from Iraq to Afghanistan and the history-making establishment of Air Force Expeditionary Prime BEEF squadrons, my team was fortunate to be involved in both challenges.

In April 2009, I was a member of a 57-person team composed of 11 AFSCs, assigned as JET Airmen for the next rotation for 732 ECES, Detachment 10, at Contingency Operating Base Adder, Iraq. We were one of three construction companies (Air Force, Navy, and Army) embedded with the 14th Engineer Battalion. Our mission was to expand some rural bases and build others to house troops displaced by a security agreement requiring U.S. troops to withdraw from major cities by the end of June 2009. After convoying more than 27,000 miles and completing 29 projects at 11 forward operating bases (FOBs), our mission ended. As part of the 2009 Afghanistan troop surge, we were given a new mission: lead an ADVON team for the AFCENT initiative (directed by CENTCOM) to stand up Prime BEEF Squadrons to support the build up to increase capacity for air and ground forces across Regional Command - South and Regional Command - East.

Maj Gen (Brig Gen at time of photo) Timothy Byers, The Civil Engineer, and other members of Air Force Civil Engineering senior leadership particpate in the Sept. 18, 2009 groundbreaking ceremony for the 777 EPBS. (left to right) Col Brian Duffy, Col Theresa Carter, Brig Gen Dave Howe, Maj Gen Byers, Col Brian Yolitz, and CMSgt Patrick Abbott (U.S. Air Force photo)

The Making of a Squadron

The growing requirements within U.S. Forces - Afghanistan (USFOR-A) for installation engineering provided an opportunity to leverage the unique skills Air Force civil engineers bring to the fight. There were already eight separate Air Force teams in Afghanistan — Facility Engineer Teams and Base Operation Detachments — operating under a variety of decentralized OPCON/TACON arrangements dedicated to individual FOBs. A FRAGO by CENTCOM outlined the realignment of USFOR-A installation engineering responsibilities under an Expeditionary Prime BEEF Group (EPBG) and most Air Force civil engineers under a single component command — AFCENT. While each Expeditionary Prime BEEF Squadron (EPBS) would provide direct support to USFOR-A and their delegated regional command leads, OPCON/TACON/ADCON responsibilities were aligned under AFCENT — a first in Air Force Civil Engineering history. The plan was to establish two squadrons — one to "hub and spoke" out of Kandahar AF (777 EPBS) and the other from Bagram AF (577 EPBS); both would work for the commander of the 577 EPBG, who would report directly to AFCENT. This concept would give unity of command and effort and provide robust installation engineering, master planning, project management, and light troop labor for repair/construction coverage of all FOBs, focusing on priorities and maximizing efficiency of limited engineering resources. This move allowed Air Force engineer leadership increased responsiveness, flexibility, and theater-wide integration of engineer forces to ensure the most efficient and effective use of assets in meeting the supported commander's priorities. The Prime BEEF squadrons would now be empowered to determine the tactics, techniques, and procedures to best leverage our unique skill sets against USFOR-A priorities.

Birth of the 777 EPBS

The ADVON team arrived at Kandahar AF in early July, but decisions at USFOR-A on how best to leverage this new concept, more from the command and control aspect than execution, delayed the FRAGO's release. While our team was en route, 85 tons of WRM, valued at $3M, were being mobilized to support the new squadron. However, because we did not officially exist, we could only begin beddown planning but not coordination with external agencies at Kandahar. Our team was placed on the books of the newly established 451 AEW. The 809 ERHS graciously housed our team in their compound, and with no compound of our own but our billeting tents, 809 ERHS and the 451 ECES allowed us to use their facilities at night.

Proper coordination made this beddown even more of a challenge; unlike Bagram AF, where U.S. Forces controlled the base, Kandahar AF was under the control of the British and 13 other NATO coalition partners.

Between the time when we arrived and when the FRAGO was officially released, the ADVON team spent many long, grueling weeks surveying potential beddown sites; designing multiple beddown plans; working with FM to establish our own funding account and delegation of approval; and preparing requests for project materials, shop tools, furniture, admin supplies, and bench stock items. The remaining 75 days proved just as challenging and rewarding. The ADVON team began conducting site surveys in support of future projects, including designs, execution plans, and bill of material lists. Work began with AFCENT on establishing our supply accounts, vehicle authorization list, unit manning documents, TPFDD flow, and sourcing of equipment. Phase I plans for the initial beddown of WRM assets and supporting contracts were initiated and executed. Plans for Phase II's semi-permanent structures were finalized, briefed, and coordinated. Teams began forward deploying in support of some of the first official projects for the newly established 777 EPBS. The composition of the team was ideal, and the experiences we gained in Iraq proved instrumental in ensuring we met IOC on such a tight timeline. However, the most important challenge we faced was the availability of real estate.

Creating the First Joint Air Force Engineering Compound

In our search for a suitable piece of soil to call our own, the ADVON team soon realized there was opportunity for efficiency at Kandahar AF. Though we were offered other plots of land at various locations, we held out despite a 45-day delay due to the temporary occupation of the section we desired. This decision supported the team's vision — an Air Force engineer compound that would complement the future location of a U.S .Forces Engineer Compound. The master plan included expansion of existing RED HORSE real estate. The 777 EPBS would build adjacent to this property on the east; and the 451 ECES would relocate to the northern end of the 777 EPBS compound, sharing a boundary with the 777th's material storage yard. Given that the 777 EPBS and 809 ERHS provided support to the same customer, the 30th Naval Construction Regiment (NCR), this vision allowed for the sharing of a common boundary, MWR facility, and lodging area. This $13M joint master plan included

the construction of 18 semi-permanent facilities and supporting infrastructure to sustain all 3 squadrons. It masterfully ensured Air Force engineering synergy within the joint environment. The master plan was first briefed to U.S. Forces, and then the NATO Alliance. The plan spanned 18 months of construction and was approved for execution with one caveat: reengage before each phase of execution to ensure it still supported the warfighter in the dynamic, changing environment. The 30 NCR agreed with the strategy and began plans to move their operations out to this area of the airfield.

The U.S. Forces Engineer Compound would help ensure partnerships flourished for all engineer components, including the 30 NCR, 777 EPBS, 809 ERHS, 74th and 22nd Naval Mobile Construction Battalions, 14th and 19th U.S. Army Engineer Battalions, and the U.S. Army's Logistics Contract Augmentation Program. The ADVON team's early insight and perseverance paved the way for future success. In just 45 days, contracts were beginning to mobilize in laying the foundation for the new compound. And just like clockwork, the first official Airmen of the new 777 EPBS began arriving shortly thereafter.

"I am honored to be the first commander of the 777th Expeditionary Prime BEEF Squadron, of what will soon become the template for all future joint engineer taskings," stated Lt Col Jason Dudjak as he assumed command of the 777 EPBS on September 17. "We have a long road ahead of us, but by working together and leveraging our unique capabilities, we can persevere."

The groundbreaking ceremony for the new squadron occurred shortly thereafter, attended by The Civil Engineer, Maj Gen Timothy Byers, as well as Brig Gen Dave Howe, ACC's Director of Installations and Mission Support, Col Theresa Carter, AMC's Director of Installations and Mission Support, Col Brian Yolitz, Director for Installations, USAFCENT, Col Brian Duffy, Deputy Commander of the Joint Force Engineer Command, HQ USFOR-A, and CMSgt Patrick Abbott, The Civil Engineer's Chief of Enlisted Matters.

"Since the inception of Air Force civil engineering, our CE warriors have been a driving force in supporting operations overseas," said Maj Gen Byers. "Much like our early CE veterans spearheaded the development of Prime BEEF units in the 1960s to support operations on the front lines in Vietnam, we are at it again, supporting the coalition warfighter in Afghanistan."

The 777 EPBS's Role in Support of Military Operations

Over the roar of fighter jets, the buzzing of unmanned aerial vehicles, and the hum of cargo aircraft, one can hear hammers pounding on 2x4's. Currently, the 777 EPBS is furiously building for an influx of troops after President Obama announced he would send an additional 31,000 troops to Afghanistan.

"Battalions are coming in whether we like it or not…and how quickly we can bed them down will determine if they are sleeping outside in a cot huddled in their sleeping bag or in a shelter," said CMSgt Larry Alt, the 777th's superintendent.

Airmen of the 777 EPBS construct the first tents on the new beddown site at Kandahar AF, Afghanistan. (U.S. Air Force photos)

The coming months will only bring more work, but the Expeditionary Prime BEEF Squadrons are up for the challenge. The soldiers will need shelters to sleep in, dining facilities to eat in, and bathrooms and showers to use as well as heat in the winter and air conditioning in the summer. The engineers are working these issues, but it will take time as they work with the many different battlespace owners in Regional Command - South: the Marine Expeditionary Brigade, the Stryker Brigade Combat Team, and Combat Aviation Brigade. More than 100,000 U.S. and NATO troops are presently in Afghanistan. The addition of 31,000 more U.S. troops will bolster the already 68,000 we have in country. Most of the surge will be concentrated on the southern part of Afghanistan in the Kandahar and Helmand Provinces. Helmand, in the southwest, is relatively flat and remote with little infrastructure and no major city. Kandahar, known as the spiritual capital of the Taliban, is in the southeast and is also a hotbed for fighting. The country is much less developed than Iraq and there are few paved roads outside the largest cities. The unpaved roads make it difficult to mobilize Airmen and construction supplies, so helicopters and C-130s are relied upon heavily. But the 777 EPBS, composed of a robust force of civilian and military alike, now have the tools necessary to persevere and ensure their place in history.

The Road Ahead

This new Prime BEEF organization will serve as the template for future joint engineer operations. It is being incorporated into joint doctrine and will be the basis for Joint Forces Command's standing joint task force organization for war and counterinsurgency and humanitarian relief operations. The cornerstone laid in the summer of 2009 at Kandahar AF is currently being implemented across Iraq; and the beddown template used for the 777 EPBS was used to support the April 13, 2010 activation of the 877 EPBS in Afghanistan.

In September 2009, 45 years after the Air Force established and implemented the Prime BEEF program, the first Expeditionary Prime BEEF Squadrons were activated in Afghanistan. Engineers will read history books of this generation's involvement in these wars, but, for the next few years each Air Force engineer will write history. We will write new chapters; whether it be from the dusty fields in the Helmand Province of Afghanistan or the now thriving streets of Baghdad; whether it be the history of the United States military or the history of our coalition partners in NATO's International Security Assistance Force, let it be known that Air Force engineers have led the way, and we have not disappointed!

Maj Kevin Osborne was the commander of Det 10 in Iraq and served as the Prime BEEF ADVON Beddown Unit Commander in Afghanistan. He was deployed from the 52 CES, Spangdahlem AB, Germany, where he currently serves as chief of the Operations Flight.

Capturing Contingency Knowledge

Improving Methods for Collecting and Refining Deployed Engineer Observations

Maj Christopher Stoppel
AFIT/CEM

Every deploying Airman's checklist includes contacting their deployed counterpart to quickly learn their new roles and responsibilities. Questions begin with common topics but invariably become more focused on observations and lessons learned. Databases such as the Joint Lessons Learned Information System and AFCESA's Observations, Innovations, and Lessons Learned program, which rely exclusively on user-initiated input, serve as tools for submitting post-deployment observations and as resources for deploying Airmen.

There are additional, more active, collection methods that can improve the volume, quality, and frequency of expeditionary observations at relatively little additional cost (Table 1). Focusing on these methods creates a continual stream of observations that can further benefit deploying engineers and maintain relevancy and currency in the contingency education and training curricula.

Methods

Webinars are perhaps the least expensive method for collectively sharing real-time information between deployed and deploying engineers and have served as significant predeployment education for the Joint Engineer Operations Course, for Provincial Reconstruction Teams, for Facility Engineer Teams at Combat Skills Training, and for others. Web-conferencing tools such as Defense Connect Online (DCO) have many advantages, including eliminating travel time and costs for speakers and students; increasing audience potential; and recording presentations for future viewing. Over the past year, DCO proved to be a useful tool for deploying teams, but scheduling DCO meetings during Combat Skills Training (CST) proved challenging for a variety of reasons. Future teams should plan these meetings either prior to CST, or work with CST cadre early to incorporate into the overall training schedule.

Recorded audio-video presentations are yet another media for collecting observations and developing lessons learned. Utilizing AFIT's recording studio, resident students and faculty have prepared recorded presentations summarizing their deployment as another source of information for deployers; they also serve as excellent visual aids in the classroom. Similar to webinars, recordings offer a low-cost, high-benefit collection method by taking advantage of the existing resident course population and available professional equipment. The Civil Engineer School recently purchased a program for producing exportable Adobe files containing audio and slides that are easily loaded onto laptops or personal computers, which could also be utilized as an additional method for capturing insights (recorded DCO webinars are not currently exportable).

End-of-tour (or exit) interviews can provide an additional level of refining observations. While face-to-face interviews are the ideal setting for this collection method, recorded phone interviews produce usable products at significantly reduced cost. Allowing interviewees to review and edit a transcript yields additional clarity on key observations and the opportunity to incorporate additional thoughts. The final transcripts possess many benefits: They are easy to download for printing or electronic storage; they provide a steady infusion of currency and relevancy into the contingency education and training curricula; and they can be added as records to the Civil Engineer Historian's archives.

Method	Application	Advantages	Disadvantages	Cost
Webinar	*Predeployment education for geographically separated inbound team*	*Eliminates TDY travel* *Enables real-time information sharing* *Photos/diagrams enhance learning*	*Product replay requires internet access*	*$0*
Transcripted Interview	*Exit interviews*	*Clearer, articulated observations* *Easy to print/store electronically*	*Lack of photos/diagrams* *Timeliness in finalizing transcripts*	*$100/transcript*
Recorded Audio-Video Presentation	*Lessons learned workshop* *After-actions presentation*	*Timeliness in producing final products* *Product downloadable to DVD/laptop*	*TDY cost* *Large file size (400MB) to download*	*$1,500/person**
Lessons Learned Workshop	*ECES flight chiefs* *PRT engineers*	*Timeliness in producing final products* *Facilitated discussion among participants* *ID of common challenges, best practices*	*TDY cost* *Scheduling to maximize participation*	*$1,500/person*

Table 1. Additional methods for collecting deployed engineer observations.
** Sunk cost for students attending AFIT residence courses*

Air Force engineer 1Lt Kathryn Miles, a member of the Panjshir PRT, accompanied by a representative from the Afghan Minister of Agriculture, and other PRT members meets with Afghan locals in the Anaba District of Panjshir Province, Afghanistan, to discuss potential locations for a water resevoir. (Photo by Army Sgt Teddy Wade)

Conducting lessons learned workshops represents an assembly of the aforementioned methods. While this method imposes the greatest in travel costs, it offers the greatest advantages. In addition to finalizing transcript documents and recording presentations, workshops allow for facilitating group analysis and discussion among participants to identify universal observations, potential lessons learned, best practices, and suggested improvements to predeployment education and training. Regardless of the collection method used, the primary goals remain the same: developing usable products that benefit deploying engineers and sustaining relevancy and currency in the contingency education and training curricula.

Results

Over the past year, the Civil Engineer School and AFCESA have pursued these collection methods with mixed results. Each method has respective advantages and disadvantages (Table 1) and should therefore be applied according to their strengths. For example, conducting lessons learned workshops for deployed Civil Engineer commanders proved unachievable due to workload and responsibilities, but conducting exit interviews and edited transcripts with them proved very feasible. Conversely, because it takes time (weeks or months) to edit transcripts, they are not the best method for providing Airmen with timely information. For purposes of sharing and disseminating current information, webinars proved the most useful.

Using these collection tools, coupled with maintaining communication with deployed personnel, has yielded positive results. The expeditionary curriculum is better positioned to respond faster to engineer education needs from the area of responsibility (AOR). Relevant topics such as Base Operation Support – Integrator; Senior Airfield Authority; Command Authorities (i.e., OPCON, TACON, ADCON); Command and Control (C2); Contingency Programming; and Environmental curricula have been updated based on the previously discussed collection methods to provide students with more relevant examples.

As an additional example, the Expeditionary Prime BEEF Group (EPBG) in Afghanistan is a relatively new C2 concept

at the time of this writing. By maintaining communication with the AOR through the aforementioned collection methods, students attending MGT 585 Contingency Engineer Command Course, heard presentations from the 577 EPBG and the 777 EPBS in Afghanistan discussing the purpose, mission, roles, and C2 challenges associated with this new organizational construct. In addition to resident students, distance learning students from USAFE and CONUS participating via DCO were also able to hear and dialog with the presenters.

Over the course of this past year, AFIT, in coordination with AFCESA, has hosted several webinars and lessons learned workshops, and conducted exit interviews with redeployed engineers. Table 2 illustrates a representative sample of deployed engineers' observations, challenges, lessons learned, suggested skill sets, and predeployment training (mandatory and recommended), as received through the collection methods mentioned throughout this article.

Final Thoughts

Throughout Operations Iraqi Freedom and Enduring Freedom, several engineer hot topics have moved to the forefront, such as airbase opening; BOS-I/SAA; joint integration of engineer organizations; Counter-IED support; and engineer support in irregular warfare/counter insurgency operations. While engineer interest items may change based on the type of conflict we find ourselves engaged, the need for rapidly transitioning observations from the field to the classroom and training sites will remain constant. Gen Stanley A. McChrystal, Commander, U.S. Forces – Afghanistan, recently stated, "We are going to win here by being smart, experienced, and focused. We will lose here by being obtuse, always-new-to-this fight (inexperienced), and not formed as a team of dedicated professionals."

Maj Stoppel is a course director and instructor at The Civil Engineer School and also serves as a facilitator at the Joint Engineer Operations Course.

Transcripts Document Now Available

AFIT's 2008-09 OIF/OEF CE Post Deployment Interviews & After Action Report can be downloaded from AFCESA's Observations, Innovations, and Lessons Learned CoP. The document contains 20 finalized transcripts by recently deployed civil engineers serving as deployed commanders, programs and operations flight chiefs, and force beddown providers or on facility engineer teams, joint staffs, and provincial reconstruction teams. The interviews cover topics such as engineer challenges, lessons learned, and suggestions for improving predeployment education and training.

	ECES Commanders	Facility Engineer Teams	Provincial Reconstruction Teams	Joint Staffs (CJTF-82, MNSTC-I)
Challenges/ Observations	AEF rotations Dealing with casualties "Expeduring" mentality Host nation relationship	Understanding Army processes Designing complete/usable buildings Lack of skilled contract labor MILCON limits	Project approval process Lack of skilled contract labor Terrain/threat impacts to QA Tech breadth of project portfolio	Adapting to joint environment Staff processes Understanding service engineer capabilities and cultures
Lessons Learned	Know SAA/BOS I roles Learn emergency response procedures upon arrival Keep operational view	Use CST for team building AFCAP provides additional internal design capability	Interagency coordination essential for unity of effort Develop good communication with HHQ (i.e., CJTF 82/101)	Understand Army organization and its processes (i.e., JFUB and JARB)
Recommended Skills	Programming Master planning advocacy Organizational mgmt	Programming Expeditionary design Construction management Quality assurance	CERP funding process Construction management Concrete, masonry, paving QA	Programming Base camp master planning Construction management
Predeployment Training	2-3 days at AFCENT/A7 Fire marshal course EOD VIP course Combat Skills Training	Combat Skills Training	Combat Skills Training Language immersion training	Combat Skills Training
Suggested AFIT Courses	MGT 400 MGT 585	MGT 590 MGT 585 ENG 481	MGT 590 ENG 550 ENG 481	MGT 590

Table 2. Sample results yielded from implementing discussed collection methods.

Housing Program Promotes Sense of Community

Civil Engineering's Building Thriving Housing Communities Strategy supports Airmen and their families in the "Year of the Air Force Family" and beyond.

Ms. Judith Teague
HQ USAF/A7CAH

In declaring July 2009 to July 2010 as the "Year of the Air Force Family," the Secretary of the Air Force, Mr. Michael B. Donley, and the Chief of Staff of the Air Force, Gen Norton Schwartz, challenged the Air Force to initiate programs to assess gaps, and look for better ways to support and improve the lives of Air Force families and single Airmen.

Civil Engineering's "Building Thriving Housing Communities Strategy" answers this challenge. The strategy was unveiled at the Professional Housing Management Association - Professional Development Seminar XXII in February 2010 by Maj Gen Timothy Byers, The Civil Engineer.

For Air Force housing professionals, the concept of a "sense of community" is not new. Programs in Civil Engineering have led the change with affordable and updated housing facilities through the housing privatization, MILCON, and O&M programs.

In developing the strategy, Civil Engineering's housing experts defined a "thriving community" as a safe, secure place for Airmen and their families to work, live, and play comfortably, with access to quality schools, healthcare, child care, dining, and other support services.

The strategy's vision is to develop and promote an Air Force-unique sense of community on our installations.

The strategy's action plan is divided into four objective areas:

- **Housing Community Focused Policies**
  Modify and build on existing policies to make Civil Engineering housing programs promote and support the Air Force's sense of community and provide responsive customer service.

- **Aggressive Communication and Marketing Strategy**
  Put customers first by providing all current and potential customers with proactive and consistent messaging to ensure they receive targeted communications about available housing options.

- **Effective Training and Education Programs**
  Ensure all stakeholders receive enhanced training and education that is supportive of their needs and communicates the same set of standards for all involved in housing.

- **Executable Housing/Dorm and Community Amenities Facility Program**
  Provide quality houses, dormitories, and community amenities (e.g., parks, playgrounds, running trails, community centers, pools, etc.) that create an inclusive environment where Airmen and their families want to live.

As 2010 continues, Civil Engineering is committed to the success of the Building Thriving Housing Communities Strategy, in this Year of the Air Force Family and beyond. Delivering superb housing support to Airmen and their families ensures that we "Build to Last … Lead to Change."

Ms. Teague is a contractor providing support to the Housing Operations Program, the Office of The Civil Engineer, the Pentagon, Washington, D.C.

Children at Keesler AFB's Child Development Center meet Sparky the Fire Dog during Fire Prevention Week. (photo by Ms. Kemberly Groue)

SPECIAL OPS CEs Respond Quickly to Haiti Earthquake

1Lt Dan Wilcoxen
1 SOCES/CEC

To use a cliché, January 13 started out like a normal Wednesday. I was on my way to work at the 1st Special Operations Civil Engineer Squadron (SOCES) at Hurlburt Field, Fla., and looking forward to a short work week after completing a seven-day operational readiness exercise the day before. I listened to initial reports of the earthquake that had severely affected almost three million Haitians the day before and wondered if the 1st Special Operations Wing and our squadron would have any involvement. At 1100L my commander, Lt Col Shawn Moore, notified me that our "J" team was going to Haiti, and by 1400L, my team and I were assembled and ready to fly.

Based on my deployment code as an enabler of special operation forces, while with the 1 SOCES I am assigned as the officer-in-charge of a 24/7/365 on-call eight-person "J" team that performs small footprint rapid beddown with a Hurlburt Field/AFSOC civil engineer-unique Air Rapid Response Kit (ARRK) UTC in support of small unit operations (see sidebar on the ARRK).

By 1900L on January 12, the day of the earthquake, special tactics personnel from Hurlburt Field and Pope AFB, N.C., were already on the ground at Port au Prince Haiti and had secured the damaged Toussaint L'Ouverture International Airport and airfield, establishing tactical air traffic control (ATC) within 28 minutes. Since the quake had rendered the ATC tower useless, the airport was reduced to a concrete strip with a single mid-field taxiway.

My team and I arrived early on January 14 in Port au Prince by HC-130 Talon to find a nearly empty airport, with the exception of one C-17 and a handful of civilian helicopters. Meeting quickly with my immediate commander, Col Buck Elton, and the special tactics team, I was asked to scour the airport and secure a suitable, structurally safe location to construct an expedient Joint Operations Center (JOC) and prepare for incoming SOCSOUTH command and control (C2) elements. We secured the largest warehouse, located on the far west end of the ramp. It had a relatively flat 200-square yard grassed area suitable for expedient beddown, but no commercial power.

After moving our initial airlifted ARRK package via the only 10KAT forklift on the airfield (from Hurlburt), my team built our beddown in a couple hours while the tactical communications team led by Capt Dave Stevenson began setting up the JOC inside the warehouse. Within 24 hours, our C2 node would become the center of controlling all Haiti ATC; airfield security; rescue; critical care evacuation; special operations forces (SOF)surgical teams; aerial port duties; humanitarian airdrop surveys, planning, and control; rotary wing ops; communications; and logistics.

Over the next three days, we received two additional ARRK packages, with seven more 35KW Atlas generators and 21 environmental control units, increasing our footprint to 21 ARRK shelters and 5 additional GP-medium tents (16'x32') to accommodate a total of over 280 SOUTHCOM, SOCSOUTH, and AFSOC personnel. At the airport, 16 ARRK shelters were used as billeting, two as the first medical facility (staffed by SOF medics), one as the only shower facility for the first two weeks, one as an air-conditioned supply tent (later our J1 area), and another as a shade for American citizens awaiting airlift.

On days 5 and 6 post-arrival, I served in a more formal role as the J7 Civil Engineering Director, as our organization formed into a Joint Special Operations Air Component (JSOAC) under the Joint Task Force commanded by Army Lt Gen Ken Keene, deputy military commander for USSOUTHCOM. My duties changed to that of a pre-ADVON engineer, as officers from an Air Force contingency response group out of JB McGuire-Dix-Lakehurst, N.J., the 2d Brigade Combat Team from the Army 82d Airborne Division, and later those from the 24th Air Expeditionary Group (AEG) out of Davis-Monthan AFB, Ariz., came to our JOC to gain any information and assistance on the overall airfield land use and utility situation.

For the first week, the JSOAC was virtually the only organization in country which had communications, food and water, transportation, tents, and security. We became the focal point for the evacuation of 12,000 American citizens and the primary casualty evacuation center coordinating hundreds of evacuation flights. For 12 days, 24/7, Air Force Special Tactics Combat Controllers with tactical radios controlled a total of almost 1,700 fixed wing flights and 800 rotary wing flights from a card table in the grass next to the runway, without a single incident. An FAA ATC mobile tower finally arrived and Air Force ATC personnel were given "the baton."

The JSOAC's role began winding down as larger supporting forces arrived and slowly built their capabilities. (see p. 36) At our day 14 on the ground, an AEG force of 48 Guard civil engineers arrived and began constructing a 150-person camp west of our JSOAC camp. With the AEG on the ground, five of our team members went home to much deserved rest, and the two remaining tech sergeants and I worked to hand over our ARRK assets to the AEG. In their downtime during this period TSgts Heath Feuss and Ronald Banks were able to volunteer to help a Canadian search and rescue helicopter crew offload MREs and water 11 miles into the mountains, providing aid to nuns supporting an orphanage.

Before we left, we joined our security teams to go downtown and were finally able to see what our hard work was supporting. The downtown/inner city district of Port au Prince was in ruins, with thousands living and sleeping outside for fear of further building collapses. As we drove through the city, viewing the suffering and devastation I forced myself to focus on the engineering perspective.

Back at Hurlburt, I feel privileged to have had a role in the efforts in Haiti and realize that the people in Air Force Special Operations I've been honored to serve with are like no other.

1Lt Wilcoxen is the deputy chief of the Programs Flight and the Liaison, 1 SOCES, Hurlburt Field, Fla.

Air Rapid Response Kit

ARRK is a rapidly deployable force beddown kit designed to support 100 personnel with billeting, shower/shave and command and control facilities. Each ARRK requires three 463L pallet positions, easily deployable on one C-130 aircraft. One ARRK includes the following equipment: 5 beddown shelters; 1 shower/shave shelter; 1 multi-purpose shelter; 2 contractor-grade commercial generators; 1 3,000-gallon water bladder; 1 Brief Relief latrine system; 1 diesel/JP8 water heater; 1 four-stall shower; and 1 three-basin field sink. Playbook options provide enhanced capability and are available as add-on features: water purification, armory, extreme cold weather, environmental control, enhanced fuel storage, and command and control facility. For more information on ARRK, email afsoc.a7x@afsoc.af.mil.

Mr. Chuck Dewar and Mr. Andrew Wardencki, HQ AFSOC/A7X

RED HORSE
Explosive Demolition

MSgt Joseph Hajik
HQ AFCESA/CEXX

Left: *In 1991, during Operation Desert Storm, CMSgt Dean Bushnell (top left) and SMSgt Bobby Chandler (bottom right) pose with other members of a RED HORSE demo for a pre-mission photo.* ***Center:*** *In Iraq in 2007, members of the 557 ERHS demo team place shape charges to demolish an overpass and clear a main supply route. (U.S. Air Force photos).* ***Right and center of page:*** *On the RED HORSE demo range at Nellis AFB, Nev., trainees calculate counter-force charge placement. (photos by author)*

"Fire in the Hole — Fire in the Hole — Fire in the Hole" sounds loudly just before a thunderous detonation. Another day at "the office" is underway for the RED HORSE Special Capabilities Cadre located in Area 2, in the high desert area north of Las Vegas, Nev. Providing explosive demolition certification for the entire RED HORSE community who posture the 4F9HJ unit type code is just one of the many mission tasks of the 820th RED HORSE Squadron at Nellis AFB, Nev.

MSgt Thomas Granville and TSgt Mark Ordway currently spearhead this RED HORSE special capability certification course, which packs quite a bit of extensive mathematical calculations, charge size requirement data, proper placement lessons, and — most importantly — safety into its two-week length. Since its maiden class in the mid 1960's the course has had an incident-free history.

Though not commonly associated with typical Air Force Civil Engineering tasks, demolition is a monthly or sometimes weekly recurring ritual for RED HORSE Demo "Dirt Boyz," as they are commonly called. RED HORSE's involvement with explosives dates back to its inception. Documents originating to the mid-1960's identify the need and use of explosives for use in quarry operations, base denial, and removal of large obstacles deterring construction and — believe it or not — removal of underwater debris for dock construction and harbor clearance.

Air Force civil engineer demolition teams are manned purposely using the 3E2X1 AFSC (Pavement and Equipment Operators). These teams are postured with the majority of RED HORSE squadrons across the globe, including Guard and Reserve units. To be indoctrinated into such a team is not easy; a very tough competition usually occurs within a RED HORSE Dirt Boyz section. In the words of retired CMSgt Gary (Dean) Bushnell, "You better have zero dings in your armor just to be considered." I finally scored a coveted slot in 1994.

CMSgt Bushnell was just one of the many RED HORSE demo team members to venture across the Kuwait border into Iraq during Operation Desert Storm. A combined effort of "blasters" from the 820th and 823rd and EOD performed base denial upon abandoned Iraqi air bases. The "wrecking crew," as they were coined, was the first RED HORSE team since the Vietnam War to utilize explosives against an adversary during times of war.

SMSgt Bobby Chandler, now retired, recounted the details of that base-denial mission. "It was a textbook operation, with team members using everything from their initial Nellis training, the same skills that are still taught to students to this day."

The most current chapter in the RED HORSE demolition history book was written during Operation Iraqi Freedom, when the first-ever RED HORSE combat demolition team was tasked to aid the Army's 99th Engineer Brigade by demolishing two overpasses on Main Supply Route Tampa in the vicinity of Baghdad; the overpasses had been severely damaged in three separate vehicle-borne IED attacks by insurgents. In less than three days, the demo team from the 557th ERHS demolished and removed over 900 tons of debris to restore coalition movement on the supply route.

As RED HORSE evolves, this special demolition capability is evolving with them to enable construction as well. A quarry certification course, tied closely to the demo course, is another special capability taught by the 820 RHS at Nellis. In the near future RED HORSE will be able to posture a deployable Quarry UTC.

The quarry capability enables RED HORSE to self-provide products in order to establish horizontal and vertical construction. For example, to pave a road or build an airfield you need either concrete or asphalt and to obtain that final product in an austere environment you have to start from scratch. Rock for the desired mix is located, often in the side of a hill, which necessitates a series of demo blast operations to extract the rock. Next comes the rock preparation in several steps, which normally involves crushing into sizes required for particular mix designs. The prepared rock is then transported to one of two batching plants, either for concrete or asphalt, depending on the requirement.

In early 2008, AFCESA's Expeditionary Engineering Branch began developing a series of interactive multimedia training system courses to aid the 820th with training for this demo-quarry-batch (DQB) capability. Scheduled for completion at the end of FY10, the DQB course is just one of the special capability computer-based training venues in the queue for RED HORSE. The DQB training will not only provide a prerequisite for the initial course at Nellis but will also provide refresher training focused on standards and repetitive commonalities for the RED HORSE warfighter.

As RED HORSE special capabilities strengthen, coordination with the civilian sector becomes more and more relevant. Explosive demolition is commonly utilized worldwide in many capacities by the private sector, and certification for the profession is quite extensive. The military's use of explosives in construction is based upon the worldwide industry standard. As RED HORSE ventures onward toward the deployable quarry capability, many pieces, including certification outside normal military boundaries, may be needed even more.

Within industry, the International Society of Explosive Engineers (ISEE) serves as the governing body for associated standards and certification. At the ISEE's 2010 conference, I met ISEE representatives to communicate the Air Force message and discuss and learn about certification needs, including a newly developed federal certification which is founded upon basic demolition training (usually a state certification).

RED HORSE demolition and quarry training and certification are just two endeavors that will keep us at "the tip of the spear" to remain sharp for our overall mission.

MSgt Hajik is the RED HORSE program manager, HQ AFCESA, Tyndall AFB, Fla.

The HORSE Rehearses Swift Response

Airmen sharpen skills during largest ever RED HORSE stateside deployment for consequence management exercise

Capt Nicholas Anderson
820 RHS/CE

Fourteen Airmen from the 820th RED HORSE Squadron drive up to a sight of utter devastation. The scenario: A nuclear device explosion has created untold destruction and loss of life. Massive debris stacked eight feet high, overturned vehicles, and live utility lines cover two kilometers of the landscape ahead, creating an impenetrable barrier for emergency response personnel.

This was just one of many scenarios rehearsed during a November 2009 Joint Service chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) exercise in southeast Indiana. Operation Vibrant Response 10.1 at Camp Atterbury, Ind., was one of two comprehensive exercises directed by USNORTHCOM to prepare CBRNE Consequence Management Response Force (CCMRF) personnel for the worst of their planning scenarios — a nuclear device exploding in a major city.

CCMRF Soldiers, Sailors, Airmen, Marines, and civilians are on standby 24/7 to respond at the direction of the secretary of defense to any major CBRNE catastrophe in the NORTHCOM area of responsibility that requires DOD capabilities. The 820 RHS, Nellis AFB, Nev., was notified (in June 2009) of its support role in the CCMRF, and has 126 personnel and more than 800 short tons of cargo allocated to the mission.

About 2,800 CCMRF personnel participated in November's exercise, which simulated a nuclear explosion near a large city. The 820 RHS deployed 122 Airmen and 758 short tons of cargo, which according to Air Force Civil Engineering's historian, Dr. Ronald Hartzer, is "the largest RED HORSE stateside deployment that I can find in my records."

RED HORSE's Role

Why was RED HORSE, a low density-high demand enabler unit, tasked with the mission?

"RED HORSE has the capability to project integrated Air Force Engineer capabilities anytime, anywhere with little to no notice," said Mr. Ron Clouse, from AFNORTH civil engineer operations. "NORTHCOM wanted DOD-controlled uniformed forces and knew that RED HORSE had the ability to provide what they wanted, an available first response heavy engineering capability."

Defense Support to Civil Authorities (DSCA) missions are not new to RED HORSE, but this one is different. "RED HORSE CONUS deployments in the past were ad hoc, with little time ahead to prepare," said Lt Col James Chrisley, 820 RHS deputy commander. "This is the first time we've had the opportunity to train as part of a large response force capable of responding to anything from a natural disaster to a terrorist attack."

An aerial view of a debris field 820 RHS Airmen from Nellis AFB, Nev., were tasked to clear during Vibrant Response 10.1 exercise at Camp Atterbury, Ind. (U.S. Air Force photo)

Training

Personnel assigned to CCMRF attend additional CBRNE training, hazardous material awareness training, weeklong command-post-of-the-future courses, convoy briefings, tactical operations center training, and NORTHCOM training for CCMRF and DSCA awareness. Training was followed by the two NORTHCOM-provided field training exercises. Thirty RED HORSE personnel attended the first exercise (Vibrant Response 10.1) in August in Kansas, where unit leadership tested their tactical operations centers skills using realistic computer simulation software.

Vibrant Response 10.1

After arriving at Camp Atterbury, the team from Nellis received situation briefings, and bedded down in FEMA trailers, which, along with a stand-alone dining facility, and a small beddown area, became the RED HORSE base of operations during the exercise. Before leaving Nevada, Capt Jay Haugen and his team of 25 personnel from the 820 RHS and the 99th Logistics Readiness Squadron loaded 63 tractor trailers in two days to support the exercise. After in-processing, a team of 15 Airmen from the 820th spent the next 24 hours unloading the cargo under the direction of MSgts James Toth and Keith Gedick, the squadron's cargo movement NCOICs.

Personnel began the process of setting up the unit control center and maintaining command and control of personnel spread over multiple locations. As command and control equipment arrived, TSgt Ramil Flores, 820th computer operations NCOIC, worked tirelessly to establish network and overall communications capability.

Over the next four days, exercise mission assignments (MAs) flowed into the RED HORSE TOC. Every MA drove deliberate planning at each level of the CCMRF command. The Army's 4th Maneuver Enhancement Brigade, from Fort Leonard Wood, Mo., which served as RED HORSE'S direct headquarters, created fragmentary orders for each MA.

"At first we were focused on each unit individually, but we soon recognized that we could combine the core competencies of each unit to more effectively accomplish tasks," Maj Loren Hollinger, 4th Maneuver Enhancement Brigade Plans Officer stated. "It was a true joint endeavor."

"At any given time of day we had between 50 and 80 personnel on the road to sites or executing MAs," said SMSgt Scottie Spradlin, the 820th's cantonments superintendent. "Over a four-day period, we had personnel simultaneously clearing roads of debris, grading land for FEMA trailers, neutralizing utility lines, constructing walls or sidewalks, and repairing camp infrastructure."

The most daunting task faced by the unit was to remove debris from two kilometers of roadway. After receiving a briefing from the incident commander, equipment operators, lead by the 820th's TSgt Mark Ordway, unloaded earth-moving equipment from their tractor trailers. Marine EOD and Air Force Radiation Assessment Team technicians begin scanning the route for explosive or radiological hazards. Electricians and utility specialists wearing personal protective equipment checked for downed power lines and water-main breaks, and after determining that the electrical lines were dead and isolating one water main, the route was ready for heavy equipment.

After just a few hours on scene, more than 500 meters of debris had been cleared off the road and a "PAUSE-EX" was declared for the MA. The RED HORSE operators had to slow down; otherwise, there would not be any work left for the following day.

Members of the media and distinguished visitors at the site said they were surprised by how much of the road they were able to see again. TSgt Todd Mitchell, team NCOIC, briefed USNORTHCOM commander, Gen Victor Renuart, on the operation and TSgt Ordway fielded questions from the media, helping earn himself a "Joint Task Force–Civil Support Hero of the Exercise" Award.

"This is the kind of mission that we never want to have to execute, but we have to make sure that everyone in the country knows we're ready for," said TSgt Alfredo Perez, 820 RHS equipment operator. "If something terrible does happen, JTF-CS and the 820th RED HORSE will respond quickly to save lives, mitigate suffering, and facilitate recovery operations."

Capt Anderson is a project engineer with the 820 RHS, Nellis AFB, Nev.

While clearing debris during Operation Vibrant Response, TSgt Mark Ordway, site NCOIC, gives direction to SSgt Timothy Yardley. Both Airmen are heavy equipment operators with the 820 RHS, Nellis AFB, Nev. (photo by SSgt Jacob N. Bailey)

CHEYENNE MOUNTAIN

Relevant, Enduring, and Vigilant

Cheyenne Mountain AFS stands ready to support national strategic defense missions.

Mr. Dino Bonaldo II
721 MSG/CE

Mr. Jason J. Cook, P.E.
721 MSG/CE2

When people find out we work at Cheyenne Mountain AFS, Colo., we invariably get asked either, "Don't you mean NORAD?" or "Isn't that place closed?" The answer to both questions is "No."

On May 12, 2008, NORAD's primary operations center officially moved to Peterson AFB, Colo., to collocate with NORTHCOM for joint operations. Since many identified Cheyenne Mountain AFS (CMAFS) only with NORAD, the rumors of our closure began to abound in earnest, not only in the public, but also throughout the Colorado Springs military complex. We are still dealing with the ramifications of this move today and have encountered some interesting challenges from a civil engineering perspective.

So if NORAD moved out, what exactly is CMAFS today? Well, it is the only STRATCOM-certified, high-altitude electromagnetic pulse-hardened command, control, communications, computers, intelligence, surveillance and reconnaissance facility in the world. It is a complex of facilities of over five acres with collective chemical, biological, and radiological protection, 99.999% reliable infrastructure, and design features that make it survivable across a spectrum of threats. In short, CMAFS is valuable real estate, attractive to a host of missions throughout DOD.

Following NORAD's move to Peterson AFB, our primary challenge was reconfiguring internal facilities to take care of a host of new missions knocking on the door. Currently, CMAFS houses elements of Strategic Command, the Air Force Technical Applications Center, and the Defense Intelligence Agency's Western CONUS Regional Service Center. While NORAD moved primary operations off-base, CMAFS still serves as the location for NORAD-NORTHCOM continuity of operations, alternate command center, and qualification training functions. The 721st Mission Support Group's Test Control Division and Systems Center are also still maintaining the nation's Integrated Tactical Warning and Attack Assessment System that analyzes sensor inputs from around the globe.

If the above set of missions isn't enough, CMAFS has several beddown requests in the works. Today, the 721st Civil Engineer Division's primary focus is space optimization. Projects to expand the complex's footprint won't happen quickly enough to address our short-term needs, so right now our only option is more efficient space usage with existing facilities.

This optimization effort is split into two areas. First, we are undergoing a full evaluation of all missions within the complex. From a mission standpoint, the underground facility space is too valuable to use for functions that don't require such a high level of protection and can easily be relocated to space above ground (primarily mission support and administrative functions). For those mission functions that truly require the benefits of space inside the complex, we are developing projects to maximize usage by further reconfiguring our facilities in accordance with current space standards.

Maximizing the space available for missions inside the complex addresses only half the challenge. The other part of our effort focuses on optimizing use of a single 32-acre parcel of aboveground land available to us. We are currently undergoing a community planning effort to optimize use of this land to ensure we can provide the mission support facilities that do not belong inside the mountain. These two space optimization efforts, and the resulting projects, will culminate in the final CMAFS 2050 vision — charting a course for maximizing the effectiveness of our installation regardless of the missions we are called upon to support.

Infrastructure modernization — a challenge for all installations — is especially important at CMAFS, where we are

Entrance to Cheyenne Mountain AFS, Colo. (photo by Mr. Paul Shambroom, used with permission)

mandated to maintain 99.999% reliability for mission critical infrastructure. As another "twist" on this challenge, all of our facilities are operating off common support, including a chiller plant, condenser water loop and cooling towers, uninterruptible power supply system, and a generator plant. So not only are outages unacceptable, but any work done to one part of the system has the potential to impact all of the missions we support in the complex. This translates into careful consideration and planning before any work is accomplished on major system components and — of course —associated cost increases.

Challenges yes, but it is an exciting time to work in civil engineering at "the mountain." We are installing a new hoist to bring larger equipment onto the facility roofs, and the rock we are chipping out to make room for the equipment is the first addition of any significant volume to the complex since 1966. We are working with two combatant commands and multiple partner agencies to align emergency management plans and improve our ability to perform button-up operations with the blast doors closed. We are bringing on new first responder capabilities for the fire department to deal with tunnel collapse and other rescue requirements unique to an underground facility.

Is CMAFS closing? On the contrary, today we are postured better than ever before to support national strategic defense missions in the U.S.'s premier underground facility. While designed to address Cold War threats, continuous improvements have ensured our effectiveness across the entire spectrum of threats, and allowed us to maintain our relevance in today's defense environment. The 721st Civil Engineer Division is proud to support "America's Fortress" — Cheyenne Mountain AFS.

Mr. Bonaldo is the Base Civil Engineer and Mr. Cook is the Deputy Base Civil Engineer, 721 Civil Engineer Division, Cheyenne Mountain AFS, Colo.

Pros & Cons of Foam Insulation of Tents

Maj Arthur Gepner
HQ AFCESA/CEXX

AFCESA is currently involved in multiple initiatives to improve the efficiency and effectiveness of our expeditionary assets, especially in the areas of survivability, mobility, lethality, transportability, communication, and training. Parallel efforts are ongoing to adapt commercial, off-the-shelf (COTS) systems to military requirements that allow faster procurement and fielding compared to the standard military research and development process.

One of the COTS systems receiving a lot of attention is spray-on foam insulation. In May 2007, the Army's Rapid Equipping Force program office issued a report citing benefits of using spray-on foam insulation on tent exteriors in the CENTCOM area of responsibility. Specifically, the use of external spray-on foam insulation on temporary structures in Iraq and Afghanistan has resulted in reduced electrical demand and the associated lower bulk fuel requirements has resulted in fewer surface convoy sorties.

Spray-on insulation also improves quality of life through sound reduction and improved temperature control. And, when 2" of foam is applied to the exterior fabric, it creates a rigid shell able to support a 200-lb person.

Even though spray-on insulation is a valid engineering solution, several factors must be considered when deciding to use this technology, such as costs; savings; return on investment; life, safety and health concerns; fire safety; environmental disposal; facility age; potential for asset relocation; enduring nature of installation; and construction cost thresholds. The U.S. Army Developmental Test Command identified an increased risk for an interior fire scenario (due to a buildup of smoke and fumes), but a decreased risk for an exterior fire scenario when compared to a non-insulated tent. A subsequent Army report concluded that air infiltration into foam insulated tents was inadequate to meet indoor air quality standards. Spray-on insulation is a contractor-only applied solution and will keep any expeditionary asset from being reconstituted. The final consideration is the disposal of the material when the facility is demolished.

As a result of these issues, AFCESA issued Engineering Technical Letter 10-6, *External Foam Insulation of Temporary Structures*, which provides specific guidance on egress, fire detection, air exchange, foam material, and disposal. On the positive side, time for energy payback is usually less than one year, so the foam could be applied at existing locations where assets are beyond their useful lifespan. Technology research into solar covers, photovoltaic, interior insulation, and alternative energy generation will offer the Air Force better long-term deployable system solutions. However, deployed engineers and base planners should be programming the replacement of expeditionary and temporary facilities with more robust and energy-efficient facilities. When considering spray-on insulation as an option, the base facility engineer should use AFCESA's experts as a resource to evaluate whether spray foam is an appropriate method for energy savings.

Maj Gepner was the Chief of the Expeditionary Engineer Programs Section, HQ AFCESA, Tyndall AFB, Fla. He is now assigned to the Defense Threat Reduction Agency.

120' X 40' "Fest" tent undergoing foam application at Kandahar AF, July, 2009. (photo by Lt Col Richard Sloop)

A Mechanical Engineer's Perspective on Tent Foaming:

Avoiding the Unintended Consequences of Good Intentions

Mr. K. Quinn Hart, P.E.
HQ AFCESA/CEOA

As you have read in the accompanying article, foaming tents achieves reductions in electrical demand and consumption which can translate into fuel savings. However, if improperly applied, unintended consequences can offset the expected benefits.

The purpose of this article is to discuss those unintended consequences and how they can be mitigated so that the full savings potential of foaming tents in the Southwest Asia area of responsibility (AOR) can be realized. More complete guidance is contained in Air Force ETL 10-6, *External Foam Insulation of Temporary Structures.*

Tent foaming involves spraying up to 2 inches of foam over the exterior surface, reducing the heat transfer through the tent's walls and roof by up to a factor of four. With such a significant reduction it's tempting to just forge ahead, but before you do, let's consider some of the possible side effects and unintended consequences. Are they beneficial or will they spoil our chances of success? What will be the effects upon related systems?

Tents' HVAC Systems

Currently our tents are equipped with a field deployable environmental control unit (FDECU) capable of providing 5 tons (60,000 BTU/hr) of cooling. These units have been sized to satisfy the expected cooling loads of the tents in the extreme environment of the AOR. The sensible and latent loads resulting from the heat gain from walls and roof, conditioning of outside air (ventilation and infiltration), occupants, and plug-in loads (lights, small appliances) are all taken into account in determining total cooling load. Sensible loads affect the temperature of the space and result from the conductive heat gain, cooling of outside air, heat from lights, appliances, and the human body. On the other hand, latent loads are determined by the amount of moisture removed from the outside air and in the space to achieve a desired level of relative humidity (RH).

The FDECU senses only temperature in the space (sensible load) and not the RH (latent load). When the thermostat in the tent calls for cooling, it cycles the FDECU compressor on and activates the cooling coil. The supply air fan runs continuously, providing for ventilation and circulation of air in the tent. Moisture is removed from the air only when the coil is activated, with the amount of moisture removed dependent on the run time of the compressor, the characteristics of the cooling coil, and the psychrometric conditions of the air. In summary, the longer the coil remains activated, the more moisture it can remove and the lower RH in the space.

In hot and humid climates, insulating the tent will reduce the conductive heat gain through the walls and roof by a factor of four, total sensible load will be reduced by 50%, and total load by almost 40%. This will result in the FDECU being considerably oversized, which affects the system's ability to remove moisture in two ways. First, space temperature is quickly satisfied, causing the cooling coil to shut off and dehumidification to cease; the decrease in total operating time of the cooling coil reduces the time available for moisture removal. Secondly, the supply air fan continues to operate while the cooling coil is shut off, resulting in ventilation air not being dehumidified and essentially pumping moisture back into the tent. Changing the sensible heat gain into the tent has significant impact on the sensible heat ratio of the space and the capabilities of the HVAC system to remove moisture.

Consequences

Degradation of the indoor environment: Space humidity levels will exceed recommended levels for extended periods. High humidity levels increase the possibility of mold and mildew growth resulting in a damp and musty environment and decreased indoor air quality. Controlling humidity is also critical in achieving occupant comfort. Generally, people are more comfortable at a higher temperature and lower RH level than at a lower temperature and high RH level. When humidity levels are excessive, occupants are known to drive the thermostats lower in a quest for comfort. The result is over-cooling of the space, which actually increases RH and the damp and clammy feeling in the tent. When interior temperatures are pushed below the outdoor dewpoint temperature, the chances of mold and mildew are greatly increased. This is

a result of unconditioned outside air condensing on cold interior surfaces when doors are opened or ventilation air is introduced.

Short cycling of the FDECU: When the FDECU is oversized, it will quickly satisfy the load and shut off the compressor. However, since the supply air fan operates continuously to meet the ventilation needs of the occupants, interior temperatures rise quickly, cycling the unit back on. The resulting short cycling of the compressor and condenser fan reduces their operating life.

Electrical System Impacts: Air conditioning of the tents represents the largest load on the electrical generation and distribution system. Upon start-up, the FDECU in-rush current spikes at almost three times its running amps. This can be a peak of almost 80 amps. By reducing run times, cycling of the compressor will occur more frequently. Considering there are hundreds of FDECUs connected to the base grid, increasing the number of start-ups will raise the probability of multiple starts occurring simultaneously. Without sufficient spinning reserve to handle this momentary increase in load, low voltages and system instability can result.

Solutions

Avoiding these possible consequences in the AOR is simple. All the problems discussed stem from oversized HVAC equipment. By taking into consideration the overall effects of the new load and taking simple steps to match equipment capacity to it, these issues are avoided. By combining air conditioning loads by reconfiguring the flex ducts so that one FDECU serves two tents, equipment capacity is better matched to the load. It also significantly reduces the number of FDECUs needed in the AOR, which pays additional dividends in reduced maintenance, logistic support, and electrical demand.

Enabling one unit to serve two tents requires the addition of tees in the supply and return flex ducts as shown in the Figure (Figure 2 from ETL 10-6). Use of locking dampers in the tees to balance air flows is recommended to allow for variances in duct pressure drops and loads between tents.

The use of an energy recovery ventilator (ERV) is also recommended. Such units can transfer up to 50% of the sensible and latent loads from the exhaust air for preconditioning the outside air required for ventilation. Ventilation air is preconditioned when it's drawn through the ERV by the negative air pressure in the FDECU return air duct. Enthalpy exchange takes place with the supply air from the FDECU (which is under positive pressure) as it's exhausted through the ERV. This configuration eliminates the need for fans in the ERV making it a passive device. Note that the air discharged from the ERV is cooler than ambient and by releasing it in front of the condenser coils, additional energy savings can be obtained.

Because the FDECU serves two tents, ventilation rates must be doubled. This also doubles the ventilation latent load and decreases the sensible heat ratio of the return air stream, reducing the coil's moisture removal capacity. However, by installing the ERV, the sensible heat ratio will in essence remain unchanged.

Conclusion

Applying foam insulation to tents in the AOR presents real opportunities to save energy and significantly reduce logistical support. Avoid unintended consequences; follow the recommendations in ETL 10-6. It's your flight plan to success.

Mr. Hart is the Air Force subject matter expert for HVAC, HQ AFCESA, Tyndall AFB, Fla.

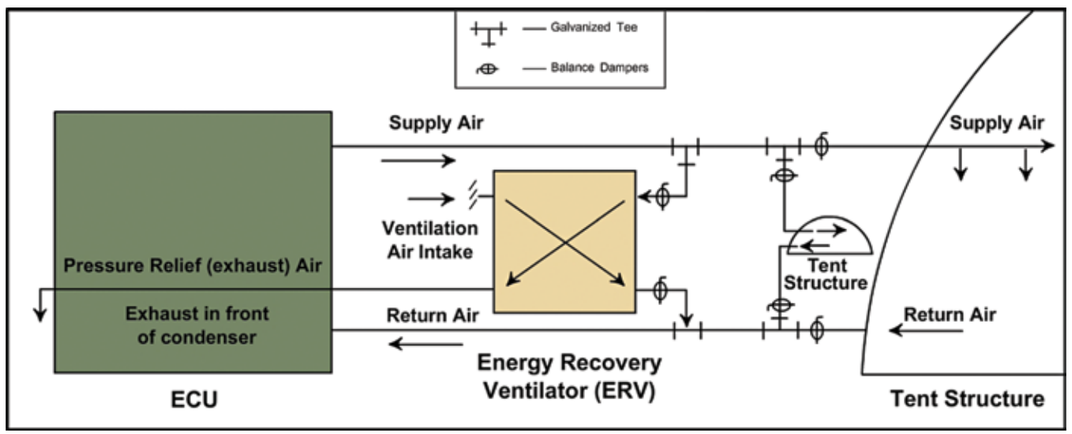


Figure. Diagram for connecting 1 FDECU to 2 insulated tents. (Figure 2 from ETL 10-6)

Future of Airfield Damage Assessment

Mr. Jere L. Brinkley
HQ AFCESA/CEOA

1Lt Andrew Kopeikin
AFRL/RXQF

A top priority following an enemy attack is expeditiously recovering the airfield. Presently, airfield damage assessment teams, on foot or in vehicles, survey the damage and prioritize repairs — a lengthy procedure that may also expose team members to a hostile environment.

In 2008, a Joint service program called CRATR (Critical Runway AssessmenT and Repair) was launched to modernize airfield recovery by investigating solutions in technology; material; and tactics, techniques, and procedures. Thus far, CRATR has focused on two phases of recovery: damage assessment and crater repair.

The Rapid Airfield Damage Assessment System (RADAS) is an effort to help prioritize repairs by rapidly selecting the best minimum airfield operating surface (MAOS). Development engineers are turning to continuous advances in remote sensing technology such as unmanned systems, sensors, image processing algorithms, and geographic information systems (GIS) to equip the RADAS.

RADAS design faces some challenges: surveying a large surface area with high resolution to detect small targets; adequate mapping accuracy; and capability in a variety of environmental conditions. It must be user-friendly, small and economical enough to equip many bases, and reliable for use in contingencies. Finally, RADAS must perform its end-to-end assessment with MAOS selection within 30 minutes.

The requirements list and rapid technology fielding motivation have shaped the RADAS into a system of systems. Its data acquisition system is a result of the proliferation of unmanned aerial systems in DOD. A small, tactical, runway-independent, remotely piloted aircraft of less than 80 pounds is rapidly launched on a preplanned survey path. Its sensor suite consists of the latest turreted camera system with electro-optical and infrared imagers for day, night, and reduced visibility conditions. Other types of sensors, such as Light Detection and Ranging and Synthetic Aperture Radar are being investigated as their technologies miniaturize and resolution capabilities increase.

RADAS imagery is transmitted in near-real time to its data processing system located in a ground control station. Innovative processes paste captured image frames into a mosaic of the pavement before geographically registering it to a baseline image. Challenges exist to perform accurate georegistration with the narrow field-of-view of the electro-optical or infrared imagery. Novel image-processing algorithms and user interfaces aid extraction of damage items from the image. The objective is for a single operator to view imagery of all pavement areas and declare hundreds of damaged items rapidly and reliably.

Finally, RADAS is leveraging existing Civil Engineering GIS tools (e.g., Geospatial Expeditionary Planning Tool) to expedite and improve MAOS selection. Populating a digital map of the airfield with identified damage items allows an operator to interactively designate the MAOS using least-cost-routing and damage repair time estimation algorithms. A file with coordinates of the MAOS and prioritized damage repairs is then passed on to explosive ordnance disposal and crater repair teams. Before the RADAS can become operational, some bigger items will need to be fully addressed; ownership and manning within different career fields, integration with current airfield operations, supportability, and overall doctrinal changes within recovery operations.

During testing in August 2009 at Avon Park AFR, Fla., the RADAS was able to perform a night-time, end-to-end assessment of more than 110 craters over the entire airfield and produce a MAOS in less than 26 minutes, a considerable improvement over previous results. Testing for the next prototype iteration is scheduled for July 2010.

Mr. Brinkley is the CRATR JCTD Program Manager, HQ AFESCA, and 1Lt Kopeikin is RADAS Technology Lead, AFRL, Tyndall AFB, Fla.

Mr. Mike Busutil (left) and Mr. Stephen Dixon from the NAVAIR UAS Deployment Team navigate the RADAS system to rapidly assess airfield damage from their ground control station. (photo by Mr. Oscar Reihsmann)

Structural Dynamics . . .

LEGACY REPRINT:

Hard Hats for the Weapon Systems

by Capt Wallace E. Fluhr

Editors Note: This article was originally published in the February 1961 issue of the Air Force Civil Engineer *Magazine. It is offered here as an example of the professional/technical articles from the publication's early years and also as a reminder of the challenges civil engineers confronted in the early 1960s as they became involved in the ICBM program.*

The successful design of underground structures capable of surviving a near miss from a nuclear explosion requires a knowledge of the loads that are imposed upon these structures. It has been the responsibility of the Office of the Deputy Commander, Civil Engineering, Air Force Ballistic Missle Division (ARDC) to determine these loads and to design our underground missile facilities.

Figure 1 represents schematically a silo for missile launching which is to survive the effects of a surface nuclear detonation. Immediately below the point of detonation, the earth is subjected to a tremendous applied pressure. This suddenly applied pressure results in thea formation of a wide, shallow crater and the shock propagates through the soil as various types of waves. These waves are called the direct ground transmitted shock. Radiating outward from the burst center is a high-intensity pressure pulse in the air above the surface. This is called the air blast wave and measured as overpressure. Near the burst, the pressure in this air wave is of the order of thousands of pounds per square inch; however, its pressure decays as the pressure pulse moves out over the earth.

Capt Fluhr received his BS in Civil Engineering from the University of Kentucky in 1954. Called to active duty in 1954, he was assigned to the BE office at Gunter AFB, Alabama. Under the Air Force Institute of Technology program, he began graduate education at the University of Illinois in 1957. Majoring in Structural Dynamics, he received his MS in Civil Engineering in 1959, and in June, 1960, he completed his Doctorate in the same field. Upon completion of graduate work, he was assigned to the Office of the Deputy Commander, AFBMD. He is a registered professional engineer in Kentucky, a member of ASCE and the American Concrete Institute.

As the air pressure pulse moves away from the center of the burst, it slaps the earth which in turn generates shock waves in the earth which propagate in all directions. The character of these air induced waves depends on the velocity, magnitude and duration of the pressure pulse and the density, stiffness, damping and stratification of the earth medium. Thus, the type of disturbance at an underground launch site is likely to be complicated since it represents the effects of waves generated in different ways and passing through complicated and nonhomogeneous earth media.

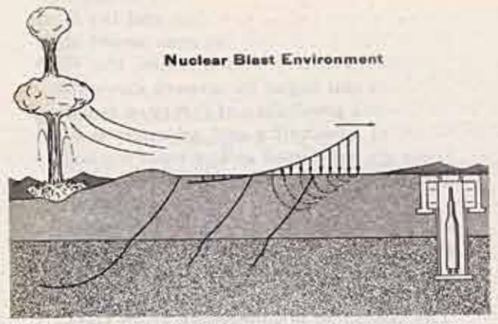
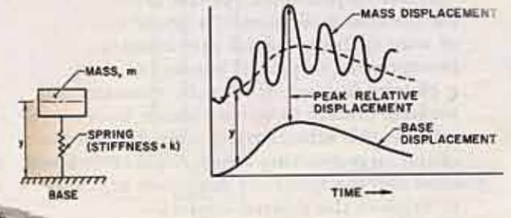


FIG. 1

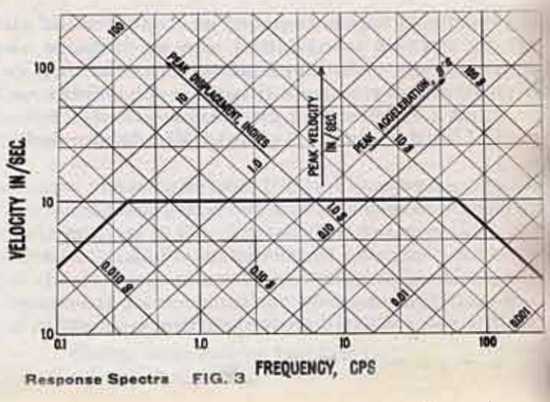
The major function of the silo-type launcher is to protect the missile from enemy attack. Not only does the underground launcher resist the normal earth loading on the launcher, but it must resist the loading caused by the passing of the air blast wave which in turn applies additional pressures and ground motions to the launcher. These ground motions (ground shock) are transmitted directly to the silo structure and its response is in turn transmitted to the missile and equipment inside. Unless special means of shock isolation are provided, the response of the missile and equipment to the shock could cause loads high enough to cause structural failure. Therefore, the missile and the important equipment are suspended on soft springs or other shock isolation devices which in effect allow the silo structure to move around them. It is extremely important that Air Force civil engineers understand the principles of shock isolation since it will be our job to maintain the ICBM facilities.

Consider the simple oscillator shown in Figure 2, consisting of a mass m (corresponding to the missile or equipment) attached by a linear spring of spring constant k (corresponding to the shock isolation device) to the base. Figure 2 also illustrates the displacement responses for this system for one value of natural frequency of the oscillator and for the given input displacement of the base. The natural frequency of the oscillator, of course, depends only on the properties of the system, that is, the mass m and the spring constant k. It is convenient to discuss the behavior of a simple oscillator system in terms of the maximum response of the system plotted as a function of its natural frequency. A plot of this nature is called a response spectrum. There are three types of response spectra: displacement, velocity and acceleration. By means of a logarithmic plot, as shown in Figure 3, the response spectrum can be represented by three regions of a single plot, each region defined by a straight line constituting an envelope to the actual spectrum. Briefly then, response spectra show, for a single-degree-of-freedom system, the peak response of the system relative to the ground motions as a function of the natural frequency of the single-degree-of-freedom system. Such spectra are applicable directly to elastic systems if their frequency, their type and mode of support are known.



Displacement Response of Single Degree of Freedom System FIG. 2

For more complex isolation systems, such as non-linear systems and multi-degree-of-freedom systems, the analysis is more difficult and involves a solution of the equations of motion of the system in which the characteristics of stiffness, mass and damping distributions of the system, along with the shock pulse input, are suitably taken into account.



Response Spectra FIG. 3

Air Force civil engineers who are now or will soon be charged with the responsibility of maintaining our missile facilities should be on guard against any modifications to the shock isolation systems. All systems and equipment have been thoroughly analyzed in the design phase for their dynamic response to shock inputs. These analyses have, in some cases, been very complex but, in all cases, these analyses have been thorough. Therefore, complete appreciation of the change in response that can occur due to a change in the mass of the isolated system or a change in spring stiffness must be had by all. No operational modification should be made to any part of the missile facilities without a thorough dynamic analysis to determine the response from shock inputs.

A concrete block etched with "820th RED HORSE Squadron" stands near the camp of the 24th AEG at Toussaint L'Ouverture International Airport in Port-au-Prince, Haiti. Engineers from the Kansas ANG found the block in a field they were leveling to bed down Airmen deployed to Haiti following the earthquake. The 820 RHS spent time in Haiti in 1994, 1995, and 1996, helping the country build basic infrastructure. (photo by Capt Nathan Broshear)

CEs Deploy for Operation Unified Response

Following the massive earthquake that hit Haiti in January, civil engineers — active duty, Reserve, and Guard — traveled to the country to aid in humanitarian and relief efforts. The AFSOC civil engineers who led the way with some of the first beddowns (see pp. 22-23) were soon followed by Air Force engineers providing a range of skills and knowledge to the government and people of the devastated country.

MSgt Bruce Schulte, a member of AFCESA's Airfield Pavements Evaluation team, assembles a GPS survey rod prior to conducting the airfield pavement evaluation at Port-au-Prince, Haiti. (photo by Capt Timothy Barnard)

MSgt Bradley Beaty, (forefront), a firefighter assigned to Scott AFB, Ill., works with a Navy Seabee and a Canadian firefighter to clear material from a collapsed roof of a shopping area in Port-au-Prince, Haiti. (courtesy photo)

MSgt Bradley Beaty, a firefighter assigned to Scott AFB, Ill., instructs Haitian and Air Force crews on fire truck setup and entry procedures during a recent exercise at the airport in Port-au-Prince, Haiti. (courtesy photo)

Kabul Facility Dedicated to Fallen CE

In a ceremony on Veteran's Day 2009, a barracks building on the New Kabul Compound in Afghanistan was renamed to honor of a fallen civil engineer: TSgt Philip A. Myers. TSgt Myers was killed by an improvised explosive device on April 4, 2009, while conducting operations in Afghanistan. He was an Explosive Ordnance Technician deployed from the 48 CES, RAF Lakenheath, United Kingdom, to the 755th Air Expeditionary Group. (U.S. Air Force photo)

Deployed CE Commander "Coined" by the Secretary of Defense

U.S. Defense Secretary Robert M. Gates presented a coin to Lt Col William H. Kale III, commander of the 380 ECES, during the secretary's visit to see the men and women of the 380 AEW at a non-disclosed location in Southwest Asia on March 11, 2010. The stop at the 380th AEW was part of Secretary Gates' trip through several countries meeting with U.S. allies. *(photo by MSgt Scott T. Sturkol)*

Fallen EOD Airmen Remembered...

TSgt Anthony C. Campbell

TSgt Anthony C. Campbell, Jr., an Explosive Ordnance Disposal technician, died Dec. 15, 2009, of wounds suffered from the detonation of an improvised explosive device in Helmand Province, Afghanistan. Three other EOD Airmen were injured in the detonation.

TSgt Campbell, 35, was forward deployed from the 380th Expeditionary Civil Engineer Squadron and was assigned to the 932 CES, Scott AFB, Ill.

"TSgt Campbell's efforts, and those of his teammates, were — and are — invaluable to the thousands of Soldiers, Sailors, and Airmen who continue to serve in harm's way — and I dare say we will never know how many lives he and his comrades have saved as a result of their courageous and selfless efforts," said Col William H. Edward, Jr., commander of 932nd Airlift Wing.

Col Williams spoke at a January 9, 2010, memorial service at Scott AFB for TSgt Campbell. A memorial service was also held in Afghanistan on Dec. 18, 2009.

TSgt Campbell went into active duty in the Air Force after graduating from high school, then served with the Kentucky Air National Guard before becoming a member of the Air Force Reserve in 2008. As a civilian, he was a police officer in Cincinnati, Ohio. He leaves behind a wife and two children.

The funeral for TSgt "Tony" Campbell was held in his hometown, Florence, Ky., on Dec. 22, 2009, with burial at the Kentucky Veterans Cemetery in Williamstown. Flags across the state were flown at half-staff on that day to honor his sacrifice.

This article was compiled from Air Force news stories by Maj Stan Paregien, Air Force and AP news releases, and sources within the EOD community.

(courtesy photo)

During a memorial service on Dec. 18, 2009 for TSgt Anthony Campbell, members of his EOD team from the 380 ECES join together for a moment of remembrance. (photo by TSgt Charles Larkin, Sr.)

(courtesy photo)

The EOD Bravo Flight team from the 755 AEW joined together on January 24, 2010, to remember their fallen team member, TSgt Adam Ginett, following a memorial service in his honor. (U.S. Army photo by PFC David Hauk)

TSgt Adam K. Ginett

A final shot was detonated Feb.1, 2010, at the end of a memorial service at Aviano AB, Italy to honor TSgt Adam K. Ginett, who died January 19 near Kandahar AF, Afghanistan, of wounds suffered from an improvised explosive device. He was deployed from the 31 CES explosive ordnance disposal flight at Aviano.

"Adam's passion for EOD fueled everyone around him, from reinstituting traditions to devising creative training opportunities to uniting the flight through hikes in the mountains and weekend dinners at obscure restaurants," Capt Emil L. Rebik, 31 EOD Flight commander said. "Our loss is incomparable to the family, but he is an irreplaceable friend and technician."

During the service at Aviano TSgt Ginett was posthumously awarded the Bronze Star Medal First Oak Leaf Cluster with Valor, Bronze Star Medal Second Oak Leaf Cluster, Purple Heart, Air Combat Action Medal, and the Meritorious Service Medal.

A memorial service was also held for TSgt Ginett on January 24 by his deployed unit, the 755th Air Expeditionary Squadron.

TSgt Ginett grew up in Coates, N.C. and entered the Air Force in 1999. While stationed at Aviano, he managed the training section for the 31 EOD Flight, which was recognized by U.S. Air Forces in Europe as the 2009 Best Explosive Ordnance Flight in the command.

On January 25, at Seymour Johnson AFB, N.C., TSgt Ginett's family, along with base leadership and other EOD service members, witnessed the dignified transfer of his remains. Along the transport route to the base's main gate, Airmen lined the streets to salute and pay their respects to their fallen comrade.

The funeral service for TSgt Ginett was held on January 29, followed by burial in Raleigh, N.C.

This article was compiled from Air Force news stories by 1Lt Kim Schaerdel and SSgt Heather Stanton, Air Force news releases, and sources within the EOD community.

CEMIRT Powers Critical Missions Worldwide

Mr. Vincent Consentino
CEMIRT/OL-A

In today's operational environments, electrical power is a mandatory requirement. During disaster relief and humanitarian efforts, connectivity to the primary utility grid may be severed, requiring the use of emergency power systems. In fact, establishing temporary power can be a top priority for first responders. Temporary power may also be necessary when an existing utility service connection or existing back-up generator is being serviced. Temporary connection of a back-up generator permits continued mission operations without any significant interruption.

Experts from CEMIRT, Travis AFB, Calif., install a CEMIRT Emergency Power System, or CEPS, at Vandenberg AFB, Calif. (U.S. Air Force photo)

One mission of HQ AFCESA's Field Support Division, Civil Engineering Maintenance, Inspection, and Repair Team (CEMIRT), is to maintain an extensive inventory of generators, or CEMIRT Emergency Power Systems (CEPS). For specific temporary prime and back-up power requirements, CEMIRT maintains an inventory of over 13MW of electrical generators. This includes 20 generators ranging from 150kW through 1.5MW. Both high-voltage (4,160V) and low-voltage (480V) generators are available to support primary distribution points (substations) and secondary distribution systems (building service entrances), respectively.

There have been some high profile projects where CEMIRT provided generators to support humanitarian and mission critical power requirements. After Hurricane Katrina hit in 2005, resulting in $81B in total damages, CEMIRT responded with personnel and assets to provide over 3.5MW of generators to quickly restore power to critical facilities at Kessler AFB, Miss. , and the Louis Armstrong New Orleans International Airport. More recently, CEMIRT CEPS supported a failed substation at Vandenberg AFB, Calif., and although they were not required, CEMIRT assets were poised for deployment to Haiti to support relief efforts.

The request for loan of CEPS is handled through CEMIRT's primary location at Tyndall AFB, Fla., or CEMIRT's Operating Location Alpha, Travis AFB, Calif. A site assessment may be performed to review access, generator placement, and connection points to the facility or electrical substation. CEMIRT will also draft a memorandum of agreement addressing roles and responsibilities, points of contact, technical support, maintenance requirements and potential reimbursement costs once the unit is returned to CEMIRT. The customer also agrees to pay for shipping, miscellaneous materials, and TDY costs for installation personnel.

Additional information on CEPS type and availability can be reviewed on AFCESA's Field Support Division's Community of Practice (https://www.my.af.mil/afknprod/community/views/home.aspx?Filter=OO-MS-CE-11). Requests should be coordinated, either through the requester's chief of ops, unit commander, or MAJCOM representative.

CEMIRT continues to provide unique services and equipment which are both cost-effective and timely to meet known and unplanned requirements. "We continue to evaluate our CEPS fleet to ensure assets are mission ready at a moment's notice," said Mr. Robert Gingell, Chief of AFCESA's Field Support Division. "We also strive to get the word out to the Air Force CE community to ensure they are aware of this capability at their disposal."

Need backup power? Just give us a call.

Mr. Consentino is the Regional Manager of CEMIRT at Travis AFB, Calif.

Key Personnel Changes

Col Theresa Carter was promoted to brigadier general on May 7, 2010. Brig Gen Carter is the Director of Installations and Mission Support, Headquarters Air Mobility Command, Scott AFB, Ill. Brig Gen Carter's promotion is made more significant by the fact that she is the Air Force's first female civil engineer general officer.

Brig Gen Theresa Carter

Mr. Timothy Bridges

In May 2010, Mr. Timothy Bridges became the Deputy Assistant Secretary of the Air Force for Energy, Environment, Safety, and Occupational Health, the Pentagon, Washington, D.C. Mr. Bridges was formerly the Director of Communications, Installations, and Mission Support, Headquarters Air Force Materiel Command, Wright-Patterson AFB, Ohio.

Maj Gen Joseph A. "Bud" Ahearn, USAF (Ret)

Former Air Force Civil Engineer Honored by NAE

Maj Gen Joseph A. "Bud" Ahearn, USAF (ret), has been elected to the National Academy of Engineering, as announced by the Academy in February 2010. The Academy's total U.S. membership is 2,267 and election to the organization is among the highest professional distinctions accorded an engineer. Academy membership honors those who have made outstanding contributions to engineering research, practice, or education.

Maj Gen Ahearn's Air Force Civil Engineering career spanned over 30 years, culminating in his appointment as The Civil Engineer in March 1989. In 1992, Maj Gen Ahearn retired from the Air Force and joined CH2M Hill Ltd., where he most recently served as Senior Vice President and executive sponsor for the U.S. Forces Korea $11 billion relocation program. Although officially retired from CH2M Hill since January 2009, he continues to serve as a consultant for the company, primarily in talent management and leadership development.

"I could not be more grateful and humbled. The election comes as I stand on the shoulders of two remarkably strong professional groups: the Air Force Civil Engineering team and the firm of CH2M Hill," said Maj Gen Ahearn. "I have been blessed with exceptional leaders and colleagues over the years. Let me honor their ingenuity, high aspirations, and exceptional service in carrying out the duties of the National Academy of Engineers."

2009 Air Force Civil Engineer Awards

In association with the Society of American Military Engineers, the National Society of Professional Engineers, and the Northeast Chapter of the American Association of Airport Executives, the Air Force recognized their 2009 Air Force civil engineer award winners at a ceremony in Washington, D.C. Winners are highlighted here in bold; runners-up are listed where applicable.

Outstanding Civil Engineer Unit and the Society of American Military Engineers - Major General Robert H. Curtin Award

Large Unit

60 CES, Travis AFB, Calif.
52 CES, Spangdahlem AB, Germany

Small Unit

554 RHS, Andersen AFB, Guam
31 CES, Aviano AB, Italy

Air Reserve Component

134 CES, McGhee Tyson ANGB, Tenn.
452 CES, March ARB, Calif.

Brigadier General Michael A. McAuliffe Award (Housing Excellence)

3 CES, Elmendorf AFB, Alaska
88 ABW, Wright-Patterson AFB, Ohio

Major General Robert C. Thompson Award (Resources Flight)

96 CEG, Eglin AFB, Fla.
100 CES, RAF Mildenhall, United Kingdom

Brigadier General Archie S. Mayes Award (Programs Flight)

92 CES, Fairchild AFB, Wash.
35 CES, Misawa AB, Japan

Major General Clifton D. Wright Award (Operations Flight)

35 CES, Misawa AB, Japan
100 CES, RAF Mildenhall, United Kingdom

Major General Del R. Eulberg Award (Asset Management Flight)

437 CES, Charleston AFB, S.C.
14 CES, Columbus AFB, Miss.

SMSgt Gerald J. Stryzak Award (Explosive Ordnance Disposal Flight)

775 CES, Hill AFB, Utah
90 CES, F.E. Warren AFB, Wyo.

Colonel Frederick J. Riemer Award (Readiness and Emergency Management Flight)

Active Duty

4 CES, Seymour Johnson AFB, N.C.
31 CES Aviano AB, Italy

Air Reserve Component

439 MSG, Westover ARB, Mass.
113 CES, Andrews AFB, Md.

Major General Joseph A. Ahearn Enlisted Leadership Award

CMSgt Michael T. Irons, 52 CES/CEM, Spangdahlem AB, Germany
CMSgt Todd A. Gumprecht, HQ AFCESA/CEOF, Tyndall AFB, Fla.

Major General William D. Gilbert Award

Officer

Maj Madison L. Morris, HQ AFGSC/A4/A7P, Barksdale AFB, La.
Lt Col Timothy L. Fuller, HQ ACC/A7OO, Langley AFB, Va.

Enlisted

SMSgt Robert F. Lovett, HQ AFCESA/CEOOF, Tyndall AFB, Fla.
MSgt Gregory Brannan, HQ USAFE/A7XE, Ramstein AB, Germany

Civilian

Mr. Stephen Shoaf, HQ AFCESA/CEOA, Tyndall AFB, Fla.
Mr. Jeffery A. Williams, HQ AFPC/DPWSM, Randolph AFB, Texas

The Harry P. Rietman Award (Senior Civilian Manager)

Ms. Teresa Clouse, 7 CES/CEA, Dyess AFB, Texas
Mr. Michael Clawson, HQ AFCESA/CEK, Tyndall AFB, Fla.

Major General L. Dean Fox Award (Senior Military Manager)

Maj Rockie K. Wilson, AF/A7CP, Washington. D.C.
Lt Col Jennifer L. Kilbourn, HQ USAFE/A7X Ramstein AB, Germany

Major General Eugene A. Lupia Award

Company Grade Officer

Capt Lisa M. Mabbutt, HQ USAF/A7CPP, Washington, D.C.
1Lt Daniel P. Griffin, 27 SOCES, Cannon AFB, N.M.

Noncommissioned Officer

TSgt Richard J. Hilger, 786 CES/CEKIE-E, Ramstein AB, Germany
TSgt Joshua L. Benauro, 18 CES/CEOIH, Kadena AB, Japan

Airman

SSgt Kristofer L. Talbott, 18 CES/CEOFP, Kadena AB, Japan
SrA Zachary C. Holschuh, 886 CES/CED, Ramstein AB, Germany

Chief Master Sergeant Larry R. Daniels (Military Superintendent)

SMSgt James A. Purkey, 4 CES, Seymour Johnson AFB, N.C.
SMSgt Craig S. Hall, 6 CES, MacDill AFB, Fla.

Outstanding Civil Engineer Civilian Manager

Ms. Kristin A. Namoca, 374 CES/CEP, Yokota AB, Japan
Mr. Thomas M. Lowry, HQ USAF/A7CPA, Washington, D.C.

Outstanding Civil Engineer Civilian Technician

Mr. Joseph J. Bruno, 43 CES/CEF, Pope AFB, N.C.
Ms. Susan L. Howard, 27 SOCES/CEP, Cannon AFB, N.M.

Outstanding Civil Engineer Air Reserve Component

Officer Manager

Lt Col Richard Freewalt, HQ USAF/A7CXX, Washington, D.C.
Maj Erin Manning, HQ AFGSC/A4/7, Barksdale AFB, La.

Senior NCO Manager

SMSgt Stephen Burns, HQ AFCESA/CEM, Tyndall AFB, Fla.
MSgt Delbert C. Brown, 460 CES/CEC, Buckley AFB, Colo.

NCO Manager

TSgt Volkmer R. Garcia, 30 CES/CEOFE, Vandenberg AFB, Calif.
TSgt Gregory W. Newman, 507 CES/CEO, Tinker AFB, Okla.

Major General Augustus M. Minton Award (Outstanding *Air Force Civil Engineer* Article)

1Lt Christopher Smith, 354 CES/CEXE, Eielson AFB, Alaska
Maj Kevin Mantovani, HQ AMC/A7ZP, Scott AFB, Ill.

Outstanding Community Planner

Ms. Jennifer A. Harris, 47 ISS (P)/CEAO, Laughlin AFB, Texas
Ms. Heidi R. Nelson, 319 CES/CEC, Grand Forks AFB, N.D.

Society of American Military Engineers Newman Medal

Col Brian D. Yolitz, USAFCENT/A7, Shaw AFB, S.C.
Col Timothy S. Green, HQ EUCOM/OSACEUR

Society of American Military Engineers Goddard Medal

Active Duty

SMSgt Christopher V. Thai, 1 CES/CEO Langley AFB, Va.
SMSgt John M. Mazza, 35 CES/CEO Misawa AB, Japan

Air National Guard

MSgt Ignatius Sanchez, 254 RHS/DOA, Andersen AFB, Guam

National Society of Professional Engineers Federal Engineer of the Year

Military

Maj Ryan J. Novotny, P.E., HQ USAFE/A7PD, Ramstein AB, Germany

Civilian

Dr. Craig A. Rutland, P.E., HQ AFCESA/CEOA, Tyndall AFB, Fla.

Air Force Energy Conservation Award

Individual

Mr. Russell J. Hume, 10 CES/CEPM, USAF Academy, Colo.
Mr. Robert D. Montgomery, 23 CES/CEAO, Moody AFB, Ga.

Team

HQ AETC/A7COE, Randolph AFB, Texas
95 ABW/CE, Edwards AFB, Calif.

Balchen/Post Award (Snow and Ice Removal)

3 CES, Elmendorf AFB, Alaska
28 CES, Ellsworth AFB, S.D.

Bulldog Award

Col David Maharrey, 96 CEG/CC, Eglin AFB, Fla.

Air Force General Thomas D. White Environmental Awards

Environmental Quality Award (Non-Industrial Installations)

Seymour Johnson AFB, N.C.

Environmental Quality Award (Reserve/Air National Guard Component)

134th ARW, McGhee Tyson ANGB, Tenn

Restoration Award (All Installations)

Hill AFB, Utah

Restoration Award (Individual/Team Excellence)

Ms. Regina D. Butler, 45 CES/CEA, Patrick AFB, Fla.

Natural Resources Conservation Award (Small Installations)

Hickam AFB, Hawaii

Natural Resources Conservation Award (Individual/Team Excellence)

Mr. Stephen M. Seiber, 96 CEG/CEVSN, Eglin AFB, Fla.

Cultural Resources Management Award (All Installations)

Barry M. Goldwater Range East, Luke AFB, Ariz.

Environmental Quality Award (Individual/Team Excellence)

7 CES/CEA Dyess AFB, Texas; Environmental/Asset Management Program Managers: Mr. James Armstrong; Mr. Gary Burling; Ms. Teresa Clouse; Mr. Brian Danko; Mr. Bryan Foreman; and Mr. David Laurence

Environmental Excellence in Weapon System Acquisition Team Award

ASC Environmental & Occupational Health Team, ASC/ENVV, Wright-Patterson AFB, Ohio