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Airborne RED HORSE

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On the Cover

During training hosted by the 820 RHS at Nellis AFB, Nev., in April, U.S. Army SSgt Hector Hoyas and SrA Matthew Phillips, a pavements and equipment operator with the Airborne RH Flight, turn away from the prop wash as a CH-47 helicopter takes off with a HUMVEE they sling-loaded. (photo by TSgt Michael R. Holzworth)

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Building Together

As Air Force Civil Engineers, we build upon our past to secure our nation's future, and we build for today's Air Force and Airman, withstanding all challenges. We have plenty of those and face even more, not least among them the tightening fiscal environment.

In his recently published CSAF Vector 2011, General Norton Schwartz states that "In the coming years, our Nation and our Air Force will face a budget environment unlike anything we have encountered in decades …. The Air Force will play a role in the solution, but not by retreating or continuing business as usual."

We all have a significant role to play within this endeavor, but as usual Civil Engineering got an early start. We rejected "business as usual" quite some time ago, incorporating more effectiveness and efficiency into our everyday practices and we'll continue to do so. We are already hard at work streamlining and standardizing our operations as we maintain outstanding support to our installations worldwide.

I challenge you to continue to do things smarter, faster, better, and cheaper. The CSAF's Vector also emphasized developing and caring for our Airmen and their families, a charge directly related to what we do in Civil Engineering. Last year we improved 3,784 dorm rooms, constructed or renovated 4,758 family housing units, and built 22 new child development centers.

Building sustainable installations is another of Civil Engineering's challenges, and in early June, we released new guidance for sustainable design and development that reinforces our commitment to installation and environmental stewardship. An article in this magazine details ongoing efforts by AFCEE to employ sustainable solutions in S/R&M projects. All of our engineers are critical to building sustainable installations. Do your part and be "brilliant at the basics," be the absolute expert, and be more efficient while not compromising our effectiveness and expeditionary combat support skills.

We also continue to develop our people, to "build great leaders." Last December, I held NCO/SNCO and wage grade forums to address several issues which you will hear more about in the future. This past spring, I spent the day with more than 50 civil engineers at the third annual CGO/FGO Forum and received valuable feedback on important issues and ongoing challenges facing our civil engineers. One of the issues discussed was the high ops tempo, which has not only stressed our Airmen but also our civilian workforce.

Sadly, we recently lost three EOD Airmen in Operation Enduring Freedom. Please read about these heroes in this magazine and remember them and their families in your prayers. Continue to be a committed Wingman to your fellow Airmen and keep each other safe, at work and at home.

The conclusion of the CSAF Vector 2011 includes the statement, "We face a challenging future, but in every challenge there is opportunity … and it is ours for the taking." Together we will capitalize on the opportunities within our challenges as we "build to last, lead the change!"

Timothy A. Byers
Major General, USAF
The Civil Engineer

GeoBase:
Moving Mapping Operations into the 21st Century

Mr. Nathan Boon
HQ USAF/A7CRT

Like military planners, civil engineers rely on a strong understanding of their own operational environment. Engineers have long used surveys, topographic analyses, map overlays, and other cartographic tools to manage projects in military construction, base beddown, transportation control, and other areas .

Today, state-of-the-art geographic information system (GIS) technologies are empowering civil engineers to better support garrison and expeditionary operations by geospatially enabling or "geoenabling" a wide range of Air Force and Civil Engineering applications. By integrating disparate data into one common picture, GIS technology creates a powerful, intuitive visual framework for understanding complex spatial relationships.

GeoBase, the Air Force Civil Engineering program for Installation Geospatial Information and Services (IGI&S), is just one of many programs making figurative strides across the Air Force enterprise to geoenable our mission. In January, we published our 2011 U.S. Air Force Civil Engineering GeoBase Strategy Document and want to share here some of the biggest moves and advances in applied geospatial capability

Standard yet Agile Support for Operations

The first goal of the GeoBase strategy focuses on providing support for "the warfighter's unique and emerging needs in both the expeditionary and garrison environments."

For many civil engineers, BRAC relocations present the biggest actual move on the horizon and there has been substantial geospatial work in planning for unit beddown, new building construction, and infrastructure improvements. GeoBase is helping to capture these changes to the installation landscape while providing a variety of analytical and visualization support. This summer, over 17,000 DOD military, civilians, and contractors will relocate from the Pentagon area alone, but big moves are afoot all across the Air Force, including at Eglin AFB, Fla.

The garrison at Eglin has been experiencing significant changes due to BRAC, and Eglin's Geo-Integration Office has been able to help.

"Our GIO was able to connect BRAC decision makers with numerous geospatial data layers needed to support beddown for Army's 7th Special Forces," said Mr. Ken Bristol of Eglin's 96 CEG. "We helped the [National Environmental Protection Act] shop complete their environmental analysis, providing data layers for wetlands, endangered species, cultural resources, and utilities."

Valuable Data through Quality Assurance

Many of the innovative applications for geospatial data are transforming the very methods used to collect the data itself. High quality data is at the foundation of all vital mission decisions, and recognizing this, those working with GeoBase have a determination to create, enforce, and maintain geospatial data standards through quality assurance. Because so much geospatial data collection occurs remotely using satellite and aerial imagery, verification in the field — or "ground truthing" — is becoming more important than ever.

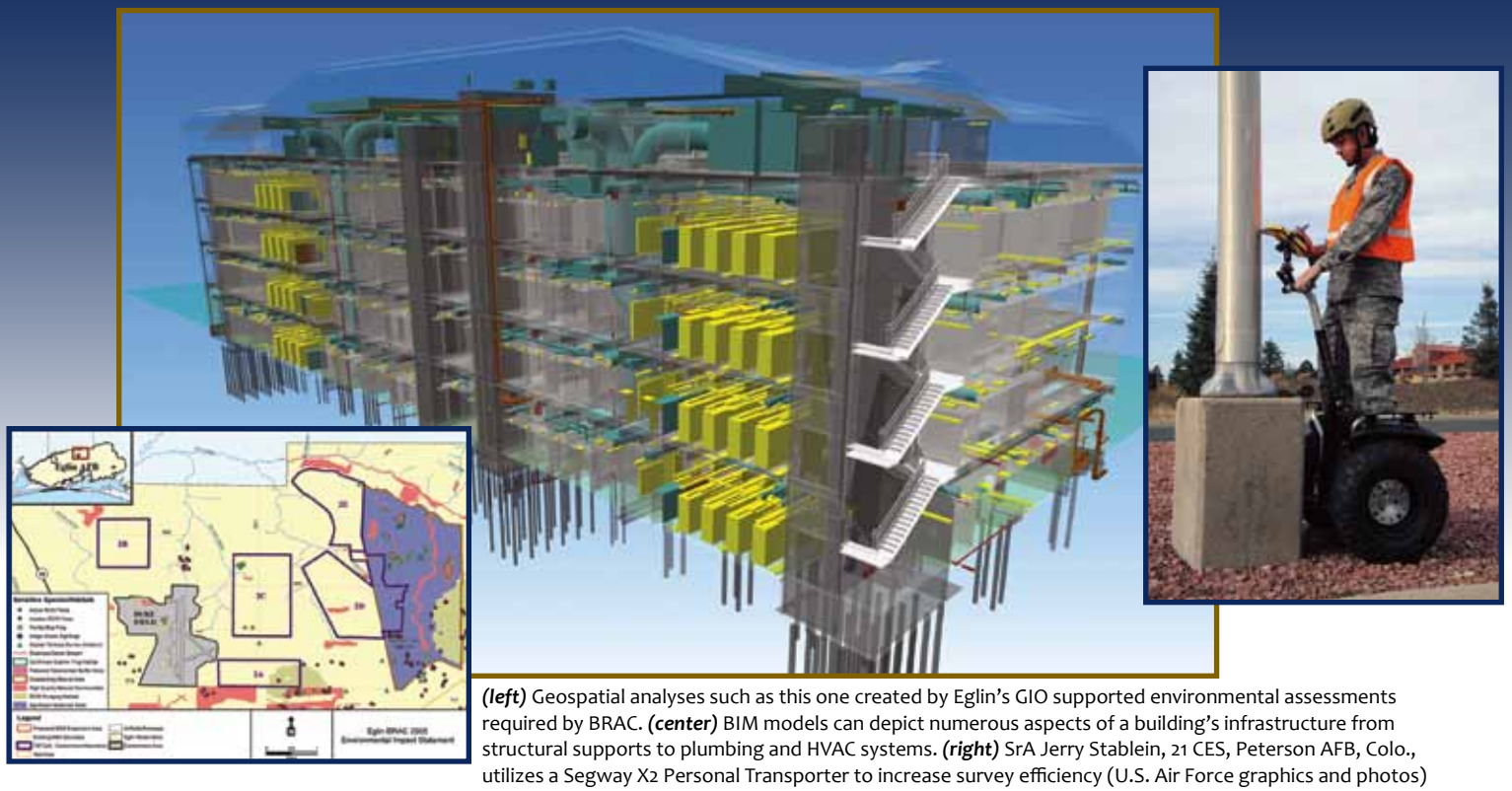
The 21 CES at Peterson AFB, Colo., has developed an innovative data collection and surveying program called X2GeoPROVE (Personal Rapid Object Verification Equipment) that unites mobile GPS survey equipment with the all-terrain Segway x2 Personal Transporter. Field data acquisition is more efficient and accurate, eliminating costly data errors. Added benefits are reductions in their carbon footprint, vehicle maintenance, and fuel usage.

"Our engineers were able to survey 114 miles of natural gas lines and verify the locations of over 200 natural gas valves," said Mr. Roger Clarke, the squadron's chief of technical support. "This work would normally take 50 hours to complete, but with X2GeoPROVE we were able to finish the job in just 17 hours."

Enterprise Architecture Utility and Savings

The GeoBase program has a history of using maps and mapping services to enable access to a variety of Civil Engineering information systems. In 2009, GIOs at commands were already developing solutions that linked information from the Air Force Civil Engineer System (ACES), into web-based map viewers.

"We were able to tie our map directly into ACES, so all information is as up-to-date as possible, and generally as current as the night before," said AFSOC's GeoBase manager, Mr. Kyle Martin.



(left) Geospatial analyses such as this one created by Eglin's GIO supported environmental assessments required by BRAC. ***(center)*** BIM models can depict numerous aspects of a building's infrastructure from structural supports to plumbing and HVAC systems. ***(right)*** SrA Jerry Stablein, 21 CES, Peterson AFB, Colo., utilizes a Segway X2 Personal Transporter to increase survey efficiency (U.S. Air Force graphics and photos)

The commands have continually fostered this capability for system integration and now Civil Engineering is implementing a comprehensive, fully integrated, and geoenabled solution in the form of NexGen IT, which will replace numerous legacy systems, including ACES and the Interim Work Information Management System, or IWIMs. GeoBase will help furnish the geospatial data and viewing capabilities that provide the backbone for map-based visualization within NexGen IT. System integration with NexGen IT is a principal driver of the design and implementation process for the GeoBase enterprise architecture, which will increase utility and savings and ensure alignment with DOD, Air Force, and Civil Engineering priorities.

Smart Resourcing to Sustain and Improve

The savings garnered from GeoBase's efficiencies have to be balanced with the resources needed to sustain and continually improve our geospatial capabilities. The GIO at Headquarters Air Force recently coordinated a special bulk purchase of Autodesk software for all of Civil Engineering at considerable savings to give civil engineers access to the best drafting and mapping tools available. GeoBase personnel ensured users were receiving the tools needed to execute their missions in accordance with the GeoBase strategy, and AFCEE experts recognized an opportunity to repurpose unused software licenses and provide users with new and powerful capabilities in building information modeling (BIM), at little to no additional cost.

"BIM tools offer myriad design and construction benefits for accuracy, efficiency, productivity, risk mitigation, and improved quality control," said AFCEE's Maj Pat Suermann, who is recognized as a BIM expert. "But while we were able to purchase the latest BIM software through the [Blanket Purchase Agreement], we realized we didn't want software that our people couldn't use."

Maj Suermann and Mr. Rick Sinkfield, the Air Force Architecture Subject Matter Expert, leveraged the Autodesk purchase agreement to get professional hands-on BIM training at several bases — Lackland in Texas, Nellis in Nevada, Langley-Eustis in Virginia, and Hickam-Pearl in Hawaii and deliver remote training to almost 300 students via satellite.

Fulfilling a Comprehensive Program Strategy

Each of the capabilities described above exemplifies the GeoBase Program's roadmap for continued progress and gives a snapshot of the forward leaps that GeoBase users and providers are making in applied GIS. From Segway-based survey techniques to satellite imagery with three-inch resolution, geospatial information and services are rapidly evolving. Civil Engineering's expanding usage of geospatial capabilities promises to move the GeoBase program ever closer to a vision of "a widely acceptable and accessible program providing structured geospatial capabilities for a full range of mission applications."

For more examples of standout applications, look for the latest issue of our newsletter, The GeoBase Projection, on the CE Portal.

Mr. Boon is a contractor supporting the GeoBase program manager within the office of The Air Force Civil Engineer, Andrews AFB, Md.

AFCAMP Meeting Marks a MILESTONE

Mr. John Franz
HQ USAF/A7CA

In February 2011, activity management plan (AMP) managers achieved a key milestone for the AMP process by "building" the first Air Force Comprehensive Asset Management Plan (AFCAMP) during a recent meeting.

AMPs and CAMPs are standardized templates used to identify installation-level asset management requirements, priorities, and issue/actions based on basic business principles of cost, risk, and benefit. Since their initial launch in 2009, these base-level plans have been rolled up with other AMPs/CAMPs at the MAJCOM and Air Force levels to integrate asset management principles into existing programs and processes across the Air Force.

Why are AMPs important?

It is critical to apply "smart unconstrained programming" across the FYDP+2 to achieve an investment plan that uses historical data as a guide to achieve a realistic programming approach. This necessitates base-level managers to strategically align requirements and needs across a longer term funding profile. At the MAJCOM, managers can leverage multiple installations to target strategic sourcing opportunities. At the headquarters level, AFCAMP managers can use the information in the AMP investment profiles (also reflected in the MAJCOM-level AMPs) to predict what the next focus fund may be. Ultimately, transparency supports predictability, which allows Air Force leadership to defend the budget, strategically map resources, and apply focus funds to areas needing attention, helping the Air Force achieve the greatest return on investment. It also avoids an unrealistic funding "spike," that often occurs when too many projects are programmed in the Automated Civil Engineer System in the same year.

Inside the 1st AFCAMP build

The AFCAMP meeting followed two years of effort put into the multi-level AMPs and marks the first time that holistically captured data was available and leveraged to evaluate top-level issues and priorities in an enterprise-wide plan.

"A7C is covering new ground here," said Mr. David Kumar, who is the Waste Air Force Activity Management Plan manager under the Environmental Program Group. "The AFCAMP meeting was the first opportunity to collectively review the results and key issues of the different AMPs. It brought together five AMP managers to work as a team to begin identifying the needs/priorities for A7C to address. We were asked to forget about allegiance to our own discipline, review the challenges within each AMP, and work together to select issues and develop a comprehensive and integrated 'AF/A7C' AFCAMP picture."

Several of the meeting outcomes are listed below:

> Developed a process to advocate and allocate funds. The AFCAMP team built a streamlined process and schedule for continuous AMP updates aligned with the planning, programming, budgeting, and execution (PPBE) cycle. This alignment creates full asset transparency by standardizing how to develop and identify requirements and issues.

> Identified level-of-service targets. This first round of data examination yielded several targets and measures to monitor through our Installation-, MAJCOM-, and Air Force-level AMPs and determine where additional action may be needed. Applicable Program Groups in the Governance process will evaluate, refine, and adopt these targets and measures in parallel with master strategy development.

> Elevated "top five" issues. The issues of real property inventory; deferred maintenance; asset knowledge/process standardization; recurring work program; and space utilization/consolidation and demolition will be vetted through the applicable Civil Engineering Program Groups for further strategic definition and refinement.

> Reviewed Investment Plans. The MAJCOMs' progress in developing investment plans was evaluated in preparation for FY12's AFCAMP. It is critical to complete investment plans per the AMP/CAMP schedule to ensure the funds the MAJCOMs receive are used for the requirements that are deemed "mission critical/worst first."

> Created a "way ahead" for focus funds. A standardized approach was initiated to ensure A7C focus funds are allocated based on AMP and CAMP input, to minimize data calls and make program management more efficient. The requirements identified in the MAJCOM CAMPs, or

"Even with all of the progress we have made, I need each of you to continue to improve our asset management programs and processes. We need to invest our limited time and fiscal resources on the right requirements. We have to be more efficient and do things smarter and more cost effectively. Make no mistake about it — I wholeheartedly support our CE Transformation and our asset management approach to CE processes because it is how we must operate and manage to make smart decisions for installation management. I call upon ALL engineers as asset managers to apply asset management principles to all our existing business practices. We have to know quantity and condition of all our built and natural assets, and use standardized processes to optimize their use to provide standardized levels of service, across the Air Force. We need to prioritize investment in those assets to ensure we meet mission and quality of life requirements. We must continue to move forward together, to "Build to Last. Lead the Change."

Maj Gen Timothy A. Byers, The Air Force Civil Engineer

MCAMPs, will be evaluated to ensure HAF-controlled funds are used for the requirements determined to be mission critical/worst first.

What's Next

Even with all this success, this work has just begun. Looking forward, we are working to make AMP data available in real time, easily accessible, and fully transparent on the CE Portal so that it can be used to align A7C master strategy priorities including strategic funding allocation decisions on any centrally managed programs.

The AFCAMP for FY12 will be built in July, leveraging the Base Comprehensive AMPs (BCAMPs) and MCAMPs to meet PPBE process and timelines, supporting the President's budget. This effort will also further integrate the Environmental Quality Program and inform airfield, demo/consolidation, dorm and energy focus areas, ultimately aiding in decision making and application of resources. To ensure we continue aligning strategy to task, the AMP development process will continue to be refined with AMPs updated on a continuous basis.

"The AFCAMP build was definitely a worthwhile effort; the process effectively copes with Air Force competing priorities to focus our efforts in areas with the highest payoffs," said Ms. Lynn Hancsak, the Facilities Air Force AMP manager for the Built Infrastructure Program Group.

For more information review the AMP 2.0 Playbook on the CE Portal (look for the Requirements Programming Playbook coming this summer) at https://cs.eis.af.mil/a7cportal/CEPlaybooks/AM/AO/RP/AMP/Pages/default.aspx and watch the Centerline video at https://cs.eis.af.mil/a7cportal/Pages/CEnterLine_25.aspx or talk to members of your asset management flight.

Mr. Franz is the Asset Optimization Manager, Asset Management and Operations Division, office of The Air Force Civil Engineer, Andrews AFB, Md.

An AFCAMP Success Story

During the AFCAMP meeting AFCESA's Dr. Craig Rutland, the Air Force AMP manager for the Airfield and Transportation Network activity, used the key performance indicator for the pavement condition index to generate a list of worst first runways. Working with the MAJCOM AMP Managers, he developed an initial project list for spending $100M in FY 12.

AFCEE Delivers Sustainable Solutions

Mr. Robert Ginsberg
Mr. Micah Shuler
HQ AFCEE/EXH

The Construction Execution Branch of the Air Force Center for Engineering and the Environment, Lackland AFB, Texas, continues to expand its sustainment, restoration and modernization (S/R&M) capability offering. In support of President Obama's June 2010 memorandum asking for all federal agencies to dispose of unneeded real estate and utilize installations more efficiently, AFCEE has ramped up its S/R&M service offering and its focus on the Air Force's initiative, "20/20 by 2020."

20/20 by 2020 aims to reduce owned, leased, and Air Force-led joint base real property and associated operating costs by 20 percent by the year 2020. In support of both this initiative and the president's direction, AFCEE's focus is to support installations executing projects to reuse existing facilities for 'new mission' and 'realignment' via S/R&M, space optimization, and asset management task orders.

To accomplish this, AFCEE is leveraging worldwide-capable, on-line contract vehicles and in-house project management and technical expertise. These assets allow AFCEE to perform focused planning, design, construction, and asset management services that produce direct savings by renovating current space, consolidating underutilized space and demolishing excess space.

In addition to S/R&M projects, AFCEE engineers are currently managing 11 task orders in support of the space optimization initiative for MAJCOMs stateside and in overseas locations, and seven task orders involving asset management planning.

"AFCEE's role in the management of this work is critical as it provides information on where there may be opportunities to plan for and operate our installations more efficiently," said Construction Execution Branch chief Mr. Ben Kindt.

For space optimization support, AFCEE issued a statement of work for surveying facilities, which includes collection of space utilization data and updated floor plans. This information is compiled in a space optimization tool, known as an S-File, which enables installations to track, view, and analyze the data.

By integrating space utilization data with facility condition and operational cost data, engineers are able to identify consolidation and demolition opportunities in support of the 20/20 by 2020 goal.

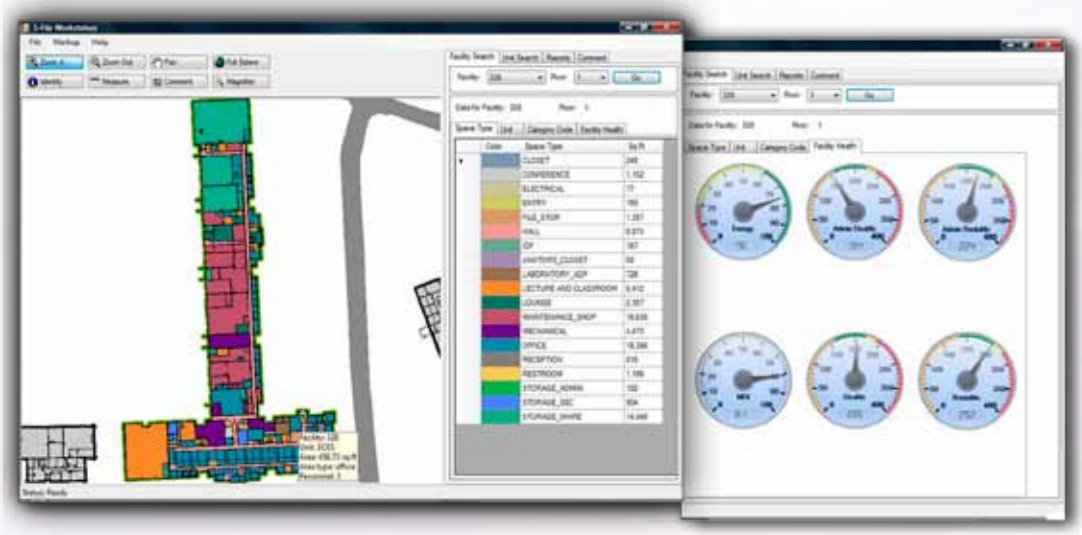
Under AFCEE's asset management task orders, contractors are developing a plan for implementing asset management principles; creating technical tools for evaluating activity management plans and maximizing their effectiveness; and providing technical expertise to participate in asset management focus groups.

AFCEE continues to look for opportunities to enhance its support of sustainable installations, as demonstrated during AFCEE and AFCESA's Joint Field Operating Agency S/R&M Industry Forum on Feb. 24 in San Antonio, Texas. The event brought together about 80 representatives from over 35 prime contracting firms to share best practices and lessons learned in an effort to enhance the quality, speed, and effectiveness of FOA delivery of S/R&M design and construction.

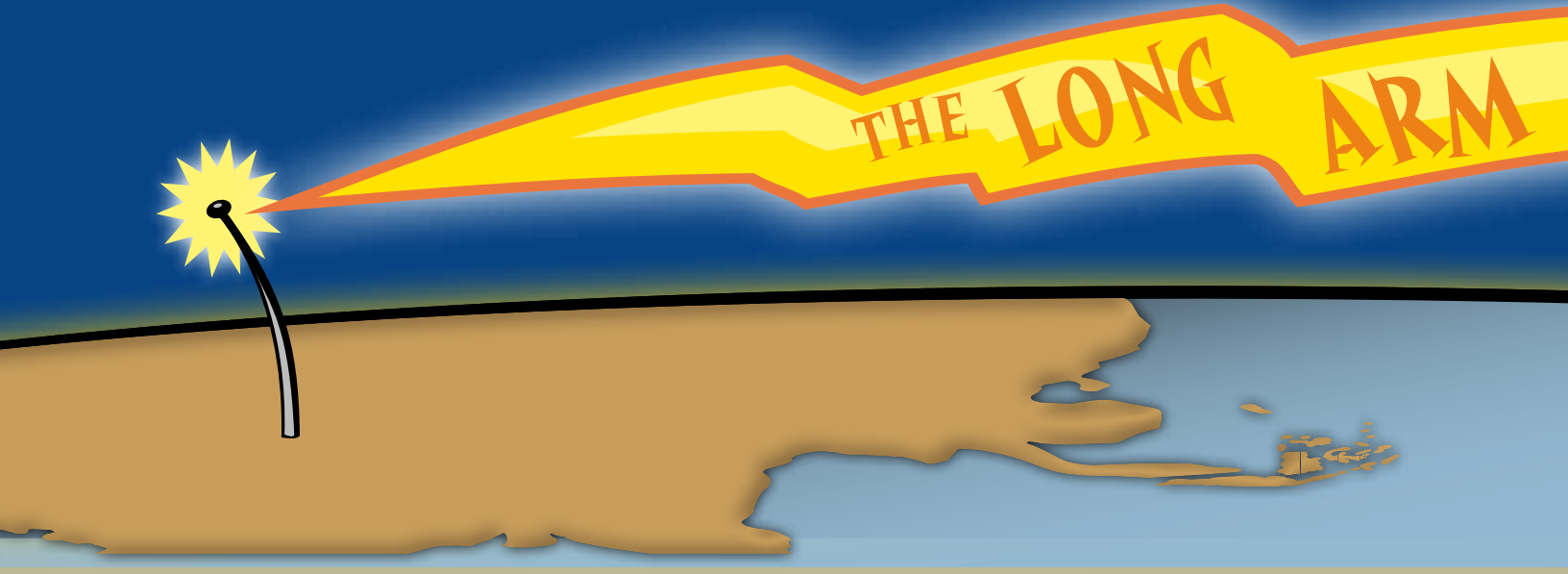
Another contribution to the 20/20 by 2020 initiative is the Inter-American Air Force's Academy Training Complex. AFCEE contractors are nearing completion of the project, which consolidates seven separate training facilities, aircraft, and equipment at Lackland and Kelly AFBs, Texas, into one massive facility located at Lackland.

"The 20/20 by 2020 initiative is all about efficient use of resources. To accomplish this, we must continue to improve our communication with our customers and stakeholders, staying proactive to ensure that Air Force assets are well managed and used wisely and support the sustainable directive," said Mr. Kindt.

Mr. Ginsberg is a support contractor and Mr. Shuler is a project manager for the Capital Investment Branch, AFCEE, Lackland AFB, Texas.



(left) Screenshot from an S-file work project.
(below) The Inter American Air Forces Academy Training Complex at Lackland AFB, Texas, is nearing completion and will serve as a state-of-the-art aircraft maintenance and training facility. The new facility consolidates seven existing training facilities, equipment, and aircraft currently at various locations. (photo by Ms. Summer Allen)



Capt Joseph A. DiCiolla
HQ AFCEE/CXM

The Air Force reached a significant milestone in its construction history earlier this year with the opening of Runway 01/19, the new 11,500-foot runway at Camp Bastion, Afghanistan. The new runway is capable of supporting C-5s, Boeing 747s, and a variety of coalition "heavy" aircraft. In fact, the heaviest aircraft in the world, the Antonov AN-255, has landed there.

The Camp Bastion runway was the first expeditionary runway built by Air Force contractors and military construction management in more than 50 years, according to Dr. Ronald Hartzer, the Air Force Civil Engineering Historian. The last airfield was Tuy Hoa Air Base, Vietnam, in 1966.

Although this was a major development, it was only part of the first phase of a more than $700M airfield construction program being managed by AFCEE taking place at bases in the Helmand Province.

Camp Bastion, established by the United Kingdom in 2006, is collocated with Camp Leatherneck and Forward Operating Base (FOB) Tombstone, which is itself collocated with Afghan National Army base Shorabak. Together, these bases make up a strategic and tactical hub for coalition forces in the fight to stabilize the volatile southern region of Afghanistan.

The construction program at these bases is being executed by a small onsite AFCEE project management team: Officer in Charge and Program Manager Maj Bradley Johnson, deployed from headquarters Air Force; Camp Leatherneck Program Manager Capt James Melvin, deployed from AFCEE's Housing Privatization Division, and AFCEE support contractors Mr. Jack Hamm, Mr. Harry Labadorf, and Mr. Andrew Barboza.

"AFCEE is tasked to execute the entire military construction program at Bastion, Leatherneck, Tombstone, and Shorabak to transform the bases to support an end state of more than 20,000 coalition members," said Col Terry Watkins, AFCEE's Contingency Construction Division chief.

When fully constructed, the Camp Bastion airfield will project significant combat power by providing close air support (CAS); intelligence, surveillance, and reconnaissance (ISR) capabilities; emergency medical evacuation; and strategic airlift for U.S. and coalition personnel operating in the region.

This newly completed strategic airlift apron is part of phase one of a $700M airfield construction program taking place at Camp Bastion in Afghanistan. (photo by Maj Patrick Suermann)

Phase one construction projects, awarded in April 2009, totaled more than $185M. They included a runway, strategic airlift apron, and a rotary wing apron at Camp Bastion. Completion of the strategic ramp in April 2011 marked the last of the phase one projects. Runway 01/19 was commissioned Feb. 10, four months ahead of schedule.

Construction phases two, three, and four are currently underway. Phase two includes five projects totaling more than $72M: rotary wing apron phase two, maintenance hangars, fuel operations and storage, and a CAS apron. Phase three includes an expansion to the strategic airlift apron, a secure reception staging and onward integration facility, and a cargo handling area. Phase four includes a CAS apron expansion, ISR apron, an operations and maintenance facility, and expeditionary fighter shelters.

AFCEE

From San Antonio to Afghanistan, the agency's engineers manage projects to create a coalition power hub

A $37.4M parallel taxiway and refueling apron and $12M dollar rotary wing phase three parking ramp were recently awarded. These projects, expected to be completed in June 2012, will conclude the Camp Bastion airfield construction program.

In addition to the airfield work at Camp Bastion, over $180M in infrastructure, operations, and life support projects are underway at Camp Leatherneck.

Troop housing and incinerator projects were completed in January, improving living conditions for 6,000 U.S. Marines. Plans to add four more incinerators to the two already built will allow Camp Leatherneck to gradually transition from open pit burning. A water distribution project, expected to be complete in August, adds a well, a distribution loop, and 450-thousand-gallon potable water storage capacity. Another $100M in pending projects at Camp Leatherneck include a vehicle wash rack, 20 kilometers of sewer lines to a new waste water treatment plant, and three 2,000-man dining facilities.

"AFCEE has worked with the Marine Expeditionary Force engineers and with the SEABEEs to do an incredible amount of construction on Camp Leatherneck over the past several years," Capt Melvin added.

Two incinerators constructed at Camp Leatherneck, Afghanistan, in January, can operate around the clock and burn up to 12 tons of solid waste each per day. The four more incinerators are planned for the camp will bring the capacity to 88 tons per day. (U.S. Air Force photo)

According to Col Watkins, AFCEE is supporting this initiative by incorporating local Afghan labor to the maximum extent possible in the form of a variety of skilled and unskilled tradesmen. "Construction efforts such as these deepen the Afghan-NATO forces partnership while promoting the strategic goals set by the International Security Assistance Force commander to combat the insurgency."

Part of the $700M construction project at Camp Bastion includes the shelters whose contractor-built frames are shown here. (U.S. Air Force photo)

"The more we come to understand each other and work together, the faster we can transition control back to the Afghan people," Maj Johnson said.

AFCEE officials expect to begin managing more Afghan National Security Forces projects soon in nearby areas in Southern Afghanistan and will continue the MILCON build-out at the joint location created by Bastion, Leatherneck, Tombstone, and Shorabak through 2013.

Capt DiCiolla is chief of the MILCON and Minor Construction Branch, AFCEE, Lackland AFB, Texas.

Capt Oliver E. Barfield III, P.E.
USAFA/DFCE

In August 2010, the 809th Expeditionary RED HORSE Squadron (ERHS) completed the first completely new paved runway built by RED HORSE. The $16M concrete runway at Camp Dwyer, in the austere Afghan deserts of the Helmand Province, was designed and constructed by RED HORSE utilizing only troop labor.

At the peak of construction, more than 100 Airmen worked around the clock in blistering 120-degree heat and biting sandstorms to complete the airfield on time and under budget. The completion of this landmark project showcased RED HORSE's unique engineering capabilities and allowed large fixed-wing aircraft to provide medical evacuation and logistical support to approximately 4,000 Marines in southern Helmand. This article explores the background and construction of the runway project, as well as the effectiveness of RED HORSE troop labor as an execution method.

The most impressive aspect of the concrete runway at Dwyer was not the magnitude, but rather the location of the work. In stark contrast to established southern Afghanistan airfields such as Kandahar and Bastion, FOB Dwyer originally consisted of 60 British soldiers manning a small combat outpost about the size of a rugby pitch, with living quarters made of HESCO earth barriers covered by tin roofing. Resupply for the soldiers was conducted via air drop, rotary flights, or an off-road convoy from Bastion.

In Afghanistan, RED HORSE builds a first with Camp Dwyer's paved runway

Earth, Wind & Fire

RED HORSE Airmen worked day and night constructing Dwyer's paved runway. Slip-form paving equipment eliminated the need for formwork. (photo by CMSgt Jay Campbell)

In February 2009, RED HORSE's Convoy Logistics Patrol team tackled the long convoy across the desert to establish the first U.S. presence in southern Helmand since 2007. The beddown team soon erected a 200-man Harvest Falcon camp and then pushed five miles of perimeter berm with assistance from Navy SEABEEs. The RED HORSE well-drilling team was not far behind and quickly added three operational wells to serve the construction effort and the burgeoning Marine population.

Because of MILCON funding delays for the concrete runway, a 4,300-foot C-130 assault strip was constructed as a temporary stop-gap measure to allow for fixed-wing logistical support. The assault strip's completion — the first C-130 landed in September 2009 — allowed RED HORSE to set its sights on construction of the concrete runway. (See "Assault Airfield" article in Vol. 17 No. 3)

As the earthwork for the runway got underway, RED HORSE established a pit quarry operation to supply raw materials. The quarry, with two rock crushers and a screening plant, provided over 96,000 cubic yards of base course and concrete aggregate. The quarry operation saved the Air Force more than $8M in contract material costs.

Shortly after quarry operations began, a slip-form paving train arrived at Dwyer; it consisted of three heavy-duty tracked Gomaco machines and operated off stringlines, which eliminated the need for time-consuming traditional formwork. The increased efficiency gave the Airmen the means to place the 46,000 cubic yards of concrete required to complete the runway.

In April 2010, the final ingredient for success fell into place when a state-of-the-art concrete batch plant arrived. It produced 250 cubic yards per hour, twice the amount of concrete as the other three contractor plants at Camp Dwyer combined. This boost in production was the necessary spark for placing over a mile of concrete per week and completing the runway in less than five months.

In addition to the runway, the 809 ERHS also completed the vertical construction of four large aircraft hangars and a support facility. The K-Spans rested on 10-foot high concrete stem walls and provided a total of 70,000 square feet to protect aircraft and their maintainers from the harsh desert environment.

RED HORSE Airmen erecting a 120 foot wide aircraft hangar door on one of the Super K-Spans. (photo by CMSgt Jay Campbell)

Despite the relative success at Dwyer, the runway project exposed several liabilities associated with troop labor execution on a project of this magnitude:

Using troop labor increased the project's vulnerability to procedural processes compared to traditional bid/award contracts. For example, a vendor protest to a material contract occurred, and though it proved unfounded, the protest resulted in a stop-work order that shut down RED HORSE paving operations for more than a week.

Flexibility for material procurement was also reduced. Unlike government contracting vehicles where project funds are obligated upon award, troop labor construction projects don't possess this "escrow" account and instead rely on commodities contracts to obligate project funds.

A state-of-the art concrete batch plant shipped to Afghanistan for Dwyer's construction. Once operational, the concrete batch plant produced twice as much concrete as three contractor-run plants at Camp Dwyer. (photo by CMSgt Jay Campbell)

Accordingly, material procurement proved vulnerable to financial management fiscal policy because project funding appeared unobligated.

Finally, the lack of a formal RED HORSE slip-form training program was evident during spin-up for each RED HORSE rotation. Ninety percent of quality control spall repairs on the runway occurred during a crew's first three weeks on the job. A special capability training program for slip-form paving would have prevented this steep learning curve.

However, the typical advantages of troop labor execution, such as increased accountability, speed of construction, and significant cost savings dwarfed the aforementioned concerns. Furthermore, the selection of RED HORSE as an execution agent showcased the organization's logistical prowess. Operating outside traditional supply channels, the unit's streamlined material procurement and delivery process provided unrivaled support for both the project and the site's heavy equipment fleet. Superior logistics gave RED HORSE the versatility to conduct and self-sustain heavy construction in an austere environment where both contractors and other engineering entities would require significant outside support.

At 8,600 by 120 feet and budgeted at $16M, the scope of the new runway at Camp Dwyer made it one of the largest troop labor construction projects ever conducted in Iraq or Afghanistan. To date, C-17s have brought in over 32,000 short tons of cargo to sustain counterinsurgency operations. Runway traffic is only expected to increase with the unit's recent completion of a ramp that tripled the airfield's capacity. The completion of the airfield at Camp Dwyer cements RED HORSE's niche as the nation's premier expeditionary heavy engineering force.

In September 2010, the first C-17 to take off from the new runway is loaded for takeoff. Boarding the plane to go home is the rotation of RED HORSE engineers who paved the runway. (photo by CMSgt Jay Campbell)

Capt Barfield is an instructor at the U.S. Air Force Academy, Colo. He was previously the Deputy Commander of the 820 RHS Operations Flight, Nellis AFB, Nev., and deployed as the Dwyer Site OIC, 809 ERHS.

RESERVE CEs SHARPEN SKILLS AT SILVER FLAG

SSgt Grant Saylor
446 AW/PA

Thirty Reservists from the 446 CES, McChord Field, Wash., are feeling more battle-tested and proven after participating in a week-long training exercise May 21-28 at the Silver Flag Exercise Site, Tyndall AFB, Fla.

The unit travels to Silver Flag every three years for field training and classroom instruction to improve deployment readiness. The Reservists teamed up with their active-duty and Air National Guard counterparts from across the nation to learn and share skills and knowledge.

"This is a chance for our Airmen to get hands-on training with our assets currently deployed in the area of responsibility," said Maj Jere High, 446 CES operations flight chief. "This is important stuff because people's lives depend on it." Maj High served as the deployed student commander for Silver Flag. He said it was exciting to see participants from various locations and backgrounds come together and gel as a team.

He and his fellow "dirt boyz," worked on refining their skills to quickly and efficiently fix runways damaged by enemy mortar rounds. And while it literally is a dirty job, it's one that's absolutely essential to keeping Air Force firepower in the air. "This is a big part of our job and this kind of training environment really helps increase my knowledge base for a deployed environment," said SrA Jenkins.

As in most field-training exercises, communication is another essential tool, according to SrA Jenkins' supervisor, SSgt Garett Wass, a construction equipment operator. "The communication side of things is so important to mission accomplishment and this scenario provides an atmosphere conducive to communication," he said.

SSgt Wass has deployed twice in support of Operation Iraqi Freedom and says Silver Flag provides invaluable knowledge and learning. He believes that makes for more confident, skilled Airmen when the deployment cycle rolls around.

That newfound confidence seemed to spread among the Reservists as quickly as the searing spring Florida heat. "I





All photos by author.

The 446 CES had Reservists from nearly every Civil Engineering specialty attending the exercise, including utilities, structures, heating, ventilation and air conditioning, electrical, power production, operations, and heavy equipment. "We're here to learn how to run it, fix it, and maintain it," said Maj High. "No matter where you are in your career, you never know it all; there's always something new to learn."

One of the Reservists who tackled the Florida spring heat while sharpening his career skills was SrA Ben Jenkins, a heavy construction equipment operator with 446th CES. Despite the experience he already has under his belt, like a seven-month deployment to Iraq in 2009, SrA Jenkins was taking in all the knowledge he could at Silver Flag. "I'm hoping to get out of this a better understanding of airfield damage repair," he said.

feel a lot of people get out of the military because they don't feel they're properly trained," said SrA Ernest Munns, a 446th CES electrician. "This type of exercise changes all that; it gives you confidence in your skills."

Along with his supervisor, MSgt Dwayne Lee, SrA Munns spent the week installing and configuring primary and secondary distribution centers, which provide power to tent cities, and practiced installing emergency airfield lighting systems. "The most rewarding part of this exercise is watching our younger Airmen train and excel," said MSgt Lee, NCOIC for the 446th's electric shop. "Here, the focus is on true skill training instead of a deadline."

LEED in the Air Force:
A Categorical Breakdown

Capt James Rozzoni
AFIT/GEM

In 2007, The Air Force Civil Engineer mandated that by FY09 all vertical construction be capable of achieving Leadership in Energy and Environmental Design (LEED) Silver certification and that by FY10, 10 percent of MILCON projects should be formally certified to the Silver level. The policy seeks to meet mandates set by the Energy Policy Act of 2005 (EPAct 2005), requirements of the Federal Leadership in High Performance and Sustainable Buildings (HPSB) Memorandum of Understanding, and Executive Order (EO) 13423, Strengthening Federal Environmental, Energy, and Transportation Management.

LEED is a rating system which identifies techniques for sustainable construction practices, which when applied, can save the Air Force resources and maintenance throughout the life cycle of the facility. AFCEE has set an internal goal to seek formal LEED Silver certification on all appropriate new construction and major renovation projects.

While the Air Force aims to meet the initial LEED goal, the question arises as to whether the benefits of LEED certification or the capability of achieving it have successfully saved resources. This article presents a preliminary analysis of the Air Force's utilization of the LEED rating system. Data from past and current LEED v2.2 construction projects was analyzed to determine the average number of credits earned per category. (Analysis was limited to v2.2 because of credit point changes between v2.2 and LEED 2009.)

The figure shows the credit breakdown of 114 projects within the data set provided by AFCEE. The difference between credits possible (blue bar) and achieved (red bar) indicates how strongly each category was utilized.

The largest disparity occurs in the Energy and Atmosphere category which provides energy savings throughout the life cycle of a project. Projects only averaged 6.9 points of 17 possible for a 40 percent utilization rate. Conversely, Water Conservation projects averaged 3.4 of 5 possible points for a 68 percent utilization rate. While sometimes overlooked, water conservation is vitally important in traditionally dry or drought-impacted regions of the country. Indoor Environmental Quality (IEQ) has a relatively high rate of utilization (67 percent) at an average of 10.1 points of 15 possible. While IEQ can help productivity levels, it does not provide direct and quantifiable savings to the Air Force, although energy and water saving credits do exist. This analysis of LEED yields a few observations which will hopefully provide recommendations for future Air Force policy.

In Engineering Technical Letter (ETL) 08-13, issued by AFCESA, several guidelines for renewable energy, utility metering, energy star rating, maintenance considerations, water conservation, occupancy sensors, and advanced HVAC systems are recommended to best meet the aforementioned sustainment goals. While not all LEED credits require additional cost, the ETL and Air Force policy also include a suggested cost allowance in the programmed amount of a project for the energy intensity goals of EPAct 2005 and EO 13423 and the LEED Silver Rating.

This data analysis is a small step in the overall analysis of Air Force LEED implementation; further detail will be explored. AFCEE is committed to the Air Force's goals of sustainability. They certified 69 percent of appropriate MILCON projects in FY09 and 100 percent in FY10. Civil Engineering leadership has drafted a guidance update requiring full incorporation of the HPSB Guiding Principles and formal LEED Silver certification on all new construction and major renovations meeting the LEED minimum program requirements (with no fewer than 20 points in energy and water credits). This research hopes to support this new policy and provide recommendations for the best implementation of LEED in Air Force construction.

Author's note: Technical inputs to this article were provided by Ms. Paula Shaw and Mr. Chris Kruzel of AFCEE's Technical Division.

Capt Rozzoni is a graduate student in engineering management at the Air Force Institute of Technology, Wright-Patterson AFB, Ohio. This article is based on his thesis research under the direction of Lt Col Peter Feng, P.E., Ph.D.

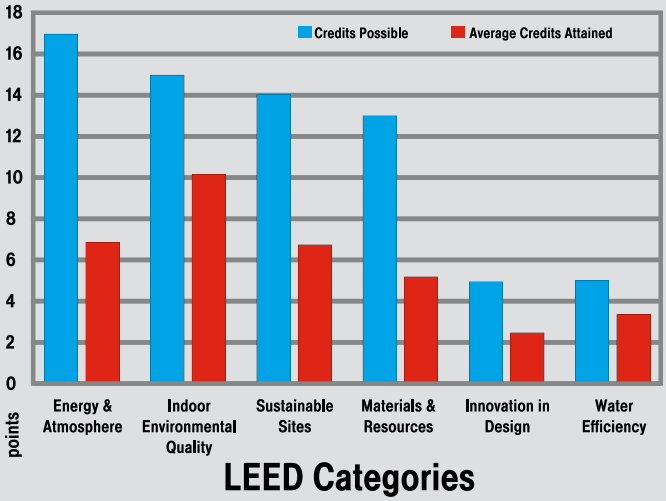


Figure. LEED v2.2 credits possible and average credits attained, by category for 114 Air Force constructions projects.

A RED HORSE with Silver Wings

Ms. Teresa M. Hood
HQ AFCESA/CEBH

Kermit the Frog laments that "it's not easy being green." But for one RED HORSE Airman it is easy, or at least he makes it look that way.

SSgt Hollis Collins, an Airborne RED Horse civil engineer, routinely "jumps" as a member of one of the Army's elite parachute demonstration teams, the Silver Wings, headquartered at Ft. Benning, Ga.

"I've been one of the Silver Wings for just under two years now, full-time for the last year," said SSgt Collins. "I originally came here as an instructor for the Airborne school, and I still teach. Because the Air Force sends its people — controllers, cops, and engineers, among others — to the school, we also have to fill instructor slots. I was lucky enough to get chosen."

There was a lot more than luck involved in getting SSgt Collins on the Army's jump school staff and Silver Wings.

"To be an instructor at Ft. Benning, you have to be Airborne, have a perfect record, be in good physical condition, and be a jumpmaster," said SSgt Collins.

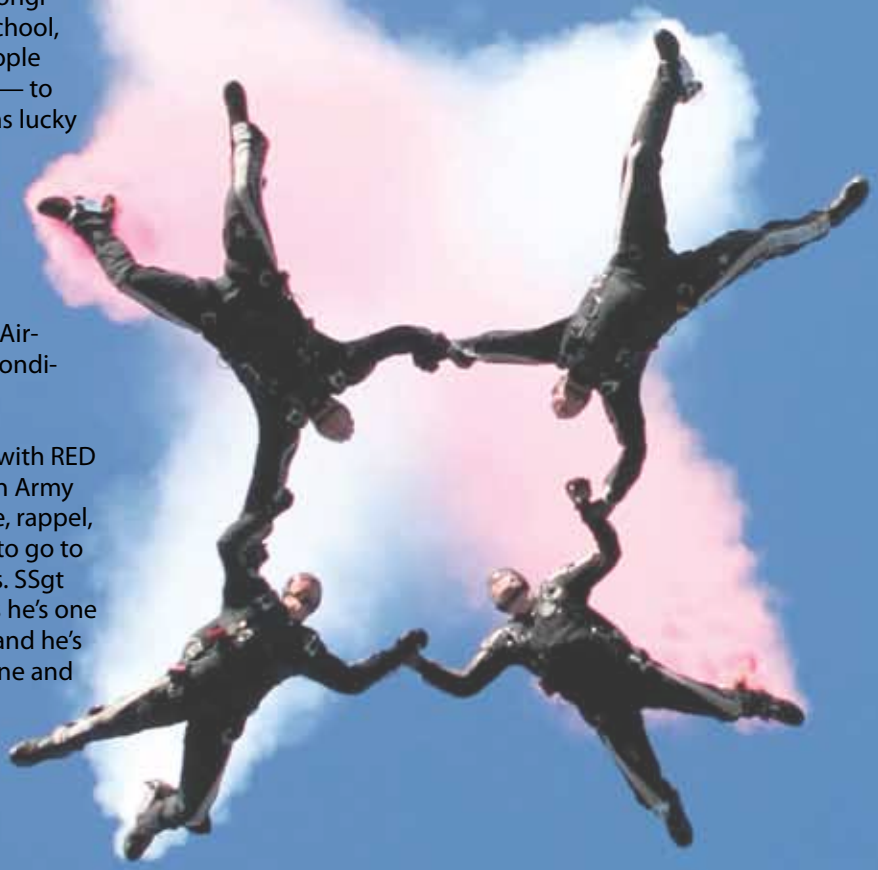
He's been Airborne the entire four years he's been with RED HORSE; he also wears the Air Assault badge. He's an Army Jumpmaster and holds master ratings in parachute, rappel, and fast rope. He's the first Air Force civil engineer to go to Pathfinder school to learn how to open drop zones. SSgt Collins is also a professional skydiver, which means he's one of the two percent of Airmen that can do free fall, and he's done a little more than 1,000 jumps – both static line and freefall.

"Some of the other instructors and Silver Wings have more than 4,000 jumps," said SSgt Collins. "So I'm in great company to do what I do. The Air Force has a really good record at the school — a relatively low 'fail' rate of only one to two percent — because of our initial training and screening process. I'm really proud to represent the Air Force as an instructor here."

Being a red-hat-wearing "blue" member of the "green" Silver Wings team is also a source of pride and accomplishment. SSgt Collins serves as one of the team's videographers, capturing their feats from a camera attached to his helmet even as he participates in the tandem and formation performances. However, his favorite part of a show involves an individual performance and the colors red, white, and blue.

"I love bringing the flag in," said SSgt Collins, "representing the U.S. Military as well as the Army and the Air Force. I had the honor of 'flying' the flag into the stadium for last fall's Arkansas-Alabama football game; coming down among 85,000 fans chanting 'USA, USA,' was truly a humbling experience. This is an awesome mission."

(left) SSgt Hollis Collins "flies" the American flag during an airshow in his hometown of Cocoa Beach, Fla. (photo by Sgt. 1st Class Michael Reed) ***(below)*** While in free fall, SSgt Collins used his "helmet cam" to capture this photo of his teammates in a speed star formation during an Airborne Course graduation at Ft. Benning, Ga.



Airborne RED HORSE: Falling to New Heights

Capt Kenneth Cooper
SMSgt Richard Buchalski
820 RHS/CA

On the afternoon of Thursday, Jan. 27, 2011, most of the 820th RED HORSE Squadron at Nellis AFB, Nev., went about the everyday activities associated with their heavy construction and repair mission. At the western end of the RED HORSE compound, however, the activities were far from the daily routine. There, in two K-Spans, the 820th's Airborne Flight was undergoing "pre-jump" preparations with the 820th Base Defense Group from Moody AFB, Ga., and the Army's 647th Quartermaster Brigade from Ft. Bragg, N.C., prior to participating in exercise Red Flag 11.2. That evening, more than 50 Air Force personnel and seven tons of heavy cargo would use the "air drop" method of insertion to secure an air assault strip, assess and repair it, and then land an allied cargo aircraft before leaving the area by aircraft from the assault strip or by land convoy. The airborne team successfully completed the task in the time given — eight hours — but the team executing it and their overall mission didn't materialize overnight. It has taken almost a decade and an immense amount of hard work and training by team members and civil engineering leadership, past and present, to bring the RED HORSE Airborne Program to where it is now.

(background) Airmen from 820 RHS Airborne Flight descend after a static line jump from a helicopter during a training exercise at Nellis AFB, Nev. (photo by SrA Brett Clashman) ***(above)*** 820 RHS Airborne Flight members gather before a training jump in April at Nellis AFB, Nev. (photo by SrA Brett Clashman) ***(right)*** Jumpmaster TSgt Mitchell Romag performs a pre-inspection of SSgt Jeremy Lowe's parachute before a training jump in April at Nellis AFB, Nev. Both are members of 820 RHS Airborne Flight. (photo by TSgt Michael R. Holzworth)

Constructing Airborne RED HORSE

Combatant Commanders in operations such as Allied Force and Enduring Freedom desired use of captured airfields to optimize sortie production and increase combat capability. However, the heavy crater damage prevented coalition forces from landing aircraft at these locations. Additionally, small units at remote forward operating bases (FOBs) accessible only through air insertion have needed light construction and renovation for better force protection to the warfighter.

Therefore, nine years ago a plan was conceptualized by then Chief of Staff of the Air Force Gen John P. Jumper to ensure optimal combat capability. He stated that the Air Force required an Airborne RED HORSE combat engineer capability to "assess, prepare, and establish" contingency airbases in remote locations through air drop, air insertion, air delivery, or other traditional means.

The plan incorporated a core group of Air Force Specialty Codes (AFSCs): Pavements and Equipment, Electricians, Engineering Assistants, Power Production, Plumbers, Structures, EOD, Fire and Emergency Services, Emergency Management, and Vehicle Maintenance. The result of this mixing of skills was the team concept which presented commanders with the ability to deploy to a FOB or air base to initiate a site assessment, perform light construction, increase force protection, and repair damaged runways for limited operations. This required training RED HORSE personnel as airborne and air insert capable and acquiring lighter equipment that was air-droppable, air-insertable, or air-deliverable. End result — Airborne RED HORSE.

Members of the 820 RHS Airborne Flight, Nellis AFB, Nev., fly to a landing zone prior to a static line jump in April. (photo by MSgt Kevin J. Gruenwald)

Originally, there were three RED HORSE squadrons with teams having airborne capability. However, as the program was implemented, it became apparent that three dislocated teams could not be managed or operated in exactly the same way. Therefore, the command and control of these three teams was consolidated into one 96-person flight — with three 32-person teams — under the 820 RHS at Nellis AFB. At the 820th, the teams' personnel would train together as a cohesive flight and be able to refine the concept of operations and perfect operational execution capabilities in one location while utilizing Nellis' 2.9 million-acre test and training range. Now, once in-processed, paratroopers and prospective flight members are instructed on flight procedures, assigned to one of the three teams, and begin training with veteran airborne team members.

Many of the flight's personnel have been part of the airborne program for several years, some since the program's inception. One training focus is cross-utilization of each AFSC to give a team the ability to accomplish maximum mission tasks in a minimum amount of time. Each of the 32 team members is trained to utilize equipment and complete basic tasks that fall under all of the AFSCs. For example, if Pavements and Equipment personnel are pouring concrete, Firefighters and Emergency Managers are working right there with them. The goal of the flight is to train to perfection each respective AFSC assigned, ensuring a tight team of the most professional and competent engineers possible.

Members of the 820 RHS Airborne Flight execute a static line jump from a CH-47 Chinook helicopter in April at Nellis AFB, Nev. (photo by MSgt Kevin J. Gruenwald)

The mission of this flight is highly specialized and constantly evolving. With the recent inception of Defense Support of Civil Authorities, Airborne RED HORSE is also adaptable to perform civil support operations during natural disasters. Whether it's getting basic utilities up and running in an area, or assisting with rescue operations, medical operations, and stabilization operations, Airborne RED HORSE teams can provide a ground zero support capability like no other asset. Each team can be air dropped or air inserted into an affected area to begin clearing the way towards the perimeter to meet civilian agencies working on the ground.

An Airman from 820 RHS Airborne Flight lands following a static line jump at Nellis AFB, Nev., in April. (photo by SrA Brett Clashman)

More Training Milestones

Since Red Flag 11.2, the Airborne RED HORSE has participated in other important training events. In April, they hosted training involving low cost low altitude (LCLA) delivery of essential food and ammunition as well as sling load operations. Because of the remote locations these enablers are sent to, Airborne RED HORSE personnel are trained in LCLA and sling load operations to transport cargo for construction and resupply purposes. Sling load operations were a vital resupply method used by the 820th during their deployment to Afghanistan last year. Having experts certified to accomplish these tasks increases direct contingency capabilities offered to commanders in support of the mission.

On May 20, with the help of the 647th Quartermaster riggers and the crew of the 14th Airlift Squadron out of Charleston AFB, S.C., the Airborne Flight accomplished a historic landmark in the U.S. Airborne air drop community. This marked the first time since the beta test phase a 420D backhoe was air dropped from a high performance C-17 aircraft. The 820th RHS Airborne engineers strapped on

(above) Army SSgt Hector Hoyas waves off a CH-47 Chinook helicopter as Airmen from the 820 RHS Airborne Flight secure a HUMVEE for sling load during an exercise at Nellis AFB, Nev., in April. (photo by TSgt Michael R. Holzworth)
(left) SSgt Jeremy Lowe attaches an 11,000-lb block to a CH-47 Chinook helicopter while TSgts Joshua Tully and Joshua Ramos provide safety observation during training near Reno, Nev. in June. All are members of the 820 RHS Airborne Flight. (photo by SrA Brett Clashman)
(below) A 420D backhoe "jumps" out of the back of the C-17, quickly followed by Airborne RED HORSE engineers, who then drove it away. (photo by MSgt Shane Cuomo)

their 'chutes and followed the largest air-droppable platform in the U.S. military's inventory down into the history books.

After years of training and working to fulfill DOD's needs, the Airborne RED HORSE Flight is ready to execute missions for the United States and its allies. Combatant commanders around the world have a unique tool at their disposal to accomplish their mission anytime, anyplace, anywhere.

Capt Cooper is the commander and SMSgt Buchalski is the superintendent for the Airborne Flight, 820 RHS, Nellis AFB, Nev.

CEs respond to disaster in Japan

Misawa CEs Prove Ready

Lt Col Dwayne Robison
35 CES/CC

Where were you when…?
The 11th of March is one of those days I will always remember. The seven weeks following, however, is a blur. The IG could not have scripted a scenario any tougher.

Over the next seven weeks Misawa AB — and the 35 CES — dealt with a lot. Here's a condensed timeline:
- The **4th largest earthquake ever recorded** (and thousands of aftershocks)
- **No power** to the installation (for up to 10 days in some parts)
- **No heat** and **no hot water** to the base (with below freezing temperatures)
- **A tsunami**
- **A nuclear incident** down south
- **Reception of more than 87 people** by 35 CES to help recover the base (including 25 Army Nuclear, Biological, and Chemical experts)
- A day with **6 inches of snow** (with still no heat or hot water)
- The voluntary **departure of 1,400 dependents** (with still no commercial power to the entire installation)
- **11 inches of snow** in a 24-hour period
- A significant **aftershock** on April 7 that shut off the re-established commercial power to the base for 17 hours
- The **near shutdown** of the U.S. Federal government

Why does the Air Force base civil engineer (BCE) position exist? In my opinion, one of the BCE's primary roles is to recover the installation – post-attack or -disaster. The Air Force fights from its bases; it needs to be able to launch and recover aircraft in order to accomplish the mission. Because of various transformations at base level, the BCE, as the lead Emergency Manager, is now also responsible for ensuring the base's command and control structure/system is in place.

Practice Like You Play, Not to Pass an Inspection

The IG was actually on base at Misawa before the earthquake. On March 10th, the 35 FW began a phase I, initial readiness deployment exercise. HQ PACAF inspectors, including Lt Col Stephen Ziadie, PACAF's Civil Engineering Inspection Chief, were on station working with the local exercise evaluation team and providing the base insight as it prepared for a June operational readiness inspection.

At 1430L on March 11, I was on the on-shift director of the Emergency Operations Center (EOC), activated to oversee the deployment process exercise. At 1443L the earthquake hit. It was fortunate that wing's installation control center (ICC) was already activated, including all of the unit control centers (UCCs). My first thought, "Phew, the EOC's generator started." My second thought, "Do what we know how to do — accountability and post-action recovery, or PAR, sweeps." (We'd been practicing this for four months.) Quickly learning that no injuries were reported, we moved rapidly into recovery phase: What is broken and what is the mission impact? My number one concern was no commercial power and a power company that was not answering the phone. At mission critical facilities 124 real property–installed generators started up, a testament to our outstanding Japanese workforce. However, as every civil engineer knows, there are different priorities when recovering the installation during peacetime than wartime; very quickly our priority was to protect families and infrastructure.

Hope is NOT Prudent Military Planning

We were going to need help. We had very few mobile generators and a lot of 35 CES electrical and powerpro experience TDY. So we decided what to ask for and we asked. Lt

TSgt Fheoshamin Marshall from Det 1-554 RHS, Kadena AB, works on a generator his unit brought in to help Misawa restore power. (photo by SrA Chelsea Cummings)

Col Ziadie took off his IG hat and integrated into the civil engineer UCC to develop a request for forces/equipment. Within 48 hours of the earthquake, Kadena's 718 CEG and 554 RED HORSE Silver Flag detachment "A-Teams" were on the ground with generators. Incremental power from the off-base power company drove different recommendations to the wing commander each day: 0 MW to 7 MW to 10 MW to 17 MW over 10 days. At day four, we were on Power Course of Action Plan #10, which was now to power up nonessential facilities (e.g., theater, rec center, clubs, etc.) on commercial power instead of taking mission critical facilities off generator. These large facilities were necessary to support the mass voluntary departure. The BENC—Base Energy Nerve Cell—was created. It was a dedicated power solutions team and its successes included the following:

1) Integration of military and civilian Japan Air Self Defense Force and U.S. Navy and Air Force engineers, electricians, and power production technicians for prioritizing generator installation and commercial power restoration.

2) Creation of a base augmentation team called the "Rolling Blackout." Armed with energy conservation checklists, they visited every on-base facility, including housing, saying things like, "Please turn off your porch light."

3) Use of Facebook to update the base populace on commercial power status and conservation tips.

4) Development of POWERCONs (if only 10 MW is available out of 17 MW total requirement then the base was at POWERCON Charlie (e.g., Burger King serves only breakfast and lunch while Popeye's only serves dinner)

5) Creation of the 35 FW "10-4 Power Management Plan" to proactively manage outages; it captured all the lessons learned over the 10 days without commercial power.

Members of 35 CES heating, ventilation and air conditioning shop prepare to go underground to repair a steam line broken by the earthquake and tsunamai. (photo by SSgt Rachel Martinez)

Experience is a Great Teacher

My 18 years in the Air Force prepared me to deal with the events of March and April 2011. I used the time to train and develop others so they would be ready to lead or command when their time comes.

What did we learn?

The wing "warrior days" (one day a month dedicated to training) allowed for focused command and control interaction and training. The base hit the ground running.

The interservice ICC/EOC concept is valid. I was easily able to communicate with my Navy and Army counterparts at other installations on issues such as plans for decontaminating aircraft and equipment.

We have a Japanese work force with a superb work ethic. People were sleeping at the plants or in offices to help recover the base faster. I am honored to serve here in Japan.

Ask for the right help, as quickly as possible. The Kadena engineers integrated immediately. The same night they arrived they were installing generators to power/heat the dorms while six inches of snow was falling.

Off-base relationships developed over the years by fire, security forces, and the medical communities are invaluable. We are now working to relocate some Japanese positions into the readiness flight so emergency managers can develop similar relations with their off base counterparts.

We accomplished so much. My proudest accomplishment? Building great leaders. We developed a whole lot of them, at all ranks and grades.

Lt Col Robison is the Commander, 35 CES, Misawa AB, Japan.

(Above) Airmen rotate a water treatment system across a tsunami-struck area March 29, 2011, in Noda Mura, Japan. (photo by SrA Joe McFadden)

CEs respond to disaster in Japan

Yokota CEs Bolster Recovery

SMSgt Jermaine Thomas
374 CES/CEOF

"Combat Engineers, Combat Ready!" is the motto of the 374 CES at Yokota AB, Japan. Although the 374 CES is not currently in a combat environment, the attitude and drive embodied in our motto was evident following the worst natural disaster mainland Japan has experienced to date.

On March 11, 2011, a magnitude 9.0 earthquake struck the Northeast coast of Japan and triggered a devastating tsunami. As of the end of May, there were over 10,000 citizens confirmed dead and 17,000 still missing. Damages reached the multibillion-dollar mark, with long-term effects and rebuilding efforts that will last for decades. The effects of these combined events rocked a nuclear power plant in the Fukushima prefecture and damaged the reactors' cooling systems, causing hazardous radiation leaks. The potential for harmful radiation to be released into the environment prompted the immediate evacuation of 100,000 residents within a 20-mile radius of the plant.

SrA Peter Beyer, 374 CES, readies chemical suit kits in support of Operation Tomodachi. (photo by Mr. Osakabe Yasuo)

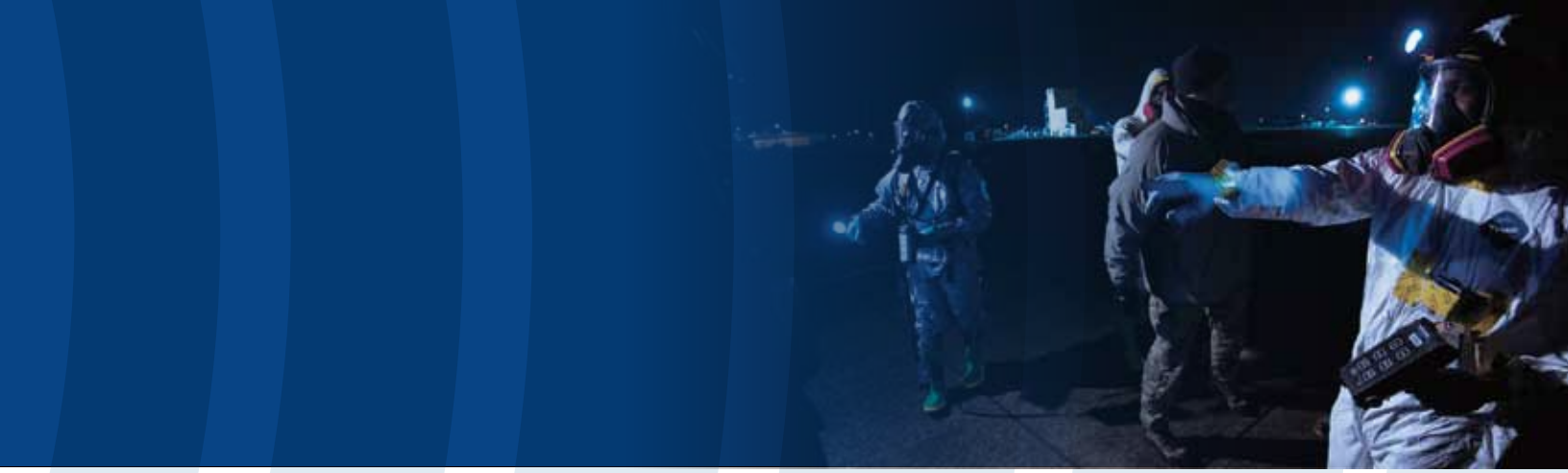
As the world watched these unbelievable events unfold, our civil engineers began working in concert with base agencies, sister services, and various DOD agencies alongside our Japanese allies to recover from this horrific natural disaster — an enterprise dubbed "Operation Tomodachi."

The 374 CES Squadron comprises more than 700 military and U.S. and Japanese civilians. Contributions to the recovery effort were as varied as the many functions they daily provide in garrison, from damage assessment and repair and fire and protective services, to infrastructure operations and emergency management. Our support for Operation Tomodachi was not only for the people affected on the Northeast Coast, but throughout mainland Japan. Following are a few key contributions — past and present — to this massive humanitarian and recovery effort.

A1C Katherine Anderson, 374 CES, a Contamination Avoidance Team member, scans a C-12 Huron for radiation exposure at Yokota AB, Japan. (photo by SSgt Craig Ackerman)

Our engineers went into action following the first tremor, quickly establishing a unit control center. Teams were dispatched to perform damage assessments on all base facilities to ensure they were still structurally sound and make expedient repairs where necessary. Two of Japan's major airports, Narita and Sendia, were affected and 11 commercial aircraft were diverted to Yokota. The Fire Department efficiently responded to and resolved multiple in-flight emergencies. Their efforts facilitated the safe arrival and beddown of 3,146 passengers until Narita resumed operations 24 hours later.

Electricians and power production teams worked countless hours preparing the base electrical grid for rolling blackouts in support of Tokyo's Electrical Power Company energy conservation efforts. Our engineers ordered and processed more than $500,000 in equipment and assets to



support base repairs and beddown operations. As Yokota became the support hub for Northern Japan, engineers stepped up to the challenge, preparing contingency lodging to house an additional 751 personnel supporting joint service operational commitments.

Once initial repairs were made and all facilities and distribution systems were deemed safe, efforts swiftly turned towards implementing detection teams for 24-hour, around-the-clock radiation exposure prevention. Readiness support teams (RSTs) put their training into action with the Emergency Management Flight leading the way. RSTs processed and scanned 607 aircraft and 2,270 personnel to enable 550 sorties. These efforts were crucial in protecting the base from radiation hazards while easing the concerns of 11,000 Yokota AB residents and the surrounding community.

SSgt Larry Gee, a 374 CES firefighter observes as Mr. Nobuhito Takeda, a 374 CES fire department driver operator, instructs firefighters from the Fukushima Prefecture on how to operate a fire truck on loan from Yokota for use in recovery efforts. (photo by A1C Andrea Salazar)

During the next few weeks, members of the 374 CES worked side-by-side with the base's Bioenvironmental Flight and Army and Marine recovery teams to guarantee mission continuation and survivability. Collectively they monitored 500 aircraft, collected 400 air samples, and provided a useable aircraft and vehicle radiological control area. Through coordination with other PACAF bases, the CES received and set up a reverse osmosis water purification unit system to aid with decontamination operations. With short notice, our engineers devised and installed a system to wash contaminated aircraft and contain potential runoff preventing exposure to surrounding soil. The bladders and reservoirs receive potentially contaminated water for testing by bioenvironmental personnel, followed by storage and disposal.

Our support efforts reached beyond Yokota and the local area. Personnel from the 374th used cranes to unload two 21,000-pound water pumps shipped from the U.S. mainland, then reload the assembled pumps for shipment to the Fukushima plant where Australian and Japanese teams were working to cool four damaged nuclear reactors. The Fire Department assisted in the monumental disaster response effort by prepping and delivering a P-22 fire truck to within 50 kilometers of the Fukushima power plant. Once on scene, they trained local firefighters on how to properly operate this lifesaving equipment. The squadron forward deployed five engineers and two 1,500-gallon water trucks for five weeks to the devastated Sendai Airport region, where our engineers worked with Army and Marine counterparts to provide 80,000 gallons of water per day to support over 100,000 displaced Japanese citizens.

These are just a few of many contributions of the 374 CES. "Tomodachi" is the Japanese word for friendship, and as relief efforts continued, the men and women of the 374 CES stood ready to support our allies. Our job is not done. We will continue to support the nation of Japan as it recovers from this disaster, as well as continue our everyday in-garrison mission to support the 374th Airlift Wing. The 374 CES motto echoed loud during Operation Tomodachi, as it will for future contingencies. "Combat Engineers, Combat Ready!"

SMSgt Jermaine Thomas is the Facilities Superintendent, 374 CES, Yokota AB, Japan.

(Above) Members of the Contamination Avoidance Team at Yokota AB, Japan, screen aircraft and aircrew members returning from a flight to Northern Japan. The team is composed of experts from the 374 CES readiness flight and the 374 AMS bioenvironmental engineering flight and. (photo by SSgt Samuel Morse)

The nighttime visibility, or retroreflectivity, of road signs and markings affects traffic safety. Retroreflectivity is the measure of light reflecting from a surface (the sign) and returning to its original source (the vehicle's driver). Retroreflectivity deteriorates over time, making maintenance important. Statistics show that fatal crashes occur approximately three times more at nighttime than during the day. The Federal Highway Administration (FHWA) has established requirements for implementation and continued use of an assessment or management method designed to maintain traffic sign retroreflectivity at or above established minimum levels. ACC has developed an innovative system to ensure compliance with these federal regulations across the command.

The FHWA's Manual on Uniform Traffic Control Devices (MUTCD) was updated in 2009 (http://mutcd.fhwa.dot.gov), establishing new requirements for retroreflectivity. It requires agencies to take specific actions to achieve a phased compliance:

- By Jan. 1, 2012 – implement a sign assessment/management method to maintain retroreflectivity levels.
- By Jan. 1, 2015 – replace non-compliant regulatory, warning, and ground mounted guide signs.
- By January 2018 – replace non-compliant street name signs, and overhead guide signs.

To meet the MUTCD's requirements, ACC's Sustainable Installations Branch partnered with the GIS and mapping staff of the U.S. Army Corps of Engineers (USACE), Sacramento District on a plan to create and populate a GIS-based traffic control management system (TCMS) for all ACC installations. The Military Surface Deployment and Distribution Command Transportation Engineering Agency analyzed and assessed ACC's TCMS for compliance with the MUTCD and endorsed it as a model system for use across the DOD.

A team of ACC and USACE GIS experts and civil engineers established a GIS database to store relevant traffic control data in keeping with DOD Spatial Data Standards for Facilities, Infrastructure and Equipment. This database, the data repository and basis of the ACC TCMS, is used by installation personnel as a management and programming tool.

The TCMS includes the following sign attributions: location, type, dimensions, condition, retroreflectivity values, inventory number (barcode and alphanumeric), and post type and condition. It also includes a photo of the sign, linked to the record, as well as nearby traffic counters (location and study data) and lights and barriers (location, size, and type). Data collection utilizes the following equipment for spatial orientation and documentation: Trimble Geo XH with Zephyr antenna, 35-mm digital camera, Trimble Trimpix Pro (photo transfer), a standard laptop, and a Road Vista retroreflectometer.

Two 2-person teams visit each installation. One team measures the sign size, height, road offset, and retroreflectivity, then affixes an ACC-supplied barcode. The other team photographs the sign, records data, and collects the GPS coordinates and any other applicable data such as active vehicle barrier information and traffic control signals.

A survey crew collects sign data at one of ACC's installations. (U.S. Air Force photo)

The teams have completed data collection at 10 ACC installations and should finish the remaining installations by FY11's end. The finished TCMS will have a robust GIS database with the location of traffic signs, barriers, lights, and counters, as well as sign posts for each ACC installation. It can be easily managed at the installation level and viewed via the ACC GeoBase Viewer. Data can be reviewed online through ESRI desktop software, associated Portal Viewers, or exported into an Excel spreadsheet. The data model structure can be easily queried to produce a desired product or display. Besides ensuring compliance with FHWA requirements for all its installations, ACC's Traffic Control Management System is shaping up to be a "value-added" product for both ACC and its installations. Programming and budgeting for replacement signs just got easier!

Mr. Dryden is the Chief, Sustainable Installations, HQ ACC, Langley AFB, Va.

Securing Industrial Controls Systems

Tarone Watley, P.E.
HQ AFCESA/CEOA

Over the past ten years industrial control systems (ICS) have incorporated significantly more computer networks and related Internet technologies to create the necessary connection between the process and the associated business systems. For example, industrial applications now use networked servers to allow business users to access real-time data from the distributed control systems and programmable logic controllers.

In fact, today's ICS look more like a computer network, more exactly known as platform information technology (PIT), complete with servers, clients, workstations, wireless access points, and other related equipment. ICS PIT system security management has been deemed a joint effort and the Civil Engineering and Communications communities are working closely together to minimize system vulnerabilities and thwart cyber threats and attacks. The goal is to protect business systems without compromising the performance capabilities and integrity of ICS.

The resulting plan involves education and accountability for A7. Civil engineers are being educated on the process for certification and accreditation of ICS and two authorities have been created within the Air Force: a Civil Engineering ICS designated accrediting authority and a certifying authority.

While civil engineers understand ICS and their operations, some have a limited understanding of the vulnerabilities these systems can place on a local area network. As the Civil Engineering ICS PIT certifying authority, AFCESA's Operations and Programs Support Division has developed a three-phase process to identify, analyze risk, and secure required certification and accreditation, as required.

The base local area network is part of a much larger entity, the Air Force Global Information Grid (AF-GIG), which is the responsibility of AFSPC and its subordinate units. Because they operate on or across a base LAN, ICS may ultimately operate on the AF-GIG. This makes necessary a second relationship, one between AFCESA and AFSPC. This relationship is one of support and cooperation with a single goal in mind — security of the AF-GIG while maintaining the integrity of ICS and the critical mission and life safety systems which they control.

Education is a key factor. Most civil engineers understand ICS and their operations and capabilities, but are unaware of information assurance as it relates to PIT. The tendency is to think of OPSEC or INFOSEC, which while relevant concepts for good security practices, do not address cyber security. Depending on their ICS responsibilities, it is recommended that certain civil engineers complete relevant IT security training such as Network+, Security+, or CISSP as described in DOD Instruction 8570.01, Manual for IA Managers. The knowledge gained through this education will make civil engineers more vigilant and proactive in the realm of LAN security and acceptable risk so that ICS can function as intended. More specific training regarding cyber security can be obtained from the Department of Homeland Security.

Armed with the pertinent knowledge, there is no doubt that civil engineers, who are the best in the world at creating new ways to transcend obstacles, will provide a seamless transition to the process of providing infrastructure requirements with a new emphasis on network security.

Mr. Watley is the ICS Certification and Accreditation Program Manager in the Operations and Programs Support Directorate, HQ AFCESA, Tyndall AFB, Fla. He holds a Security+ certification from CompTIA.

Mr. Dennis Hatcher, a CEMIRT ICS technician, uses a systems operator screen to test an ICS program developed at CEMIRT, HQ AFCESA, Tyndall AFB, Fla. (photo by Mr. Eddie Green)

Training Tomorrow's Air Force Today

During training, Emergency Management Airmen go into the "hot zone" to earn their badge.

Mr. Ed McAteer
HQ AFCESA/CEXR

"What is the potential casualty of this?"
"Sixty or seventy."
"That's not so bad."
"Thousand. Sixty or seventy thousand. One small drop of this on the ground is lethal up to a hundred feet. One teaspoon of this stuff in the air will kill every living thing in an eight-block radius."

This scene from "The Rock," a 1996 movie about a renegade group that takes over Alcatraz Island and threatens San Francisco with chemical weapons, is make-believe. But within today's geopolitical climate, a real-life adversarial threat like it is unfortunately very possible. The outcome will depend on training and real-life reponse.

The Air Force has more than 1,800 Emergency Management military, civil service, and contractor professionals working worldwide. Emergency Managers at the AFCESA at Tyndall AFB, Fla., oversee training requirements, fielding of new equipment, and providing guidance through development of Air Force publications for the career field. Training occurs at the "schoolhouse" at Ft. Leonard Wood, Mo., where a multi-service team of 16 instructors assigned to the 364th Training Squadron, Detachment1 teach more than 640 students a year to become chemical, biological, radiological, and nuclear (CBRN) responders.

The 1LT Joseph Terry Chemical, Biological, Radiological, Nuclear Responder Training Facility occupies 22.5 acres at Ft. Leonard Wood and provides a state-of-the-art campus for training CBRN responders. Here students learn to plan for, respond to, and recover from "all hazards" as their primary training objective. Chemical weapons, such as poison gases used in World War I, used harmful chemical properties to poison victims. Biological weapons use toxins from microorganisms, such as viruses or bacteria, to injure or incapacitate people. A radiological or nuclear weapon

is defined as any weapon using a radioactive or radiation-emitting source as the primary source of destruction. These weapons may be used to expose and harm a person or contaminate an object or area, rendering it useless or dangerous. Air Force responders are trained at the schoolhouse and prepare for all these types of threats.

To become an Emergency Management Apprentice, Airmen must complete the Emergency Management Apprentice Course consisting of two-parts: 55-day apprentice-level classroom training and the hands-on 12-day CBRN Responder Course. The two-part course focuses on the skills and knowledge needed to prepare for and respond to weapons-of-mass-destruction, or WMD, incidents. The course includes training on various military and commercial CBRN equipment, personal protective equipment, and self-contained breathing apparatus. Successful completion of both parts of the training provides the student with a HazMat technician level certification and the award of the 3-skill level apprentice badge.

Learning to become a CBRN responder typically means learning concepts and then going through active, hands-on exercises. For example, to complete their chemical-defense training, students must participate in an active chemical response in the "hot zone," a large semi-circular facility made of foot-thick reinforced concrete deep within the Chemical Defense Training Facility (CDTF). This training exercise is intentionally stressful, designed to show the students that they can do all the tasks they need to and still survive in a toxic environment

During basic training, Soldiers, Sailors, Airmen, and Marines are exposed to CS gas to prove to them that their gas masks work. The CDTF expands on that concept by using the lethal nerve agents VX and Sarin, in amounts that can cause harm if a responder is not protected. The Air Force's chemical experts must have supreme confidence that their equipment will protect them; this course provides that confidence.

Here's what you'd experience as a student on CDTF training day:

- You're picked up around 5:30 a.m. for transport to the CDTF. Along the way you anxiously go over the information you learned in the classroom. At the facility the doors close behind you and you feel the "whoosh" of air rushing in around you — drawn in by the building's negative pressure.

- You receive a security briefing, site briefing, and then enter a classroom to receive your training objective. Next, you have to pass medical clearance, an evaluation that includes blood work, heart performance, and the stress level assessment. Pass this and it's on to the next step.

(Let's take a moment to emphasize safety: Although there has never been a chemical accident at the school, the staff is fully prepared to deal with an emergency. Two medics are present during training and a removal team is always on standby. Throughout the entire process, instructors constantly monitor students. They check for miosis (pinpointing of the eye pupils), a clear signal of exposure and the need to be removed, decontaminated, and treated. If a seal breaks on a mask during the exercise or participants risk contamination by undressing in the wrong order, they're "red tagged" and earn a trip back to the medics for another blood draw and a test for possible exposure to nerve agents.

- You dress in your PPE and instructors inspect you for a tight fit and proper seal. Before you enter the hot zone you go through a mask confidence test: A chamber lowers over your head and expels an irritant smoke fume to check for a bad seal requiring mask adjustment. Pass this test and it's a green light.

- You continue down a long corridor as multiple training bays come into view. A coordinator watches all rooms through closed-circuit television cameras and always keeps three methods of communication with the training rooms — radio, intercom, and telephone — and directs you when to go from one bay to the next.

- Once inside the first bay, you practice atropine injections on a dummy using expired antidote. Then you watch as a nerve agent is placed on a weapon. This is recognition training. The next stage includes detection and identification.

- You're directed into Bay 2 and to perform "free reconnaissance." Nerve agent vapor fills the room as you and the other students move throughout the stations to detect and identify all the agents present — a requirement for passing.

- To close the exercise, you must drink water through your mask drinking tube and ensure that no contamination is present. Then you remove your gear and take a hot shower. Your medical records are updated and you're finished.

For the instructors it was just another day at work, training tomorrow's Air Force today. But, for you and the other students it's a day you're glad is over.

Mr. McAteer provides contract support to the Emergency Management Branch as a publications analyst, HQ AFCESA, Tyndall AFB, Fla.

DO IT ONCE, DO IT RIGHT

The Construction of Tuy Hoa Air Base

Dr. Ronald B. Hartzer
HQ AFCESA/CEBH

This issue of the Air Force Civil Engineer magazine includes two articles on major construction work in Afghanistan that refer back to the construction of Tuy Hoa AB during the Vietnam War. The Tuy Hoa [pronounced "tooey wah"] project was one of the most significant achievements in Air Force Civil Engineering history, so a retelling of the story will help put today's work in Afghanistan into the proper historical perspective.

In early 1966, the first big wave of American military forces were in Southeast Asia and more were expected, especially tactical fighter squadrons that were needed to support the expected move toward an offensive capability. Limiting factors were a shortage of munitions and the dearth of basing, particularly the latter.

The existing air bases in South Vietnam had been enlarged or constructed primarily through the civilian construction combine of RMK/BRJ (Raymond International, Morrison-Knudsen, Brown and Root, and J.A. Jones). By 1966, the contractors were overwhelmed by the magnitude of the construction requirements. The decisions on how and where to build, or even whether to build another airfield were mired in interservice rivalry. Concerned over the delays, Air Force Chief of Staff Gen John McConnell urged Secretary of the Air Force Harold Brown to obtain permission for the Air Force to build one of the required bases themselves by hiring and overseeing its own contractor. Strong opposition came from the Navy, which was pushing for another carrier, and from Military Assistance Command, Vietnam, whose construction chief, the Navy officer-in-charge-of-construction, worried about adding another contractor and the loss of control over design and construction standards. "I need the fighters," said Gen William Westmoreland, MACV Commander, and by May 1966 the decision was made.

Workers lay AM-2 matting for Tuy Hoa's 9,000 ft runway. (U.S. Air Force photo)

On May 27, a cost-plus-fixed-fee contract estimated at $52M was signed with Walter Kidde Constructors, Inc. to build a base at Tuy Hoa, South Vietnam. For the first time since the construction of the Air Force Academy, the Air Force would serve as construction agent. The Air Force and the contractor faced a number of obstacles: an overwhelmed design capability; a paucity of local skilled labor and equipment; inflationary concerns for the Vietnamese economy; crowded ports and supply channels; and a tight schedule. The contract called for the expeditionary airfield to be operational by December 27 and for sustained facilities that could support 54 fighters and several thousand Airmen completed by June 24, 1967.

The Air Force and the contractor developed a single-package, or turnkey, project with the contractor responsible for everything except real estate acquisition and security. Walter Kidde would do both the design and construction of the base and bring in its own supplies, equipment, and labor force to work on the project. The solution to the logistics difficulties was the siting of the new base — directly on the coast of the South China Sea. This permitted bringing in supplies and equipment directly over the beach, avoiding the existing port facilities. Ships stationed just offshore would serve as floating warehouses; reconditioned World War II landing craft would deliver items when needed.

The basic design was an integral part of the effort's success. To ensure initial operational capability as early as possible (and to earn the $10,000 a day incentive for early completion of the basic airfield) the contractor planned to construct a 9,000 by 150-foot runway, taxiway, and parking apron using nearly three million square feet of aluminum matting — AM-2. Flying operations could use this runway while a permanent 9,500-foot concrete runway was constructed. The contractors' facilities were sited and constructed for eventual use by the Air Force and construction roads would eventually be streets.

820th Civil Engineer Squadron (HR) members prepare a site for construction of a maintenance apron at Tuy Hoa AB with F-100s parked in the background. (U.S. Air Force photo)

Air Force oversight for "Project Turnkey" was intense. Civil Engineering leaders had gone out on a limb by taking on this project and wanted to ensure it was done right and on time. Gen McConnell received weekly updates on the progress. Brig Gen Guy H. Goddard was the Air Staff director for Project Turnkey. The program director's office was at HQ Seventh Air Force in Saigon, headed by Col Archie S. Mayes and Col John D. Peters; the New York project office (near the contractor's offices) was led by Col John Trommershausser, and at Tuy Hoa, Col David S. Chamberlain was designated as the Turnkey Resident Engineer. The team adopted the motto of "Do it once, do it right."

A major part of the construction effort was first directed toward completion of the AM-2 runway to quickly achieve operational status. The original plan was to simply expand an existing 3,000-foot Vietnamese runway. However, Col Mayes and Col Peters evaluated the situation and determined it would be quicker and easier just to create a totally new 9,000-foot AM-2 runway. When the grading and leveling was complete and drainage provided, the sub-base of compacted natural soil was then covered with a soil cement treatment and asphalt seal coat followed by a blanket of sand. By early October, AM-2 placement began; it proceeded at a rate of 600-800 linear feet per day.

Simultaneously, construction was expedited on all basic facilities required for the interim operation of the base. This included the control tower, three squadron operations buildings, POL storage for 56,000 barrels, a warehouse, cold storage and communications buildings, and a 320-seat dining facility.

The contractor had to establish its own quarry, arrange for dredging out in the harbor, endure a typhoon, and even run a railroad during the construction period. But progress on the base continued on a fast pace.

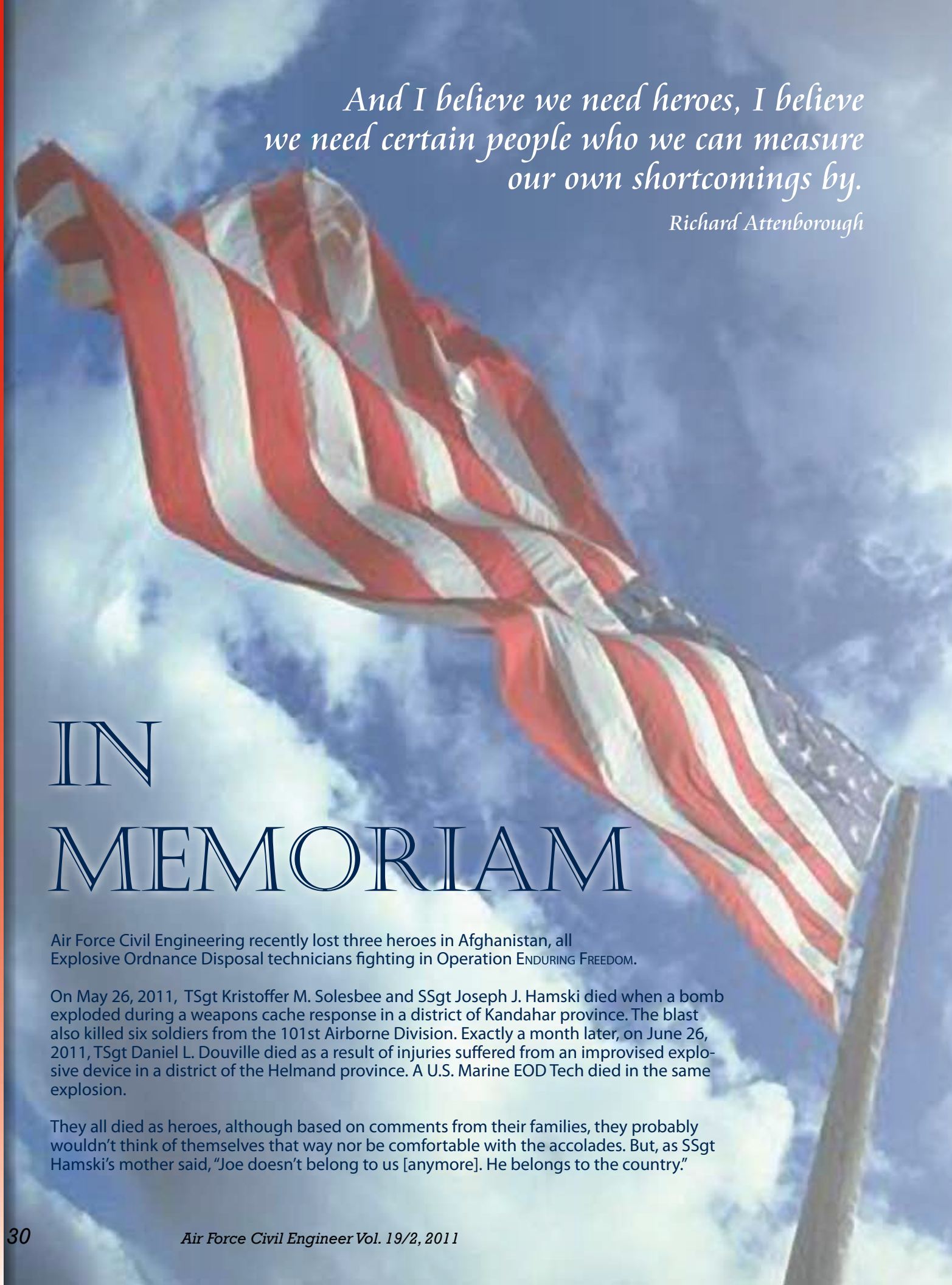
In October 1966, the 820th Civil Engineering Squadron (Heavy Repair) arrived to augment the contractor workforce. This RED HORSE unit worked around the clock to complete some of the operational facilities, including dormitories, dining halls, water tanks, ammunition storage facilities, warehouses, and hangars. The unit erected 170 aircraft revetments and 120,000 square feet of wooden buildings. They also operated a rock crusher 9.5 miles from the base and hauled aggregate through enemy-held territory to the base. The 820th estimated that they completed nearly 50 percent of all construction at the site. So the project was truly a civilian/military partnership.

By the second week of November, the last piece of AM-2 matting was in place on the expeditionary runway. The 9,000-foot runway was ready for aircraft. On Nov. 12, 1966, an Air Force C-130 carrying navigational aid equipment became the first aircraft to arrive. Three days later, F-100s of the 308th Tactical Fighter Squadron took off from Bien Hoa AB, flew a mission over North Vietnam, and landed at Tuy Hoa. In December, two additional squadrons joined them.

An aerial view of the base under construction at Tuy Hoa, directly on the South China Sea. (U.S. Air Force photo)

The base had become operational a full six weeks ahead of schedule, a testament to the detailed planning, professional execution, and teamwork of everyone involved. On June 10, 1967, all contract facilities were completed, two weeks ahead of schedule.

Construction of Tuy Hoa was a success but not a precedent because the Air Force was not manned to perform this mission. However, the Air Force has moved into this area with its work on projects such as Camp Bastion (p.10) and RED HORSE's runway project at Camp Dwyer (p.12).



And I believe we need heroes, I believe we need certain people who we can measure our own shortcomings by.

Richard Attenborough

IN MEMORIAM

Air Force Civil Engineering recently lost three heroes in Afghanistan, all Explosive Ordnance Disposal technicians fighting in Operation Enduring Freedom.

On May 26, 2011, TSgt Kristoffer M. Solesbee and SSgt Joseph J. Hamski died when a bomb exploded during a weapons cache response in a district of Kandahar province. The blast also killed six soldiers from the 101st Airborne Division. Exactly a month later, on June 26, 2011, TSgt Daniel L. Douville died as a result of injuries suffered from an improvised explosive device in a district of the Helmand province. A U.S. Marine EOD Tech died in the same explosion.

They all died as heroes, although based on comments from their families, they probably wouldn't think of themselves that way nor be comfortable with the accolades. But, as SSgt Hamski's mother said, "Joe doesn't belong to us [anymore]. He belongs to the country."

TSgt Kristoffer Solesbee, 32, was deployed to Kandahar Airfield from the 775 CES, Hill AFB, Utah, when he was killed on May 26, 2011. It was his third deployment and first to Afghanistan. Following in his father and grandfather's footsteps, TSgt Solesbee joined the Air Force after graduating from high school in 1996. Memorial services were held for TSgt Solesbee on June 2 at Hill AFB and June 18 in Citrus Heights, Calif., his home town. MSgt Steven Hallenbeck, his supervisor remembered TSgt Solesbee at the Hill AFB service: "He was the example for other EOD techs. He was a benchmark."

On June 28, TSgt Solesbee was laid to rest at Arlington National Cemetery with full military honors. He was posthumously awarded the Bronze Star Medal with Valor and second oak leaf cluster, the Purple Heart Medal, and the Air Force Combat Action Medal.

"Kristoffer loved his job," said his mother, Ms. Sandra Parker. "We will miss him, but we know he did his job well. He saved a lot of lives defusing bombs."

SSgt Joseph Hamski, 28, a member of the 52 CES, Spangdahlem AB, Germany, was on his fourth deployment when he died on May 26, 2011. He and TSgt Solesbee were responding to a reported weapons cache when an IED exploded. SSgt Hamski joined the Air Force in 2003, following graduation from Ottumwa High School, Iowa, and a year of studies at Iowa State University. While stationed at Kunsan AB, South Korea, he met and married his wife, who is also a staff sergeant and a civil engineer in the Air Force.

SSgt Hamski's funeral was held on June 9 and he was laid to rest in his hometown of Ottumwa with full military honors conducted by the Offutt AFB honor guard. He was posthumously awarded the Purple Heart, Bronze Star with Valor, and the Air Force Combat Action Medal. A June 16 memorial service at Spangdahlem honored SSgt Hamski, who was preceded in death by his father. "I just wish that I had been half the Airman that he was," said his stepfather, himself a retired Airman. "He knew he had a tough mission and he accepted it."

TSgt Daniel Douville, 33, died June 26, 2011 as a result of injuries suffered from an IED in Helmand province, Afghanistan. TSgt Douville was a member of the 96 CEG at Eglin AFB, Fla., and was on his third deployment. His funeral was July 9 in his hometown of Harvey, La. Memorial services were held at Camp Leatherneck, Afghanistan, and at Eglin, where friends, family, and coworkers gathered to remember the man they affectionately knew as "P-Nut."

TSgt Douville, who joined the Air Force in 1997, was posthumously awarded the Purple Heart, Bronze Star with Valor, and the Air Force Combat Action Medal. "He had a larger than life personality that … destined him for fame," said Capt Jonathan Herman, 96 EOD Flight commander, who spoke at Eglin's service. "He achieved that fame within the EOD community as a top notch team leader … stand a little taller, stick your chest out a little further, and be proud your life was touched by a superhero."

Compiled with information from Air Force news releases, Air Force News articles by SrA Steve Bauer and Mr. Samuel King, an Air Force Times article by Ms. Markeshia Ricks, and sources within the EOD community.

Memorial Honors EOD Fallen

Ms. Lois Walsh
96 ABW/PA

Almost 3,000 people gathered at Eglin AFB, Fla., on May 7, for the 42nd annual memorial service honoring EOD technicians past and present. The names of 15 EOD technicians who were killed last year were added to the wall, bringing the total of technicians killed in combat since World War II to 269. Among the 15 names were those of two Airmen: SrA Daniel J. Johnson and SrA Michael J. Buras.

"I'm humbled to walk among you this morning and share in this unique opportunity to commemorate and honor our EOD warriors, each one is a genuine American hero and a national treasure," said Gen James F. Amos, Commandant of the Marine Corps, speaking to the families at the ceremony. "The four services stand together in one place at one memorial forever honoring their heroes in the common mission they all were a part of. We owe each of you a debt of gratitude we are honor bound to keep. You embody all that is honorable and good about the American spirit."

(left) CMSgt Albert Schneider and Maj Jason Warnick, 366 TRS Det 3, move away from the EOD memorial after laying a wreath in front of the Air Force wall during the annual memorial ceremony. (***right)*** SSgt Lindsay Ahonen, 366 TRS Det 3, salutes Air Force Chief of Staff Gen Norton Schwartz after passing him a flag during the ceremony. Gen Schwartz presented flags to family members of EOD Airmen who were killed last year. (photos by Mr. Samuel King, Jr.)

Key Personnel Update:

Senior Leadership

Brig Gen Leonard A. Patrick is the Commander, Second Air Force, Keesler AFB, Miss. He was the Commander, 502nd Air Base Wing, Fort Sam Houston, Texas.

Brig Gen Theresa C. Carter is the Commander, 502nd Air Base Wing, Fort Sam Houston, Texas. She was formerly the Director of Installations and Mission Support, Headquarters Air Mobility Command, Scott AFB, Ill.

Brig Gen Timothy S. Green is now the Director of Installations and Mission Support, Headquarters Air Mobility Command, Scott AFB, Ill. He was the Special Assistant to the Commander, United States European Command, and Supreme Allied Commander Europe, Supreme Headquarters Allied Powers Europe, Casteau, Belgium.

Office of The Civil Engineer, Washington, D.C.

Colonel Bart Barnhart is the Chief, Asset Management and Operations Division, replacing Col Stephen Wood who is now the Vice Commander, 72nd Air Base Wing, Tinker AFB, Okla. Col Barnhart was formerly the Chief, Environmental Management Planning, Programming, Budget and Execution, Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, Washington, D.C.

Col Frank Freeman is the Chief, Housing Division. He was previously the Commander of the 380th Expeditionary Mission Support Group. He replaces Col David Martinson, who is now the Associate Civil Engineer in the Office of The Civil Engineer.

Col Markus Henneke is the Chief, Planning Division. He was formerly the Chief, Installation Support and Strategy Branch for the division. He replaces Col Derrek Sanks, who is deployed to the Southwest Asia area of operations.

Col Stephen Shea is the Chief, Programs Division, replacing Col John Allen who is deployed to the Southwest Asia area of operations. Col Shea was previously Deputy Director, Joint Engineer Directorate United States Forces-Afghanistan Kabul.

Col Darren Gibbs is the Chief, Readiness and Emergency Management Division. He was formerly the Chief, Expeditionary Combat Support Division, Headquarters Air Combat Command, Langley AFB, Va. Col Gibbs replaces Col Jeffery Vinger, who is retiring.

CEs Test JFIRE

MSgt Sonny Cohrs
8 FW/PA

Airmen from the 8 CES, Kunsan AB, Republic of Korea, recently participated in a field test of the new modified Joint Firefighter Integrated Response Ensemble (JFIRE). During a week-long base exercise, firefighters donned the JFIRE suit while responding to scenarios involving both conventional and chemical attacks. Bioenvironmental engineers, emergency management, and explosive ordnance disposal personnel also tested the suit.

The JFIRE consists of an outer shell to provide liquid protection and a carbon-bead filter material on the inside for vapor protection. One of the biggest differences between the JFIRE and the currently used Joint Service Lightweight Integrated Suit Technology, or JLIST, is the one-piece design.

"The ensemble specifically allows military firefighters to operate in a chemically contaminated environment," said CMSgt Joseph Rivera, a Fire Emergency Services program manager, AFCESA, Tyndall AFB, Fla. "We're really trying to reduce the thermal burden and weight, and improve flexibility to make the job easier for the firefighter." The JFIRE includes upgraded helmets, gloves, and boots.

SrA Daniel Couey, 8 CES firefighter, practices donning and doffing procedures with a new JFIRE suit. (photo by SSgt Rasheen Douglas)

Zapata Wins Harold Ensign Engineering Excellence Award

Mr. Michael Zapata, P.E., won the National Petroleum Management Association's Harold Ensign Engineering Excellence Award in May. This award is given annually to the individual who has made significant and outstanding contributions of an enduring nature to improve the operation and maintenance of petroleum equipment and facilities.

Mr. Zapata, who works in the Operations and Programs Support Division at AFCESA, Tyndall AFB, Fla., is the Senior Technical Engineer for Fuels Infrastructure for the U.S. Air Force. He is Civil Engineering's subject matter expert in the field of fuels facilities as well as the acting SME in the field of corrosion control.

219 RHS Wins National Award

The Montana Air National Guard 219th RED HORSE Squadron was awarded the 2011 distinguished National Guard Association of the United States Mission Support Trophy by the National Guard Bureau.

Lt Gen Harry M. Wyatt, the Director of the Air National Guard, announced the award winners on April 18, not long after the unit returned to Great Falls, Mont., from Southwest Asia and their third involuntary full unit mobilization in support of Operations Enduring Freedom and Iraqi Freedom.

During their deployment, the unit's experienced personnel served leadership roles in operations, logistics, and command positions, completing 60 projects valued at $45M during the deployment. The classic association with its active duty sister unit, the 819 RHS, Malmstrom AFB, Mont., proved once again to be a professional organization that provides a phenomenal capability for combatant commanders worldwide.

The recent seven-month deployment adds to the unit's long list of proud and distinguished accomplishments, but it wasn't the only reason the 219th won the Mission Support Trophy amid competition from numerous outstanding units. Award winners were selected for their ability to fulfill Air National Guard missions, such as humanitarian relief, domestic support, and defense of the United States.

Highlights of the 219th's other achievements include completing an innovative readiness training project to reconstruct a 1.5 mile road in a joint venture with Montana Army Guard Soldiers. The 219 RHS also installed a mobile aircraft arresting system critical to the success of a Blue Angels Air show in Missouri, providing the necessary emergency response. Closer to home, the 219 RHS provided support to the Montana Youth Challenge program, benefitting numerous at-risk youth. Rounding out their achievements was a 99-percent compliance rate in their 2010 Air Combat Command Unit Compliance Inspection and recognition by the IG team for "best practices" of guard units inspected.

"You can see the association that the 219th has had with the 819th over the past 14 years has really developed and matured," said Lt Col Ryck Cayer, the 219 RHS commander, a veteran of four 6-month deployments. "I would say this was the smoothest deployment that we've had. The unit cohesion was outstanding — best seen to date. The project management, leadership and group morale, it was just like none I've seen before."

"For a small unit in the middle of Montana it's kind of amazing to think of the capability that Montana and the U.S. Air Force has right here," said Lt Col Cayer. "It's a global capability."

Compiled from stories by 1Lt Justin Hutchins and SMSgt Eric Peterson, 120 FW Public Affairs, Montana ANG, Great Falls, Mont.

Biting Back at Bed Bugs

Mr. Donald Teig
HQ AFCESA/CEOA

The Air Force Civil Engineer Pest Management program has avoided serious outbreaks of bed bugs on installations through proactive public education. But we all need to avoid them while traveling and avoid bringing them home — they can ruin a trip and they're excellent hitchhikers.

Bed Bug Safety Tips When Traveling

Going TDY or on vacation? Travelers frequently overlook bed bugs, although they're a very common nuisance found in many hotels. Travelers can be bitten hundreds of times in a single night, waking up with a rash that leaves their entire body itching for days.

Before booking a hotel, look online for any recent bed bug reports. This can be found at sites such as bedbugregistry.com or tripadvisor.com. Following are some anti-bed bug tips for before, during, and after travel.

Before leaving home

- Pack everything in a top quality luggage liner or plastic bag.
- Use hard-sided suitcases to keep bed bugs out.
- Pack a small flashlight to search for indications of bed bugs.

Arriving at hotel

- Use a flashlight to inspect your hotel room, especially mattresses, box springs, chairs, drawers, headboards, carpets, closets, and wall hangings. Look for dark fecal spots, dried blood, eggs, and bed bugs – dead or alive.
- Check electrical sockets, cracks in walls, radios, tvs, and phones.
- If you find bed bugs, ask the hotel management for a new room in another area of the hotel, or try another hotel.

Unpacking in hotel

- Hang up clothes or put them on a metal luggage rack. If the luggage rack is made of wood, keep your clothes in your bed bug-proof luggage liner.
- Don't leave your suitcase on the bed, floor, or chairs.
- Keep all shoes inside sealed luggage liners.
- Put all dirty clothes in anti-bedbug laundry bags or plastic bags.
- Before checking out, recheck the outside of your luggage, laundry bag, clothes, and shoes for "hitchhikers."

Back at home

- Unpack your bags outdoors if possible and never near your bedroom.
- Vacuum the inside and outside of your luggage. Do not use a bag-less vacuum.
- If you find bed bugs on your suitcase or clothes:
- Wash and dry your clothing (and luggage, if possible) in extreme heat (>140 degrees Fahrenheit to be safe).
- If you can't wash your clothing at such heats, you should have it dry cleaned.
- Use a Laundromat to reduce your chances of bringing bed bugs home.

Note that bed bugs are resistant to most sprays! The above may seem like overkill, but eradicating bedbugs can be costly. By taking a few steps to ensure a better night's sleep when you're away from home, you can get on with life when you return from your trip.

Contact the author (donald.teig@afcesa.af.mil) for more information or see AFCESA's A-Gram 10-04, Bed Bug Management.

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Into the Breach

1Lt Rueban Glaves, Wright Patterson AFB, Ohio (right) and 2Lt John Dolan, Joint Base Pearl Harbor-Hickam, Hawaii (left) enter a smokehouse as part of their fire familiarization training during an Officer Field Education course at Silver Flag Exercise Site, Tyndall AFB, Fla. Students wear gas masks and oxygen tanks to simulate the load a firefighter would carry into the building. This photo was taken by another student in the class, 2Lt Alexander Frank, Kadena AB, Japan.

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