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Air Force Global Strike Command Beddown

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Firefighters from the 2 CES, Barksdale AFB, La., prepare to remove a crew from a B-52 Stratofortress during an exercise. (photo by MSgt Michael A. Kaplan)

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Supporting the Air Force's Nuclear Enterprise

This August, Air Force Global Strike Command (AFGSC) celebrated the one-year anniversary of being established at Barksdale Air Force Base, La. It's been a busy year for the Air Force's youngest MAJCOM, which is responsible for the Air Force's nuclear enterprise. As AFGSC Airmen prepared themselves to refocus on their important mission, Air Force civil engineers were also working to ensure they were ready.

Within its first six months, AFGSC assumed command of the nation's nuclear-capable bomber fleet of B-2s and B-52s, and the Minuteman intercontinental ballistic missile fleet. AFGSC also underwent a significant organizational transformation. Units once belonging to different MAJCOMs transitioned into a new command structure and new ways of doing business. They clarified lines of authority, increased capacity, and expanded oversight. The command also instituted a rigorous inspection regimen to demonstrate their commitment to the highest levels of performance and ensure Airmen are trained and prepared to carry out one of the Air Force's most critical missions.

The formation of AFGSC also meant the creation of a MAJCOM with a span of control made up of six wings at five bases, as well as two geographically separated squadrons and one detachment, throughout the United States. Despite the small footprint, AFGSC Civil Engineering units found themselves with greater responsibility. Not only do engineers have increased oversight of programs like the lightning arresting systems and hoist inspections, they also have oversight of critical launch infrastructure. When maintenance is required on these facilities, civil engineers exercise extreme caution and conduct painstaking analysis to ensure whatever they change does not degrade the core mission.

Civil Engineering career specialties are also adapting to AFGSC's unique needs. In this issue of the *Air Force Civil Engineer*, you'll read about new training targeted at explosive ordnance disposal and firefighting specialties that include instruction applicable to the nuclear mission.

Of course, civil engineers are no stranger to the nuclear deterrence business. Civil engineers were there when the runways and infrastructure were built in the 1950s and 1960s to accommodate the strategic bomber mission of Strategic Air Command. They were also there to maintain the Minutemen missile fields and ensure they were operational. Civil engineers did these jobs with pride and will continue to do so under AFGSC.

In the coming years, AFGSC will work to sustain and modernize its weapon systems, and replace outdated equipment. It will also continue its rigorous inspections to ensure the highest possible standards. This is especially important given AFGSC's mission. Nuclear deterrence is a zero-defect mission; there can be no mistakes.

Strengthening the nuclear enterprise is the Air Force's most immediate priority according to the Secretary of the Air Force and the Chief of Staff. And, as AFGSC continues this important mission, civil engineers will also be there to support them by "Building to Last … and Leading the Change."

Timothy A. Byers
Major General, USAF
The Civil Engineer

ENGINEERING A NEW COMMAND

At Air Force Global Strike Command headquarters, where every day brings different challenges, civil engineers are striving to "make a difference every day."

Ms. Teresa Hood
HQ AFCESA/CEBH

In a recent *CSAF's Vector*, the Chief of Staff of the Air Force listed the service's number one priority as "Continue to Strengthen the Air Force Nuclear Enterprise" and cited the creation of Air Force Global Strike Command (AFGSC) as a significant step in meeting this priority. AFGSC was officially established on Aug. 7, 2009 to direct all the Air Force ICBM and nuclear-capable bomber forces. Headquartered at Barksdale AFB, La., AFGSC has six wings – three bomber and three ICBM – that were previously under Air Combat Command (ACC) and Air Force Space Command (AFSPC).

"Global Strike Command was created to be 'one voice' for the Air Force's nuclear enterprise," said Col Michael Hass, Operations Division Chief for AFGSC's Logistics, Installations, and Mission Support Directorate (A4/7) and the command's Civil Engineer.

Directorates of AFGSC, including AFGSC civil engineers continuously overcame challenges to meet goals and set standards throughout the command.

"With the Command's full operational capability approaching quickly, being prepared is a primary goal," said Col Hass. "Within our directorate, we've given ourselves an additional goal – 'to make a difference every day.' It gives us a tangible mark each day, to keep us focused when new challenges arrive daily, sometimes hourly."

Some of the biggest challenges faced by engineers were time and manpower.

"The pace here is faster than any I've experienced," said Maj Madison Morris, AFGSC's civil engineering executive officer, who has the distinction of being the first civil engineer to arrive at the Barksdale headquarters. "In addition to the command responsibilities, we're in the process of bedding ourselves down and building up to our full staffing."

"Global Strike's A4/7 structure was set up a little differently — we didn't align with PAD 07-02," said Col Scott Hoover, who was AFGSC's first Civil Engineer and now commands the 2 MSG at Barksdale. "The reviews of the nuclear enterprise said the three main focuses should be 'ops, cops, and maintenance.' To meet this organizational objective, the deputy A7 is a Security Forces officer and the Operations Division Chief is the command's Civil Engineer."

Above: *AFGSC headquarters at Barksdale AFB, La., are in the building formerly housing Headquarters Eighth Air Force. (photo by SrA La'Shanette Garrett).* ***Below:*** *B-52 Stratofortresses from AFGSC's Minot AFB, N.D. and Barksdale AFB, La., prepare to take off in rapid succession as a finale to a rapid launch exercise at Minot. (photo by SrA Benjamin Stratton)*

AFGSC's A4/7 directorate is slated to be made up of about 60 percent civilians, a fact which has affected the speed of reaching manning numbers.

"The switch from NSPS to GS caused an unexpected delay in our hiring timeline," said Col Hass. "But we brought in contractor experts as a 'bridge' and we're keeping up the pace."

The command's beddown planners refined the initial plans, which included a new $125M AFGSC facility built with MILCON funds, to save money and time. "There's enough space at Barksdale to do a lot of renovation with O&M funds in lieu of large MILCON bills," said Mr. Dan Aldrich, who works in A7O's beddown planning office. "Now we're building one $24-million facility with MILCON funds — to house the wing's functions that we displaced — and doing about $69 mollion in O&M. Our total cost will end up being about $107 million."

"To meet the FOC, we had to move out fast," said Lt Col Douglas Tippet, the Chief of Infrastructure Assessment and Beddown Branch. "Renovating with O&M funds was the faster execution method. We're doing the beddown

for less money and faster, and we're getting to fix a lot of the base infrastructure as we go. Right now, we're 67 percent executed, and one good news item is that we're about 20 percent below the original estimate for total beddown construction costs."

Many of Barksdale's buildings date back to the 1930s and are listed with Louisiana's State Historic Preservation Office. The O&M funds will be used to renovate two of the base's historic campuses – The North Campus for Eighth Air Force (headquartered at Barksdale) and the South Campus for AFGSC. According to Lt Col Tippet, AFGSC's planners have worked with the base's 2 CES to make sure everything fits with the base comprehensive plan (see article, p. 7). At the same time, they've focused on keeping "unit integrity and efficiency" by ensuring AFGSC's divisions and branches are located close together.

During the beddown process, AFGSC's civil engineers also provided MAJCOM support to their people and bases, not always an easy task.

"It's difficult for all of us because we can't pull a playbook or a FY09 program binder off the shelf to build our FY10 programs," said Lt Col Tom Svoboda, the acting Asset Management Division Chief.

"ACC and Space Command are continuing to provide reach-back support," Col Hass said. "We are a voice of advocacy in this resource-constrained environment, which is exactly what the command is supposed to be — a voice of advocacy for the nuclear enterprise."

Combining the cultures, philosophies, and processes of the two nuclear enterprise missions is another challenge.

"We have two very diverse mission requirements sets – visions, if you will," said SMSgt Joseph Walsh, who leads AFGSC Installations and Mission Support firefighting section. "It's my responsibility to ensure solid integration to the Global Strike vision."

One important function where the two missions have been combined is the Response Task Force which the directorate manages. With members from many functions, the RTF is tasked to provide command and control functions in the case of a crisis or contingency, specifically for CONUS assets.

"We took the structures from both ACC and Space Command's RTFs, and 'morphed' them into one," said Col Sherry Bunch, AFGSC's Readiness Division Chief. "With an enormous amount of input, AFGSC's Readiness Division wrote the plan. We also manage training, take care of equipment, design and orchestrate exercises, and provide interaction with other response agencies."

The division had their first field exercise in June at Malmstrom AFB, Mont. "It's been a challenge but also very exciting," said Col Bunch.

"We stood up a major command at a breakneck pace, but we're not taking a break because we have the nuclear enterprise to steward – and people and bases to take care of," said Col Hass.

This sense of excitement and responsibility is echoed by all of the command's civil engineers.

"Right now we have a unique opportunity, said SMSgt Walsh, "and it's certainly within our charge to make a difference every day."

Left: *A Minuteman III ICBM launches from Vandenberg AFB, Calif., in June 2010. The 576th Flight Test Squadron at Vandenburg, now an AFGSC unit, is responsible for ICBM tests. (photo by Mr. Joe Davila)*
Right: *During a four-day AFGSC Response Task Force exercise at Malmstrom AFB, Mont., in June, members of the 341 CES Emergency Management flight and Firefighters respond to an exercise accident scene. (photo by Mr. Beau Wade)*

Beddown BOOGIE

2nd Civil Engineer Squadron helps beddown AFGSC at Barksdale

Ms. Teresa Hood
HQ AFCESA/CEBH

Barksdale AFB's civil engineers have been doing a fast dance, moving people and organizations into and out of swing space while renovating and building facilities to bed down Air Force Global Strike Command (AFGSC) on their Louisiana base. The new major command was officially established on Aug. 7, 2009, and recently celebrated its first anniversary at its headquarters at Barksdale.

Engineers in the 2 CES worked with their new command and their former command — ACC —to help ensure that everything and everyone had a place and that the base's infrastructure reflected its new status. From the start, wing and headquarters civil engineers worked together to assign office space and facilities, while trying to minimize impact on existing operations.

ACC's Basing and Beddown Branch—the A5/BB—set up a basing office at Barksdale to help," said Mr. Eric Tillstrom, head of the 2 CES Programs Flight. "And they put some really good people in Global Strike's civil engineering divisions."

The first step was for incoming AFGSC headquarters staff members to move to their permanent headquarters building, which happened to be the current Eighth Air Force Headquarters. Eighth Air Force staff members were temporarily relocated to the Cyber Innovation Center off base and will eventually move into the former military personnel flight building when renovations to that building are completed. A select number of directorates are working out of modular facilities until permanent space is available.

Barksdale's engineers saw the beddown as an opportunity to both right-size the base and better arrange it.

Above, top: *Before Feb. 1, 2010, all of Barksdale AFB's base road signs and gate emblems were replaced with new ones with AFGSC's shield. (photo by SrA Joanna Kresge)* ***Bottom:*** *The 2 BW headquarters building at Barksdale AFB, La., was completed in 1932, and the octagon-shaped shell covering the 1932 water standpipe was completed in 1934. Over 50 percent of Barksdale's facilities are on the National Historic Register. (photo by TSgt Jeff Walston)*

"We've been working on moving some functions away from the flightline and we're almost there," said Mr. Rich Parent, 2 CES Real Property Manager. "Now 'community' type things like the BX, the hospital, family support, the post office, the bank, and the Red Cross, will all be centralized on one side of the base."

"It all fits into the master plan quite well, "said Mr. Tillstrom. "With the addition of the new building, the overall footprint will increase slightly, even with the reductions gained by tearing down a lot of old dorms. But we're replacing a lot of aging infrastructure within the buildings being renovated. That's a big plus for the base."

Timing, as they say, is everything. Thankfully, the task to beddown AFGSC came right after completion of a base-wide water line infrastructure repair and replacement project. Other renovations included the improvement of HVAC systems in key facilities.

"We were lucky to get a lot of big HVAC jobs in our old 1930s-era buildings — the big two- and three-story ones — funded in the stimulus package," said Mr. Tillstrom.

Many of the buildings have a two-pipe system, either hot or cold depending on the season. Now, with these buildings going to a four-pipe system, Barksdale can have infinite temperature control year-round, and the systems will be energy efficient. Electricity for cooling is the biggest energy drain.

"Barksdale has been fortunate to attain about a dozen energy conservation projects annually — cool roofs, pipe insulation — and we're excited about the 83 buildings we now have on an energy monitoring control system," said Mr. Tillstrom.

Top: *Maj Madison Morris, AFGSC/A7C's Executive Officer, inspects a modular building project slated for 80 of the command's IG personnel. (U. S. Air Force photo)* ***Bottom:*** *Mr. Eric Tillstrom (left), chief of the 2 CES's Programs Flight, and Mr. Rich Parent, the squadron's real property officer, look over plans for renovation related to AFGSC's beddown. (photo by Ms. Jeanette Howell)*

The 2 CES's 400 personnel have had a busy year managing the construction of 252 projects totaling more than $70M while soliciting bids for 99 additional projects worth $32M. What are some of their "lessons learned" in bedding down a new command?

"Don't let pride overcome reality," said Mr. Parent. "We have the normal rotation — about a third of our people are out of the squadron at any one time. Without temporary, contract help, we couldn't get it done. Thankfully, this squadron is blessed in the sense that we have people who work well together; it makes for a real efficient machine."

"We attend a lot of meetings every week," said Mr. Tillstrom. "We may not have the final decision, but our input is sought and valued. We understand the historical nature of the base; we know where things are and what you can get away with in this particular soil or climate. Most importantly, nothing's personal; you have to keep talking.

"Bottom line, we're dealing with the Air Force's nuclear enterprise," continued Mr. Tillstrom. "There's no time to waste and you've got to be accurate."

Although things won't get back to "normal" until the new MSG building is completed, the base engineers expect that the "beddown dust" will begin to settle as soon as the Eighth Air Force is in its renovated building and many of the trailers are gone.

"At the end of the ride, we're going to have an improved facility, base, and organization," said Mr. Parent.

"Air Force Global Strike Command — the people and the beddown — have done so much to help us improve our infrastructure," said Mr. Tillstrom. "In a few years, this will be one heck of a base."

Studies Identify Energy Sources at Bases

This 1 MW solar array at Buckley AFB, Colo., is expected to generate 5 percent of the base's electrical needs when operating at full capacity in September 2010. (photo by A1C Paul R. Labbe)

Ms. Jennifer Elmore
HQ AFCESA/CEBH

Air Force civil engineers and Department of Energy (DOE) laboratories are working together to conduct a first-of-its-kind scientifically based renewable energy (RE) study that spans all major Air Force installations. In FY09, the Air Force produced 5.8 percent of all facility energy using RE sources, surpassing the 5 percent goal for the year. For the first time, the Air Force achieved the goal without having to purchase RE credits to make up for a shortfall in production. But a new federal mandate effectively doubles earlier RE goals and requires that 25 percent of all facility energy come from RE sources by 2025.

"We're providing each base a very specific research-based report on what RE sources they have and the amount of energy they can extract from them," said Mr. Ken Gray, Chief, Rates and Renewables Branch, Air Force Facility Energy Center (AFFEC). "This will allow base leadership and the base civil engineering squadrons to focus on the top four identified RE sources, whether they are geothermal, solar, wind, or waste-to-energy. That information, along with the base mission and availability of land, will give them a better idea of what they can do for RE development as we continue to move forward to meet our goal," said Mr. Gray. By Oct. 1, 2010, more than 70 bases will have completed RE studies, enabling the energy managers to begin building business case analyses.

The Air Force has RE projects (either solar, wind, landfill gas, or ground source heat pumps) in operation on 45 bases. Engineers at the AFFEC, located at the Air Force Civil Engineer Support Agency, Tyndall AFB, Fla., expect the number of projects to double by 2015.

- A $7.3M, 1 MW solar array at Buckley AFB, Colo., is scheduled for completion in September 2010.
- The Air Force Academy will represent the Air Force as a net zero demonstration installation, achieved when an installation produces at least as much energy from renewable sources as it consumes in its facilities. It is transforming into a showcase base using solar power, hydro-power, wind energy, waste-to- energy and dry fermentation biomass. American Recovery Reinvestment Act funds are being used to construct a 4 MW solar array expected to come online in the spring of 2011.
- A 16.6 MW solar array is planned for Luke AFB, Ariz., that will generate 50 percent of the power needed to run the base. The Air Force has entered into an agreement with the utility provider, Arizona Public Service, which will fund, construct, and own the project. In return, the Air Force will receive a guaranteed low rate for solar power. Completion is scheduled for December 2011.
- Air Combat Command is partnering with Utah State University, the International Continental Drilling Program, and other scientific and academic groups to construct an exploratory geothermal well at Mountain Home AFB, Idaho.

Not only is the number of projects growing, but so is the variety. The Air Force's first biomass plants are in development at Eglin AFB, Fla., and Robins AFB, Ga. These RE projects will divert refuse from landfills, reduce net emissions, save taxpayer money, and contribute towards energy security.

Ms. Elmore, a support contractor, is the communications coordinator at the AFFEC, HQ AFCESA, Tyndall AFB, Fla.

Building Great Leaders by Keeping Young Officers

Maj Robert C. Lance
HQ AFCESA/CEOO

Maj Gen Timothy Byers, The Civil Engineer, has stated that the CGO retention issue is one important part of fostering an environment that promotes development, both professional and personal, in all of our Airmen. During last year's Civil Engineer Senior Leaders' Meeting held in December 2009, Maj Gen Byers, invited approximately a dozen company grade officers (CGOs) to a forum to discuss the four "pillars" that support our Airman's intent to remain in the Air Force — leadership, deployments, professional development, and balanced living — and how these factors impact CGO retention. As a follow-on "vector check, Maj Gen Byers again asked a group of CGOs to attend another forum in conjunction with the 2010 SAME National Convention.

1Lt Kate Miles, a civil engineer on a provincial reconstruction team, takes notes on construction progress of a new government building in Panjshir, Afghanistan. (photo by TSgt Jennifer Buzanowski)

CGO Forum at Senior Leader's Meeting

In preparation for the meeting, several CGOs distributed surveys to their peers. The feedback from this larger representative sample of CGOs in the Civil Engineering career field validated the opinions of those attending the meeting and highlighted concerns in each of the four pillars. Maj Gen Byers focused his February 2010 CEnterline video on findings presented at this forum.

Leadership. This is an area of high importance, and unfortunately, many CGOs feel that their commanders could spend more time mentoring them and investing in their futures. Most squadron commanders are extremely busy and finding time to focus on mentoring their young officers can be a challenge. Leadership through email has become overwhelmingly popular but falls short of what Maj Gen Byers has termed "high-touch" leadership. Personal guidance is vastly important with respect to job satisfaction and ultimately, retention.

Deployments. These were a concern for most of the CGOs. Although they typically enjoyed their deployed jobs, most felt the dwell ratio for deployments was too high. At a one-to-one dwell ratio, CGOs may spend ten to thirteen months at home during a three-year tour, when training and travel time are factored in. With so little time at home station, they feel that they lack the opportunity to hone the engineering skills they would typically obtain. They should be managing large design and construction projects that take many months, or even years, to complete. Instead, they spend their time acclimating to home station and preparing for the next deployment.

Professional development. Many avenues and programs exist to facilitate and promote officer development; the same is not true for development as a civil engineer professional. To be considered deployable, a young civil engineer officer must have completed their basic technical training (Management 101) at the Air Force Institute of Technology (AFIT). It is assumed that this training, coupled with their engineering degree, prepares our young officers

to lead our Airmen and effectively manage projects both in-garrison and in the AOR. Unfortunately, this is not true. As pointed out by our CGOs, not only do they need a professional development guide, they also need the time and resources to accomplish their professional development. It is essential to building a strong professional foundation that enables our young officers to be efficient and effective leaders both at home station and deployed.

Balanced living. A balanced life includes pursuing professional goals while developing and fostering relationships with family and friends and pursuing interests and activities that enrich physical, mental, and spiritual well being. During deployments, the primary focus is the mission. Upon returning home, the focus should shift to recuperation, reenergizing, refocusing, and reintegrating with families and friends, and personal lives and interests. Unfortunately, upon returning home, many CGOs find themselves overworked, understaffed, and consequently out of balance.

After this initial forum, AFCESA's Career Field Management office captured the concerns into a formal "CGO Action Item List." Senior leaders were already aware of and addressing many of the items discussed at the forum, a fact unknown to most CGOs. A CGO white paper was the first step to informing CGOs; this paper discusses all the initiatives currently underway that coincide with the concerns voiced at the forum. For example, the CGO white paper addressed CGOs' concerns about Air Force engineers working for the Army in Army taskings by outlining, among other things, the new Expeditionary Prime BEEF group concept, which moves most Air Force members deployed in Army billets back under Air Force. Responsibility for other action list items was given to Air Staff, AFCESA, and AFPC, and have been or are currently being addressed.

GCO Forum at SAME National Convention

The CGO forum at the SAME conference served as a follow on to the one at the Senior Leaders' Meeting, with a much broader audience. Every civil engineer unit throughout the Air Force was encouraged to send one CGO to discuss the direction of the career field.

The day-long forum began with a look at what actions have recently taken place in the career field, with particular focus on the CGO white paper and action item list. Two AFIT graduate students then presented their thesis work on mentorship and retention. At afternoon breakout panels, attendees were separated into small groups chaired by a Civil Engineering senior leader and a squadron commander, to discuss the morning briefings and the direction in which the career field is moving.

Each panel elected a CGO to brief their thoughts to the larger group at the end of the day. Group panels identified

2Lt Jason Adams, a member of PRT Panjshir, gives a mission briefing prior to departing FOB Lion in Afghanistan to visit five work sites. (photo by 2Lt Jason Smith)

four recurring concerns: information dissemination, home station job satisfaction, fair-share tasking in deployments, and mentoring. Maj Gen Byers addressed these issues and associated subsequent actions in his August 2010 CEnterline video.

Some initiatives related to these concerns include the following:

- Increased emphasis on the CE Portal as a clearing house of Civil Engineering information to keep everyone up-to-date, including the placement of helpful career tools on the AFCESA Operations Support CoP
- Solidification of an in-house Civil Engineering work order program to bring CGOs into large project management duties performed exclusively by military civil engineers
- Update on the status of the proposed Civil Engineering officer "enabler" deployment list to improve equality of taskings
- Development of a commander's mentoring toolkit

Way Ahead

The Civil Engineer and the Air Staff, along with AFCESA personnel, are continuing to work on the issues surrounding Civil Engineering CGO retention; more initiatives will begin in the coming months. According to Maj Gen Byers "We still have much work to do, so we'll keep working as a team to meet the challenges ahead in continuing to build great leaders."

Maj Lance is the chief of Operations Flight Management, AFCESA, Tyndall AFB, Fla.

Author's note: Currently the GCO white paper and action item list are housed on the CE Operations Support CoP (https://www.my.af.mil/afknprod/ceopssupport), with plans to move the information to the CE Portal in the future.

Strengthening the Total Force

Mentoring Air Force Active Component Officers into the Reserve Component

Col Glenn Seitchek
HQ AMC/A7

Col Daniel Whalen
HQ ACC/A7

The Air Force has had a comprehensive mentoring program for over 10 years, with the goal of helping each person reach his or her full potential, thereby enhancing the overall professionalism of the Air Force. Mentoring is a fundamental responsibility of Air Force supervisors at all levels, but their discussions typically focus on professional development within the Active Component. How do supervisors provide mentoring to Airmen who decide to leave active duty? What do they tell them?

A supervisor's first recommendation to the Airman should be to consider a career in the ARC. In today's high ops tempo environment, it's important to remember we're all part of a Total Force. For Airmen leaving active duty, there are many opportunities to continue their military service and professional development within the Air Reserve Component (ARC) – in either the Air Force Reserve or Air National Guard.

Traditionally, the vast majority of Reserve and Guard Airmen have entered the ARC with previous active duty experience. Today, only 20 percent of separating Airmen transition into the ARC. This percentage has been declining, making it even more important for supervisors to communicate ARC opportunities to all separating members. In addition to supporting the Total Force, increasing transfers into the ARC provides a pool of well-trained Guard and Reserve Airmen to help meet critical end-strength goals. A follow-on ARC career builds upon a member's active duty time and allows them the opportunity for continued benefits such as access to Tricare and unlimited shopping at commissaries.

In recent years, only 20 percent of separating civil engineers have transitioned into the ARC. In FY11, The Air Force Reserve added over 50 civil engineer officer positions, driving necessary accessions even higher.

Knowing and understanding what programs are available helps supervisors advise Airmen on the ARC options that will work best with their family life and civilian occupation. Both part-time and full-time opportunities are available.

Part-time ARC Programs

The two primary part-time ARC programs are Traditional Reserve (TR) and Individual Mobilization Augmentee (IMA). The TR program is what most people think of when considering a RC career. Currently, members are assigned to an organization that requires meeting one weekend a month plus a two-week annual tour. Members of the IMA program support Active Component operations on an individual basis, with a duty requirement of between 24-36 days per year. Duty is typically conducted between Monday and Friday; weekend work is rare.

Airmen leaving active duty should be made aware of the differences and the benefits and limitations of both programs to choose the one that best meets their needs. For the TR program, one of the "pros" is that most of the duty occurs on weekends and impacts a member's civilian job less than the IMA program. A "con" is that the required duty is on a fixed schedule, which limits personal scheduling flexibility. One benefit of the IMA program is having a flexible, workweek duty schedule, but time away from a civilian job is much greater. Regardless of which program is selected, separating members should understand that all Civil Engineering reservists are subject to a predictable mobilization schedule (currently at a 1:5 dwell).

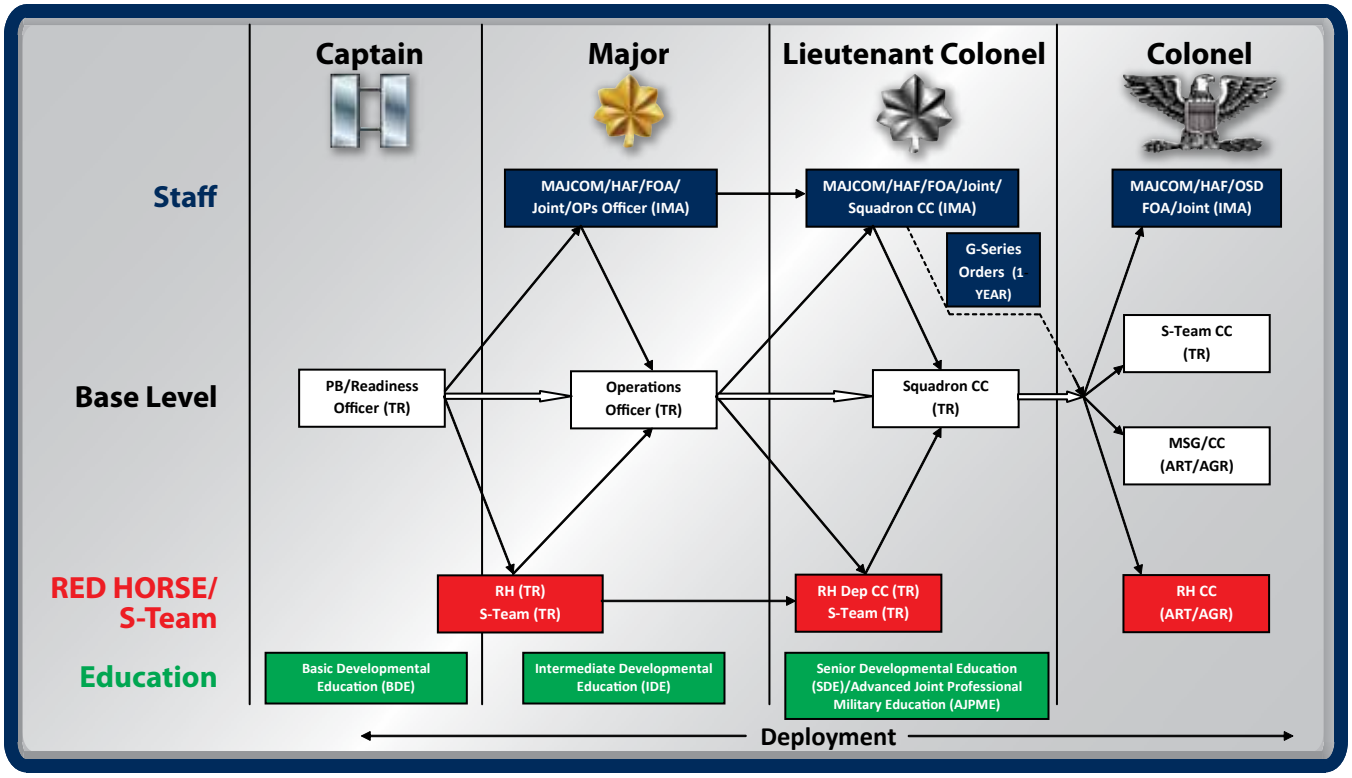
Full-time Reserve Component Programs

For separating members considering a civil service career, the Air Reserve Technician (ART) program may be an option. It combines a full-time civil service position with a part-time TR position. Although the civil service and reserve careers are linked, they must be managed separately and the requirements for both must be maintained. A second full-time program is the Air Guard Reserve (AGR). AGRs are full-time military positions without the PCS component. Both the ART and AGR programs provide stability and could serve as an excellent transition from the Active Component.

Career Development within the ARC

The Air Force Reserve implemented a force development program five years ago and Civil Engineering was one of the initial proof-of-concept career fields. Consequently, separating civil engineer officers will find their Reserve

Figure: 32E Career paths with the ARC.



career development very similar to that of their Active Component program.

Reserve officers are now encouraged to acquire experience at the right time during their careers; promotion boards are looking for officers who have breadth and depth in their job histories, experience gained by moving between the TR and IMA programs. Operational experience is primarily gained in the TR program (CES, S-Team or RED HORSE) and staff experience in the IMA program (NAF, MAJCOM, or Air Staff). Some skills, like programming knowledge, are only available via active duty units.

Much like active duty, within the ARC, command experience is increasingly vital for promotion and senior-level assignments. (Command opportunities earning a "C" prefix on the AFSC are not available in the IMA program.) There are a variety of career development opportunities to choose from (see figure) and the "right" path for new Reserve officers should be guided by filling in the missing experiences in their duty history. The ARC career should complement and build upon the Active Component experience.

Promotion Timelines

The appropriate assignment into the ARC should take into account the timing of promotion boards. ARC officer promotion timelines differ slightly from the Active Component, but with proper planning, the timelines can be synchronized.

ARC members with seven years of time-in-grade (TIG) meet a mandatory promotion board to major (February). Captains with five years TIG, serving in a major position for one year, and nominated by their supervisor become eligible for a promotion vacancy, or PV, selection (somewhat equivalent to an active duty below-the-zone promotion). Promotion eligibility to lieutenant colonel is also at five years TIG for PV and seven years for the mandatory board (June). All lieutenant colonels meet a colonel board with four years TIG in October and continue meeting the board until their mandatory separation date.

Assignments

Each functional area has an assignment facilitator at the Air Reserve Personnel Center (ARPC) to assist officers in finding available RC positions. The Civil Engineer Assignment Facilitator is Lt Col Patty Pettine (303-676-6168; patricia.pettine@arpc.denver.af.mil).

She is standing by to help civil engineers find available ARC positions and to offer valuable career planning advice. For additional information, visit the ARPC website at http://www.arpc.afrc.af.mil/library/factsheets/index.asp.

Working together, we can ensure that we don't lose the talent of our separating Civil Engineering officers.

Col Seitchek is the IMA to the Deputy Director, Installations and Mission Support, HQ AMC, Scott AFB, Ill., and Col Whalen is the

Top to Bottom: *(1) In late April 2010, the Golf Delmas 48 site (formerly the Petionville Golf Course), a spontaneous internally displaced person (IDP) settlement in Port-au-Prince housed over 40,000 Haitians. (2) A MINUSTAH engineer constructs a drainage ditch at Coral Cesselesse, a peri-urban site built for emergency relocation of 6,780 IDPs from the Golf Delmas site before Haiti's rainy season began. (3) Haitians hired by a relief organization help IDPs relocate from the Golf Delmas Site to (4) the camp constructed at Coral Cesselesse (U.S. Army photos)*

Port-au-

CEs Key to Safer Shelter Strategy

Lt Col John C. Blackwell, 820 RHS/CD

On Jan. 12, 2010, a magnitude 7.0 earthquake rocked Haiti, with the epicenter forming 15 miles west-south-west of the country's capital, Port-au-Prince. A multitude of aftershocks — one up to magnitude 6.0 — continued for weeks afterward. The American government and people, together with the international community, quickly mobilized to develop complementary strategies to alleviate the disaster's impact and mitigate further catastrophe.

Structural assessment, debris management, and internally displaced person (IDP) camp decongestion were three key areas of focus that were incorporated into the "Safer Shelter Strategy." Developed by the Government of Haiti (GoH), with the support of the international community, this comprehensive displacement strategy identified five options to aid Haitians living in "spontaneous" settlements:

- Return to a safe home after evaluation by trained engineers
- Return to a safe plot, after debris has been removed from the site
- Relocate to a host household
- Stay in a current spontaneous settlement (if site conditions can be made to meet minimum standards in the medium term)
- Move to a GoH-planned temporary relocation site (for those with no other option)

Air Force civil engineers played an important role in early efforts during the emergency stage and continue to be active as long-term plans for Haiti's recovery evolve.

Emergency Stage

A GoH and United Nations task force developed two action plans, one for debris removal and another for temporary resettlement. Using Joint Task Force-Haiti–led mission analyses, the task force had the basic plans in place by February 23, and by March 5, had established the Project Management Coordination Cell (PMCC) to execute them. I was selected to head up the PMCC and three other Air Force civil engineers were assigned to the cell.

The PMCC confronted an emergency phase with a non-negotiable deadline — the Haitian rainy season, which peaks in May. Officials assessed over 1,325 spontaneous settlements housing 2.1 million IDPs in Haiti and identified several in Port-au-Prince as priority sites for decongestion to mitigate risks from flooding, landslides, and environmental factors associated with overcrowding.

Of the 250,000 IDPs in at-risk settlements in Port-au-Prince, 100,000 occupied 7 priority sites and required complete relocation. With the rainy season four weeks out, peri-urban (areas between suburbs and rural areas) sites became the best temporary option for the most vulnerable IDP population. The PMCC was tasked to locate and quantify this population. We corralled U.S. engineers from the Air Force, Navy, and international engineers from MINUSTAH (the U.N. stabilization mission in Haiti), as well as site planners and medical personnel from several Haitian, U.S., and international agencies to form seven teams. On March 23, we reported that this number was

9,000 and that engineering mitigation projects needed to be completed at 4 settlements to preclude the emergency relocation of an additional 36,200 IDPs. Two peri-urban sites were planned: a 2,500-person capacity settlement at Tabarre Issa, and a 6,780-person emergency relocation site at Corail Cesselesse.

After U.N. site planners completed the Corail site design, Seabees and MINUSTAH engineers began site preparation (grubbing, grading, and drainage work only) on March 29, with movement of IDPs to the site planned to begin April 5. A GoH-required scope change — the site-wide application of gravel — introduced a serious challenge to the schedule. PMCC Project Manager, 1Lt Wilfredo Melchor, from the 156 CES, Muniz ANGB, San Juan, P.R., "stepped up" and developed an eight-phase site preparation plan that allowed the first 14 families to arrive at Corail Cesselesse on April 10.

Project development included plans for moving people to the peri-urban sites. Major Ivo Werneck, a Brazilian working with MINUSTAH, developed plans for moving 6,780 people from the Golf Delmas 48 (Golf Course Petionville) settlement to Corail Cesselesse and 2,500 from Bourdon Valle to the Tabarre Issa site.

Simultaneous with settlement construction and movement planning, flooding and landslide mitigation projects raced to prevent the worst-case scenario: the emergency relocation of 36,200 additional IDPs. The most complex of the four "must-mitigate" sites was Golf Delmas 48, where 5,000 IDPs urgently needed to vacate areas slated for mitigation projects that, once completed, would save 25,000 others. Seabee Lieutenant Jason Killian engineered a master plan to implement lifesaving engineering controls across the site and work started on April 1. The scope was robust: slope and road stabilization, drainage ditch construction, and retention and collection ponds. Golf Delmas 48 mitigation was a true team effort: Seabees, MINUSTAH Japanese engineers, and hundreds of Catholic Relief Services cash-for-workers saved 30,000 Haitians from potential peril.

During the emergency phase, we focused on two of the five Safer Shelter Strategy objectives: Stay at the current risk-mitigated settlement or move to a temporary relocation site. A supporting objective, restoring the Port-au-Prince drainage system, rounded out the emergency phase. Port-au-Prince has 9 primary drainage canals (13 miles total) that form an unplanned combined sewer and trash-dump system. Although not quake-related, these trash-filled canals were an obvious pre-rainy season concern. The PMCC partnered with other agencies to completely clear 443,000 cubic yards of debris from these canals – a knockout blow to potential flood risks.

Looking Ahead

For those already homeless prior to the earthquake, planned settlements such as Tabarre Issa were the right answer. However, emergency relocation sites, such as Corail Cesselesse, have a shelf life. Option 2 of the Safer Shelter Strategy — proximity sites — is the antidote for such peri-urban sites. (A proximity site is simply a plot cleared of debris and dangerous structures that enables a neighborhood resettlement.)

There is no place like home. Teams from the habitability assessment program began creating a blueprint for resettlement. This systematic program was rooted in the pioneering work of a small team of NAVFAC building assessors, and has about 200 engineers and 50 social workers, trained and vectored by the PMCC in partnership with the U.N. Office of Project Services. By April 13, teams had tagged 15,081 out of 36,209 single- and multi-family houses as "green" (safe to return) and identified clusters of "red" structures (potential proximity sites).

A return to point-of-origin proximity sites and "green" houses is the right way to decongest the spontaneous settlements. However, this won't be possible if points of origin are still buried in rubble, making systematic demolition and debris removal key to operationalizing the Safer Shelter Strategy.

Back in February, this author intended to achieve all five objectives of the Safer Shelter Strategy in the short-term purely through engineering efforts. The proving ground — the first proximity site — was to be Turgeau, a point-of-origin neighborhood for many living in a spontaneous settlement of 29,658 IDPs. However, early efforts had to be abandoned for lack of a set process for private property demolition and debris removal, and for the PMCC, Turgeau remains a work in progress, just like the Safer Shelter Strategy.

During my work in Haiti, the efforts of PMCC members saved at least 45,200 from harm during the emergency phase. I am confident that engineers currently working in the Project Management Coordination Cell in Haiti will continue the progress and "get it done."

Lt Col Blackwell is the Deputy Commander, 820 RHS, Nellis AFB, Nev. From Jan. 29 to April 28, 2009, he was deployed to Haiti as the JTF-Haiti Deputy J7, then the PMCC Director.

AAFES Real Estate: *Building for the Future*

Mr. Michael J. Smietana, P.E.
Army and Air Force Exchange Service

AAFES facilities serve as main destination points on military installations worldwide, providing goods and services to Soldiers or Airmen wherever they're stationed. One of the goals of AAFES is to develop a lifelong emotional connection with its customers. The AAFES Real Estate Directorate is a major agent in achieving that goal by delivering first-class retail facilities, while creating a sense of community at installations worldwide

The Real Estate Directorate's primary focus is the Shopping Center (PX or BX), which is the flagship of the AAFES retail experience. To improve the connection with their customers, the directorate has developed shopping center prototypes and a world-wide "branding" plan to make over their main stores. Capital investment in new centers and recapitalization of existing centers has increased, helping to decrease the overall age of AAFES' shopping center inventory. An initiative to renovate or provide an "image update" of current shopping centers is also underway. In the midst of all these efforts, the AAFES focus on facilities has become "greener" with a greater emphasis on facility sustainability.

Main Store Prototypes and Branding

To improve the efficiency of facility delivery, in 2005 the Real Estate Directorate established eight different main store prototypes to accommodate different-sized installations and customer bases. Ranging in size from the largest 1.0 prototype (324,000 square feet) to the smallest 8.0 prototype (18,820 square feet), the prototypes have several benefits. "The shopping center prototypes are optimally designed for one-stop shopping; they're economical to construct and more energy efficient to operate," said Col Jeff Hall, the AAFES Command Engineer. These prototypes are reflected in the eight main stores AAFES opened in the past year.

AAFES is undertaking a campaign to strengthen its brand through a consistent, clear identity at every customer interaction to ensure that it remains a major contributor to the military community. With the help of world-class marketing consultants, over the next five to seven years, AAFES will "unite" elements such as the food court, the mall services, and retail department into a more consistent "AAFES brand." For the Real Estate Directorate, the store layout is the backbone of the branding experience, offering and aligning products and services in ways that optimize shopping and buying patterns.

Increased Capital Investment

Since BRAC 2005 decisions were announced, the AAFES capital investment program has grown steadily, to support BRAC as well as other DOD transformational programs. In 2003, AAFES' facility capital investment was a little more than $135M; currently the capital program portfolio is near $310M annually — a 130-percent increase. In the past five years, AAFES has executed, or is in the process of completing, more than $340M in construction (31 major projects) at installations experiencing significant growth.

AAFES is not just investing at installations with military growth, it's also recapitalizing old stores elsewhere. "Many of our shopping centers were over 50 years old and were original facilities provided to AAFES by the military in the 1950s and 1960s. They were beyond their useful life and needed to be recapitalized," said Mr. Mike Gividen, Senior Vice President of the AAFES Real Estate Directorate. Realizing its 147 main store inventory was increasing in age, AAFES developed a strategic plan to recapitalize and consolidate functions to create an improved one-stop shopping experience on military installations. In early 2000, the average AAFES shopping center was nearly 24 years old. Ten years later, after constructing and opening 35 new shopping centers, the average age has decreased to 22 years old — a significant decrease, considering the large number of shopping centers in the inventory. With a total value in excess of $620M, these new shopping centers are on average twice the size of the stores they replaced. They are approximately 15 to 20 percent more efficient per square foot and have more offerings in the food court and increased concessions and services in the mall. Most importantly, business has increased an average of 20 percent per store in the first year.

Renovations

After the significant investment in new stores during the past decade, the AAFES Real Estate Directorate is shifting

its focus to renovation. The directorate has established a customer-centric, robust image update program to refresh and maintain their shopping centers, replacing worn surfaces, modernizing fixtures, and adjusting merchandise layouts.

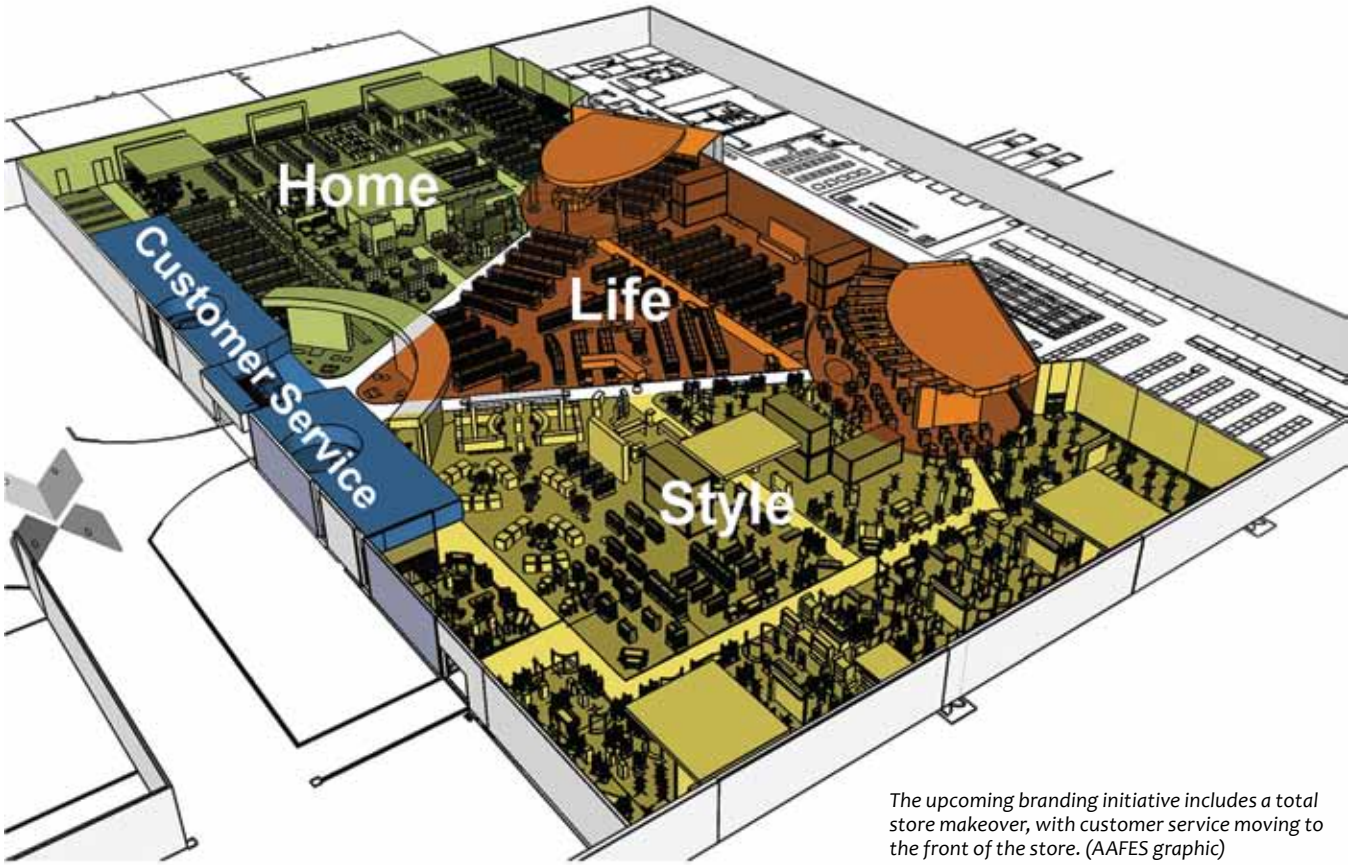
In 2008 and 2009, AAFES executed $27M in image update projects to nine shopping centers. Coinciding with the global economic downturn, many projects came in with a bid savings of 10 to 20 percent compared to original estimated market costs. "When we saw a consistent trend of low bids, we realized the potential savings of getting future projects to market early," said Mr. Gus Elliott, Vice President of Facilities. As a result, the Real Estate Directorate accelerated 12 more image updates above its normal schedule, and provided much needed work to local construction contractors.

Since August 2009, eight more image update projects estimated at $49M were awarded at $35M — a 30-percent savings. "Our strategy to accelerate our Shopping Center image updates has paid big dividends and we're passing the savings on to our customers with newer, more pleasant store environments worldwide," said Mr. Elliott. In the five-year period from 2008-2012, AAFES will have invested over $169M in image updates at 37 shopping centers worldwide.

Sustainability

AAFES has put a great emphasis on facility sustainability to improve maintainability and reduce the lifecycle costs required to operate its shopping centers. This equates to new shopping centers constructed to LEED Silver certification standards. These facilities are more energy- and water-efficient, use environmentally friendly materials, and have minimal environmental impact.

AAFES recently completed new LEED shopping centers at Ft Polk, La., and Randolph AFB, Texas and is in the process of certifying them with the U.S. Green Building Council, which oversees the LEED program. The Real Estate Directorate registered the facilities as part of the council's "LEED for Retail" pilot program, which helped establish benchmarks specifically for retail facilities. "While not a requirement, we believe there is value in getting these facilities certified as Silver," said Mr. Mel Hendricks, Chief of Corporate Sustainability for AAFES. "In addition to validation that we achieved the standard, we can quantify our energy savings and contribution to reducing our burden on the environment. Compared to the original ones, the new LEED Silver facilities will reduce energy consumption on the average of 20 to 30 percent, which will go a long way in helping the Services meet their federally mandated energy and water reduction goals." AAFES is completing and certifying a LEED Silver Shoppette at Ft Bragg, N.C.



The upcoming branding initiative includes a total store makeover, with customer service moving to the front of the store. (AAFES graphic)

The new AAFES shopping centers feature numerous energy-saving and environmentally friendly features, including cool roofs to reduce the heat island effect from a large facility footprint; HVAC systems that are 20 percent more efficient than traditional building standards; waterless urinals; water-efficient fixtures; day lighting; xeriscaping; and polished concrete floors. One goal is to eliminate incandescent lighting by the end of 2010. "The most surprising aspect of our two new LEED Shopping Centers is customer interest in shopping in a 'green' facility. It's not just a fad anymore; our customers genuinely care about the environment. They go out of their way to shop at an environmentally conscious store," said Mr. Hendricks.

Building for the Future

The AAFES Real Estate Directorate's focus on 'building for the future' has been a key aspect of achieving the corporate vision of establishing and maintaining AAFES' lifelong emotional connection with its customers. As military Services move toward bringing members back on the installation, the shopping center is a major part of the plan. Base shopping centers are now more than ever places where military members, family, and retirees can work and shop for decades to come.

Mr. Smietana is the Vice President of the Support Division in the Real Estate Directorate, HQ AAFES, Dallas, Texas.

Table: New main stores opened in the past year

Store	Date Opened	Prototype/ Sq. Ft.	Cost	Details
Minot AFB BX, N.D.	*Jul 2009*	*7.0 / 86.8K*	*$17M*	*4 food concepts & large concession/services mall* *42% larger than previous 50-year-old store*
Kaiserslautern Military Community Center (KMCC), Germany	*Sep 2009*	*1.0+ / 436K (total complex = 844K)*	*≈$100M*	*AAFES European flagship & world's largest exchange* *Joint venture with Air Force Services* *Complex includes lodging, multiplex theater, sit-down dining, & parking garage* *12 food offerings & 35 concessions/services* *Replaced 3 facilities averaging 47 years of age*
Kadena AB BX, Japan	*Oct 2009*	*2.0 / 328.4K*	*$65M*	*AAFES' Pacific flagship serving all Services* *9 food offerings and 23 concessions/services on 2 stories* *232% larger than previous 53-year-old store*
Ft. Wainwright PX, Alaska	*Oct 2009*	*6.0 / 99.8K*	*$11M*	*7 food offerings* *Expanded existing 19-year-old store by 20%*
Little Rock AFB BX, Ark.	*Feb 2010*	*5.0 / 131.6K*	*$24M*	*6 food offerings and 17 concessions/ services* *Consolidates Military Clothing Sales Store*
Randolph AFB BX, Texas	*Mar 2010*	*4.0 / 163.3K*	*$34M*	*First "green" shopping center of its kind* *20% more energy efficient* *Registered with LEED's retail pilot program* *6 new food concepts and 14 concessions/services* *118% larger than previous facilities*
Keesler AFB BX, Miss.	*Apr 2010*	*4.0 / 171K*	*$38M*	*6 food offerings and 13 services/concessions* *Built with congressional appropriation to replace BX and commissary destroyed by Hurricane Katrina in 2005*
Ft. Polk PX, La.	*Apr 2010*	*5.0 / 130.6K*	*$23M*	*AAFES' second (and Army's first) LEED Silver shopping center* *"Green" features include a cool roof, waterless/water-saving fixtures, and high-efficiency mechanical systems* *60% larger than previous facilities*

YEAR of the HORSE!

Lt Col Anthony Davit
SAF/IEI

CMSgt Stephen Batherson
51 CES/CEM

CMSgt Kevin Monkman
554 RHS/CEM

In the Chinese Zodiac, 2009 was the Year of the Ox, but in the Civil Engineering community, it was the Year of the Horse — RED HORSE. The 554th RED HORSE Squadron was selected as the 2009 Major General Robert H. Curtin Award for most outstanding civil engineer unit in the Air Force, small unit category. As the first RED HORSE squadron created, it is fitting that the 554th is the first RED HORSE Squadron to win the Curtin Award in either the small or large unit category.

There were three key factors to the squadron's winning this prestigious award: the build-up on Guam, their deployment to the Southwest Asia area of responsibility (AOR), and the unit's Detachment 1 training team at Kadena AB, Japan.

In 2006, the 554th RED HORSE Squadron (RHS) moved from Osan AB, Republic of Korea, to Andersen AFB, Guam, as directed by a strategic policy initiative. Since the move, the men and women of the 554th have excelled as they built compounds for themselves and four other units to create the PACAF

SSgt Stephen Johnson, 554 RHS Structural Craftsman, puts together framework for one of 12 tents during a field training exercise at Andersen AFB's Northwest Field. (photo by A1C Courtney Witt)



***Left:** SSgt Kevin Owen, an instructor with Det 1, 554 RHS oversees training at Kadena AB's Sliver Flag site.* ***Center and right:** A 554 RHS Airman installs utility infrastructure and a combined team of 554th and Guard deployed-for-training CEs construct a K-span at the PACAF Regional Training Center on Andersen's Northwest Field (below).*

Regional Training Center (PRTC) at Northwest Field, an abandoned World War II airfield. This effort brings together the 554 RHS, the 644 Combat Communications Squadron, the Commando Warrior Training Center, and the Silver Flag training area. The PRTC will provide a facility to hone the wartime skills of civil engineers, security forces, and services personnel throughout PACAF. The beddown site encompasses over 2000 acres, with 169 acres to be cleared of vegetation in one of the most environmentally sensitive areas on Guam, the limestone plateau. This area is habitat for the endangered Mariana crow, the Guam rail, the Micronesian kingfisher, and the Mariana fruit bat. The combination of unique location along with distinctive habitat makes coordination with local and national regulators paramount. Scheduled to be completed in FY 2017, the $219M beddown is a multi-mode construction effort comprising MILCON, O&M, and troop labor construction.

The $15.4M troop labor construction effort is the largest-such effort outside of Southwest Asia. To complete the troop construction, in addition to its own Airmen, the 554 RHS utilized their Guam Guard counterparts from the 254 RHS on mandays to maintain the skill sets and manpower needed to meet construction timelines. During this time, the unit hosted 10 CONUS deployed-for-training RED HORSE and Prime BEEF ANG teams to rotate through and construct 3 K-Spans, valued at $1.5M, and assist with utility construction. This provided 15K square feet of much needed storage space for the 36th Contingency Response Group. The 554th also took advantage of some Joint Service training opportunities by coordinating with the Guam Army National Guard and Navy Seabees to clear 167 acres of jungle for a Joint drop zone. The Seabees also trained with RED HORSE Airmen on vertical construction trades and utilities. Overall, the 554th integrated 585 joint military members from the U.S. Navy and Air and Army National Guard into 11 PRTC projects and saved 61,000 manhours.

One of the big priorities of the Guam's squadron leadership is to "put the RED back into RED HORSE" and the team has done just that. The unit mirrored up with the 819 RHS from Malmstrom AFB, Mont., and deployed 61 personnel to Iraq and Afghanistan. Although the 554th had performed troop training deployments within the PACOM AOR in its past, this was the first time the squadron had deployed outside the PACOM region in over 35 years. The deployment was a huge success; the team did construction from Al Asad in Iraq to Bagram in Afghanistan. They constructed a 4,300-foot assault strip that allowed resupply and CAS- Evac missions. At Kandahar, they constructed a 200,000-square-foot concrete apron expansion to support

ISR platforms and CAS. They also executed CENTCOM'S number 1 project, a $1.5M Joint Debriefing/Interrogation Center that was a vital link in the planned closure of Guantanamo Bay detention facility. They made important quality of life upgrades in both regions with numerous projects, including drilling five water wells. Within PACOM, RED HORSE also supported the Humanitarian Assistance Rapid Response Team after a devastating earthquake in Indonesia and a HUMRO to Chuuk.

While the Andersen-based RHS members were busy with construction and the deployed personnel were focused on their AOR mission, the 554 RED HORSE Detachment 1 team at Kadena AB, Japan, were focused on training the other PACAF Civil Engineering, Services, Personnel, and Contracting warriors. Kadena's 39-person team is responsible for training and equipping 30,000 PACAF Airmen in combat skills. During 2009 the team developed a new Silver Flag curriculum that updated new training requirements for four civil engineer AFSCs. They taught 8 Silver Flag classes, 7 MEET courses, and delivered 193 mobile war-skills training classes for 305 civil engineer and services Airmen in Korea, which saved $400K in student TDY costs. Members of Detachment 1 also deployed to East Timor and Indonesia for the Pacific Angel HUMRO, where they executed a $49K upgrade to the medical facility, enabling 8,000 patients to be treated.

The 554th RED HORSE Squadron is the oldest RED HORSE unit in the Air Force, dating back to 1965. It has a rich history and legacy that everyone in the unit today strives to carry on. Earning the 2009 Major General Robert H. Curtin Award is dedicated to all past 554th RED HORSE Airmen who paved the way for RED HORSE members today and in the future. To the Horse!

Lt Col Davit is the Director, Housing Policy, SAF/IEI, Washington, D.C.; he was formerly the commander of 554 RHS, Andersen AFB, Guam. CMSgt Batherson is the Chief Enlisted Manager (CEM), 51 CES, Osan AB, Korea; he was the CEM, 554 RHS. CMSgt Monkman is the current CEM, 554 RHS.

Operation Pacific Angel

On Feb. 13, 2010, 22 RED HORSE engineers departed from Andersen AFB, Guam to Laoag City, Ilocos Norte, Republic of the Philippines, in support of Operation Pacific Angel (PA) 10-1, which provides medical and engineering civic support within the PACOM area of responsibility. The engineers (19 Reservists from the 254 RHS and 3 active duty Airmen from the 554 RHS) handled the operation's engineering civic assistance program (ENCAP) mission. Previous operations have touched the lives of thousands in communities from Cambodia, Timor Leste, Indonesia, and Vietnam.

The ENCAP for PA 10-1 concurrently targeted two different sites — the Apaya and Caaoacan Elementary Schools —selected not only because of an appropriate timetable and scope of work, but also because of the impact it would have on the communities. Together, the two schools serve a population of almost 3,000 residents. Two 11-member teams were assigned at each of the schools; the Apaya team worked alongside 10 Armed Forces Philippines Army engineers and the Caaoacan team with 10 Philippine Air Force engineers. For eight days, this total international engineering force worked diligently to restore two classrooms at each school with masonry, carpentry, electrical, and utility infrastructure support. The full scope of work included the contracted replacement of the roof at both buildings. In total, the RED HORSE engineers executed almost $60K in contracts, supplies, and materials at both schools and well over 3,500 manhours of work.

Capt Frank Blaz, Director of Operations, 254 RHS, Andersen AFB, Guam

A team of RED HORSE engineers supporting Operation Pacific Angel 10-1 pose outside of an elementary school in the Republic of the Philippines. The team, composed of Airmen from the 254 and 554 RHSs, Andersen AFB, Guam, worked on the school as part of the operation's civic assistance program. (U.S. Air Force photo)

BEAMS: FIRSTGEN IT FOR CIVIL ENGINEERING

Dr Ronald B. Hartzer
HQ AFECSA/CEBH

Before NexGen IT, before ACES, before IWIMS, and before WIMS, there was BEAMS.

With all of the discussion, briefings, and articles concerning the NexGen IT system under development, I thought it would be useful to look at the beginning of automation in Air Force Civil Engineering. Looking back over the more than 40 years of development of our automated systems, you see some of the same concerns, expectations, and yes, complaints that people continue to have today.

A 1967 issue of *Air Force Civil Engineer* magazine officially introduced the first automation system with the article "BEAMS—Base Engineer Automated Management System: What It Means to the BCE." This system was going to "revolutionize" base civil engineering.

In the 1960s, engineers faced a number of challenges. An increasing workload and decreasing resources made it important for civil engineers to use automation to make the organization as efficient as possible — sound familiar?

Civil Engineering piggybacked onto a base-level data automation standardization project in the early 1960s to field its own rudimentary system. Then, in 1964 the Headquarters, Air Force Directorate of Civil Engineering instructed a task force at Kelly AFB, Texas, to design a comprehensive data processing system for Civil Engineering, and BEAMS was born. The system was to be a "complete management system" for the base civil engineer and provide current information on costs, labor utilization, and real property and produce all reports required by higher headquarters. As proposed, BEAMS had five objectives:

1. Integrate civil engineer records into a single, on-call data bank to save time and money by permitting one input to update a variety of records
2. Provide timely management data and responsive reports
3. Eliminate manual file maintenance, specifically real property records, family housing surveys, and workload programming
4. Reduce planner's recordkeeping tasks by eliminating clerical tasks with reporting labor hours
5. Achieve the optimum use of management-by-exception and change-reporting techniques to streamline processing by only making changes to a report rather than creating an entirely new file

BEAMS originally included four major subsystems: Labor Reporting, Work Control, Cost Accounting, and Real Property (Family Housing and Workload Programming were later added).

Labor Reporting. Employees were assigned a "normal" duty code and work center and reported time only for exceptional duties —time spent working at other than the normal work center or normal hours. They could turn in a single card for a small job or multiple cards as a percentage of a longer job. BEAMS reported labor costs for various work orders and kept a master file of employee records and monthly personnel lists, which allowed supervisors to measure labor performance at selected work centers.

Work Control. This subsystem improved work order management by reporting completed orders, as well as daily work stoppages, weekly status (completed and backlog), and monthly work orders. Monthly variance reports showed the percentage difference between standard and actual labor hours and costs, material costs, and overall costs. Tracking type of work by work center and facility allowed managers to determine annual maintenance costs by facility. BEAMS maintained records on installed equipment and automatically tracked maintenance requirements.

Cost Accounting. BEAMS cost data (labor, material, and mobile equipment costs) was essentially the same as those available through other sources; however, it was touted as more accurate, current, and accessible. It also provided additional cumulative information for the installation and various types of comparisons.

Real Property. Cost data found on Real Property Record Cards was automated in BEAMS, which also tracked changes or additions to facilities, vacant areas by building, and tenant data. Several reports such as the Real Property Control Ledger and Facility/Cost Account Reference List were automated under BEAMS.

The original hardware for BEAMS was the Burroughs B-263, RCA 301, and IBM 1401, later upgraded to the Burroughs 3500 in 1967 and the Honeywell 880 in 1969. The Burroughs was a collection of equipment that included a high-speed card reader, card punch, printer, magnetic tape, disk storage, and remote keyboards. The majority of the data transactions were done through keypunch cards using the reader, which processed 1000 cards per minute.

The initial workshop at Kelly expanded to include two major commands and produced comprehensive specifications for a data processing system in 1965. The Air Force established the Civil Engineer Data Systems Design Office in June 1966. As a field extension of Headquarters Air Force, Directorate of Civil Engineering, it was collocated at the Air Force Data Automation Directorate at Suitland, Md. Manned by 13 civilians, the office's twofold mission was to design and implement BEAMS and set future requirements for data systems supporting bases and MAJCOMs. It later merged with the Air Force Data Systems Design Center.

BEAMS was introduced to civil engineers in an article featured in the August 1967 issue of Air Force Civil Engineer.

As a result of testing the initial system at Langley AFB, Va., in 1968, it was decided that the basic BEAMS programs already developed would not be implemented further. Despite interim improvements, the next test – in November 1969, at March AFB, Calif. — also had problems. The data's accuracy and integrity was suspect and the equipment criticized, problems later attributed to the unfamiliarity of personnel with the equipment. By March 1970, BEAMS was successfully loaded at Lackland AFB, Texas, followed by other lead bases. A revised schedule called for complete employment of BEAMS throughout the Air Force by April 1972, eight years after the effort began.

As with any project of this type, difficulties soon developed. One was that BEAMS had been oversold and those in the field expected more than it could deliver. A 1972 article in *The Civil Engineer* magazine tried to downplay these expectations: "BEAMS is not a miracle system and was not expected to be. BEAMS will not solve all the problems of a BCE." Despite an extensive training program at the BEAMS school at the Air Force Institute of Technology and Sheppard AFB, Texas, people in the field were reluctant to use the system. In fact, the Inspector General's office reported that many people were neither familiar with nor using BEAMS products. During Air Staff visits to the bases, one colonel reported instances where stacks of unused BEAMS products were collecting dust.

Retired Brig Gen Archie S. Mayes, deputy chief of staff for Civil Engineering at Strategic Air Command from 1969-1972, recounted that they "... just didn't believe this thing would work. So they had a group keeping everything manually on the side. We'd catch them at it and make them destroy all their manual stuff."

Many folks were frustrated by the quantity of material, commented retired Maj Gen Clifton D. "Duke" Wright, Jr. "The worst part of it was volume. The reams and reams of computer-generated data and reports that the system created were virtually useless to the poor civil engineers working to keep bases glued together. I think BEAMS came to haunt every Air Force civil engineer, but it was the beginning of automation in our business."

During the 1970s, the bugs began to be worked out and BEAMS became an accepted part of a BCE's daily routine. BEAMS success stories began to appear but it was still a topic of both admiration and frustration for civil engineers.

In the 1980s, the Work Information Management System, or WIMS, replaced BEAMS as the dominant automation system within Civil Engineering. BEAMS applications and much of the data were migrated from Honeywell hardware to the Wang system. Many of the same lessons learned by personnel developing and fielding BEAMS were experienced by the WIMS team, the IWIMS team, and the ACES team, and will most likely affect the NexGen IT team:

- It won't go smoothly
- Technology changes faster than you can field systems
- Requirements change as quickly as technology
- People in the field will resist the new system
- Communication with the field is critical to the acceptance by users
- Communication with counterparts in Communications, Logistics, and Financial Management is equally critical
- Adequate training is a must

Lt Col Donald L. Mang, the person in charge of the BEAMS program in 1972, summarized the opinions of many folks involved in automation projects over the decades since then, "First of all we've learned that it is no simple task to create a computerized management system."

Capacitors for Power Factor Correction

Dr. Daryl Hammond, P.E.
HQ AFCESA/CEOA

Capacitors are typically used to improve power factor; however, because of their potential to adversely affect operation of equipment, they are rarely installed. As a general rule, their use may be justified for the following reasons:

- To improve voltage level
- To lower the cost of an electric bill, but only when the electric utility rates vary with the power factor at the metering point
- To reduce the energy losses in conductors
- To utilize the full capacity of transformers, switches, overcurrent devices, buses, and conductors for active power predominantly, thereby lowering the capital investment and annual costs
- To reduce overload of fully loaded motors

However, capacitor installations can have adverse effects on facility operation and must be considered as part of the overall design. Some of the adverse affects include the following:

- Capacitor switching causes surge voltages, which can necessitate the use of surge protection
- Capacitors can affect the operation of nonlinear loads

Determining Capacitor Size

Figure 1 shows a typical configuration in which a shunt capacitor can be added to an uncompensated system to improve the power factor.

Figure 2 shows the phasor relationship for power factor correction. The addition of VARs by a shunt capacitor reduces the supplied VARs to the load.

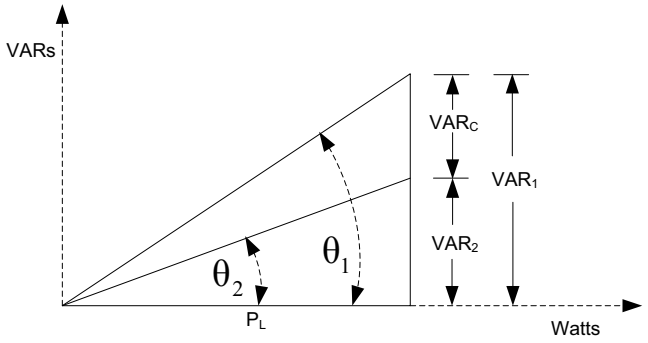


Figure 2. *Phasor diagram for power factor correction.*

The required capacitor size to improve power factor is determined by using the following expression:

$$VAR_C = W\left(\tan\theta_1 - \tan\theta_2\right) \quad (1)$$

where,

VAR_C = Required compensating capacitor size in VARs
W = Real power consumed by the load
θ1 = Phase angle before applying power factor correction
θ_2 = Desired phase angle after applying power factor correction

Example Problem: A three-phase, 460-volt (V), 50-horsepower (37.3-kilowatt) motor has a power factor (pf) of 0.65. What capacitor rating in VARs is needed to improve the power factor to 0.95?

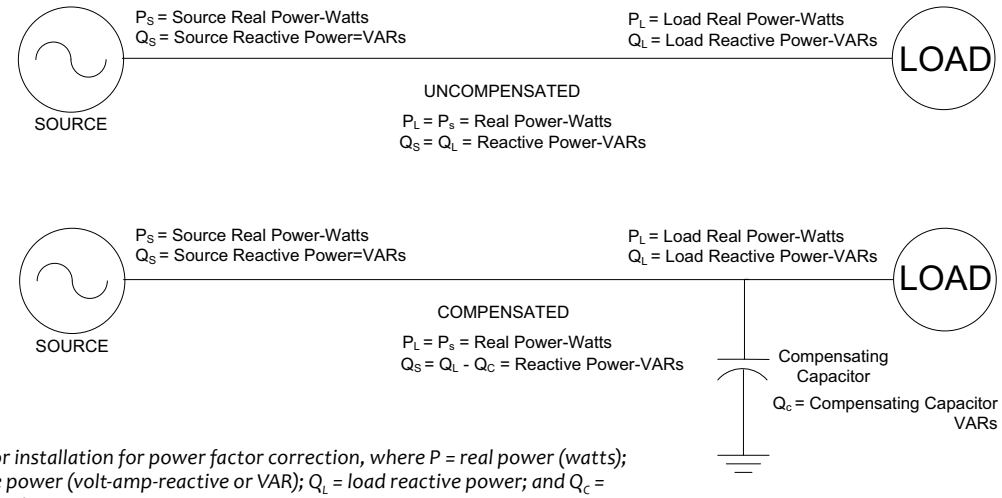


Figure 1. *Capacitor installation for power factor correction, where P = real power (watts); Q_T = total reactive power (volt-amp-reactive or VAR); Q_L = load reactive power; and Q_C = compensating reactive power.*

First, calculate the power required by the motor at full-load conditions. NEC Table 430.250 (2008 Edition) specifies a typical full-load current (I) of 65 amperes.

Real power, W , is calculated by the formula,

$$\begin{aligned} W &= \sqrt{3}(V)(I)(pf) \\ &= 1.732(460)(65)(0.65) \\ &= 33,661 \text{ watts} \end{aligned} \quad (2)$$

where,

I = Full load current
pf = Power factor before compensation

Since the uncompensated power factor of 0.65 is derived from the relationship,

$$\cos\theta_1 = 0.65 \quad (3)$$

we can calculate tan θ_1 needed for Equation (1) by rearranging Equation (3) so it is expressed in terms of θ_1,

$$\tan\theta_1 = \tan\left(\cos^{-1}(0.65)\right) = 1.17 \quad (4)$$

Similarly, by using the desired power factor of 0.95, tan θ_2 is calculated by the relationship

$$\tan\theta_2 = \tan\left(\cos^{-1}(0.95)\right) = 0.33 \quad (5)$$

Finally, the required capacitor size is given by

$$\begin{aligned} VAR_C &= W\left(\tan\theta_1 - \tan\theta_2\right) \\ &= 33,661(1.17 - 0.33) \\ &= 28,275 \text{ VAR} \end{aligned} \quad (6)$$

Therefore, the compensating capacitor rating is 28,275 VAR or 28.3 kVAR.

Capacitor Ratings

Capacitors are built to standard sizes as specified by the Institute of Electronic and Electrical Engineers in IEEE 18, *IEEE Standard for Shunt Power Capacitors*. Since the calculated capacitor size will rarely exactly match one of the available sizes, the designer will need to select the next larger or the next smaller size depending on the circuit configuration and the desired power factor.

Design Criteria

Power factor correction has to be justifiable based upon operational performance improvements or cost savings, including any potential effects caused by interaction with other devices. Additionally, power factor correction requires particular attention if nonlinear loads are a significant portion of the facility load. This includes electronic equipment, adjustable speed drives, uninterruptable power supplies, and other significant sources of harmonic distortion. Contact the author for design guidance.

Dr. Hammond is the Air Force Chief Electrical Engineer, HQ AFCESA, Tyndall AFB, Fla.

Although they can be installed on underground distribution systems, power factor correction capacitors are often not used with such systems because underground systems have more inherent capacitance than overhead distribution systems. (U.S. Air Force photo)

Better & Cheaper: Moody CEs Utilize New and Existing Technologies

Mr. Morgan Spruill
23 CES/CEO2

The Civil Engineer, Maj Gen Timothy Byers, has given all Air Force civil engineers the charge to find ways to do things "better and cheaper." In the civil engineer squadron at Moody AFB, Ga., we're using two technologies to do just that. One is a relatively new technology — a tool that allows our craftsmen to insert valves into our water distribution network without disrupting water service. The other technology isn't necessarily new, but used sparingly on Air Force Bases. Moody has operated a Propane-Air Mixing Plant, Emergency Reserve (PAMPER) with in-house forces for the past five years. Following are more details on both technologies and how we use them.

Valve Insertion Tool

With this tool, we can upgrade our more than 50-year-old water distribution network without turning any water off. With the exception of excavating around the water line, this tremendous infrastructure improvement asset is completely transparent to our customers. What's not transparent to us is the capability to isolate small sections of the water system to repair broken/burst water lines or undertake other improvements — definitely a better, more customer-focused method to do business.

The standard "insert-a-valve" package comes with everything needed to insert 4-, 6-, and 8-inch valves designed to be installed using the tool. The three main components are the slide gate isolation valve, a tapping tool, and a bonnet/gate insertion tool. The isolation valve is pivotal because it allows the tool attachments to be installed and removed while maintaining system pressure/integrity.

The ductile iron valve body meets AWWA C515 valve specifications, operates at 250 psi working pressure, and fits all pipe outer diameters without modification. The tapping tool has a hand crank to raise/lower the cutting head; hydraulic operation turns the cutting head and a built-in stop prevents cutting into valve body. The tapping tool includes a 2-inch pressure relief valve that is opened during tapping to blow out shavings or dirt. The insertion tool operates manually. The bonnet/gate slides in with very little resistance and a built in check-valve is used to equalize pressure once the isolation valve is opened.

SSgt Jason Reynolds (right) and SrA Patrick Hare of the 23 CES lower the cutting head onto the temporary gate valve to begin cutting pipe for valve insert using the "insert-a-valve" kit. (U.S. Air Force photo)

SrA Roderick Gorman, 23 CES, follows an automated checklist to start the plant. (U.S. Air Force photo)

The condensed version of the process is as follows:

1. Site is excavated
2. Outside of pipe is cleaned and chlorinated
3. Valve body is bolted to pipe
4. Temporary gate valve is bolted to top of valve body in closed position
5. Cutting head is bolted to top of temporary gate valve and valve is opened
6. Pipe section is cut out and removed; temporary gate valve is closed
7. Cutting head assembly is removed and valve insert head is bolted in same fashion
8. New valve bonnet is inserted into the hole vacated by cutting the pipe in the open position
9. Valve insert head is removed and the valve bonnet is bolted in

The insert-a-valve package costs about $37K for the tapping and valve insert tools, and either $3K for a 6-inch valve or $3.5K for an 8-inch. On-site training by the manufacturer is available for $3.5K, which involves field training performing an actual valve insert. Our first valve was completed in two hours at a very deliberate "training" pace.

PAMPER

Moody's PAMPER plant operates to meet the base's natural gas demand during periods of curtailment. Curtailment is when the gas companies limit consumers' natural gas usage to meet national demand spikes during winter. Companies charge premiums to customers that consume natural gas during these curtailment periods; by switching to the PAMPER plant, Moody avoids these premiums and works "cheaper." During this past winter, we operated the plant for a little more than a month and saved more than $72K that we would have paid in curtailment period premiums.

The plant operates on the process of mixing propane and air. Propane (stored in two 30,000-gallon tanks) is heated to a temperature of 160°F, which changes it from a liquid to gas form. It's then mixed with air in a large tank to a specific gravity of 1.32 before being pumped out into the natural gas distribution system at a slighter higher pressure than the commercial natural gas service. This automatically closes a valve at the main base gas regulator and, at this point, the base is being fed exclusively from the PAMPER.

Crews transition to 24-hour operations and perform physical inspections every 2 hours to ensure proper operation. The plant is designed to meet all base natural gas needs for up to two weeks. If we're not the only one, we're definitely one of the few Air Force bases to operate a PAMPER plant with military and civilian squadron personnel, rather than contracting out operations and maintenance. This is a point of pride for our shop personnel.

Finding innovative and less expensive ways to serve our customers, save our resources, and minimize negative impacts to the mission are day-to-day challenges for all base civil engineers. The two technologies described above have helped us meet these challenges at Moody AFB and we'll continue to look for ways to do our jobs "better and cheaper."

Mr. Spruill is the deputy chief of the Operations Flight, 23 CES, Moody AFB, Ga.

Training Response-ready Firefighters

A newly developed firefighter course builds "ready engineers" for munitions emergency response

Mr. John Staub
HQ AFSPC/A7XF

Firefighter training and education is a continuing process focused on our career field's ever-expanding roles and responsibilities. But sometimes we need to ensure that we're grounded in the basics and that's exactly what the new Munitions Firefighting Multi-Media Training Program will do.

From World War II to Korea to Vietnam, Air Force firefighters responded to an incredible array of emergencies involving munitions. At Korat Royal Thai Air Base in Thailand, and Bien Hoa and Da Nang Air Bases in Vietnam, munitions accidents and fires were a major challenge, killing several Air Force firefighters and injuring many others. A formal course, Missile and Munitions Fire Fighting, was developed that prepared firefighters for the specific hazards encountered by teaching well-established practices and procedures.

As Vietnam wound down, our focus shifted to more pressing concerns of the day. The Missile and Munitions Fire Fighting course morphed into a munitions and hazardous materials course; then munitions was dropped from the formal course and only training on only hazardous materials remained. Munitions-centric training was left up to the individual base with no standardization across the Air Force. Consequently, our munitions knowledge base had deteriorated significantly and needed to be expanded.

SSgt Michael Zartner, 509 CES firefighter, Whiteman AFB, Mo., holds his position during a 2009 Mass Accident Response Exercise, Sept. 9, 2009, involving a nuclear weapons transport incident scenario. (photo by SrA Kenny Holston)

In the first Gulf War, munitions incidents were few and far between. Our flightlines were more secure and the odds of an aircraft coming back with battle damage were remote. While we recognized the munitions knowledge shortfall, training dollars were tight and additional training days were virtually non-existent. Now, with nuclear surety a key focus, more attention — and funding — has been given to training firefighters for munitions emergency response.

AFSPC Fire teamed with ACC and AFCESA firefighting experts to identify a way ahead and develop a munitions multimedia training program. This was also an opportunity to "fix" a couple of issues. Both AFSPC and ACC recognized the need to improve firefighter knowledge in the munitions area and in ICBM support and emergency response. But AFSPC had an area where firefighter knowledge could be improved — spacelift. The knowledge and skills for firefighters working in spacelift operations are both somewhat similar and significantly dissimilar to those needed in the ICBM world. Keeping in mind that munitions reside at the core of the training package, the team developed both ICBM and spacelift modules that build upon the training provided in the core munitions course.

"Students taking the course must score 80 percent on the questions presented at the end of each module and all highlighted or 'hot' items on each page must be answered or queried," said Mr. Pat Rodriguez, who serves as a subject-matter expert for the munitions course development. The team foresees that the munitions training program might be a potential candidate for a certifiable subject area, very similar to hazardous materials.

With initial release mid-August 2010, the program is designed to help Air Force firefighters focus on fundamental munitions knowledge, and improve our emergency response operations across the world.

"We've definitely set the bar high," said Mr. Rodriguez.

Mr. Staub is the Command Fire Chief for Air Force Space Command, Peterson AFB, Colo.

JEOC Prepares CEs for Joint Operations

Maj Christopher Stoppel
AFIT/ENV

Mr. Shawn P. Howley
ATSE-D

The Joint Engineer Operations Course (JEOC) continues to be a very successful Joint engineer educational and training program, having trained over 700 Service engineers for their assignments in Joint and Service Engineering Staff positions. This year the course received its Joint Validation from U.S. Joint Forces Command and established a new link to the course in the Joint Operational Engineer Community of Interest (COI) on the Joint Knowledge Online.

Students from the Joint Engineer Operations Course review service engineer capabilities from the Training Operations Order. (Courtesy photo)

Some of you have had the opportunity to attend the course at one of the four locations. We look forward to seeing more civil engineers in the course in FY11. The table below provides the schedule for the FY11 training year, including the start of the distance learning phase, resident phase, and offering locations.

AFIT Training

The Air Force Institute of Technology (AFIT) at Wright-Patterson AFB, Ohio, lists the summer JEOC offered at AFIT in their curriculum catalogue as MGT 590 and links the course to the MGT 585, Contingency Engineer Command Course. The courses are complementary and joining them back-to-back offers students the ability to broaden their knowledge in Joint as well as Air Force contingency engineer capabilities. AFIT's Civil Engineer School recently garnered approval to receive Air Force funding for the AFIT-hosted JEOC. The remaining three JEOCs are still unit-funded.

Facilitators Needed

Key to the JEOC's long-term success is establishing a qualified team of Air Force civil engineer facilitators ready to teach, coach, and mentor new Service engineers in Joint engineer operations. Each class needs two Air Force civil engineers with Joint operational experience in the rank of O-4 to O-5. To become a member of our facilitator team for the resident phase, contact the new Air Force Service Representative for the JEOC, Maj Kelly Hannum (kelly.hannum@afit.edu; DSN 785-5654, ext 3509); the JEOC Course/Program Manager, Mr. Shawn Howley (shawn-howley@us.army.mil; comm. 573-563-5088; DSN 676-5088); or the JEOC Course Administrator, Mr. Dwayne Boeres (dwayne.boeres@us.army.mil; comm. 573-563-7065)

Maj Stoppel was an instructor at The Civil Engineer School, AFIT, Wright-Patterson AFB, Oh, where he was the JEOC Air Force service representative and facilitator. He is now a graduate student at the University of Texas, Austin. Mr. Howley, a retired U.S. Army officer, is the JEOC program and course manager, U.S. Army Engineer School, Ft. Leonard Wood, Mo.

FY11 JEOC Schedule

Class No.	Distance Learning Phase	Resident Phase	Resident Location
11-01	30 Jul 2010	1-5 Nov 2010	Quantico, Va.
11-02	10 Jan 2011	11-15 Apr 2011	Ft. Leonard Wood, Mo.
11-03	16 Mar 2011	13-17 Jun 2011	Wright-Patterson AFB, Ohio
11-04	26 Apr 2011	25-29 Jul 2011	Port Hueneme, Calif.

A Principal Mission with a Nuclear Focus

Mr. Michael Werner
HQ AFCESA/CEXD

The Explosive Ordnance Disposal (EOD) career field's peacetime and wartime missions share many foundational skills, but one skill set not commonly practiced during wartime is that needed for our nuclear mission. When viewed against other Service's missions, Air Force EOD plays a predominant role in the nation's nuclear response and recovery capability.

During a 2007 top-to-bottom training review, CMSgt Robert Hodges, the EOD career field manager, and his training team took a hard look at the Air Force EOD nuclear mission, knowing that the career field was facing multiple challenges ranging from an extremely high ops tempo to maintaining a rigorous training regime that ensures proficiency in all mission sets.

For EOD technicians, training and proficiency are paramount to mission success. Historically EOD's training venues were sufficient, but following the training review, EOD leadership made a proactive decision to increase the training standards for EOD's nuclear mission area. These standards, which will be formally implemented with an update to AFI 32-3001, *Explosive Ordnance Disposal (EOD) Program*, will bolster EOD's training capability from response to recovery when dealing with nuclear weapons and associated hazards, including weapons of mass destruction, or WMDs.

The expanded nuclear training focuses on two areas: a nuclear computer-based training course and enhancements to training at the formal schools, training that supports EOD's role in the nuclear mission.

Computer-based Nuclear Training Model

Nuclear Physics and Response, a classified computer-based training course is in development and will form the "heart" of EOD's nuclear training path. The Air Force EOD Nuclear Training Path utilizes the pyramid model commonly used in all Air Force Specialties' Career Field Education and Training Plan (CFETP) to illustrate a timeline to achieve skill level, rank, and professional development (see Figure). The six-hour CBT course will challenge EOD Airmen to step up their foundational knowledge as it relates to nuclear response, nuclear render safe procedures, disposition and/or disposal, and full accident recovery. The course has four modules:

- First Module – This section covers chain of command, organizational, and leader responsibilities, as well as inter-governmental agency communications. During a real-world nuclear incident or response, EOD technicians would find themselves in pivotal roles, relied upon as experts responsible for generating sound, logical solutions to complex problems.
- Second Module – This section covers how these weapons work (i.e., nuclear physics). Although not physics or chemistry engineers, EOD Airmen are required to have expert knowledge of how a conventional or improvised device will function. This is the heart of the CBT; the goal is that even the youngest Airmen can confidently explain the functioning of a nuclear weapon from delivery vehicle to detonation.
- Third Module – This section covers the multitude of tools and equipment used to deal with nuclear weapons or devices and any problems or complications encountered. EOD is a technology-driven career field, and since the events of 9/11, industry has developed a great deal of new and innovative tools and equipment. These have become smaller, faster, and more reliable. New equipment every year demands the most rigid training regiment, geared to keep EOD technicians up to date with state-of-the art technology.

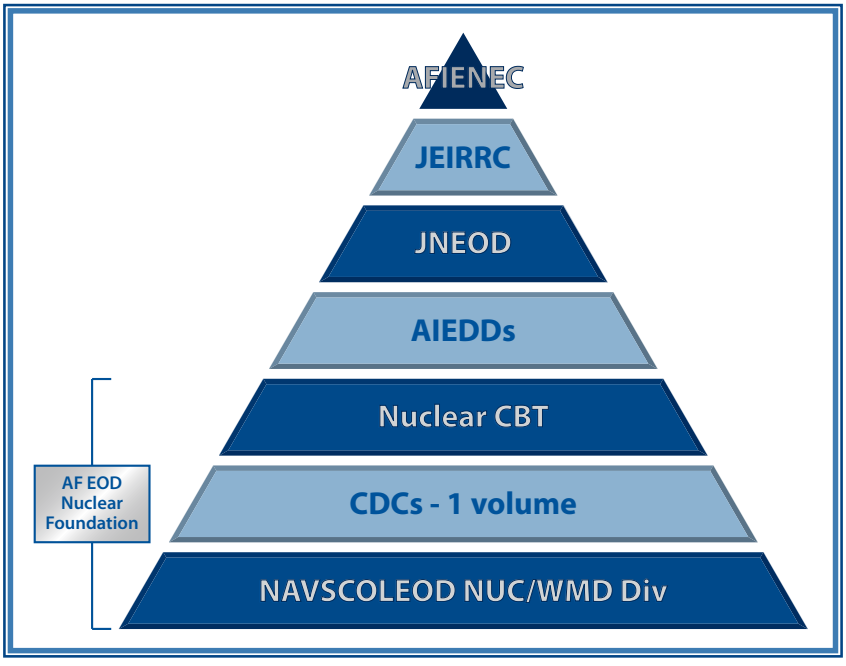


Figure. *Air Force Nuclear Training Path*

- Fourth Module – This section focuses on the actual operations and weapons systems an EOD Airman might encounter during an incident or accident. This module will utilize high-definition, 3-D modeling technology to recreate events and accidents involving Air Force asset and delivery vehicles, including various aircraft, transport trailers, and even the equipment used to store and maintain such weapons.

After completing this CBT course with a minimum passing score of 85 percent, EOD Airmen will have a foundational knowledge of the Air Force nuclear mission. Of course this is only the beginning of what EOD Airmen will encounter through their progressive nuclear training career path (see figure).

Four Independent Courses – The Keys to Proficiency

The next four levels to our pyramid include four different training venues (see figure and table). One builds upon the other, so ideally, EOD Airmen should work through these in a progressive fashion if possible (i.e., not affected by ops tempo, funding, manning, etc.) These 5-day, in-residence courses are all formally allocated AETC courses, and managed by AFCESA/CEXD through Second Air Force. They will be finalized with the release of updated AFI 32-3001.

Advanced Improvised Explosive Device Defeat (AIEDD) Course

This Joint, state-of-the-art course is designed to provide advanced improvised explosive device (IED) tactics, techniques, and procedures to EOD Technicians to diagnose, disable, contain, and dispose of sophisticated improvised explosive devices (IEDs) in varied environments, including battlefield operations, peacekeeping operations, and homeland defense. It also continues where Naval School EOD left off with weapons of mass destruction training involving advanced diagnostic analysis and safe defeat or neutralization of radiological dispersal devices (RDDs), commonly called dirty bombs, or in the most extreme threat, improvised nuclear device (INDs).

Joint Nuclear Explosive Ordnance Disposal (JNEOD) Course

Taught for over 20 years, the JNEOD course gives Airmen detailed sustainment training for nuclear EOD operations, including identification of nuclear weapons stockpiles and associated hazards and DOD, DOE, and EOD roles and responsibilities during a stockpile accident. Training includes descriptions of U.S. and foreign weapons systems, with emphasis on weapons' design information (e.g., nuclear physics, safety, component subsystems, and identification features, etc.). Students will complete a comprehensive review of DOD 3150.8M, *Nuclear Weapon Accident Response Procedures*, commonly called the NARP. The NARP is a must-read for all EOD technicians and highly recommended for members of other civil engineer specialties who deal with nuclear-related emergency response, especially those in a position of authority or overall responsibility.

Joint IED Improvised Nuclear and Radiological Dispersal Device Recognition Course (JEIRRC)

This course picks up on the ever-increasing threat of nuclear terrorism. The JEIRRC is a new course (only 1½

Table. Courses required for the EOD Nuclear Training model

Course	Instructor(s)/ Location	Prerequisites		Mandatory attendance [a]
		Rank/Level	Courses	
AIEDD	*NAVSCOLEOD/ Eglin AFB, Fla. (geographically separated off Eglin AFB)*	*SSgt-select or higher/5/7 level*	*IED Electronics and HME CBTs*	*Every 48 months*
JNEOD [b]	*Defense Nuclear Weapons School and Department of Energy/ Kirtland AFB, N.M.*	*SrA/5*	*None*	*Every 72 months*
JEIRRC [c]	*Defense Nuclear Weapons School and Department of Energy/ Kirtland AFB, N.M.*	*SrA/5*	*IED Electronics and HME CBTs*	*Every 72 months*
AFIENEC [c, d]	*Sandia National Laboratories/ Kirtland AFB, NM (classroom & range)*	*SrA/5*	*IED Electronics and HME CBTs*	*Every 72 months*

[a] Mandatory within 18 months of assignment for Direct Support EOD units
[b] Under curriculum review for class length
[c] Allocations are scheduled to begin FY11
[d] Replaces Dynamic Explosive Test Site (DETS)

years old) that familiarizes EOD Airmen with the hazards associated in an IND/RDD incident through understanding lines of authority, capabilities of response assets, and advanced design. This becomes a crucial component because we begin to shift from local and state to federal lines of authority. A response of this magnitude most likely will be directed by the Department of Justice and the FBI, under the authority of the U.S. Attorney General. Students focus on 3-D IND radiography interpretation and gain a fundamental understanding of high voltage firing components as they relate to RDDs and INDs.

Air Force Improvised Explosive and Nuclear Enhancement Course (AFIENEC)

The AFIENEC is the newest course (effective FY11) and represents the peak of this training. While IND incidents are the least likely to occur, they are among the most terrifying for our country. The primary focus of this course is to reinforce what our technicians have already learned in previous courses, but still teach the increasingly important signatures and general operating principles of postulated INDs. During classroom instruction, labs, and live-range scenarios, EOD Airmen study theories of high voltage and the high-velocity percussion actuated non-electric disrupter, commonly termed PAN. Designed by Sandia National Laboratory and released in 2002, PAN is a non-electric EOD tool designed to remotely disable and render safe IEDs without disrupting them. The course includes instruction in homemade explosives: classroom presentations on their characteristics, properties, and hazards and hands-on instruction by chemists on the range in mixing trace amounts of home-made explosives. Capstone exercises portray realistic scenarios that utilize the EOD Airman's skills and learned techniques.

Prerequisite Computer Based Training – IED Electronics and Homemade Explosives (HME)

One of the reasons the IED Electronics and HME courses were created is a concern with how we train and prepare our Airmen before and after in-residence schools. Students attending classes have a range of knowledge and skills and instructors can really only effectively teach to those who fall into the range of average or below. Experience has also shown that the acquired knowledge and skills are perishable. As a solution, AFCESA/CEXD developed a set of CBT courses to prepare EOD Airmen for success in the classroom by giving them a fundamentals refresher on complex topics prior to the course, as well as a reinforcement tool for post-course review. The IED Electronics and HME CBT courses are hosted on the AFCESA Virtual Learning Server. The information in these CBT courses can also be "re-learned" in group settings on a semi-annual or annual basis, depending on a flight's respective training package.

Joint Service Endeavors and One of EOD's Principal Missions

Today's warfighters operate in a multi-layered, Joint wartime environment; most EOD schools are Joint endeavors and always will be. It is not uncommon for Airmen to be under tactical control of other services during an overseas contingency operation and EOD has always recognized that we should train as we fight. Over the past two years, Air Force EOD has made strong ties amongst its sister Services and has collaborated on ways to benchmark and share ideas in curriculum development as well as training allocations. EOD Airmen are setting the example for and learning from their service. To facilitate this Joint effort, the CBTs have been offered and gratefully embraced by the Air Force's EOD Army, Navy, and Marine counterparts, along with multiple government agencies. Everyone recognizes the value of this type of training whether or not the CBT course precedes or follows an in-resident course.

The EOD nuclear mission is a silent mission that many are not aware of. It will continue to be one of our principal missions, one that ensures an immediate response led by a trained, competent, and confident team that can accomplish any mission, anytime, anywhere.

An EOD team monitors for surface contamination during a local exercise. (U.S. Air Force photo)

Mr. Michael Werner, a support contractor, works as the EOD Nuclear Support and Master Scheduling Program Manager, AFCESA/CEXD, Tyndall AFB, Fla. In this capacity, he also serves as an advisor to the FBI and DOE for nuclear matters and national exercise preparation, respectively.

Worldwide Real Estate Symposium Returns

Mr. Bobby Roberts
HQ AFRPA/RET

2010 is the year that the Air Force Real Property Agency (AFRPA) brought back the Worldwide Real Estate Symposium (WWRES). Returning after a decade's absence, the WWRES was held in May 2010 in San Antonio, Texas. The theme was "Building Real Estate Success."

"It's been 10 years since the last time we gathered and much has changed with Air Force Real Estate in those years," said AFRPA Director, Mr. Robert Moore, at the opening session. "This symposium will not only address those changes but will also address the future of Air Force Real Estate and how it relates to the Civil Engineering community."

AFRPA's Real Estate Transactions division hosted the training symposium. "We found a strong need in the field to bring back the symposium," said Mr. Brian Brown, the division's chief. "My team of realty professionals gathered together this past year to put together the most extensive and comprehensive training sessions that we could provide in three-and-a-half days. We reached out across each MAJCOM and down to the installations to ensure the training was relevant and inclusive."

Thirty-five instructors from the Air Force and federal agencies conducted over 25 hours of training for more than 250 realty program specialists from around the globe. To create the comprehensive training, AFRPA partnered with experts from several other organizations such as the Office of the Deputy Assistant Secretary of the Air Force (Installations), the Air Force General Counsel Environment and Installations Division, the office of the Air Force Civil Engineer Asset Management and Planning Divisions, the Air Force Personnel Center, the General Services Administration, AFCEE, and AFCESA, as well as realty staff from the landholding MAJCOMs and several installation-

Realty program specialists listen to a presentation during the 2010 WWRES. (U.S. Air Force photo)

level realty specialists. Attendees were trained in areas ranging from appraisals, inventory and accountability, real estate law, planning optimization, disposals, congressional notification, utilities privatizations, civil engineering transformation, property inspections, space optimization, environmental documentation, and career management.

"Any realty specialist that missed this symposium missed a lot. It's a rare occasion to get this many brilliant real estate experts from across the federal government together in one place for several days of intense training. And it wasn't just top-notch training, the networking opportunities were immeasurable," said Mr. Moore.

"We aren't going to wait another 10 years for the next symposium," Mr. Brown said. "This is a biennial event and we have already started planning for the 2012 Air Force Worldwide Real Estate Training Symposium."

Mr. Roberts is the Air Force Real Estate Subject Matter Expert, AFRPA, Lackland AFB, Texas.

AFRPA's Real Estate Transaction Division staff that made the 2010 WWRES possible are (left to right) Ms. Diane Bailey, Mr. Ernesto Bent, Mr. Bobby Roberts, Ms. Zannetta Williams, Mr. Jeff Blevins, Ms. Kathy Davis, Ms. BJ Fender, Mr. Art Manyweather, Ms. Debra Bahr, and Mr. Brian Brown (division chief). (U.S. Air Force photo)

CE receives 2010 Tuskegee Airmen Award

Ms. Hannah Hill
AMC/A6O

SMSgt Patrick Jones, superintendent of the Operations Flight for the 375 CES, Scott AFB, Ill. was awarded the 2010 Chief Master Sergeant Fred Archer Military Award, July 15 by Tuskegee Airmen, Inc., an organization dedicated to honoring the accomplishments of African American service members.

Named for one of the first African Americans to achieve the highest enlisted grade, the award goes to a senior NCO who exhibits outstanding performance in both professional and community service.

SMSgt Jones earned the award through his constant achievements, which included saving the Air Force $2M by converting 85 housing units to temporary lodging facilities and acting as the 375 CES's top enlisted member for six months from October 2009 to April 2010. At Misawa AB, Japan, SMSgt Jones managed 521 military and civilian personnel while finishing 21,000 jobs worth $13M.

He is an avid volunteer in his community, creating a tutoring course which kept 261 underprivileged youths off the streets and mentoring 47 elementary children. He also tutored 25 Japanese school students in English fundamentals while at Misawa.

"I have been blessed to work with a great team of Airmen and civilians," said SMSgt Jones. "They are the power that keeps the train of successful actions moving down the tracks, and I especially thank them for allowing me to ride on their train."

SMSgt Patrick Jones

Air Force Renames Firefighter Heroism Award

The Firefighter Heroism Award has been renamed the Robert A. McAllister Firefighter Heroism Award in honor of the most decorated firefighter in Air Force history. This award annually recognizes individual acts of heroism above and beyond the call of duty.

Mr. Robert A. McAllister retired as a Senior Master Sergeant after 28 years on active duty before starting a 22-year civilian career and rising to the rank of Fire Chief at Columbus AFB, Miss. During his active duty service, he was awarded two Distinguished Flying Crosses, two Bronze Star medals (one with valor), 33 Air Medals, the Vietnam Armed Forces Honor Medal, four Meritorious Service Medals, and four Air Force Commendation Medals.

"It's fitting that this award is now named for Chief McAllister," said Mr. Donald Warner, The Air Force Fire Chief. "In addition to his many decorations, Bob McAllister represents the many fire protection heroes that emerged during Vietnam and haven't been recognized. He was a proven hero — his actions demonstrated his willingness to risk all to save another."

Key Personnel Changes

Major Commands

Mr. Paul Parker is the new Director of Communications, Installations, and Mission Support, Headquarters Air Force Materiel Command, Wright-Patterson AFB, Ohio. He was formerly the Deputy Civil Engineer, Headquarters U.S. Air Force, Washington, D.C.

Mr. Paul Parker

Col David Demartino is now the Civil Engineer, Air Education and Training Command, Randolph AFB, Texas, replacing Col Mark A. Correll, who retired.

Col Joseph Schwartz is now the Deputy Director for Installations and the Civil Engineer, Headquarters Air Force Space Command, replacing Col Carlos Cruz-Gonzales, who retired.

Col Michael Hass is the Chief, Operations Division, Installations and Mission Support Directorate and the Civil Engineer, Headquarters Air Force Global Strike Command, Barksdale AFB, La. He replaces Col Scott Hoover, who is now the commander of the 2nd Mission Support Group at Barksdale.

Direct Reporting Units

Col Peter Sartori is now the Director of Logistics, Installations, and Mission Support, Air Force District of Washington, Andrews AFB, Md. He was formerly the Deputy Director, Installations and Mission Support, Third Air Force, Ramstein AB, Germany.

Field Operating Agencies

Col David L. Reynolds is now the Commander, Headquarters Air Force Civil Engineer Support Agency, Tyndall AFB, Fla. He was formerly the Chief, Programs Division, Installations and Mission Support Directorate, Headquarters U.S. Air Forces Europe, Ramstein AB, Germany. Col Reynolds replaces Col Max Kirschbaum, who retired.

Col David L. Reynolds

Office of The Civil Engineer, HQ USAF

Col Beth Brown is now the Associate Civil Engineer, replacing Col Mark Pohlmeier, who retired. She was formerly the Chief, Programs Division.

Lt Col John Allen, who has been selected for promotion to the rank of colonel, is now the Chief, Programs Division. He was formerly a student at the U.S. Naval War College.

Lt Col Stephen Wood, who has been selected for promotion to the rank of colonel, is now the Chief, Asset Management Division, replacing Col Joseph Schwartz. Lt Col Wood was the Director, Housing and Installation Management, Office of the Assistant Secretary of the Air Force for Installations, Environment, and Logistics, Washington, D.C.

Col Jeffery Vinger is now the Chief, Readiness and Emergency Management Division, replacing Col Curt Van De Walle. Col Vinger was formerly the Provisional Wing Commander for the 673rd Air Base Wing, JB Elmendorf-Richardson, Alaska. Col Van De Walle is now the Commander, 1st Special Operations Mission Support Group, Hurlburt Field, Fla.

Robo-Planter

At the former Mather AFB, Calif., a 16-foot-tall robot called DieselZilla helped plant an oak tree as part of AFRPA's "Trees Across America" project. In honor of the 40th anniversary of Earth Day, trees were planted at 40 current and former Air Force bases throughout the United States. The robot was built by students in the American River College clean diesel program, which meets in a former Air Force diesel equipment repair shop on the property. (photo by Mr. Scott Johnston)

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