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THE CE

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Operation Clean Sweep: Cleaning up after the Cold War

The Civil Engineer - United States Air Force



FROM THE TOP

The Operations Flight

To quote an old adage, “The more things change, the more they remain the same.” That has certainly been true of the organizational structure of base-level civil engineering units, particularly the operations flight. The question of “zones” or “shops” has been a hot one since we implemented zonal maintenance Air Force wide in response to the 1992 Defense Management Review Decision 967. As you may recall, DMRD 967 mandated a 15 percent manpower reduction. Zonal maintenance produced manpower savings as a result of multiskilling and streamlining supervision. It also changed our organization to be more customer-focused with the emphasis on accountability. Zonal maintenance and the Objective Squadron were the answers in 1992.

As I travel throughout the Air Force, people frequently ask me about the zonal maintenance concept and the possibility of returning to the shop organization to improve training. I also hear these same comments from the Chiefs’ Council, Airmen’s Council and Lieutenants’ Advisory Board. During an October meeting with the major command civil engineers, the topic came up once again. I asked the Air Force Civil Engineer Support Agency to look at the issues and answer the questions, “Should we maintain the current policy of zonal maintenance, go back to centralized shops or make it optional? What are the problems, impacts and actions required to change the current policy?” We discussed these issues for several hours at our Civil Engineer Worldwide conference in December and decided to conduct a more in-depth review.

We tasked the Air Force Civil Engineer Support Agency with studying the operations flights of CE squadrons worldwide and making recommendations for change. This review will include a look at issues such as training, vehicles, equipment, facilities, personnel actions, manpower and others.

I want to make one point clear: this is NOT a spur of the moment decision. I recognize there is turbulence in the field due to questions about outsourcing and privatization, downsizing and the Quadrennial Defense Review. I also clearly understand the potential reorganization of our operations flight will only add to that turbulence.

This operations flight review, with full major command (MAJCOM) participation, will be methodical, it will take time and it will allow for the most prudent decision. We will do it right, and the solution will be one we can live with. I expect the review process may take up to 10 months, starting with an initial survey of how all civil engineering squadron operations flights are currently structured. We will seek additional feedback from the MAJCOMs and the field to help define workable solutions.

We don’t know where the journey will lead, but I wanted to open this issue to focus on the operations flight since it is one of the cornerstones of our business. The value of asking these hard questions is to make sure we are posturing our organization and people for success to better meet the challenges of the future.



Maj. Gen. Eugene A. Lupia
Air Force Civil Engineer

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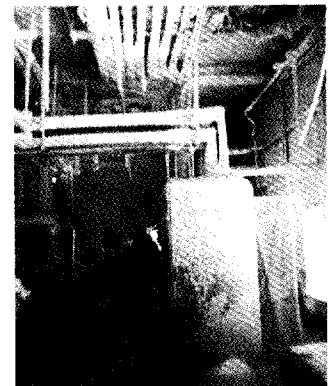
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On the cover...

Maj. Gregory Schmidt inside the generator room at Anvil Mountain White Alice site. This site is scheduled for Clean Sweep during summer 1998. For more on Alaska's Operation Clean Sweep, see Page 16. Photo by Capt. Christopher Pleiman.

In this interview, Lieutenant General William P. Hallin, deputy chief of staff for Installations and Logistics, Headquarters U.S. Air Force, interprets trends in our changing Air Force and what these trends mean for civil engineers as they

"Maintain the Springboard"

The Civil Engineer magazine: What is your vision for Agile Combat Support?

Lt. Gen. Hallin: It's important to remember that *how* we say it implies a lot, "Agile," "Combat," "Support." "Agile" implies a lot more than just what is required to support war fighting. Agile implies how we go about doing our business and how we think about our business. So agility is a very powerful part of it. "Combat" obviously takes us to what we're really about, being able to provide a combat capability for our war fighters. How do we do that? We do it by providing "Support" across the whole spectrum of the combat support area. It's not just civil engineering, it's not just services, it's not just logistics, it's personnel, it's security forces, it's communicators, the medics and so forth. All of that wraps up into Agile Combat Support and that's how you need to look at it. The vision that I have is; Agile Combat Support begins at our installations. The installation serves as a springboard from which we provide organized, trained and equipped personnel to the combat support elements to make sure we're ready. We must be able to bed down the force, deploy it, employ it, sustain it and re-deploy it all in support of the Air Force components of the war fighting CINCS for small-scale contingencies or a major theater war.



The Civil Engineer magazine: What can Agile Combat Support really do for the Air Force?

Lt. Gen. Hallin: First of all, it provides a very clear focus for us because we've identified it as one of our six key core competencies. When we talk about Agile Combat Support we focus on the combat support team and allow some breakdown of the stove pipes. I think that's a plus for us. It gives us a better entree into the joint world. We've tended in the Air Force to think more narrowly about combat support. When we look at Agile Combat Support from a joint perspective, we must focus on all of our disciplines in a way that asks, "How do you pull that thread through from the factory to the flight line?" "How do you get that combat support job done?" Now we're looking at it more as a systems approach to combat

support, something very different from how we may have addressed it in the past. And all toward, "How can we do our job, at the same time reduce costs and still have the capability to deploy and sustain?" To wrap up, we're addressing combat support across a continuum, and it gets us out of the stovepipe way of looking at combat support.

The Civil Engineer magazine: How do you see civil engineering's role in developing and maintaining efficient installations that promote Agile Combat Support?

Lt. Gen. Hallin: To go back to the vision. You think of an installation as being the springboard. You look to the civil engineer activity to maintain that springboard. That goes all the way from the real property maintenance to making sure that we have the military construction projects laid in. We're looking across the facilities, the utilities, the infrastructure, the environmental needs and from a civil engineer standpoint, ensuring we are postured to do the training to work disaster preparedness, rapid runway repair and chem-bio issues associated with the ability to survive and operate.

The Civil Engineer magazine: What are the most pressing issues Agile Combat Support will face in the next five years?

Lt. Gen. Hallin: Our challenges will be the Air Force budget is going to remain at best, flat. The other issues that we really need to be concerned about are how we continue doing our business and how we reengineer our processes. Whether we're dealing with civil engineering or any of the other elements of combat support, we have to evaluate our processes as we do them today and look at how we can do them more efficiently by cutting out either time, people or dollars. Beyond that, one of the real challenges is how we approach outsourcing and privatization and how it impacts our capability to provide Agile Combat Support. We must take advantage of outsourcing and privatization, but do so from the perspective of it being one of the tools for dealing with the resource issue, not an end in itself. Another major issue of Agile Combat Support is operating successfully in a chem-bio environment. We need to focus on how we can survive and operate in such an environment. We must also focus on how to distribute and move our assets around in the battlefield environment. That end of the logistics chain is something that we're going to have to spend a lot of time working on to ensure combat support.

The Civil Engineer magazine: Readiness Challenge is a biennial contingency skills compe-

tion. What is the value added of holding large-scale competitions that closely simulate real-world situations?

Lt. Gen. Hallin: I feel really great about the capability we've set up at Tyndall (AFB, Fla.) I had a chance to go down and participate as an observer during the last Readiness Challenge competition. The bottom line is, with Readiness Challenge we make it real. We get as close as we can to a real combat situation, pull our people together to take on those kinds of tasks and provide real hands-on experience. Plus, you're providing the opportunity for people to understand it's not one individual that can get the job done, it's a group of individuals operating as a team, bringing all of their skills and all of their brain power to bear to get through the challenges that are set up. I think it's a great way of focusing on our war fighting skills. It makes Agile Combat Support a reality and drives home how important it is to understand what the civil engineer community brings to the table as far as enhancing our war fighting capability.

The Civil Engineer magazine: The reorganization of Installations and Logistics provides an Air Staff-level voice for the base-level support group commander. How is this reorganization working out?

Lt. Gen. Hallin: I have been very pleased with how this sorted out. It provides a voice for a large part of the combat support team at the Air Force corporate table. I find that to be extremely powerful for us, in terms of working policy and resources. IL is responsible for about 43 percent of Air Force manpower. It's crucial that the civil engineer groups, support groups, etc., have representation at the Air Force corporate table. It allows us to pull across functional areas that are now a part of IL and work some very important programs. I'll give you three examples; chem-bio, information systems and outsourcing and privatization.

We have an integrated process team that CE leads for the Air Force with representation from the other key elements of IL and the Air Staff including supply and transportation. It's given us an opportunity to be a voice in ascertaining what our present defensive requirements are for chem-bio as well as our ability to survive and operate. Second major issue; information systems. We're able to pull together as an Agile Combat Support team the things

“ ...one of the real challenges is how we approach outsourcing and privatization and how it impacts our capability to provide Agile Combat Support. ”

that are important to us in terms of improving our information management systems. Whether you're talking about the Automated Civil Engineer System software that civil engineering is going to deploy, upgrading the supply system or the integrated maintenance data system; we're able to focus more of the effort by speaking as one voice to drive our goals for deploying globally in support of combat. The third area is outsourcing and privatization. The integrated process team we have, led by Col. Joe Munter out of the CE shop, helps us substantially. Those are just three examples of why I think the Installations and Logistics organization was the right step.



The Civil Engineer Magazine: How is Installations and Logistics approaching outsourcing and privatization?

Lt. Gen. Hallin: The effort has been really successful. CE leads the IL outsourcing and privatization integrated process team on the Air Staff. Basically, what we've done is built upon what the civil engineer team already started. Taking a look at each functional area, identifying the war time requirements, all the career field requirements and making sure we have some career opportunities built in. We've also looked at where we have the wartime unit type codes located to see where it makes sense to roll up and aggregate some of them at certain bases and open up a broader slice of the base operating support element for outsourcing and privatization. That has been a real

success for us. We've been able to lay out a template and we're starting to establish a vision for the Air Force in terms of the end-state for outsourcing and privatization. We need to know what our bases, career fields and functional areas are going to look like. Do we clearly understand the ramifications in moving forward with the outsourcing and privatization initiatives? Some of these initiatives make a lot of sense to pursue and we must take advantage of them. We need to understand where we're headed, where it makes sense and where it doesn't.

The Civil Engineer magazine: Quality of life issues are increasingly prominent. What initiatives are being worked in Installations and Logistics to promote quality of life in the Air Force?

Lt. Gen. Hallin: I have to start with the civil engineer community. Look at what we've established. I see it when I'm out visiting the bases. We are

absolutely light-years ahead of what is occurring in some of the other services and we should be. We owe it to our folks to provide a quality of life that allows Air Force members to concentrate on the job they have to do. For example, the elimination of central latrine dormitories will be a reality in the next fiscal year. Building one-plus-one dorms for airmen gives them the opportunity to have a private room, a shared bath, a shared kitchen and more storage space than was provided in the past. There's been a whole host of family housing privatization initiatives to leverage the investment we have in land and MILCON. These initiatives will drive down the deficits in our family housing shortfall. We owe it to our installations and our people to retain quality in our facilities. Beyond that, we must continue to resource a level of MILCON investment that allows us to rebuild and maintain the infrastructure.

The Civil Engineer magazine: What aspect of your job do you find most gratifying or enjoyable?

Lt. Gen. Hallin: There are two pieces of it. One, I like the idea that I am the voice for all of the IL functions at the corporate table. As I said earlier, we represent 43 percent of the blue suit manpower. I think it's important that I represent this segment of the Air Force in a way that looks out for their interests in quality of life and in our ability to provide combat support. Another aspect, and one that I thoroughly enjoy, is getting out to our activities and seeing our blue-suiters in action. I always come away from every base visit just absolutely impressed with the enthusiasm, the commitment and the quality of our young men and women. That's the most gratifying part of the job, getting out, talking to and seeing what our young folks are doing today.

The Civil Engineer magazine: What would you say to base-level troops to inspire and motivate them in a rapidly evolving Air Force?

Lt. Gen. Hallin: I would look them in the eye and say, "Thank you for doing a super job for our Air Force." Secondly, I'd tell them how proud I am to be able to represent them from an Air Staff perspective. Third, I would say that change is something that we have to deal with. There's been a significant amount of change ever since the Berlin Wall fell in 1989 and I think one of the things that sets us apart is our ability to deal with that change. Our younger troops need to understand that. Part of that is being assured that we're straight up with them and provide them with the facts as we downsize our force. We have to tell them where the opportunities are and are not. The bottom line is we always need quality people, regardless of the size of our Air Force.

Civil Engineering OUTSOURCING what does it all mean?

By Lt. Col. Alberto Armesto and
Capt. Vicki Buschur
Pentagon, Washington D.C.

In the last decade, there has been a fundamental shift in the nature of business reflected by global integration of economies and accelerating rates of innovation and technological change. At the same time, there have been fundamental changes in the world situation and corresponding changes in the way the Air Force trains and equips its forces to fulfill its warfighting mission. However, there have been few major changes in the way the Air Force performs support functions that are not directly linked to its warfighting mission. Keeping up with innovation and technological change is a basic requirement for sustaining readiness. Specialized private sector firms have the flexibility to adjust to rapid change and can help the Air Force keep pace. Private sector firms bring state-of-the-art technology to bear in support areas and allow the Air Force to concentrate on its core competencies.

The economic benefits of outsourcing initiatives through competition are noteworthy regardless of who ends up performing the work. Historically, savings through competition exceed 25 percent which allows

the Air Force to support modernization initiatives and focus its resources and personnel on core activities.

Currently the Air Force has over 255 on-going studies encompassing over 16,000 positions. In addition, the Secretary of Defense's Civilian Drawdown Initiatives include some 4,000 positions and other related initiatives involve an additional 5,000 positions. Jump Start adds 41,000 positions to the Air Force's cost comparison program for a total of 66,000 positions, of which the civil engineer portion is about 9,500. Functions being cost compared that currently contain military personnel will have these positions converted to either civilian or contract, depending on the cost comparison decision. The reason for this is that a decision to cost compare a function with the private sector reflects a management decision that the activity is not military essential.

The terms *outsourcing* and *cost comparison* are often used interchangeably. *Outsourcing* is the *transfer of commercial activity services or functions* previously performed in-house to an outside provider. *Cost comparison* is the approved process for determining the most cost effective means of perform-

ing commercial activities. A commercial activity is any product or service, currently provided by a federal executive agency, which could be obtained from a commercial source. The Air Force Commercial Activities program is implemented and conducted in accordance with instructions in AFI 38-203, *Commercial Activities Program*. This Air Force guidance implements Office of Management and Budget Circular A-76 (OMBC A-76) and OMB and DOD supplemental guidance. The "winner" in a cost comparison is usually either the minimum cost provider or the one offering the best value. The result of a cost comparison is a business decision to either outsource the work to a contractor or perform it in-house using the most efficient organization (MEO) developed during the cost comparison process. Regardless of whether the services or functions end up in-house or outsourced, the government retains responsibility and control of those recurring services or functions. Use of phrases such as "outsourcing candidates" should not be interpreted to mean specific cost comparisons will always be won by a contractor. Based on past Air Force experience, 40 percent of cost

See *Outsourcing*, page 27

The New Air Force Utilities Privatization Process

by Maj. Jeff Vinger, P.E.
Pentagon, D.C.

In the Fall '97 issue of The Civil Engineer magazine, a detailed description of the privatization of the Youngstown Air Reserve Station utility system was given. A detailed, life-cycle economic analysis and risk analysis were performed prior to privatizing. Both analyses led to the conclusion that privatizing the system was the most effective use of government resources. Ohio Edison, a local utility company that provided 69 kV service to a single government-owned substation on base, was eventually selected for privatization of the entire base electrical system. This article is a continuation of that discussion focusing on a new process that formalizes privatization as a tool for the Air Force.

With the Youngstown success and lessons to draw from, policy and guidance to facilitate privatization of utilities is now complete and was provided to major commands last Fall. AFI 32-1061, *Providing Utilities to U.S. Air Force Installations*, was rewritten and now requires installations to look first to the private sector when contemplating new or replacement utilities. A new "Quick Look" model assesses a utility's potential for privatization, allowing for prioritization and focus of efforts on the best opportunities. A new Utilities Privatization Manual consolidates and details the utilities policy and privatization guidance, discusses roles and responsibilities to achieve privatization of utilities and most importantly, presents the Air Force utilities privatization process. The privatization process is affected by

myriad federal real property and environmental laws and regulations. However, new statutory authority (Chapter 159 of title 10, USC, sec. 2688) was recently approved to allow transfer of ownership of existing Air Force utility systems to municipal, private, regional, district or cooperative utility companies or other entities. Further, the Secretary of Defense announced in November 1997 a DOD goal to privatize all utilities by January 1, 2000, with limited exceptions for those systems needed for unique security reasons or when privatization is uneconomical. Basically this means that we need to make sure that the privatization deal makes sense for the Air Force and does not break down the readiness core.

The Air Force utilities privatization process is best viewed as a series of consecutive activities that can be divided into three principal phases: preliminary feasibility assessment, comprehensive evaluation and privatization implementation.

Phase One: Preliminary Feasibility Assessment

This phase includes the activities that occur to document the basic considerations that enter into the development of a utilities privatization project. Successful completion of the activities contained in this phase result in a determination of the feasibility of a privatization initiative versus the status quo or possibly other alternatives. Specific activities include:

- ◆ Establishing a dedicated and devoted utilities privatization team;
- ◆ Determining the objectives of the privatization initiative, defining the requirements, scoping policy and readiness impacts and determining

impact of utility deregulation in surrounding area;

- ◆ Gathering data to perform a utilities screening utilizing the "Quick Look" assessment model specially developed to assess privatization potential;
- ◆ Developing a list of viable alternatives;
- ◆ Drafting of project documentation and a proposed plan of action for facility board approval;
- ◆ Forwarding of plan to the major command for consideration.

Phase Two: *Comprehensive Evaluation and Approval*

This phase includes the steps necessary for review and approval of privatization proposals and activities needed to prepare, issue and evaluate an industry request for proposal.

Activities include:

- ◆ Development of a decision analysis report;
- ◆ Assessing local interest and market analysis leading to determination of a viable private business opportunity;
- ◆ Inventorying and identifying equipment and property to assess condition and market value;
- ◆ Evaluating existing authorities to determine applicability;
- ◆ Analyzing operational impacts especially those pertaining to readiness or the mission;
- ◆ Accomplishment of an initial economic analysis estimating life cycle costs of alternatives;
- ◆ Performing an environmental impact analysis of potential privatization actions and alternatives as

described in the decision analysis report and development of an environmental impact statement or finding of no significant impact;

- ◆ Identifying protected natural and cultural resources (such as wetlands and historic properties) in consultation with state or federal officials, as appropriate through the environmental impact analysis process;

- ◆ Determining environmental condition of property to be privatized through an environmental baseline survey and development of a finding of suitability for transfer;

- ◆ Analyzing socioeconomic effects of the proposed initiative on the surrounding community.

- ◆ Drafting a request for proposal, selection criteria and evaluation standards.

Phase Three:

Privatization Implementation

This phase includes the necessary steps to convey the property in accordance with the Air Force's privatization decisions. This phase also includes any activities that must be completed before deed transfer of property can occur:

- ◆ Issuance of the request for proposal, evaluation of proposals and selection of an offeror.

- ◆ Finalizing the decision analysis report for deputy assistant secretary of the Air Force (Installations) approval and 21-day congressional notification;

- ◆ Preparation of the property transfer long-term lease or deed, operating agreement and workforce transition plan

- ◆ Final contract negotiations leading to the conveyance of government property to the new owner.

Lessons Learned

Many lessons have already been learned in the privatization of Air Force utilities. Some taken from the Army, some from housing privatization efforts, some from industry and many from the Youngstown experience.

Foremost, it is imperative for leadership to champion the privatization initiative and be committed to ensuring the best value to the government in any effort.

Privatization of a base utility is a complex undertaking, involving cooperation of federal agencies, state and local governments, regulators, the local community, base officials, major command officials, Air Staff officials, and of course, the utilities industry. Many resources are required to produce and deliver the variety of documents and other essential materials necessary to drive the privatization initiative forward through the essential steps. Of utmost importance is the establishment of a dedicated team of base experts. The team should, at a minimum, be comprised of representatives from real estate, cost and finance, community planning, environmental, engineering, contracting, personnel, manpower, legal and public affairs. The base team becomes the single entity responsible for providing the necessary leadership and consensus to assess the potential for privatization of the base utility.

Air Force General Counsel determined that legislative authority must be involved in the process of conveying government-owned utility systems and real estate to the private sector. In the Youngstown case, no legislative authority existed. The requirement for specific legislation held up the project for more than a year. New legislative authority streamlines this process by requiring only a 21-day notification to Congress for any initiative.

We must develop reliable and complete cost data to assess performance, support decisions, and make decisions easier to implement and justify. From our studies, we've found that much of the data collected and how they are collected on our utility plants and systems varies from base to base and major command to major command. The economic analysis must include all possible costs associated with the initiative.

It is possible that the consideration of privatization of a base utility will be viewed as a threat by some. For that reason, it is imperative that lines of communication be established early and maintained at all times. Communication is an essential resource and contact should be maintained with the base team as well as with the major command, Air Staff and Air Force Civil Engineer Support Agency to benefit from current experience and lessons learned from other agencies. The success of the initiative depends on positive public opinion and active leadership and support by all levels. Early in any privatization initiative an iron-clad strategy for workforce transition must also be developed to minimize the impact to our number one asset – our people.

Summary

In the case of Youngstown Air Reserve Station, privatizing the electric system was truly a "win-win" situation. The base accomplished its goal of procuring a new underground system that will meet their future needs. Ohio Edison will be able to better maintain the base system which will in turn, result in their entire system being better off. The Air Force ultimately saved \$3 million over the planned and approved MILCON replacement of that system. The Youngstown project was the consummation of three years of exhaustive work.

With the establishment of the Air Force Civil Engineer's Utilities Privatization Program, we now have the goals, policy, tools and guidance in place to make privatization a complete and viable alternative for Air Force commanders. The legislative authority is now available and streamlines our efforts. The new utilities privatization process can be expected to take approximately 18-24 months to produce the final transfer of property and operations. Since this is new territory, set backs will undoubtedly occur and unanticipated tasks may be

See Utilities, page 27



All photos by Capt. Jeff Mathieu

The first of several construction projects, this three-story airmens' dormitory has a view of the Dolomite Mountains.

Aviano 2000

Developing the "Jewel of the Mediterranean"

by Lt. Col. Marvin Fisher and
Capt. Jeff Mathieu
Aviano AB, Italy

The people, the food, the wine, the Alps, the history, *la dolce vita*; the list of reasons to love Italy is infinite. Over the past few years, thousands of U.S. personnel have had the pleasure of experiencing northern Italy. With the largest construction program in the Air Force, an innovative plan dubbed "Aviano 2000" is transforming Aviano Air Base into another great reason to spend some time in *Italia*.

A Strategic Location

Situated in northeast Italy, in the Friuli-Venezia-Giulia region at the foot of the Dolomite Mountains,

Aviano is only an hour from *Venezia* (Venice) and a mere 45 minutes from the Adriatic Sea. As political and social problems in formerly communist countries boil over, Aviano is in a key strategic location, just 30 minutes flight time to downtown Sarajevo and the latest trouble spot, Albania. Aviano is the closest installation with permanently assigned U.S. personnel and aircraft near Slovenia, Croatia, Bosnia, Yugoslavia, Hungary, Romania, Bulgaria and several other small nations recently awakened from their Iron Curtain slumber. For these and many other reasons, NATO is transforming Aviano from the only U.S.-based fighter presence south of the Alps into the watchdog of the Mediterranean region.

A Historic Location

Aviano spans the decades of Italian aviation history. This installation was one of the first air strips in Italy; an Italian version of "Kittyhawk." Training young aviators was Aviano's first mission in 1911. During World War II, the base played a key role in the Axis war machine, launching bomb attacks against Allied Forces until the Allies captured the base in 1945. Under a Status of Forces Agreement, the United States has maintained a presence at Aviano since 1954.

Formerly a "sleepy hollow," the base hosted transient aircraft and maintained a low key mission until 1994 when U.S. Air Forces in Europe stood up the 31st Fighter Wing with the relocation of the 510th and 555th

Fighter Squadrons and the 603rd Air Control Squadron to Aviano. Around the same time, civil war flared throughout Bosnia and the other independent nations carved out of the former Republic of Yugoslavia. NATO kicked off "Operation Deny Flight" in 1994 and deployed aircraft from the U.S. Air Force, Marines and Navy, as well as Spanish and British forces to Aviano. This multinational contingent projected air superiority enforcing a "no fly zone" over Bosnia, which continues today.

A Unique Installation

The increase in personnel and a new mission compounded quality of life problems for a base with infrastructure that's been neglected for many years. Developing the base is further complicated by its geographically separated layout.

Divided into several small support areas and one large flightline area, the base is highly developed with limited open space for new expansion. Space limitations forced many organizations into portable buildings. More than 50 off-base leases are also required to house base functions. Several units including security police, housing, bioenvironmental engineering, military public health, contracting, airmen leadership school and civilian person-

nel currently operate in leased buildings spread throughout nearby communities. Last year, Aviano became the first base in the Air Force to lease part of a local hospital to provide expanded health care, a huge quality of life improvement for assigned personnel and their dependents. The base also leases two elementary schools in the cities of Vajont and Pordenone.

The lack of space on base has precluded the construction of family housing; all families, as well as many single personnel, live off-base. The housing office manages over 2,300 rental agreements in more than 150 local towns. Personnel supporting "Operation Deliberate Guard" live in a tent city called "Tendopoli" and many of the local hotels.

Tendopoli cost the Air Force \$6.3 million to provide billeting and mess halls for over 800 troops. Personnel on temporary duty here make up an additional force of over 1,300 personnel. The need for permanent housing also led to the pursuit of a build-to-lease program to satisfy the housing shortfall. Aviano has no on-base accompanied housing. The base is currently in final negotiations with several firms to build 500 housing units, in tracts of 25 to 75, using

private developer's investments in return for a 10-year guaranteed lease.

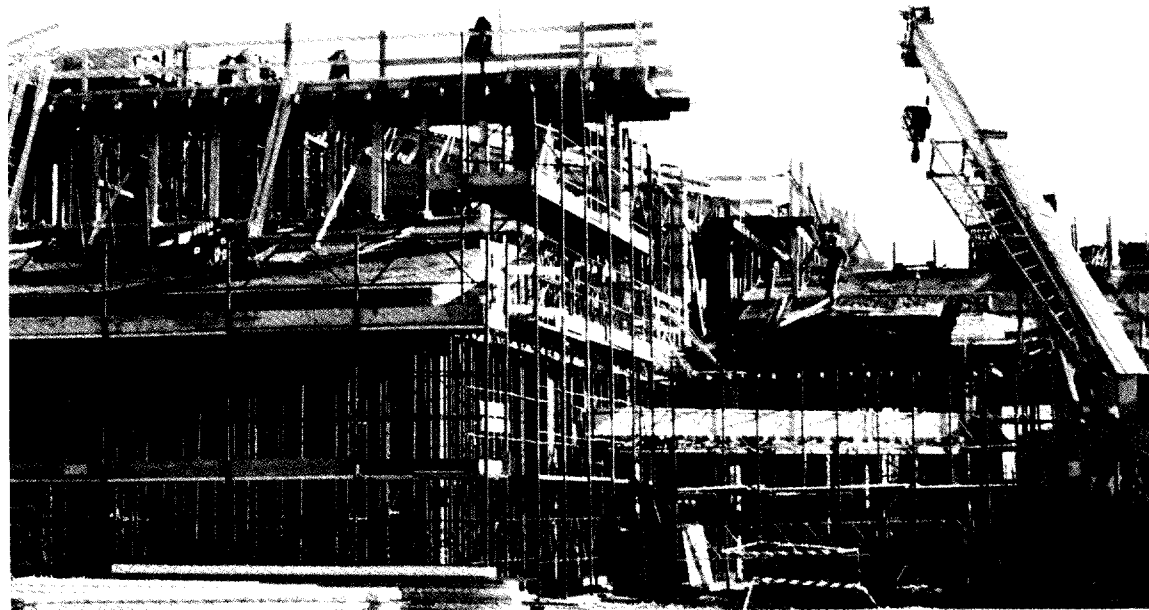
The Challenge

Geographically separated areas, limitation of available space, a degraded infrastructure and the need for quality of life improvements are all elements of the strategic plan to meet the future needs of Aviano's community. These requirements are incorporated into the base master plan known as Aviano 2000, a dynamic vision to bring the base into the new millennium. Aviano 2000 is the primary focus of the men and women of the 31st Civil Engineer Squadron. Reconstructing Aviano presents 31 CES with numerous challenges, including:

- ◆ Increase the number and size of facilities to adequately support the mission.
- ◆ Provide new facilities near the flightline where most assigned personnel work.
- ◆ Create functional centers by siting like facilities near each other, enhancing the efficiency of the base.
- ◆ Establish and maintain an architectural standard consistent with northern Italian designs.

The Plan

With its sights set on meeting



The consolidated support center building in the process of being constructed. It is adjacent to the 31st Fighter Wing Headquarters.

these challenges, the 31st Fighter Wing has been pushing forward, acquiring a 219-acre plot of land recently vacated by the Italian Army adjacent to the

Aviano include over 150 projects estimated at approximately \$500 million. Programming, designing and executing all of these projects in the next five years

Giurgola, to name a few, have helped shape the development of the base. They assisted with essential studies, surveys and designs, including, the



(Left) Aviano's tent city, Tendopoli, houses approximately 600 people.

(Below) The front of the airmen's dormitory with a gazebo for group events and socializing.

flightline. The area, know as Zappala, is essentially an open field with a few existing structures. The open space is exactly what 31 CES required to provide the quality of life improvements and new facilities. Zappala will be developed with a mix of commercial, outdoor recreation, industrial and operational facilities including a new BX/commissary, fitness center, athletic fields, track, collocated club, temporary lodging facilities, visiting officers' quarters, dormitories, dining facility, security police complex, warehouses, skills development center, child development center and more. Groundbreaking for the first facility, a new base exchange/commissary, is scheduled for March.

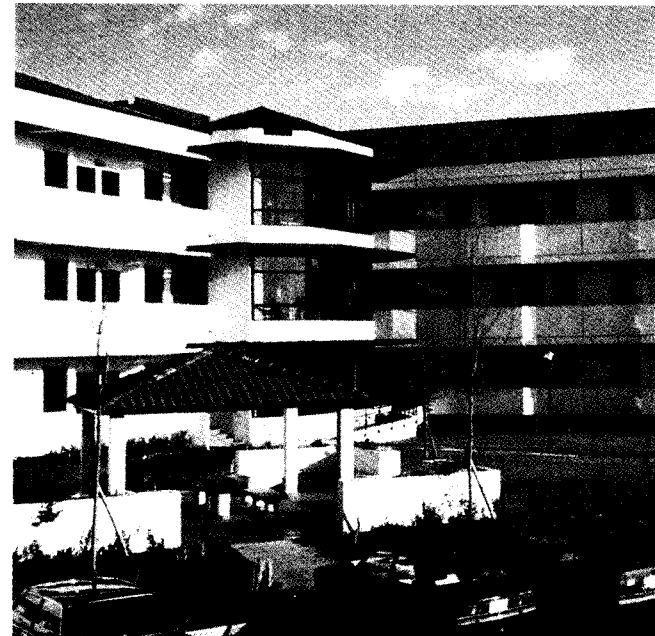
The flightline area will have over \$160 million in new facilities, the majority of them directly supporting the fighter mission with funding from NATO. Areas A1 and A2, located in the community of Aviano, will be totally redeveloped with a new \$32 million school, \$28 million, 20-bed medical facility and a new youth center. Over 400 new dormitory rooms have already been provided.

The Program

Buildup and improvements at

is a task 31 CES is wrestling to the ground, with the assistance and advocacy of everyone on the installation and in the Air Force. Maj. Gen. Eugene A. Lupia, the Air Force Civil Engineer fully supports Aviano 2000, as evidenced by his quarterly visits to Aviano for a Senior Executive Review Group (SERG). SERG, co-chaired by Maj. Gen. Lupia and Brig. Gen. Timothy A. Peppe, commander, 31 FW, is attended by officials from the U.S. Mixed Commission, HQ USAFE, the Navy and others. The group's oversight and advocacy are making Aviano 2000 a reality.

The 31 CES got the attention and support of many different organizations during the past three years to help pull together the Aviano 2000 plan. Cooperative efforts with the Air Force Civil Engineer Support Agency, the Navy, Army Corps of Engineers and architectural and engineering firms such as Clark-Nexsen, Glenn & Sadler, STV Inc., the OK Design Group and Mitchell-



Zappala Development Study, Traffic-Use Study, Area 1 Planning Study, Environmental Baseline Survey for Zappala, Environmental Assessment of Zappala Development, Noise Survey, Asbestos Survey, Radon Survey, DOD School conceptual design, Air Traffic Control Tower Study, Airfield Operations Study, Hazard Reduction Plan and the associated \$500 million in facility designs.

The value of this information is

reflected in the positive reception to Aviano 2000 from military, civilian and local Italian officials. The results of these studies and other design requirements have been consolidated into one document, the Aviano AB Design Standards, which is provided to all architects and engineers, to ensure proper and consistent guidance is used to design all facilities (perspectives of temporary living and fitness facilities). The concept is to build facilities fitting into the local Venetian architecture with state of the art equipment and technology; in other words, "Star Wars on the inside, Italy on the outside."

The final results of these surveys, evaluation and the construction program culminated in a briefing 31 CES presents annually to hundreds of VIPs, congressmen, flag officers, NATO personnel and local Italian officials in



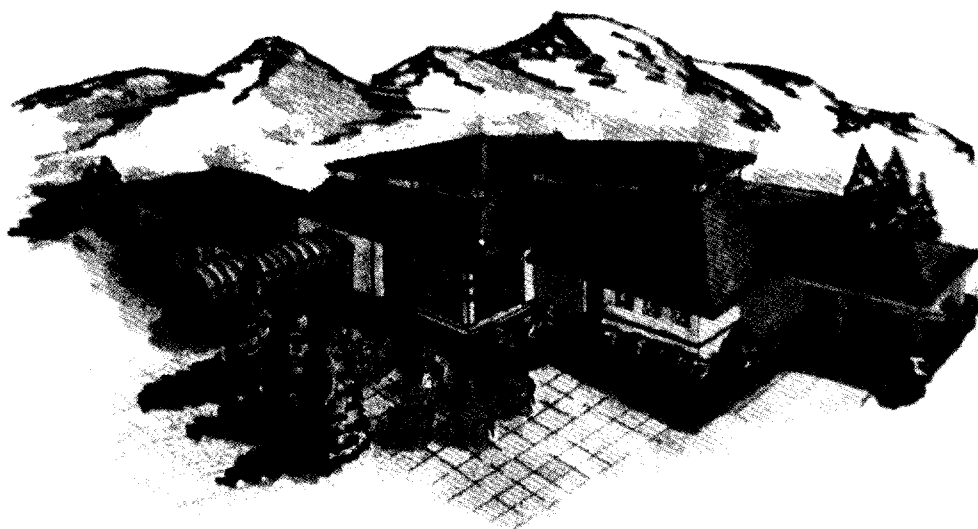
the form of the Aviano 2000 briefing. In 1995 and 1996 over 500 flag officer equivalent VIPs visited Aviano to learn more about Aviano 2000.

Lessons Learned

As with any major undertaking, 31 CES discovered the challenges associated with such an enormous program. Some of these lessons were learned quickly while others took a little more time. Each lesson is equally

important and should be carefully considered in the planning stages of a major build-up. Here are the most important:

It takes considerable manpower to properly define requirements, devise a master plan for the base, develop programming documents and complete design reviews. With adequately staffed, properly motivated and capable personnel in the right positions, anything can be accomplished. Think big in the beginning and go after the manpower early in the process so the requirements definition, planning and programming can be done right the first time.



An artist's rendering of the new flightline dining facility shows the use of local Friulian and Venetian architecture.

Get help from all sources; there's a wealth of professional expertise ready to assist.

- ◆ Air Force Center for Environmental Excellence
- ◆ Individual Mobilization Augmentees
- ◆ Major command staff assistance visits
- ◆ Air Force Civil Engineer Support Agency
- ◆ Reserve and Guard teams
- ◆ Army Corps of Engineers

Articulate the plan clearly. Create a vision and stick to it. A clear vision helps everyone stay focused on the long-term result, not short-term gains.

Once you have a well-defined vision, advocate, advocate, advocate! Every person who gets sold on the plan can become an advocate for your plan and will help support it.

Take time to celebrate success and have some fun!

The Future

Aviano 2000 provides a great opportunity and learning experience to those involved. Many of our installations were built and designed in the 1940s and 1950s. Today there are certainly many more requirements and restrictions providing more challenges

to the task of developing a base. Some days the men and women of 31 CES feel overwhelmed by the whirlwind pace. However, their thoughts and feelings stay focused on their contribution towards creating a new Aviano AB, one that will be a showcase installation. Since the buildup of 1994, the secret is out, Aviano AB is a great overseas assignment for a short temporary duty assignment or a three-year tour. In just a few years, this former "sleepy hollow" will become a choice Air Force assignment with world-class facilities to match its critical mission.

Civil engineers support 4th Air Expeditionary Force



Aerial view of Doha Air Base.

Photo courtesy of Qatari Emiri Air Force

Maj. Van Fuller
Seymour Johnson AFB, N.C.

As America's military forces become more CONUS-based, the Air Force looks to the Air Expeditionary Force (AEF) for flexible, tailored, quick-response to fill theater needs across the spectrum of conflict.

The AEF exercised with deployments to Bahrain, Jordan and Qatar in 1996. Each AEF provided a balanced capability for air superiority, precision attack missions and suppression of enemy air defenses. This rapid response capability is key to winning the air battle and ensuring the success of a Joint Task Force. The 4th Fighter Wing, Seymour-Johnson AFB, N.C., led the 4th Air Expeditionary Wing (AEW) deployment. It was composed of forces from every Air Combat Command base as well as a number of other commands, and deployed to Doha, Qatar, from February through June 1997.

The 4 AEW Civil Engineer Squadron was made up of personnel from numerous ACC bases. The first seven engineers (one officer, two electrical power production, two engineering, one electrical systems and one utilities) from Seymour Johnson arrived at Doha in January and began work with members from the 823rd RED HORSE Squadron, Hurlburt Field, Fla., to accomplish after-action requirements identified during AEF III.

As an added benefit, they were able to lay the groundwork for power, water, electrical distribution, site layout and contract services; serving the base for the entire deployment. An additional 28 engineers deployed in advance of the main body in February for force protection. This team of explosive ordnance disposal, supply, structural, pavements and construction, HVAC, utilities and electrical system engineers completed the basic facility erection required to support two-thirds

of the deployment prior to main body arrival. As a result, personnel were not required to be mass billeted in hangars, and fuel deliveries could be accepted.

They also completed all basic utility requirements including power, electrical, water and sewer. The main body arrived in late February, rounding out the squadron to 156 personnel. By March the build-up was complete and 43 personnel redeployed to home station. The squadron erected and sustained 147 billeting tents, 51 shop facilities, a multitude of community and morale enhancing facilities such as contract vendors, self help washer/dryer tent, tour-booking, a tactical field exchange and seven general purpose shelters.

A mobile aircraft arresting system was installed and certified for flight safety in late March. Force protection measures included moving the encampment location to increase stand-off distance from the perimeter and decreasing billeting tent density

from the AEF III siting. Also constructed were seven air conditioned guard houses for security forces and 44 concrete and earthen personnel protective bunkers. Seven-foot high concrete revetments were installed between tent city blocks to defray damage-spread in the event of an attack.

Base integrity was further maintained with a Hesco-Bastion revetment blast wall at the contractor service entrance to tent city, the installation of three security cameras at the perimeter adjacent to the main gate, the installation of five giant voice early warning system poles and speakers, a new tap to the city's water main (alleviating the need for contract bulk water deliveries) and diligent escort of all civil engineer contractors.

Deployment and use of the "Dominant" sewage pumping truck proved crucial for force protection because it allowed the 4 AEW to remove all its sanitary sewage and dump it at a local lift station. This eliminated the need to bring contract sewage vehicles onto the installation.

Contingency preparedness and response was also key to the success of the 4 AEW. A total of 11 exercises ensured the wing was prepared for any contingency. These exercises tested the development of an Emergency Response Plan, a Survival Recovery Guide and a Base Support Plan. The squadron also responded to ten suspected explosive devices, conducted clearance of the Qatari Emiri Air Force bombing range after munitions were dropped and trained security personnel in search and explosive identification techniques.

The local weather played a part in the AEF as well. During one two-week period, more than four times the usual annual rainfall fell on Qatar. The civil engineers expertly responded to three major storms by protecting life and property, securing the infrastructure necessary for mission support and constructing assets such as prefabricated modular tent floors to mitigate the affects of future storms. Environmental stewardship was the force

behind the establishment of procedures and a benchmark facility for hazardous material and hazardous waste storage and disposal.

Relations with the host nation were enhanced through coordination, cooperation, and mutual aid with the Qatari Emiri Air Force, Doha International Airport, its fire department and various local utility departments. Investing in infrastructure prepared the 4 AEW to better handle a quick-start deployment. This was accomplished by leaving the power plant and secondary electrical distribution centers in place, installing underground primary electrical distribution lines, constructing permanent latrine and shower facilities and asphalt paving around the apron.

Additional investments are planned and prioritized to further develop the infrastructure in support of operational and logistical needs. The plan included an 18-project wing infrastructure investment program valued at \$4.8 million. The single most important project for continued fighter operations is repair of the aircraft parking apron. High aircraft loads, pavement age, fuel spills and high ambient temperatures have deteriorated the ramp to the extent that replacement with concrete pavement is necessary to support continued deployment of similar forces to Doha.

The success of Air Force civil engineers in the AEF culminated when the 4th Air Expeditionary Wing won every end-of-deployment award for outstanding performance: Outstanding Company Grade Officer, Captain Tony Gomillion; Outstanding Senior Noncommissioned Officer, Master Sgt. Larry Filion; Outstanding Noncommissioned Officer, Tech. Sgt. Mike Cavaliero; Outstanding Airman, Senior Airman Rick McHose; and the Outstanding Civil Engineer Support Award, Staff Sgt. Vinnie Gorman.

Maj. Fuller is currently the chief, Operations Flight, 4th Civil Engineer Squadron at Seymour Johnson AFB, N.C. He served as commander, 4 AEW Civil Engineer Squadron.

MailBox

Dear Editor

Just got my hands on the fall issue of *The Civil Engineer* magazine... Thanks for making my first time publishing effort so easy! I never imagined the thrill of seeing my name as an author of an article in a magazine.

I was wondering if you could tell me how to get about five additional copies?

Keep 'em flying,

Scott Hastings

Mr. Hastings,

Your contribution to *The Civil Engineer* magazine helped make it a great issue. Civil engineers know best what civil engineers do and what civil engineers like to read about. That's why contributions from the field are so important and why I make it as easy as possible for authors (or potential authors) to publish their material. Send material to: HQ AFCESA, *The Civil Engineer*, Barnes Drive Suite 1, Tyndall AFB, Fla., 32403-5319, or call commercial (850) 283-6242 or DSN 523-6242.

The Editor

PS: Additional copies are available to authors and readers upon request (while supplies last.)

Remember The CE Magazine Internet address is <http://www.afcesa.af.mil/AFCESA/CE-Mag/>

Operation Clean Sweep

An Alaskan Success Story

by Maj. Gregory J. Schmidt and
Capt. Christopher A. Pleiman
Elmendorf AFB, Alaska

The sounds of heavy equipment, air compressors and pounding hammers are once again ringing out across the Alaska landscape. The sounds are coming from remote arctic mountain tops and high ridges; home to a comprehensive network of radar and communications sites constructed during the Cold War to counter the military menace of the nearby Soviet Union. Now, one by one, these sites are being demolished and the surrounding grounds environmentally cleaned up to allow for timely transfer of excess Air Force property.

Col. Samuel C. Johnson III, Commander, 611th Air Support Group (ASG), Elmendorf AFB, Alaska, implemented a comprehensive program to demolish old facilities and remediate environmental contamination at remotely located installations and Forward Operating Locations throughout Alaska. This program is "Operation Clean Sweep." Under the command of Lt. Col. David T. Peters, the 611 CES, is entering its third field season of work.

Dozens of abandoned or mini-

mally attended U.S. Air Force radar and communications installations are scattered across Alaska. These installations once housed state of the art equipment and served as America's early warning defense system against attack from the Soviet Union during the Cold War. These installations contained the most modern radar and communications technology of the era. However, with new and improved technology, many of these sites became obsolete. Over time, they were incrementally deactivated.

During the 1970's, when the installations were deactivated, they were left "as is." In many cases, this meant that the personnel departed

immediately upon receiving the "bug out" order, with dirty dishes left in the sink and evacuation notices in the teletypes. Equipment, supplies and anything else that was needed to maintain a remote work force for two years, were abandoned. These items included massive generator banks and transformers, switchgear, fuel storage and distribution systems, water wells, waste water treatment facilities, landfills and drums of petroleum products, anti-freeze and brake fluid. Above and underground fuel tanks containing residual fuel were also abandoned. Because of the remoteness of the installation locations and the fact that many of them were abandoned

completely intact and without security, they became prime targets for vandalism and a ready source of building materials. Neglect, vandalism and pilferage combined with exposure to the severe arctic climate for more than 15 years rendered these facilities unsuitable for reuse and stripped them of any real value. Also, many of these facilities are no longer structurally sound. Parts of walls or floors are missing and some have collapsed completely.

The urgency to develop a comprehensive plan to address these facilities became very apparent when two persons from a local community were injured when they collided with an abandoned fuel pipeline while snow machining. The resulting lawsuit and the PACAF/CE Environmental Compliance Assessment and Management Program (ECAMP) findings emphasized the need to reduce Air Force liability.

Many of the sites are near very small communities. Several of the sites have indications, such as graffiti, that children and young adults have gained access to the buildings. These remote facilities have also been used as campgrounds during hunting season, dog sled and snow machine rest stops and retreats from inclement weather. Furthermore, building materials, which are scarce throughout Alaska, have been scavenged from the sites. This is particularly worrisome as asbestos and lead-based paint hazards are abundant throughout the structures.

Clean Sweep is an aggressive program that is addressing these concerns. Under Operation Clean

Sweep, the Air Force is demolishing deteriorated and/or abandoned structures on Air Force real property in Alaska while concurrently cleaning up the contamination. Previous to this program, contamination had to be cleaned up in a rigorously established priority order based upon the degree of hazard posed by the contamination. This required clean up crews to make multiple mobilizations to the same site as they eliminated contamination, in priority order, throughout the state.

“We used to simply go from one contaminated site to the next highest

installations spread throughout the entire state, hundreds of miles apart, the worst first prioritization method for clean up makes no sense because it requires multiple mobilizations to the same remote location.

“Mobilization to remote locations is incredibly expensive. Our mobilization and demobilization costs could easily run as high as half a million dollars, which in some cases could be more than half the total cost of a clean up project. Under Clean Sweep, we now remediate all the environmental contamination at a single installation at

one time. Clean Sweep has dramatically reduced our total cleanup cost,” said Johnson.

“The vast distances between installations and the fact that moving equipment to these remote locations had to be done by air, made it obvious that we needed to do all the work at one installation, regardless of the priority, all in one mobilization. Subsequently, if there was also demolition work to be accomplished at that location, it made sense to also do it in the same mobilization as we do the remediation,” added Peters.

This concept resulted in the birth of Operation Clean Sweep. The worst first process did not make economic sense for the clean up of the multiple remote installations making up the 611 CES’ vast real property responsibility.

It was obvious that by going to a single geographic location and taking care of all the contamination at that location, it would be possible to minimize shipping and logistic costs. Also, by sharing resources on-site, it was determined that the entire site clean-up could be

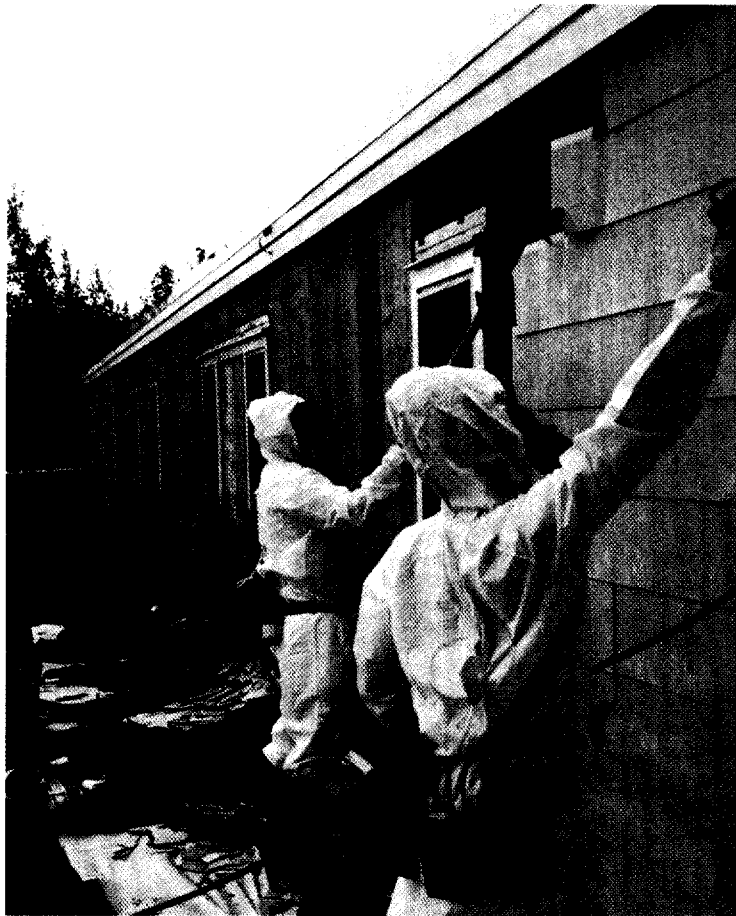


Photo property of 611 CES

Senior Airman Eric Allgaier and Staff Sgt. Danna Kelly remove asbestos from a site at Bear Creek.

priority contaminated site. This clean up was done according to the Air Force’s ‘worst first’ relative risk priority system,” said Johnson.

According to Johnson, that might make sense elsewhere, but in remote Alaska, where there are so many

sped up and made more efficient. In an effort to become more efficient, it was apparent that the environmental remediation efforts be combined with demolition.

Operation Clean Sweep was established in the winter of 1996. The PACAF initiative enables the cost-effective elimination of human health, safety and/or environmental hazards. There are 31 geographically separate installation locations in the Clean Sweep program. At these installations, there are a total of 204 facilities, amounting to more than 1.13 million square feet requiring demolition. Many of these facilities have been abandoned since before 1979.

Clean Sweep includes studies to

ascertain the appropriate course of action to take. These studies include preliminary assessments/site investigations, remedial investigations/feasibility studies, contract preparation and design, remedial action (contamination clean up), building demolition and debris removal, asbestos and lead surveys, natural and

concept of a single step "complete" site removal. This project was accomplished to the great satisfaction of the city of Kodiak.

Beyond the positive environmental impact, Clean Sweep also represents a unique opportunity to provide a significant positive impact on the communities surrounding the sites. The



Photo property of 611 CES

Senior Airman Eric Allgaier works on a 120-foot tall parabolic antenna at the Bear Creek White Alice site. The site was completely demolished during the summer of 1996.

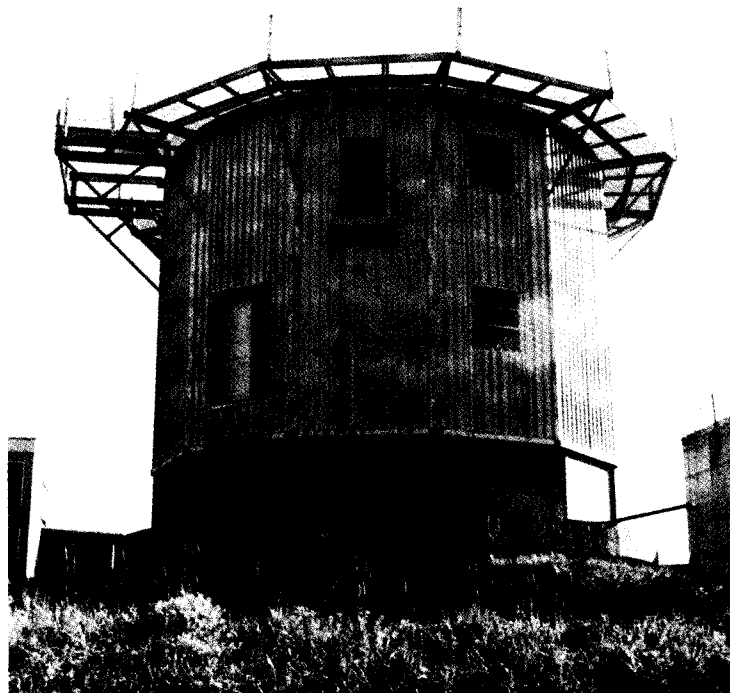


Photo by Lt. Col. Dave Peters

Kotzebue Air Control and Warning site radar facility. The radar and dome were removed.

cultural resources evaluations and community relations plans. Recycling or reuse of excess materials is always pursued to the greatest degree practical.

During the summer of 1996, the 611 CES demolished the White Alice communication site at Bear Creek Radio Relay Station nine miles from the village of Tanana. The White Alice site at Kotzebue was demolished in September 1996. Remediation of the Bear Creek site's environmental contamination was completed during the summer of 1997. Also in 1997, the 611 CES completed the comprehensive demolition and remediation of the Pillar Mountain White Alice communication site outside of the city of Kodiak. Pillar Mountain was the first fully successful demonstration of the Clean Sweep

Clean Sweep program will be executed with the highest degree of environmental and social stewardship for the land and the people who live off of the land.

In keeping with the Consensus Principles and Recommendations for Improving Federal Facilities Clean Up, as given in the *Final Report of The Federal Facilities Environmental Restoration Dialog Committee*, the 611 ASG is working with its nine Restoration Advisory Boards and through direct communication with individual and group stakeholders. Johnson's policy of Alaskans cleaning up Alaska for Alaskans is implemented with an execution strategy that emphasizes local resource utilization and the use of local labor through the employment of local contractors. Local contracting is the preferred method to

assure that local hire and thus local benefit is maximized. It also minimizes mobilization costs, builds meaningful partnerships with local stakeholders and significantly reduces distrust. Local labor is important to the success of the program. It achieves in-depth community understanding of the clean-up efforts and will enable the smoothest possible transfer of property. The 611 CES expects to perform the Clean Sweep of the Air Control and Warning site near Kotzebue and the White Alice site on top of Anvil Mountain near Nome and the Long Range Radar Site at Tin City this summer.

Air Force resources will only be used when execution by contract is not practical for either cost or schedule reasons. Because of funding and time restrictions, the Clean Sweep of the old White Alice communications site on the top of Pillar Mountain (in Kodiak)

understanding and awareness of human health, safety and environmental concerns. It also aids in the expeditious transfer of excess property out of the Air Force inventory and thus reduces the long-term real property liability of the Department of Defense. It is the right thing to do – done right.

The success of Operation Clean Sweep is due to the combined efforts of the men and women of the 611 CES, the unwavering support of Col. Frank Destadio, Headquarters Pacific Air Forces Civil Engineer, the guidance of the Air Force Civil Engineer and staff, the aid of the assistant Secretary of the Air Force for Manpower, Reserve Affairs, Installations and the Environment and deputy assistants and many others.

The 611 CES was recently named PACAF's Most Outstanding Civil

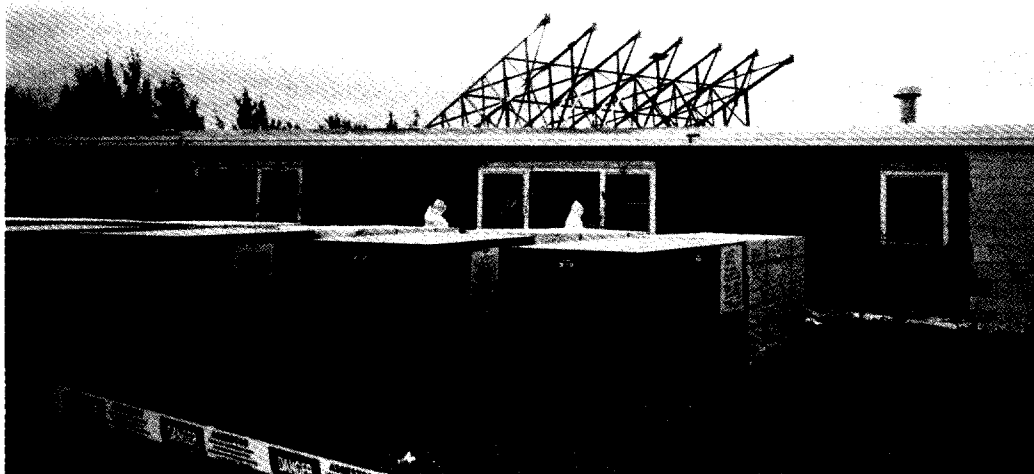


Photo property of 611 CES

Boxes are used to store asbestos waste removed from the Bear Creek facility.

was accomplished with 611 CES personnel. The Clean Sweep on that site was completed during a 71-day period last summer.

In total, Operation Clean Sweep performs facility demolition and environmental remediation under one comprehensive effort combining all remedial action and building demolition/debris removal work at a single remote geographical location into a single mobilization effort. It minimizes government costs. It assures local

Engineer Unit – Small Unit Category for 1997. The squadron also earned five Commander in Chief Special Recognition Certificates for Installation Excellence; one of which was for Operation Clean Sweep.

“This is not bad for a 120 person squadron. Needless to say, I’m a very proud commander,” said Peters.

The Talking Lady of the North

“White Alice” is an odd name for an Air Force communications system. While opinions differ, the most agreed upon version of how White Alice got her name is this; “Alice” is an acronym for Alaska Integrated Communications Enterprise. “White” is descriptive of the stark, snow-bound Alaskan climate. The only difficulty was “Alice White” was also the name of an old silent screen movie actress. The words were transposed and the name White Alice has been synonymous with long line communications in Alaska ever since. The White Alice Communications System was designed and constructed by Western Electric (1955-1958). It was the first large-scale project to transmit signals by tropospheric scatter. This highly reliable system could carry up to 600 conversations simultaneously over great distances and in all kinds of weather.

They once served as early warning defense systems during the Cold War with the former Soviet Union and contained the most modern radar defense technology of the time. They were designed and built to endure one of the world’s most unforgiving climates, but with the advance of satellite and communication technology, these sites are now obsolete and were deactivated in the late 1970’s. The “Talking Lady of the North” speaks no more.



Members of an Aviation Engineer Battalion construct a heavy bomber airfield near Eye, England, 1943.

Black Aviation Engineer Units of World War II

Dr. Ronald B. Hartzler
AFCESA Historian

February is Black History Month and it offers us the opportunity to recall the important role black Americans played in providing the worldwide system of bases during World War II as members of segregated Aviation Engineer battalions. These 800-man units constructed airfields overseas between 1940 and 1945. They were specially trained units whose mission was to construct, conceal, maintain, and defend airfields in every theater. Of the 157 separate Aviation Engineer Battalions that saw duty during the war, 48 were segregated units designated as "Colored." Overcoming many challenges inherent in a segregated situation, these men served proudly throughout the war and made a significant contribution to the overall base construction effort.

TRAINING

The training for these units was as uneven as their all-white counterparts. However, the units faced the additional difficulties of segregation, substandard living and recreational facilities, and suspicion or outright hostility from the white units and the local civilian population living near the training bases. Instead of training in their wartime duties, black units were frequently assigned the more tedious and labor intensive tasks during training without being allowed the opportunity to demonstrate their capabilities. The 857th, assigned to Eglin Field, Florida, for training was primarily used as labor troops at the installation and only participated in one field training problem, the completion of a heavy bar and rod runway.

The 811th had only trained for slightly more than one month when it departed for the Pacific. Its limited

training time was further hampered by an unusually heavy snowfall that hit Langley Field, Virginia. However, their presence in theater was so critical that any shortcomings in training were overlooked. On the other hand, the 810th had trained for six months by operating heavy equipment, building roads and bridges, and doing general construction work at their home station of MacDill Field, Florida. One company moved to Greenville, South Carolina, where it constructed camouflaged revetments for observation planes, and to Wilmington, North Carolina, repeating the job for fighter planes and building asphalt connecting taxiways.

PACIFIC THEATER

The majority of black engineer units served in the Pacific or China-Burma-India theater. The 810th and 811th were the first black engineer units shipped out. The 810th, originally told

they were headed for a cold climate, had a most uncomfortable five-week trip to Australia because they had packed their "suntans" and donned winter uniforms. After a brief stay in Australia, the unit moved to the French island of New Caledonia and was given responsibility for constructing Plaines des Gaiacs, which became the most important base on the island, and eventually one of the most highly developed in the entire theater. After arriving in New Caledonia, the 810th unloaded ships, often during enemy bombings, while they waited three weeks for their equipment to arrive. Once it came, they had to move it more than 100 miles over a mountainous trail to the construction site, a task that necessitated felling trees, reinforcing bridges, and fording streams. They arrived just in time to place the runway at Plaines des Gaiacs in service for fighter aircraft involved in the Battle of the Coral Sea. The unit worked in shifts, 24 hours a day, 7 days a week, building an all-weather runway and expanding the facilities to accept B-17s. The major

construction went on for months on this critical airfield.

Meanwhile at a nearby location, the 811th not only worked on airfield development, but also used their heavy equipment to transport crated planes 35 miles from the harbor to an assembly point. A friendly rivalry developed as the unit began working with a white Seabee engineer unit on various projects. The 811th set the island record for B-24 hangar construction. Later, the unit commander told his men they could have a day off for every day under the existing Seabee record for constructing a radio range. Despite heavy rains, the unit beat the Seabees' time by 13 days. The 811th finished their Pacific tour at Iwo Jima. While building airstrips and quarters for bomber groups, its platoons encountered numerous Japanese holed up in caves. The 811th promptly captured the Japanese and turned them over to the infantry.

CHINA-BURMA-INDIA THEATER

Black Aviation Engineer units were the first five to arrive in the China-

Burma-India Theater. However, they did almost no airfield work. The units fell under the command of the Corps of Engineers to participate in building the Ledo Road that stretched from India to Burma to carry supplies on to China. From 1942 to 1945 they hauled rocks, dug ditches, laid culverts, rolled roadbeds, erected bridges, dozed out bamboo jungles and fought erosion on mountain slopes where the road should be. The challenges presented by monsoon rains and alternating heat and cold, as they worked in jungles and on mountains, only served to relieve the otherwise monotonous road-building work. The work of the 823rd Aviation Engineer Battalion was hampered by the fact that its six bulldozers, the only available machines with sufficient power and traction to clear the jungle, had arrived without blades. The engineers borrowed a blade from a nearby British unit until theirs were delivered five months later. Finally, the road was complete in January 1945. But this just meant that the units could now make the thousand-mile trip over the road to



When members of black Aviation Engineer Battalions reached China to begin building airfields, they were welcomed as heroes. Before they arrived, hundreds of civilians used whatever means available to construct airfields in many areas of China.



Members of the 1889th Aviation Engineer Battalion operate an asphalt plant producing blacktop surface material for a taxi strip at an airfield on Guam, 1944. Crushed rock brought from the quarry flows out of the hopper on the conveyor belt to the mixing section of the plant.

China to begin constructing airfields. Making repairs in the road as they progressed, the black engineers occasionally had to scramble to rescue men and machines that had slipped off the road on sharp curves. Upon their arrival in China, the engineers were welcomed by cheering crowds and trigger-happy Chinese soldiers looking for a ride. After only a few months of work, the war was over and their long trip home began.

MEDITERRANEAN AND EUROPEAN THEATERS

Only a handful of the black Aviation Engineer units were sent to Europe. Of the 48 battalions organized during World War II, only 7 were in Europe when the war ended there in May 1945. In addition to problems such as equipment shortages, long hours, and difficult work, Aviation Engineer leaders were concerned with the long-term presence of blacks in England. Special efforts were made to ensure problems did not arise between black

and white troops and with the English people. General Dwight D. Eisenhower helped establish a firm policy for the troops under his command in England by stressing, "Troops must train together, work together and live together in order to attain successful teamwork in campaign. The sharing of work opportunities and recreational facilities must be willingly accepted and utilized to unite more closely the troops of our several commands." Most black engineers found the English much more accepting than the Americans at their training base.

The black Aviation Engineer units usually faced the same difficulties as all engineering battalions. For example, the 812th shipped out of Charleston in May 1942 to build bases in south-central Africa and help maintain the southern aircraft ferry route. After constructing airfields in Kenya, they found themselves on ships bound for Egypt, followed by a 900-mile truck ride across the desert to Benghazi, Libya. At this location, the unit established water

points, constructed Nissen huts, devised camouflage and deception devices such as decoy fires, dummy runways and dummy aircraft. They continued to improve and stabilize the base for Ninth Air Force B-24s that bombed the Ploesti oil fields in Rumania. In addition, they built a pipeline from the sea to keep the airfield sprinkled. The unit then moved to the islands of Sicily and Corsica where they built bases at more than a dozen sites until the end of the war.

EVALUATION

In spite of the difficulties encountered, the whole World War II experience for members of the black Aviation Engineer units proved to be quite valuable. They acquired during the war years a wide variety of technical experience. Men who otherwise may have had little opportunity to work as heavy equipment operators or electricians, built airfields out of jungles, constructed roads over mountains, and completed aircraft hangars on Pacific islands. New opportunities were opened to them as a result of their World War II experience. At the end of the war, Aviation Engineers had built or improved more than 1000 airfields around the world. Black engineers were a major part of this success.

Sadly, and apparently ignoring the notable record of the black Aviation Engineer units, a Board of Officers meeting in 1946 to evaluate the Aviation Engineer experience discussed the future of black engineer units. Their recommendation reflected the times, "It follows that, because technical skills are relatively seldom attained by individuals of the colored race, Aviation Engineer units requiring a high proportion of technical skills would not normally be colored. On the other hand, colored personnel may be used, without comparable sacrifice of efficiency, in units wherein labor requirements are predominant." Despite these observations, the Army and Air Force began to integrate after President Harry S. Truman issued Executive Order 9981 in 1948 and the comments were soon proved erroneous.

Oversight group helps engineers deployed to Southwest Asia

by Capt. Richard Houghton
Langley AFB, Va.

Air Force engineers stationed in Southwest Asia wrote another chapter of proud CE history following the June 1996 bombing incident at Khobar Towers, Dhahran, Saudi Arabia. In the weeks that followed, the Secretary of Defense ordered the performance of Operation DESERT FOCUS, in which U.S. Military troops moved out of urban areas and into more remote, secure living and operating environments. Deployed engineers provided the facility support needed to rapidly relocate these forces into bare base environments. Today, Air Force civil engineers continue to maintain bases at several sites in Southwest Asia.

To support air operations for Operation SOUTHERN WATCH, the 9th Air Force Civil Engineer staff at Shaw AFB, S.C., planned, prioritized and executed a staggering collection of projects (acting as U.S. Central Command's Air Force component, 9 AF also serves as U.S. Central Air Forces or CENTAF). The small CENTAF staff continually works to improve the facilities for deployed airmen. It's a big challenge, but they don't face it alone.

Throughout the last year, CENTAF engineers have had help in a unique multi-level partnership called the Southwest Asia Oversight Group.

The Southwest Asia Oversight Group was formed in October 1996 to address the challenges of DESERT FOCUS. The intent (as stated in the charter) of the group is to present a unified approach to force

protection and other engineering decisions in the desert. The original core members consisted of personnel from Air Staff, Air Combat Command (ACC), Central Command and CENTAF. Many others have participated including Air Mobility Command, the Air Force Center for Environmental Excellence, three active duty RED HORSE units, the 49th Materiel Maintenance Group and various other ACC staff directorates such as operations, logistics, financial management, communications, security forces and plans and programs. A year later, the group still meets monthly to share information and brainstorm ways to help deployed engineers.

ACC's civil engineer staff facilitates the monthly meetings. ACC created a cross-functional integrated product team, called the Southwest Asia Delivery Team, to provide in-depth staff support to both CENTAF and deployed engineers. The ACC civil engineers

devote three officers to full time coordination of the desert engineer issues identified by the oversight group. The team validates requirements and fights for funds to deliver the resources Air Force civil engineers need to sustain operations in Southwest Asia. The team tracks progress and maintains a history of the lessons learned in the desert through Weekly Activity Reports.

At the monthly meetings, members report progress in solving the tough problems and identify new issues that need resolution. Each new issue is assigned an action item

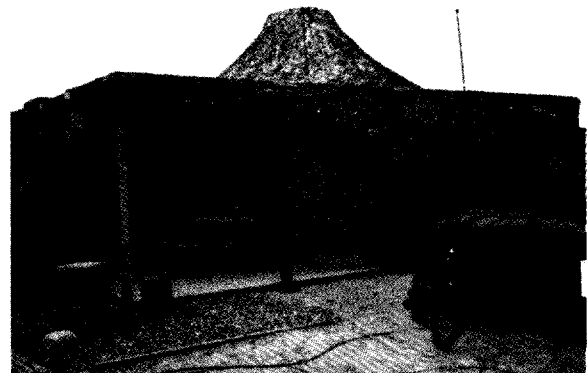


Photo by Maj. Craig Campbell

Base civil engineer headquarters at Al Jabber.

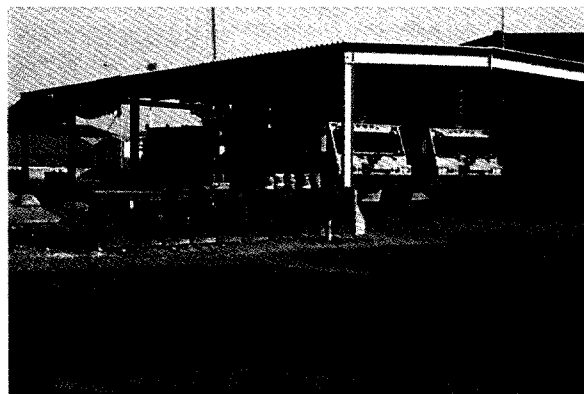


Photo by Capt. Matt Crafton

Fire trucks at Al Dhafra are protected from the climate with sunshades.

number and is vigorously attacked until it is solved. In one year, the group identified 124 action items. More than 100 of these action items are closed, but the group continues to generate an average of 10 new action items each month, demonstrating the continuing challenges of moving toward sustainment of base structure in the desert. While the facilities may be temporary, the contributions of the Southwest Asia Oversight Group and the deployed engineers it supports, will leave a permanent mark in Air Force history.

Reducing risk and maximizing performance

by Sue Alexander
Editor

Most people don't think of their day-to-day routine as risky, but every situation carries some potential for danger. With all things, there is a certain amount of risk involved, whether it's part of our personal or professional life. The challenge is learning how to assess and manage the risk and still obtain the optimum benefit.

Fortunately, there is a technique that most people are well-acquainted with. It was learned early in life; from assessing the dangers of crossing a busy intersection to selecting a career path. The question to ask is, on or off the job, "Does the benefit outweigh the risks?"

Operational Risk Management (ORM) is designed to answer that question. ORM enables commanders, functional managers, and supervisors to improve operational capabilities and minimize the effects of risk by applying a logic-based process appropriate for all Air Force functions. To enhance mission effectiveness while safeguarding people and property, the Air Force ORM program is governed by four specific rules:

- ◆ Take no unnecessary risks.
- ◆ Make risk decisions at the appropriate level to establish clear accountability.
- ◆ Accept risk when benefits outweigh the cost.
- ◆ Integrate ORM into Air Force doctrine and planning at all levels. This is expected to be initially implemented by October 1998.

Air Force civil engineers are accustomed to taking risks in their day-to-day operations. Working with potentially hazardous materials in potentially hazardous environments is

nothing new. To jump-start the ORM assessment process in civil engineering, Headquarters Air Force Civil Engineer Support Agency (HQ AFCESA) personnel developed an ORM workbook/checklist. AFCESA also provides an example of how to perform ORM using the format. Both are available to each major command and listed on the AFCESA homepage: www.afcesa.af.mil (located within management practices).

There are six specific actions Air Force civil engineers can take to reduce and manage risk:

- ◆ Identify the hazards or potential sources of danger. Data and facts should be used to consider the root causes of identified hazards. However, common sense and experience may be the only source from which to draw. This valuable first step eliminates surprises.

- ◆ Assess the risk. Weigh the hazard's potential affect on the task or mission by putting it into the context of the mission. It helps to first thoroughly review the expected sequence of events and the hazards associated with each step. The completion of this step provides a prioritized list of risks.

- ◆ Analyze risk control measures. Identify how to remove or reduce the risk to an acceptable level.

- ◆ Make control decisions. Select the best methods to reduce the risks to an acceptable level. This decision will be consistent with mission objectives and optimum use of resources. This decision is made at the level corresponding to the degree of risk, i.e., a minor risk requires a decision made at a lower level of authority. The greater the risk, the higher the level of authority required to make the decision. Decide before the operation begins how these risks

will be handled.

- ◆ Risk control implementation. Make implementation clear, consider using examples, and describe the desired result. Establish accountability for implementation and provide support to those accountable.

- ◆ Supervise and review. Careful oversight of the operation is necessary to ensure compliance with the various risk controls. After the operation, review the success of the risk controls for future reference.

In addition to the ORM workbook and example, AFCESA identified the top eight hazards in civil engineering using the first two steps of the ORM process and based on data provided by the Air Force Safety Center. The top eight hazards are: crash fire rescue, structural fire fighting, EOD range maintenance, EOD munitions safing, constructing/maintaining airfields and roads, operation and maintenance of electrical systems, operation and maintenance of liquid fuel systems and performance of emergency work. These are broad categories and contain numerous subprocesses readily applicable to ORM.

The plan to help the civil engineering community to implement ORM is for each major command to choose one of the top eight hazards, identify a process within the hazard and perform an ORM assessment using a standard format.

"It's a starting point for bases to implement ORM," said Lt. Col. R. Craig Mellerski, chief, Quality Improvement, AFCESA. "A lot of ORM implementation information is coming from the major command safety offices, but not a lot of how to information. We hope these tools will ensure that civil engineers worldwide are using ORM consistently, and that each base doesn't have to reinvent the

wheel.”

To many civil engineers, the ORM process may seem like business as usual. But ORM goes beyond the intuitive approach to risk management. It is a fact-based, systemic approach to making calculated decisions on human, material and environmental factors before, during and after Air Force operations. It enables commanders, functional managers and supervisors to maximize operation capabilities while minimizing risk.

ORM isn't expected to be the flavor of the month program. Over the next several years the principles and process will be integrated into training and daily activities. ORM will become invisible as it blends into daily Air Force activities.

“Risk management is not new to civil engineers. ORM however, is not only aimed at reducing risk but optimizing it. By focusing on excellence vs. standards and addressing all dimensions of organizational risk, we

can improve efficiencies, reduce the cost of doing business, save lives, property and resources. I'm convinced that our NCO's and company grade officers will use ORM as a tool to correct deficiencies and improve operations,” said Mellerski.

Questions regarding the civil engineer ORM program should be directed to Lt. Col. R. Craig Mellerski at DSN 523-6443, commercial, (850) 283-6443, or mellersc@afcesa.af.mil.

Quality of Life Remains Strong

by Maj. Scott Jarvis
Pentagon, Washington D.C.

Good news! The Air Force received the lion's share of a \$360 million congressional plus-up for DOD Quality of Life Enhancements (QOLE). The Air Force got \$145 million; the Army got \$100 million; the Navy got \$70 million; and the Marine Corps got \$45 million.

The Air Force's success in gaining the largest portion of the funds is due in part to early execution of similar funds in the previous two years. These special QOLE funds are a separate two-year appropriation designated for real property maintenance in the areas of barracks, dormitories and related facilities.

The Air Force intends to award the majority of its \$145 million by April 1998. This year's congressional increase is the third consecutive plus-up year for Quality of Life. In FY 96, the Air Force received \$100 million, all applied towards unaccompanied enlisted housing (dormitory) requirements. In FY 97, the Air Force received \$108 million - also applied towards dormitories. This year, the Air Force intends to apply approximately \$100 million towards dormitories and \$32M towards other Quality of Life facilities such as fitness centers, lodging, dining

facilities, child development and youth centers. The remaining \$13 million balance will be initially retained at the Air Staff to cover potential contract contingencies and fund a few additional FY 98 Quality of Life requirements. With this additional help from Congress, the Air Force continues its significant investment in the quality of life of our people and their families.

In early December, the Air Force provided Congress with a full report on those initial projects to be funded with the QOLE funds. Concurrently, the Air Force Civil Engineer Operations Division staff began working with Secretary of the Air Force Financial Management personnel and Office of the Secretary of Defense (Comptroller) to obtain and distribute the QOLE funds to each major command. Funds were successfully distributed to each

command in late December. Those commands who execute early may compete for additional FY 98 QOLE funds. Please refer any program management questions to the author, DSN 225-1428 or commercial (703) 695-1428. Look for updates on this important QOL program in future issues of *The Civil Engineer* magazine.



All photos courtesy of 52nd Civil Engineer Squadron



(Above) One-plus-one dormitory MILCON construction at Spangdahlem AB, Germany.

(Left) This building is the first dormitory in United States Air Forces in Europe Command to be built from the ground up featuring the one-plus-one standard of living.

Aviano CE teams deploy to help Italian quake victims

by Staff Sgt. Dan Neely
31st Fighter Wing Public Affairs

U.S. Air Force civil engineers from Aviano Air Base and Camp Darby, Italy, deployed to Assisi, Italy to assist with local disaster relief efforts following the Sept. 26 earthquake which struck the region.

More than 30 members of the 31st Civil Engineer Squadron and 31st RED HORSE flight arrived with heavy equipment Oct. 17 and established a five-tent area which served as base camp for ongoing operations.

The team worked four sites within a five-mile radius of base camp. Using everything from bulldozers to earth movers, the civil engineers cleared and graded land areas, and trucked in gravel to pave the way for Italian crews to set up temporary, prefabricated shelters for the nearly 4,000 displaced residents.

"We were glad to be able to help our host neighbors recover from this devastating earthquake," said Capt. George Petty, chief of the 31st CES disaster preparedness flight.

"We came to use our expertise to help the people of this area recover from this disaster in any way possible," Petty said. "The Italian authorities have done a great job helping us get oriented to the task at hand."

Assisi was struck by what Italian geological officials consider the most destructive earthquake to hit the region in more than 80 years. The disaster claimed 12 lives and injured hundreds of residents. Many of the ancient churches of the town were severely damaged, including the world famous Basilica of St. Francis of Assisi. The basilica's treasured 14th century frescoes were damaged during the earthquake and four people were killed inside when sections of the ceiling

crashed down on them.

City officials from Assisi and three smaller, neighboring villages – Capodacqua, Santa Maria Angeli and Palazzo – asked the civil engineers to help them in a two-phase recovery effort. For the engineers, the deployment affords a unique opportunity on two fronts.



Photo by Staff Sgt. Joe Springfield

Staff Sgt. R.J. Costanzo pounds a stake to set up the five-tent base camp.

"In addition to being able to assist the people of Assisi, we at CE have an annual training requirement to meet, so this is a good opportunity for us," said Petty.

"Our advance team met with the mayor of Assisi," Petty said. "We told him what we had to offer, and he welcomed us with open arms and offered us several sites to work on."

"It's a perfect opportunity for our guys to actually come out here and get some stick time," said Senior Master Sgt. Samuel Ortiz, 31st CES infrastructure superintendent. "Back at the

base they don't get to do this kind of work."

The humanitarian project's first phase calls for clearing and leveling large land areas and trucking-in numerous tons of gravel, essentially laying the foundation for Italian contractors to set up nearly 200 prefabricated, temporary homes. While the Air Force is providing the manpower and equipment the hosts will supply the structures and utility hardware.

Petty said the CE labors saved the Italians about 30 percent of the total project cost. In phase two, a second Aviano CE team deployed there to connect utilities to the units. Each of the single-family units have two bedrooms, one bathroom, a kitchen and den.

Local residents reacted enthusiastically to the American military presence. Dozens personally delivered offerings of food and beverages to the visiting engineers. Still others offered their own nearby property as dirt dumping sites, gestures that will save time and transportation expenses.

During the work effort, small crowds of curious onlookers have lined the perimeter of the site. For most, the occasion was their first opportunity to see American troops perform a mission in this region, nearly seven hours drive time southwest of Aviano.

"This was a great experience for everybody," said Staff Sgt. Ricky Lucas, a 31st CES heating, ventilation and air conditioning systems technician.

"We got a lot of training out of it," Lucas said, "but the important thing is that people in the area who needed help got help – what we're here to do." (Courtesy of USAFE News Service)

Outsourcing

continued from page 7

compared functions are retained in-house through the MEO.

With all of this as background, what does it all mean? It means that the civil engineer community, as well as all other functional areas in the Air Force, will go through the analysis and

“As a responsible steward of taxpayer dollars, and with today’s fiscal constraints, we cannot afford to continue to perform business as usual in the Air Force.”

evaluation of all its commercial activities to determine the optimal course of action with readiness constraints and economies as driving factors. Currently all civil engineer staffs are involved at bases, major commands and the Air Staff to ensure

we do things right the first time. The cost of not doing this right is prohibitive if we are to maintain the best civil engineer capability in the world. Jump Start, the largest Air Force outsourcing initiative ever, began by looking at the entire Air Force inventory and reducing it to the most viable commercial activities. From there, the major commands and the Air Staff worked to tailor these candidates to the most doable ones, which sits at 41,000 level today. The results of Jump Start were presented and approved through the Air Force structure. Today, the major commands are validating all the numbers and generating implementation plans for a successful execution. Jump Start will be executed over the next four years. Current plans call for 32 percent of the Jump Start candidates to be cost compared by FY 2000, 75 percent by FY 2001, and 100 percent by FY 2002.

As a responsible steward of taxpayer dollars, and with today’s fiscal constraints, we cannot afford to continue to perform business as usual in the Air Force. When military

missions are not impacted we must depend on cost comparisons to provide the best products and services. It is critical to ensure that military manpower is used only to perform our military essential missions within the Air Force. The sustainment of our ability to support the war effort is paramount. Thus readiness will be the driving factor as to where the thresholds (or the lines we will not cross) will be established. Through a deliberate and measured approach we will take advantage of new opportunities through cost competition while minimizing the adverse impacts of unintended consequences. As we move down this road we must keep a clear view of our end state objectives so all our efforts are focused, our people informed and postured for success, and the mission gets accomplished.

Editor’s Note: Some information presented in this article was extracted from the Civil Engineer Outsourcing Strategy and AFI 38-203, Commercial Activities Program (draft).

Utilities

continued from page 9

required to move the project ahead. But, by allocating sufficient resources at the start, and through close communications the process will become more efficient.

We have initiated studies of four pilot projects to further refine our policy and guidance. At Scott AFB, Ill., we’re assessing the potential for privatization in the base wastewater treatment plant. At Hill AFB, Utah, we’re assessing the potential of privatizing the industrial wastewater treatment plant. At Langley AFB, Va., we’re assessing the potential of privatizing the electrical and natural gas distribution systems in Bethel Manor, a geographically separated housing area. Finally, we’re assessing the potential for privatizing the

electrical distribution system for Edwards AFB, Calif. All four studies are well under way and results will be the topic of future CE articles.

To see if utilities privatization is a viable option for your installation, assess the utility’s potential using the Air Force’s “Quick Look” model. Spend some time researching the process for accomplishing the project by reviewing the new Air Force Utilities Privatization Manual.

To obtain specific information on the privatization of the electrical distribution system at Youngstown ARS, contact Scott Hastings at HQ AFRC/CEO, DSN 497-1037, or by email, scott.hastings@afres.af.mil. For additional information on the Air Force utilities privatization program

“Spend some time researching the process for accomplishing the project...”

contact your major command outsourcing and privatization representative or Maj. Jeff Vinger at HQ USAF/ILEIO, DSN 227-6266, or by email, jeffery.vinger@af.pentagon.mil. For technical and contract support visit the AFCESA web page at <http://www.afcesa.af.mil>, or contact Rick Baker at HQ AFCESA/CEOC, DSN 523-6238, or email, bakerr@afcesa.af.mil.

CE Worldwide conference highlights



by Maj. Gordon M. Sprewell
HQ AFCEA, Tyndall AFB, Fla.

Agile combat support from an installations and logistics view, and outsourcing and privatization initiatives already under way provided the backdrop for week-long discussions among civil engineer leaders from around the Air Force during the 1997 Civil Engineer Worldwide Conference. The Civil Engineer of the Air Force, Maj. Gen. Eugene A. Lupia, and the Air Force Civil Engineer Support Agency at Tyndall Air Force Base, Fla., hosted the annual conference.

Environmental issues, funding concerns and civil engineer support of the Air Expeditionary Force were other hot topics laid out on the table during the Dec. 1-5 conference that brought together major command civil engineers, field operating agency commanders, Air Staff civil engineer division chiefs and other senior civil engineers. The talks were aimed at setting the strategic direction of Air Force civil engineering while continuing to focus on improving combat commanders' responsiveness, deployability and sustainability.

A portion of the conference focused heavily on outsourcing and privatization, two methods of doing business that lie at the heart of "planning for tomorrow while facing today's challenges," the theme for the conference.

Col. Robert E. Corsi, deputy director of manpower, organization and quality for the deputy chief of staff for Air Force plans and programs, briefed the Air Force perspective on outsourcing and privatization. He described the pressures placed on the Department of Defense from the Defense Science Board, General Accounting Office, Quadrennial Defense Review, and the Office of Management and Budget to reduce infrastructure. The Air Force is vigorously pursuing outsourcing and privatization programs to save resources for investment in vital modernization and quality of life programs. These initiatives are also expected to improve performance, quality and efficiency of Air Force functions. The colonel said the entire Air Force privatization program, currently in the execution phase, resides within the civil engineer community, pointing out initiatives aimed at privatizing utilities and military family housing as examples. Of particular interest to the attendees were the major commands' newest initiatives seeking further outsourcing opportunities through the Jump Start program. Jump Start evaluates potential candidates for competition.

Col. Joe Munter, chief of the civil engineer outsourcing and privatization division, and staff presented the civil engineers' perspective on outsourcing

and privatization. Also participating in the discussion were Rodney A. Coleman, assistant secretary of the Air Force for manpower, Reserve affairs, installations and environment, and deputy assistant secretary of the Air Force for installations Jimmy Dishner, who provided the perspective and insight from the Office of the Secretariat.

Lt. Gen. William P. Hallin, the deputy chief of staff for Air Force installations and logistics, was a guest speaker. His briefing included strong support to the warfighter, the Air Force Long Range Plan, basing strategy, outsourcing and privatization, and key budget issues. The general also challenged all civil engineers to continue providing timely warfighter support and maintaining quality of life while right-sizing infrastructure.

Another guest speaker, Brig. Gen. Charles Wald, the special assistant to the Air Force chief of staff for national defense review, provided an on-target reminder of the Air Force's primary mission and capabilities, and the way ahead as the Air Force moves into the 21st century. His briefing took the engineers away from their tool boxes, outsourcing initiatives, designs and construction projects for a few minutes. Wald showed the advances in mission capability the Air Force has made since the Gulf War and some of the new technology to look forward to

in the coming years, including the F-22 Raptor aircraft.

It was clear senior civil engineer leaders are in tune with the challenges ahead and are committed to the right decisions for continued excellence in support of the Air Force and care of the civil engineer warriors and civilian teammates.

Other topics discussed:

- * Operations and readiness with a focus on civil engineer support of the Air Expeditionary Force;

- * Programming and funding issues;

- * Civil engineer squadrons' operations flight organizational structure of the future (for more information, see "From the Top," Page 2);

- * Aircraft hangar fire protection standards;

- * Air Force housing, including dormitories;

- * Environmental program challenges with emphasis on pollution prevention;

- * Environmental contract partnerships between major commands and the Air Force Center for Environmental Excellence.

- * Readiness Challenge;

- * Automated Civil Engineer System;

- * Explosive Ordnance Disposal wartime requirements;

- * Capital Investments Program, where execution of the fiscal 1997 military construction program reached an all-time high of 96 percent within the fiscal year of the appropriation.

Conferees addressed today's issues head-on, from discussion of dormitory and housing standards, to execution of outsourcing and privatization initiatives, to support for training and the future organization of the civil engineer squadrons' operations flights. But perhaps what was most obvious throughout the conference was the senior civil engineers' concern for the Air Force's most valuable resource – people.

(Maj. Sprewell is a contracts program manager assigned to Headquarters Air Force Civil Engineer Support Agency.)

EOD Coveralls Explained

The cover of Vol. 5, No. 3, Fall 1997, *The Civil Engineer* magazine, pictured two EOD personnel working with the EOD robot. Both men are wearing black coveralls. As the coveralls are not standard issue and knowledge of this item is not widespread, this presents a great opportunity to explain their wear.

Chief Master Sergeant Dave Brown, EOD Program Functional Manager, HQ AFCESA, Tyndall AFB, Fla., researched this subject.

According to Brown, the authorization to issue EOD personnel coveralls comes from DOD U.S. Secret Service (USSS) mission parameter and Air Force equipment safety requirements for the wearing of the EOD bomb suit.

"Nomex coveralls are authorized for wear as an item of safety gear when wearing the EOD bomb suit. In the CE magazine cover picture the EOD teams are working with the robot, which implies they simulating response to a bomb threat or suspicious item, such as an Improvised Explosive Device (IED) mission, during which they are supposed to wear the coveralls under the bomb suit," said Brown.

All service EOD assets have the mission to support the USSS and State Department. The USSS provides guidelines for DOD EOD support through the Munitions Countermeasures Manual, which mandates specific items of equipment, organizational items and civilian clothing. Commercial coveralls are on this list.

The authorization to wear the coveralls as a piece of functional clothing or safety gear during operations and training exercises is a base- or command-level decision, according to AFI 36-2903 (the old AFR 35-10).

"Space Command bases such as Vandenberg, Patrick and Malmstrom, have unique missions with space and missile launches. It's logical from a safety standpoint that wear of the nomex coveralls be extended into launch operations and training," said Brown.

Space and missile launch operations expose the EOD teams to greater than normal chemical and fire hazards. The coverall style is highly functional as well; objects are prevented from falling out of pockets and loose uniform edges do not get snagged on the various protrusions in the cramped quarters of launch platforms.

"Wearing nomex coveralls during operations and training is allowed at the base level as a piece of safety gear. It is similar to the fire fighters wearing bunkers during fire fighting operations and training or the security police wearing a pistol belt and kevlar vest during high-threat guard duty," said Brown.

"The coveralls are worn only during operational responses and training exercises. It is not an approved uniform for wear on a daily basis."

For more information on the wearing of nomex coveralls, contact Chief Master Sgt. Brown at (850) 283-6128, DSN 523-6128 or via email: BrownD@afcesa.af.mil.

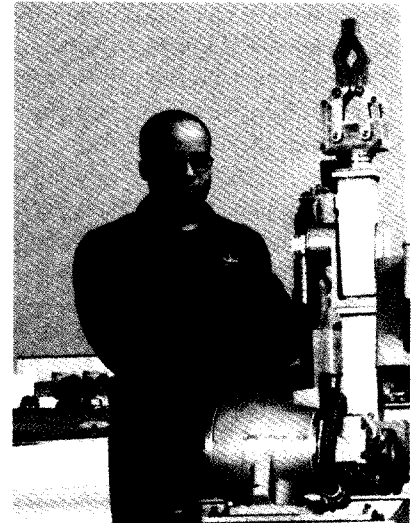


Photo by Virginia Smallwood

This photo, "EOD – Failure isn't an Option," was first published on the cover of *The Civil Engineer*, Vol. 5 No. 3, Fall 1997.

RED HORSE rebuilds the environment

by Capt. William Giezie and Staff Sgt. Shannon Scherer
Columbus, Ohio

Who would have thought that preparing for war would include the restoration of a wetland? But according to 1st Lt. Mike Hrynciw, 200th RED HORSE Squadron environmental engineer, "this is some of the best training available."

The flatland of Northwestern Ohio exists as a flood plain to Lake Erie and

entire nation, it also had many serious side effects.

The installation of the various drainage structures, combined with the removal of once dense vegetation produced erosion of topsoil, destroyed the natural habitat of many species and allowed for down stream flooding in many areas.

In 1991, the 200 RHS along with the Ohio Department of Natural Resources, the Oak Harbor Conservation Club and many local community leaders joined together to restore a 300-acre farm to its previous conditions as a wetland.

"This restoration has been very successful. In the 1920s, wood ducks were almost extinct," said Eric Hellman, Oak Harbor Conservation Club member. "Today they're the second most populous duck in this area after the mallard."

Hellman attributed the success of the project to the 200 RHS.

"Without the efforts and commitment of the 200th, this project would not be possible."

The 200 RHS is an Ohio Air National Guard unit that is able to rapidly deploy heavy construction and engineering equipment and personnel. This special unit is capable of deploying to remote locations across the globe to design, construct and repair Air Force installations.

Restoring the wetlands provides the members of the 200 RHS the opportunity to train on the unit's heavy equipment while performing a real world project that benefits the community and preserves the environment.

"Coming out of tech school this project provides us with great hands-

on training," said Staff Sgt. Victor Conley, 200 RHS.

This type of environmental project also allows unit members the chance to train on different pieces of equipment and make and learn from mistakes that are not detrimental to the project.

"It's not like building a parking lot with certain specifications," Conley said. "If you mess up it can be fixed."

Unit members will train in teams of 20 people working eight hour shifts on three rotating weekends every month during the summer.

According to Hrynciw this project prepares members for their wartime mission of levying and building earthen walls around lubricants, petroleum compounds and missiles.

"This project involves everyone from engineers to airfield personnel to food service," said Hrynciw. "It provides hands-on training to everyone possible."

In order to convert the plan from paper drawings to an actual functioning wetlands area, the 200th RHS had to excavate a 10-acre deep water lagoon, haul the excavated soil and grade and compact the material. In 1995, the 200 RHS moved more than 15,000 cubic yards of dirt for the project (one dump truck holds 10 cubic yards.) Thus far, this effort has resulted in the construction of more than 50 acres of earthen embankments, watersheds and storage lagoons.

"We hope to see the project completed by the year 2005," Hrynciw said. "And along the way we're learning our wartime mission and how to be good marsh managers."

As a result of the 200 RHS and many other organizations, various species such as the bald eagle have returned to Northwestern Ohio. The environment is being restored in many locations and the readiness skills of Ohio's RED HORSE Squadron are being prepared and enhanced for their "total force" worldwide mission.



Photo by Staff Sgt. Shannon Scherer

Members of the 200th RED HORSE Squadron prepare to move earth and concrete to prevent erosion of the wetlands project.

is known to many natives as the "Black Swamp." For thousands of years Lake Erie deposited organic material there, of great benefit to the settlers who farmed the area during the 1800s.

To develop the area into useful agricultural land required the implementation of modern drainage engineering technology. These early settlers pioneered this technology and developed techniques such as subsurface drainage systems, field tiling and ditching.

These methods are still used today to rapidly remove the flood and rain waters from the land into the adjacent natural drainage features. Although the agricultural use of the land resulted in the production of crops to feed an

Eielson engineers keep tent city running smoothly

by Tech. Sgt. Darla J. Ernst
Foal Eagle Public Affairs

Keeping a tent city running smoothly for hundreds of deployed people was the job of 28 members of the 54th Civil Engineer Squadron from Eielson Air Force Base, Alaska.

The unit deployed to Osan Air Base, South Korea, Oct. 17 with a variety of skilled technicians to maintain the 110 tents and utilities for exercise Foal Eagle '97. Foal Eagle is the largest air base defense exercise in the free world, and brings together nearly 33,000 U.S. service members and hundreds of thousands of Republic of Korea forces.

Plumbers, carpenters, electricians, heating and air conditioning specialists, and equipment operators are some of the skills the civil engineer squadron brought to the exercise.

"It's been good training for us," said Capt. Tim Anderson, team chief for the CE unit. "Bed down is part of our wartime task."

Their biggest challenge was trying to keep residents of the makeshift homes-away-from-home comfortable with the varying temperatures, according to Anderson.

Temperatures reached the high 50s during the day and dipped to the low 30s at night, making it great for some and freezing for others, depending on who you talk to and from what base they are deployed.

"I'm freezing," said Capt. Robin Janovsky, an intelligence officer who deployed Oct. 17 with the 67th Operations Support Squadron, Kelly AFB, Texas. "When I left San Antonio it was in the 70s to 80s every day. This is cold to me."

While people here from Andersen AFB, Guam, might agree, those coming from bases like Eielson and Elmendorf

AFB, Alaska, have really warmed up to the temperatures.

"It was sunbathing weather last week," said Master Sgt. Delores Richardson from Elmendorf, where there was already snow on the ground. Richardson worked billeting for tent city. (Courtesy of Pacific Air Forces News Service)



Photo by Tech. Sgt. Darla Ernst

Airman 1st Class Travis Smith, 354th Civil Engineer Squadron, sets up an environmental control unit for the tent city housing hundreds of deployed forces for Foal Eagle '97 in South Korea.

CE Senior Officers and Civilians List

The *Civil Engineer* magazine publishes a "who's who" list of senior civil engineer officers and civilians annually. Listed below are a few clarifications to the list published in Vol. 5, No. 3, Fall 1997.

Officers

Command	Rank	Name	Location	Position
OSD	Col.	Horsfall, John D.	Pentagon	Assistant Director, Installation Management Policy
ACC	Col.	Patrick, Michael R.	Langley AFB	Chief, Environmental Division
HQ ANG	Col.	Lundgren, Samuel G.	Andrews AFB	The Civil Engineer
HQ AFCESA	Col.	Turner, Randall L.	Tyndall AFB	Director, Contingency Support

Civilians

Command	Grade	Name	Location	Position
HQ AFCESA	GS-15	Firman, Dennis M.	Tyndall AFB	Executive Director
BCA	GS-15	Carr, John	Rosslyn, Va.	Program Manager
BCA	GS-15	Corradetti, John J. Jr.	Arlington, Va.	Program Manager
BCA	GS-15	Hatch, Charles R.	Arlington, Va.	Program Manager
BCA	GS-15	Jackson, Dale O.	Arlington, Va.	Program Manager
BCA	GS-15	Lowas, Albert F. Jr.	Arlington, Va.	Acting Director, Air Force Base Conversion Agency

NEW WORLD

Nellis EOD receives new, safer detonation system

by Airman 1st Class Monica J. Munro
Air Warfare Center Public Affairs

The Air Force's only Laser Neutralization System was unveiled at Nellis Air Force Base, Nev., Nov. 20. The system allows explosive ordnance disposal teams to destroy mines and unexploded ordnance from a safe distance, as opposed to their more "hands on" method used today, by using a concentrated laser beam.

"We are going to start destroying things from afar," said Chief Master Sgt. Ernie Lorelli, chief of EOD. "We're going to do that with directed laser energy. The laser is zeroed in on a bomb, and the concentrated light heats it to detonation in about four seconds." The new laser system will not only reduce costs by saving on explosives used to destroy unexploded ordnance, but will be safer for EOD people.

Lorelli said the old method of destroying unexploded ordnance involved a person putting a demolition charge beside the item to destroy it. It involved more risk since the person had about six minutes to protect themselves before detonation. "Instead of having one of my troops put on 50 pounds of body armor, 30 pounds of explosives (to destroy an unexploded ordnance), the laser would allow him to destroy the unexploded ordnance from about 250 yards away," Lorelli said.

Another old method of ordnance disposal was using a high-powered rifle to shoot the bomb. This method was also risky since a bullet could project off an object and be a deadly hazard for many meters, said Lorelli.

The idea for the laser originally came about during the Cold War and was revived again in December 1996, said Lorelli. The first laser system prototype was mounted on an armored personnel carrier.

"If everything goes as planned, all the EOD teams will eventually receive a humvee version," Lorelli said. "It won't be as big and clumsy, and it will be cheaper and almost twice as powerful."

Right now the cost of the LNS, or "Thor" as Lorelli likes to call it, is about \$1 million. Once the system is no longer a prototype, Lorelli explained, the cost should go down to about \$500,000.

Thor will greatly reduce hazards to operators and

people down range. With the laser's precision, the only potential hazard is its concentrated light beam. To offset that risk, EOD teams will wear protective goggles.

Lorelli said the prototype was tested at Nellis because it has the largest, most hazardous EOD mission in the Air Force. "We drop more than 90 percent of the cluster-bomb training units in the Air Force here," he said.

A cluster bomb holds anywhere from 200 to 700 bomblets. The Air Force drops about 2,000 cluster bombs a year, with an average of 20 explosives per cluster bomb not exploding. This adds up to thousands per year with EOD responsible for the clean up.

To grasp this precision technology, Nellis EOD personnel went through 10 days of training for the LNS. "We learned everything from laser theory to air conditioning theory, the system that cools down the laser and electronic equipment for the entire system," said Master Sgt. Timothy Tracy, superintendent of EOD Operations. But even the latest technology has its limitations.

"The laser only has a certain range," Tracy said. "For example, if you are out in the woods or in the jungle, you are probably not going to be able to use this system because the laser won't have a clear enough shot. If you can get a clear shot, you're probably too close."

Everyone on the EOD team will eventually be trained to use the LNS, according to Tracy. Thor, according to Lorelli, is not designed to cut down on manpower; it is designed to make the job less dangerous for the people in EOD. Lorelli said the laser system will eventually change who they recruit into the career field.

"The kids coming in today are a lot smarter than I was when I came in. Young troops now have different motor skills and are able to grasp computer knowledge a lot better than I can. We need troops who are comfortable with computers because that's essentially what the system is." *(Courtesy of Air Combat Command News Service)*

Force protection drives new construction at Osan

by Tech. Sgt. Armon T. Gaddy Jr.
51st Fighter Wing Public Affairs

While new dorm construction is a quality-of-life issue throughout the Air Force, at overseas locations, force

protection is the driver at Osan Air Base, South Korea, for current and future dormitory construction projects.

"Force protection is a top priority at Osan," said Col. Al Dremstedt, 51st Support Group commander. "If hostilities break out, we need all our personnel located within the confines of our base perimeter. Where quality of life comes into the equation is during the design and construction of dorms. Although force protection is the reason for the construction, we will also ensure that when construction does occur, that it will be to the Department of Defense's 1+1 construction standard."

The first dormitory at Osan to adopt the 1+1 concept is currently under construction and should be completed by March 1999, according to 1st Lt. Lori Kabel, a base development project programmer assigned to the 51st Civil Engineer Squadron.

"This 156-person dorm features two private sleeping quarters joined together by a common area, common bathroom and a common kitchenette. All future enlisted dorms constructed here will follow this configuration," said Kabel.

In September, construction began on an 80-room unaccompanied officer dorm. Both the enlisted and the officer dormitory projects come on the heels of the completion of a new 144-person enlisted dormitory that also became Osan's first tobacco-free dormitory.

Kabel added there are plans for three more dormitory construction projects over the next couple of years. However, she said, "It's important to note that 'planned' doesn't mean 'completed.' We have funding and other issues to get ironed out before anything can happen."

And, while new dormitory construction is driven by force protection concerns, repairs and renovations of existing dormitories are geared toward improving quality of life for the troops who live in them.

"We recently received \$4 million to do just that," said Kabel. She said this recent funding will take care of humidity problems and enable carpet replacement in five dormitories. It will also enable upgrading of electrical systems and installation of ceiling fans with lights in 11 dormitories.

Recently completed dorm improvement projects at Osan include restroom renovations, ceiling tile replacements, interior repainting, lighting fixtures and renovated kitchens, bathrooms and day rooms. Planned improvements don't stop there. According to Kabel, \$1.2 million has been allocated for renovating 130 rooms and bathrooms and \$750,000 has been allocated for heating, ventilation and air conditioning renovations.

"Taking care of our troops, from both a force protection and quality-of-life perspective, is at the foundation of every decision made within the support group," said Dremstedt. "It's the basis for dorm construction and renovation. These projects fulfill that goal."

(Courtesy of Pacific Air Forces News Service)

RED HORSE squadron deploys to Guyana

by 2nd Lt. John Tews

New Horizons '97 Public Affairs

Nearly 120 members of the 820th RED HORSE Squadron from Nellis Air Force Base, Nev., deployed to Camp Stephenson, Guyana, in support of New Horizons Guyana '97 July 16 to Sept. 13.

The team was the lead unit in a U.S. Southern Command-sponsored engineering and medical field training exercise.

United States forces from all branches of the armed forces, commanded by the 820th's Maj. Franklin W. Baugh, worked with the government of Guyana, the Guyana Defense Force and local community leaders to accomplish construction and medical projects.

"This is really a unique opportunity for RED HORSE," Baugh said. "We deploy all the time, but this is the first time we've had an opportunity to lead a large contingency like this. This is our opportunity to shine, and our people are doing an outstanding job stepping up to the challenge."

Service members from the United States, host-nation government personnel, Guyana Defense Force personnel and community volunteers conducted engineering projects such as the construction or renovation of schools, health clinics and a retirement home. Medical personnel provided medical services for the people of Guyana and the nearly 300 deployed military people involved in the exercise.

The principal objective of these engineering and medical civil assistance projects was to provide training opportunities for U.S. military units, while demonstrating continued U.S. support for the people of Guyana.

RED HORSE members, along with members of other branches of the U.S. military and Guyana Defense Force, rebuilt St. Mary's High School and renovated Ascension Community High School and Uncle Eddie's retirement home in Georgetown. They also constructed a school in Malali, built an addition to a medical clinic in Capoey and upgraded a hospital in Kumaka. Malali and Capoey are isolated villages in the country's rain forest, and Kumaka is near Guyana's Atlantic Coast. All three villages are accessible only by helicopter or boat.

"We all feel very proud to come to Guyana and really do a good job helping these people," said Tech. Sgt. Fred Green, Uncle Eddie's project manager. "The thing that really makes this assignment special is that we have a chance to work with our sister services. It's a real privilege for me because I get to see how everybody ties in when we come together for a common cause."

The RED HORSE members enjoyed the hospitality in Guyana, a land with broad cultural diversity. More than half the population of approximately 740,000 is of East Indian origin, 29 percent of African origin, 14 percent mixed, 4 percent Amerindian and 2 percent European and Chinese. *(Courtesy of Air Combat Command News Service)*

TRAINING



Do you know....

...where civil engineer enlisted members are taught the initial skills they need to do their job?
Thought it was one location? Try seven!!

Air Force Specialty Code	Career Field Title	School Location	School Owner
3E0X1	Electrical Systems	Sheppard AFB Texas	366 TRS
3E0X2	Electrical Power Production	Sheppard AFB Texas	366 TRS
3E1X1	HVAC/R	Sheppard AFB Texas	366 TRS
3E2X1	Pavements and Equipment Operators	Ft Leonard Wood Mo.	366 TRS (Det 7)
3E3X1	Structures	Gulfport NCBC Ms.	366 TRS (Det 6)
3E4X1	Utilities Systems	Sheppard AFB Texas	366 TRS
3E4X2	Liquid Fuel Systems Maintenance	Sheppard AFB Texas	366 TRS
3E4X3	Environmental	Sheppard AFB Texas	366 TRS
3E5X1	Engineering	Ft Leonard Wood Mo.	366 TRS (Det 7)
3E6X1	Operations	Sheppard AFB Texas	366 TRS
3E7X1	Fire Protection	Goodfellow AFB Texas	312 TRS
3E8X1	EOD	Eglin AFB Fla. and Indian Head, Md.	366 TRS (Det 3 and Det 2)
3E9X1	Readiness	Ft McClellan Ala.	366 TRS (Det 5)

...the Air Force Specialty Codes (AFSCs) for officer and enlisted civil engineers?

AFSC	Title	Comments
32EXX	CE Officer	
3E0X1	Electrical Systems	Includes former interior and exterior electricians.
3E0X2	Electrical Power Production	
3E1X1	HVAC/R	Includes former AC, controls and heating.
3E2X1	Pavement & Equipment Operators	Includes former heavy equipment operators and pavements & grounds.
3E3X1	Structures	Includes former sheet metal, welders, carpenters, masons, painters, and locksmithing.
3E4X1	Utilities Systems	Includes plumbing, water & waste.
3E4X2	Liquid Fuel Systems Maintenance	
3E4X3	Environmental	Includes former pest management and new environmental specialty.
3E5X1	Engineering	Note: Not Engineering "Assistant" anymore.
3E6X1	Operations	Formerly called "force management" ...formerly "triple nickels."
3E7X1	Fire Protection	
3E8X1	EOD	
3E9X1	Readiness	Formerly called "disaster preparedness."

THE PEOPLE

New AFCEE Executive Director/Commander Named

Col. Jerrold B. "Jerry" Harrington was named to the position of executive director/commander of the Air Force Center for Environmental Excellence (AFCEE) headquartered at Brooks AFB, Texas. He assumed the duties on Dec. 1 upon the retirement of Col. Michael F. McPherson.

AFCEE is a field operating agency of The Air Force Civil Engineer that provides expertise in environmental, architectural and landscape design as well as planning and construction management services and products. AFCEE was formed in 1991 and is undergoing changes to meet the changing needs of the Air Force. According to Harrington, growth areas for AFCEE are compliance through pollution prevention in the environmental arena, outsourcing and privatization and base closure, provided the two additional rounds of Base Realignment and Closure come to pass.

His primary duties will be to assist with the center's director in guiding the efforts of environmental cleanup, planning and compliance, and architectural and construction management services for U.S. Air Force commanders throughout the world.

Harrington is a native of Syracuse, N.Y. He received a bachelor of science degree in electrical engineering from Kansas State University and a master of science in facilities management from the Air Force Institute of Technology.

His engineering assignments include chief of design and chief of industrial engineering at Vandenberg AFB, Calif., chief of the requirements division, Directorate of Engineering and Services for the Air Force Logistics Command Headquarters at Wright-Patterson AFB, Ohio; director of operations for the 1100 National Capital Region Support Group, Air Force District of Washington; commander of the 554th RED HORSE Squadron at Osan Air Base, Republic of Korea; and Fifth Air Force Civil Engineer, Yokota Air Base, Japan.

"My goal is to maintain AFCEE's focus on our primary customers, the MAJCOM and base civil engineers," he said.

Reserve units receive outstanding unit award

Fifteen Air Force Reserve Command units were selected to receive the Air Force Outstanding Unit Award for meritorious service. The 810th Civil Engineer Flight, NAS Fort Worth Joint Reserve Base, is one of those units. Reservists who were assigned to this unit during the award period Jan. 1, 1996 to June 30, 1997 are eligible to wear the AFOUA.

Former unit members should check with the military personnel flight to verify their eligibility to wear the AFOUA. (Courtesy of AFRC News Service)

Chief Master Sergeant-selects for 1997

The 1997 Central Line Chief Master Sergeants Board is complete. Below are the names of enlisted members in the civil engineer career field selected for promotion. Congratulations to all for their well-deserved achievement.

Arsenault, Keith R.
Cain, Eddie N.
Caldwell, James R.
Carson, Wayne T.
Challis, John V.
Cherry, Phillip M.
Coleman, Rodney E.
Earley, Gregory C.

Eggers, Jack R.
Fisher, James H.
Frost, Michael E.
Glover, Carl B. Jr.
Gustafson, John M.
Haidinger, Steven N.
Hannan, James J.
Hilliard, Kenneth W.

Jones, Randy F.
Jones, Victor P.
Keller, Bruce E.
Kelly, Robert L. Jr.
McClain, Charles O.
Miller, Alfred H. Jr.
Niswonger, Robert W.
Olson, Steven T.

Poliansky, Walter
Romig, Gerald D.
Runnels, Larned E. I.
Taylor, Carla F.
Whitehorn, Jimmie E.

Next Issue...



A dormitory construction project at RAF Lakenheath UK, revealed an archeological find of enormous historical significance. Archeologists discovered more than 200 Anglo-Saxon graves, some dating back as far as 550 A.D. Look for the full story and more photos in the Spring 98 issue of *The CMI Engineer* magazine. (Photo courtesy of the 40th Civil Engineer Squadron Environmental Flight)