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THE CE

SUMMER 2000

Challenged and Found Ready

The Civil Engineer - United States Air Force

FROM THE TOP

The Best Met the Challenge

Maj Gen Earnest O. Robbins II
The Air Force Civil Engineer

"Veni, vidi, vici," Julius Caesar's phrase meaning "I came, I saw, I conquered," sums up the enthusiasm of the Readiness Challenge VII teams in their quest to earn the title "Best of the Best!"

This enthusiasm permeated the biggest and best Readiness Challenge competition to date, which showcased 12 U.S. Air Force teams (one from each major command, two direct reporting units and the Air National Guard), returning teams from Canada (their 4th) and the United Kingdom (their 2nd), and first-time, partial teams from Norway and Japan.

Although the Brig Gen William T. Meredith Trophy was in high demand, it went to only one team — Air Force Space Command, represented by the 90th Space Wing team from F.E. Warren Air Force Base, Wyo., and augmented by the 21st, 30th and 45th Space Wings.

Congratulations also to Pacific Air Forces, represented by the 3rd Wing, Elmendorf AFB, Alaska, the first runner-up, and to Air Mobility Command, represented by the 60th Air Mobility Wing, Travis AFB, Calif., the second runner-up.

The real victors in any Readiness Challenge competition are not only the men and women of each team, but also the civil engineer squadrons, services squadrons and chapel offices to which they return. The competitors are better Air Force professionals because of the team spirit, leadership and *esprit de corps* displayed throughout the events. These attributes, plus discipline, dedication and the will to win, are the hallmarks of this and all Readiness Challenge competitions.

Since we introduced the competition, teams have dramatically improved performance and continued to reduce times required for wartime task completion. This competition was no exception. The competing teams showed us that whatever obstacle we can design, they can beat!

This year, Canada and the United Kingdom sponsored events which provided the intrinsic benefits of working in an allied environment. The situation in the world today demands international cooperation. Canada and the UK — our allies and our friends — demonstrated once again we work very well together.

During this Readiness Challenge, we hosted the first-ever Senior International Engineer Meeting, attended by officers representing the four competing countries, along with France, Israel, Italy, Greece and the Republic of Korea. The meeting provided a superb crossflow of allied engineer capabilities and was so successful we agreed to continue these meetings in the future.

From this competition we all take home the knowledge that our Air Force civil engineers and our allied counterparts are capable and ready to support the people, the weapons systems, the operations and the deployments that will keep our world safe.

Readiness Challenge VII proved again, to ourselves and to the world, that we're ready to fulfill our combat wartime mission and provide "Expeditionary Combat Support," anywhere, anytime. We are building a Total Force that is ready and relevant for the next century.

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The Air Force Materiel Command team competes in the TEMPER tent event at Readiness Challenge VII. On the fly are: *(front to back)* A1C Alain Diaz, SSgt Bill Miller and SSgt John Kagarise, 75th Air Base Wing, Hill Air Force Base, Utah. Story page 18. *(Photo by SMSgt Bob Tanner)*

THE CE

The U.S. Air Force Civil Engineer

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The Civil Engineer
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Colonel Susanne M. Waylett, the first military woman to enter Air Force civil engineering, retired at a ceremony conducted May 3 during the Readiness Challenge competition at Tyndall Air Force Base, Fla. In this interview with AFCESA Historian Lois E. Walker, Colonel Waylett shares memories and insights from her groundbreaking career, which included many "firsts" and several history-making deployments. In her own words …

"Readiness Is My Business"

Mrs. Walker: Tell us where you were born and raised and a little about your family.

Col Waylett: I grew up in a little town called Jamestown, outside Grand Rapids, Mich. My maiden name was Ocobock, a good German Pennsylvania Dutch name. My father and mother were both in World War II. My father was in the Army Air Corps. My mother was a Marine and worked as an aircraft mechanic. She had two sisters, one went in the Army and the other the Navy. They made news at the time because it was so unusual for all three daughters of a family to be in the military.

Mrs. Walker: Aside from your parents' experience, what inspired you to enter the Air Force?

Col Waylett: I'm the oldest of eight children. Obviously there wasn't a lot of money to pay for college. I was studying at the University of Michigan. When things got tight, I started looking at alternatives and one was to go into the military. I graduated in 1970 when there weren't a lot of jobs for engineers, because many aeronautical engineers had been laid off and they were taking up the jobs. It wasn't until January 1971 that I got an Officer Training School slot. There were very few slots for women because of the limitations on women in combat positions.

Mrs. Walker: Your first assignment was with industrial engineering at Kelly AFB, Texas. How did that come about?

Col Waylett: General [Guy] Goddard, who was then the Director of Civil Engineering, came to Randolph and wanted to meet with me. They said I was going to be the first woman in the civil engineer career field, officer or enlisted. Subsequently, I was given a long list of places I could go. That was unheard of — officer trainees don't pick their assignments. I chose the assignment to Kelly.

When I got to Kelly, a lot of people were interested in using me as a poster child. At first I spent as much time doing public relations as I did working. I traveled to Washington at the invitation of the Secretary of the Air Force and the Chief of Staff to do PR for recruiting. That was okay for awhile, but I got real tired of it. I hadn't come in the Air Force to be a poster child; I came in to be an engineer. Luckily, once I made that known, it backed off some. If it brought more women in, then it was certainly worth it, and that was the attitude of General Goddard and the folks at Air Force level.

Mrs. Walker: Your next assignment was with Osan Air Base's industrial engineering branch. How were you received there?

Col Waylett: The response was, "What do we do with her?" but the acceptance was better than at Kelly because I had a job to do. It was real work and we were at war. I made very good friends there who taught me a lot about how to be an effective civil engineer officer. Another thing I learned at Osan was the manpower business, which stood me in good stead my whole career. All officers need to know how to understand and work unit manpower documents.

Mrs. Walker: From there, you went to Pope AFB, N.C., again working in industrial engineering?

Col Susanne M. Waylett, commander of the 10th CEG, U.S. Air Force Academy, retired with 29 years of service at a ceremony held at Tyndall AFB, Fla., during Readiness Challenge VII.

Col Waylett: The assignment at Pope was another good assignment, and I got to do something a little different. I was the Women's Air Force squadron section commander. Enlisted women were not integrated into normal squadrons, but were assigned for administrative purposes to a WAF squadron.

That was when we first started putting women on the flightline, and you had a lot of old brown-shoe maintenance chiefs who thought the best thing for the women maintenance folks I was sending over was to put them in the office to type. I had to weigh in with some of them and say, "This airman went to school to be an aircraft mechanic, and you owe it to her to let her be an aircraft mechanic, and she can haul that toolbox." It took setting the standards. That was my first exposure to command and learning to take care of people.

Mrs. Walker: According to your official biography, you served in the Reserves and as a DoD civilian from 1975 to 1980.

Col Waylett: During the latter part of my tour at Pope, I decided I was going to separate. The challenge of being in industrial engineering wasn't there. The Air Force Personnel Center was calling and offering me good overseas jobs but I couldn't take them because my husband flew C-130s and they expected him to be there at least four years. It was frustrating. I decided to separate and go in the Reserves.

My daughter, Sarah, was born while we were in North Carolina. In fact, the day I came home from the hospital, we got an assignment to Yokota. So I went to Yokota as a dependent spouse. I spent the first few months there not working, but by that time I was fully convinced that I needed to work. I was not a stay-at-home mom. I was doing reserve time and was very involved with the CE squadron. When a GS-5 position came open as a housing inspector, I applied. Eventually I was promoted to the GS-7 position that supervised all of the housing inspectors for all of the high-rise apartments.

Mrs. Walker: How did you come back onto active duty?

Col Waylett: I really missed the military. There were a lot of articles in the *Air Force Times* then about the shortage of engineers and bringing reservists back on active duty. I applied, and it wasn't a few weeks later that I got the letter saying, "You have been selected to return to active duty. Report in 60 days." Not only was I coming back on active duty, but this was a joint spouse situation and I was senior by two or three weeks. We were both captains, but I was the one who led for assignment selection. We worked it so that I went to Eglin AFB, to the 3202nd Civil Engineering Squadron, and he went to Hurlburt to fly gunships.

Mrs. Walker: You had a variety of jobs at Eglin, including civil engineer support to refugees following the Mariel Boatlift.

Col Waylett: When the Cuban refugee influx started, I worked as a CE rep in the command post. Once we started building and operating at the fairgrounds in Ft. Walton, I worked out there.

2Lt Susanne M. Ocobock joined the Air Force in 1971 after graduating with a degree in industrial engineering from the University of Michigan. She received a warm welcome from Maj Gen Guy H. Goddard, Director of Civil Engineering, as the first woman civil engineer in the Air Force.

The refugee camp at Eglin was one of the largest, so we had federal marshals maintaining order.

I was the senior woman, and the only woman in uniform who spent a lot of time in the camp itself. I noticed there was always a marshal near me and asked one of the senior marshals what was going on. He said, "We would really prefer if you would stay out of the tent complex." I said, "Well, that's hardly possible when that's my job, to run this place." He said, "Well, then get used to having somebody keep an eye on you. We know there is unrest, we know there have been riots at the other camps, and we know that if they're going to take a hostage, you're it." After that, I was careful to make sure that when I went way into the back or was going to take care of a problem by myself that somebody knew where I was going. But you can't let things like that stop you from doing your job.

Mrs. Walker: After a tour at Air Force Systems Command headquarters and completing a master's degree at the Air Force Institute of Technology, you went to Torrejon AB, Spain, as operations branch chief. What are your memories from that assignment?

Col Waylett: That was an interesting assignment. In the land of supreme fighter jocks, in the country of macho men, here

comes the female ops chief. I got there about the same time as the brand new base civil engineer, Lt Col Joe Allen. I met the wing commander for the first time when I'd been there only two weeks and we had a water line break on a Sunday morning in front of the chapel. I was down in the hole with the guys when Colonel Allen brought him over to meet the new ops chief.

Fortunately, my deputy was a crusty chief by the name of Darryl Hood, who had been around and had lived in Spain a long time. He was my defender, and he was military to the bone — "By God, she's the ops chief, she's the boss, you'll support her." We talked to each other constantly. He was never afraid to come in, shut the door, and say, "Shouldn't we think about that? I'm not sure that's the right decision." I learned very early, as a second lieutenant, that you need to listen to your enlisted force and support them.

Mrs. Walker: In 1987 you took your first job as a CE commander at Zweibrücken AB, Germany. What goals did you achieve while you were there?

Col Waylett: Zweibrücken was a little base, tucked in the hills, but a great location and a wonderful little town. It hadn't had much money invested in it, so I got to work with everything — the full scope of MILCON, real property maintenance, manpower, training, everything.

We had a lot of successes at Zwei. A tremendous readiness program — we came in second to Spangdahlem in the Rapid Runway Repair Olympics and almost beat them. We established a joint training program with the Army brigade at Karlsrühe. That hadn't been done before. We won the Fire Muster every year except one, when Prüm won it. Our firefighters were tremendous. We redid the MILCON and got some good infusion of investment.

Major Waylett celebrates graduation from the Air Force Institute of Technology with daughter Sarah in 1985.

Mrs. Walker: In 1989 you moved to U.S. Air Forces in Europe headquarters, Ramstein AB, Germany, to become the planning and programming division chief. What projects did you work during your three years there?

Col Waylett: Even though I hate desk work, I needed to learn how those things work, and if there was ever a time to do that kind of work, this was it. Since there was no MILCON, we got very innovative at moving missions around and bedding missions down using O&M and creative at doing things on a shoestring and still meeting our customers' needs.

The challenging part was making drawdown decisions. USAFE was deciding what they could afford to support and where it was going to be. I was part of the four-person team that worked with Military Airlift Command on Rhein-Main issues. My staff and I worked which one to save, Bitburg or Spangdahlem, and bedding down the special operations mission when it left RAF Alconbury. All those decisions were made while I was there, with my staff, very quickly. These were not two-year decisions, or even one-year decisions. So, although it was tremendously stressful, it was also tremendously rewarding to be part of that and a great time to be in USAFE.

I haven't talked much about my home life, but I was a single parent all of this time. There were many times when I should have been with my daughter that I was on duty somewhere, out working a plane crash or going to a class graduation, but I had super support from the families in my units. Throughout my whole career, had I not had that kind of support from the CE family I would not have been able to do what I do with a clear conscience, feeling comfortable that I could go support the mission because she was taken care of.

Mrs. Walker: After a tour at AFCESA, you went to Hurlburt Field as commander of the 823rd RED HORSE Squadron. Was that something you really wanted to do?

Col Waylett: I had wanted to go to RED HORSE for a long time. I recall sitting in the Readiness Center at Zweibrücken during a local Salty Nation, reading in the *Air Force Times* that women were no longer precluded from serving in combat-coded jobs. Dennis Yates, who is now a lieutenant colonel at Air Combat Command, was sitting next to me. I looked at him and said, "I'm going to command a RED HORSE unit." I always tell him, "I'll give you credit. You didn't laugh." Because at that point in time, who would have thought? I was very excited when General [James E.] McCarthy offered me the job.

Mrs. Walker: What was the reaction to your getting the job?

Col Waylett: I know that internal to the 823rd there were many who said, "You have got to be kidding." But I was in heaven. There were really extraordinary people in that unit — extraordinary capability and dedication to the RED HORSE mission. But the 823rd and its facilities had been neglected for a long time. Throughout my tenure I lobbied with ACC and Air Force Special Operations Command to invest money in that complex.

Mrs. Walker: Tell us about your deployment to Bosnia.

Col Waylett: The 823rd had been in "the plan" for Bosnia all along. When the first group went in to evaluate airfields in Europe, it was envisioned that the 823rd would deploy to do airfield restoration so Air Mobility Command could operate. But when the time came, U.S. European Command didn't

Major Waylett became the first woman to serve as commander of a civil engineer squadron, with the 20th Civil Engineering Squadron at Zweibrücken AB, Germany, in 1987. The fire protection staff at Zweibrücken won the U.S. Air Forces in Europe Fire Muster several years in a row. Here Major Waylett *(front row, third from left)* joins the class at Fire Marshal School.

envision a need for strategic airlift. They also decided the Army would provide all base operating support for Operation JOINT ENDEAVOR.

Being the skeptics that we were, my folks suggested we coordinate with USAFE/CE and go to Camp Darby to inventory and prepare our assets, just in case. That was the smartest move we could have made. Without that jump on things, we would not have been able to meet our timelines.

A week later, the 9-1-1 call came from USAFE. "USAREUR [U.S. Army Europe] has gone to EUCOM and said they need RED HORSE to do beddown at Tuzla. *Not* airfield work for airlift, but beddown. And, oh by the way, they need you to bring your own materials."

We got our tasking on a Wednesday afternoon and on Friday RH-1 was in the air. We got a phone call Saturday morning saying, "We have four airplanes coming. We want all of you gone." We jumped through hoops to get 227 people and all their tools and equipment ready to go in virtually 72 hours.

At Ramstein we had to re-process all of our cargo. My folks worked around the clock with the civil engineer squadron there, re-palletizing cargo and the lumber we procured so we could work. We had sent an advance crew to Ramstein to work contracts for lumber and materials. That crew remained at Ramstein for the duration.

Tuzla Main was full to the gills when we got there, because they had flowed people in with nowhere for them to go. Any hard billets that existed were still occupied by the United Nations, including the dining facility. There were about 2,500 people on Tuzla Main with one mobile kitchen trailer for feeding.

Our original tasking was to build tent cities for 5,500 people in three locations. A fourth was added later. The work itself was challenging because of the environment — the mud, the cold, the wet — but our folks are adaptable. As long as they had materials they went 150 miles an hour, sometimes working around the clock to make up for time lost when materials weren't available. We prayed for freeze, because if the ground was frozen it wasn't mud. The mud was often up to my knees. I've never seen anything like it.

This was not a joint operation — this was an Army operation, supported by the Air Force and the Navy. The Army leadership at Tuzla had a timeline to meet, but they had no experience in putting together base camps because the Army does not traditionally do beddown. Because we build base camps a lot, we're usually able to take a quick look and say, "Okay, here's your estimate. Here's what we need to do this right." And we tend to be inflexible about building something we can't guarantee will withstand time and weather.

It was, and still is, a dilemma for us. If we are going to support other services in their deployments, we need to develop a good joint CONOPS [concept of operations] for engineers between the services. We don't have a good way to work together to share resources. We are not knowledgeable of how the others work, are tasked, are organized, or their capabilities. We don't do a good job of exchanging that kind of information. I listened to the Seabees make the same comments when they came back.

I got calls from USAREUR headquarters wanting progress reports. USAREUR-Rear in Heidelberg and EUCOM basically told us our SITREPs [situation reports] were their only source of information. When we look at joint engineering doctrine and how to operate in a joint environment, this is something that needs to be discussed. We need a standard means of producing SITREPs and sharing communication.

Mrs. Walker: What is Sue Waylett's philosophy on being a good commander?

As commander of the 823rd RHS, Colonel Waylett spearheaded beddown operations for the U.S. Army in Bosnia during Operation JOINT ENDEAVOR. She worked for Col Neal Patton *(right)*, vice commander of Sixteenth Air Force, who also served as commander of the 4100th Group (Provisional) at Tuzla AB, Bosnia-Herzegovina.

Col Waylett: A good commander has to have mission focus, but also has to think about the people who are executing the mission. If you can continue to consider the needs of people as you make decisions, then you're going to be a good commander.

It's not all about putting the customer first, although we need to support the customer. It's not always about doing what the wing commander wants, because that's not our role. Our role is to provide guidance, as well. A commander's role is essentially to manage resources, and managing resources also means taking care of your people and their families. Sometimes this means giving them bad news. Sometimes it means being a marriage counselor. Sometimes it means taking care of their children. Sometimes it means putting your foot in their rear end. It means a lot of things. It always means taking time to mentor. If you manage to do all of that, to administer discipline that is fair and equitable and to maintain your integrity above all, then you'll be a good commander.

Mrs. Walker: You also led RED HORSE in reconstructing Prince Sultan AB, Saudi Arabia, to accommodate relocation of forces from Dhahran following the Khobar Towers bombing. What challenges did you face there?

Col Waylett: In the summer of 1995 we tore down all of the war reserve materiel (WRM) shelters and storage buildings at Al Kharj because it was no longer going to be a manned storage area. So, it was ironic the following year when we got the call after the Khobar Towers bombing. We knew there was an initiative to move people out and that we might get tasked to do something. I was in Germany on a site visit when I got a late night call from General [Carl] Franklin. "Sue, we've reached an agreement with the Saudis. I need you to go build the bare base at Prince Sultan." "Okay, I'll get right back to Hurlburt, get my bags, and get ready to go." He said, "No, I need you at Dhahran tomorrow." I had one suitcase for Germany. I left for Dhahran on the first flight the next morning.

I was the first woman to be in the Saudi headquarters at Prince Sultan. We were not sure what reaction the Saudis would have to my presence on the team, and I was a little worried. There were some who were clearly uncomfortable, but I learned long ago, you just press on as if you know what you're doing and they'll believe you do. The Saudi base commander was very supportive.

The heat was horrendous — 130 degrees at midday sometimes. When you're doing a lot of horizontal construction, you have to work during the day when it's light, so our guys kept right on trucking.

During her tour as 823rd RED HORSE Squadron commander, the squadron built a bare base at Prince Sultan AB, Saudi Arabia, to house troops relocated from Dhahran AB following the Khobar Towers bombing. Maj Marc Richard *(left)*, was operations chief for the 823rd RHS.

One problem we faced was a disconnect between CENTAF [U.S. Air Forces, Central Command] and the wing at Dhahran. We were told to build a standard bare base, using a standard Harvest Falcon kit. That was not what the wing expected, because they needed to relocate trailers and shelters, extra things that required power. That created problems with the power grid because the infrastructure wasn't there to support them.

We took about 200 people to Saudi. We did four Harvest Falcon housekeeping sets, which house 4,400 to 4,500, but they kept bringing more tents in because the numbers kept growing. We had the base up and operational, flying combat sorties, in 34 days. This was in July of 1996. It was a tremendous effort.

Mrs. Walker: Tell me about your experience as the civil engineer group commander at the Academy, particularly about the Global Engagement program you implemented.

Col Waylett: It was a real culture shock, coming out of ACC, and I really missed the readiness world. But in addition to accomplishing our day-to-day mission, we were able to dramatically increase the role CE plays in cadet education. I'm very excited about Global Engagement and that legacy. [Brig] Gen [Stephen] Lorenz was the commandant of cadets when I arrived. He was very down to earth and knew the nuts and bolts of the Air Force. During my first office call with him he said, "Sue, I have this vision of being able to show the cadets something about the real Air Force. We're in the AEF, we deploy, we live in bare base conditions. I would really, really like to see them exposed to some of that." Well, he should have known better than to throw that at an old RED HORSE commander. The gauntlet was laid on the table, and I said, "I think we can do this."

He sold it to CORONA. We got their commitment to run 150 cadets through a test program that summer. I brought in Lt Bill Smith, who worked for me at the 823rd, specifically to put together Global Engagement, working with the 34th Training Wing. We pulled strings with ACC and with the WRM folks, we got the 49th Materiel Maintenance Group to help us. I used some silver bullets with each of the HORSE units, and we got people in to do the classroom training. We had guys from Silver Flag come out to teach blocks of classes. We brought an emergency airfield lighting system and set it up on the terrazo and lit it up at night. The cadets loved it.

Mrs. Walker: Is it similar to a mini-Silver Flag training?

Col Waylett: We go through two weeks of classroom training. They learn all about the philosophies of bare base: what kinds of assets you use, force protection considerations, what your priorities are in layout, what kind of communications you're going to use, how you plan meals — whatever you need to do a bare base operation. The third week they go to a site in our training area, out in Jacks Valley, and there's nothing there but their boxes. Based on what they've learned, they set up their base camp and look at how they are going to operate. They do perimeter defense and they actually control some aircraft flying out of Buckley Air National Guard Base with the mobile comm. They plan meals and operate the mobile kitchen trailer. Then they have an operational readiness inspection on the last day. We brought it all together the first time to make sure it would work, and the response was phenomenal. So General Lorenz went back to CORONA and sold it as a full-up program, part of the requirement for graduation.

Mrs. Walker: They do this their senior year?

Col Waylett: They do it between their freshman and sophomore years, which is good because they're exposed to the real Air Force very early. The other piece of it was getting General [Eugene] Lupia's support for two P341 projects, to put in a new road out to Jacks Valley and to build a mock airfield for Global Engagement and for Colonel [David] Swint to use with his civil engineer classes.

Every time I saw General Lorenz he would look at me and say, "I don't believe you pulled this off." When he cut the ribbon for the new road and the airfield, he said this was the best thing that had happened to the Academy in decades. It provides cadets an opportunity to understand what the support world is all about. It's been interesting, too, because many of them come back and say, "I'd like to be a CE officer,"

Col Dan Barker and daughter Sarah pin Colonel Waylett with her eagles during her tour as Director of Maintenance at the Air Force Civil Engineer Support Agency. She became the first woman Air Force civil engineer to attain the rank of full colonel in 1993.

For her efforts in Bosnia, Brig Gen Earnest Robbins congratulates Colonel Waylett as the Air Combat Command nominee for the 1996 Society of American Military Engineers Newman Medal.

or "I'd like to be a Services officer." It's made a difference in people volunteering for those jobs when they graduate. I'm really proud of that.

Mrs. Walker: You occupy a special position in history as the first woman Air Force civil engineer. What was it like to climb through the ranks of a predominantly male career field?

Col Waylett: I can honestly say that in almost 30 years — and this is a real credit to the people in the civil engineer career field — I have never experienced blatant sexual harassment or a lack of opportunity. I kind of laugh when I tell other women, "You know, there isn't a lot of prejudice in CE. It's not necessarily because we don't have it built in to some of our people, and I'm not talking just women, but other kinds of prejudice. It's that we're so overworked that if the person next to us is pulling 120 percent of what we expect, we don't care if they're blue, pink, purple, male, female — as long as that person's doing their job and giving their all."

In my career, I have never asked for any favors or special treatment because I happen to be female or I happen to be a single parent. In fact, there were times when I probably should have asked for a little leeway but didn't, and my daughter has paid for that. I've paid for it. There has always been pressure, much of it self-generated, that I have to be better because I don't want *anybody* to say I didn't earn what I got. There's always somebody who wants to say, "She's there because they needed to put up the storefront woman." To the credit of the leadership in CE, they have not done that. The people that made a big deal about me being female in Bosnia were the press. Nobody else did. Certainly my unit didn't. In Saudi, life could have been very difficult for me, but it wasn't. Part of why it wasn't is my attitude. I have always been able to go in, sometimes whether I believed it or not, and make people believe I could do whatever they ask me to do, and do it better

than they thought it could be done. The only frustration is, up until very recently, every time I went to a new job I had to establish the reputation again, because there had been no one before me.

Mrs. Walker: What kinds of things does the CE community need to address to make the environment more conducive for women engineers?

Col Waylett: We're doing it. We're doing it with [Col (sel)] Marianne Chisolm wearing eagles. You don't see any level of civil engineering that doesn't have women. The opportunity is there for us to do whatever we have the ability to do. I would never suggest we change the standards by which we make assignments. Those standards apply equitably across the board, it doesn't matter if you're male or female. Is it more difficult for the women? Absolutely. We get to a certain point where it is difficult to operate. It's difficult for me to operate at the level I am right now. There is a very distinct social structure, and it is not geared for a single female. I will never be able to go in the men's locker room at the golf course and talk business. I'm not part of that club, and never will be. And none of the women following me will be part of that club. So, is there a glass ceiling? Absolutely. It exists. But it's not something civil engineers are going to change. As long as women are the distinct minority, there are going to be limitations to what we can do, in any career field.

Mrs. Walker: People will want to know, why did you decide to end your military career now?

Col Waylett: There are those, including General Robbins, who would have liked me to stay and go on to be a MAJCOM civil engineer. But there comes a time when everyone has to balance the Air Force's needs and their personal needs. I reached the point where I needed to make the decision on that balance. I did, and it's the right time. I'm leaving from a job at base level, which is where I wanted to be.

Mrs. Walker: It seems particularly significant that you decided to hold your retirement at Readiness Challenge. What special meaning does that hold for you?

Col Waylett: I've been going to Readiness Challenge for a long time, but the fact that RED HORSE runs it obviously is special. Readiness is my business. For me, that's the place to leave.

UNIT SPOTLIGHT

Unit Name: 10th Civil Engineer Group **Parent Unit:** 10th Air Base Wing **Location:** USAF Academy, Colo. **Commander:** Col Scott K. Borges **Personnel:** 126 military, 375 civilians **Mission:** Provide the most positive physical environment as a foundation to develop and inspire future air and space leaders.

Unique Requirements: The 10th CEG deploys numerous officers and craftsmen in support of worldwide contingency and humanitarian relief operations while supporting the mission of the U.S. Air Force Academy.

It supports the training and education of over 4,000 cadets in Cadet Basic Training, Field Education, Survival Training, Soaring and Initial Flight Training, Jump Training, Field Engineering Readiness Laboratory and Global Engagement.

The Academy is spread over 19,300 acres of forested land, where the 10th CEG is responsible for more than 1,000 facilities, including housing for USAFA personnel and those at Peterson Field, Schriever Air Force Base and Cheyenne Mountain, as well as recruiters, foreign officers and visiting civilian professors.

The Academy has the busiest Visual Flight Rules (visual operations between sunrise and sunset) airfield in the Air Force with more than 260,000 operations a year (including touch and go's but not parachute drops). The Academy hosts CORONA Fall, an annual Air Force Chief of Staff conference, and is home to 27 different intercollegiate sports teams and an extensive intramural sports program. Graduation ceremonies often include support to the President.

Base/Community Relations: The Air Force Academy Fire Department recently sponsored a mutual aid water tanker drill for seven local fire departments involving 50 firefighters and 16 pieces of apparatus. The Academy Fire Department is also involved with community wildfire prevention efforts. In 1999, 10th CEG personnel helped build three homes for Habitat for Humanity.

Additional Accomplishments:

The Readiness Flight helped create one of the first Appendixes to OPlan 32-1 for weapons of mass destruction. In the past year, the unit has instructed about 1,600 active duty personnel in nuclear, biological and chemical (NBC) warfare defense, including personnel from USAFA's 10th ABW and 34th Training Wing, Buckley Air National Guard Base and the Peterson AFB Clinic. They created NBC defense curriculum for the Global Engagement Summer Program, where about 1,300 cadets were instructed in basic chemical warfare defense as well as mask confidence training (tear gas chamber). About 1,200 are expected to train in 2000.

Preparing for Disaster

New technology improves facility survivability

The site of the June 25, 1996, terrorist truck bombing of Khobar Towers, a U.S. military living quarters for those supporting Operation Southern Watch. The explosion killed 19 Americans and injured many others at Dhahran AB, Saudi Arabia. Since the Khobar Towers bombing, Air Force civil engineering has focused on improving its ability to combat terrorism. ***(DoD photo)***

by Lt Col Donald R. Huckle, Jr.
Air Force Research Laboratory, and
Kenneth J. Knox, Ph.D., P.E.
Applied Research Associates, Inc.

The bomb has a long history of use by terrorists, political dissidents, criminals and others intent on killing people, destroying property or disrupting operations. Bombings at New York City's World Trade Center, the Murrah Federal Building in Oklahoma City, and even attempted bombings at places such as Columbine High School, illustrate that such attacks no longer occur "elsewhere."

Since the Khobar Towers bombing in Dhahran, Saudi Arabia, in June 1996, Air Force civil engineering has focused on improving its ability to combat terrorism. The Air Force Research Laboratory at Tyndall Air Force Base, Fla., is contributing to this effort by studying ways to make buildings safer in the event of a bomb blast.

Protecting People-Not Buildings

One of the greatest threats from a bomb attack comes from fragmentation. Pieces of walls, windows, equipment and vehicles flying at high speeds can result in extensive injury and death. One tactic in defeating this threat is to ensure a building's exterior wall can survive a bomb blast without breaking apart. While new construction can be designed to provide occupants with an acceptable level of protection, effective retrofit techniques are needed to upgrade existing buildings.

The usual approach is to add strength and mass to the wall — to "beef" it up, usually with concrete and steel. Such "fortress" approaches are difficult to implement, time-consuming and prohibitively expensive.

AFRL is currently investigating an easier, less expensive solution. It involves applying relatively low cost, highly ductile elastomeric polymers (a type of plastic) to building walls for rapid and cost-effective blast protection. Maj Gen Earnest O. Robbins II, The Civil Engineer, has requested AFRL expedite the research on this highly promising technology with the objective of fielding an implementation procedure by September 2000.

Masonry Wall Retrofits

Using lessons learned from recent earthquakes and from the Khobar Towers bombing, the Lab began investigating ways to retrofit unreinforced masonry walls to improve ductility (the ability to bend under pressure) and to prevent fragments from penetrating into interior rooms. Masonry walls are very common and are particularly weak and dangerous in a blast.

This fall, AFRL ran a series of tests

Lightweight structures such as trailers are especially susceptible to damage from a terrorist's bomb. Photos show damage from bomb blast testing at Tyndall AFB, Fla. *(Photos courtesy AFRL)*

with a commercially available spray-on truck bed liner. When sprayed onto concrete block walls, it coated an 8-foot by 8-foot wall in 30 minutes, curing in only 10 minutes. When tested against an explosive blast, it was a complete success! Although the concrete block was severely fractured, no wall fragments entered the room behind the wall. The polymer effectively contained the shattered wall fragments and would have prevented serious injury to persons inside the building.

The truck bed liner material is a proprietary elastomeric polymer that is flexible, ductile and has modest strength. It can be sprayed using standard Occupational Safety and Health Administration (OSHA) safety practices for a hazardous material (i.e., isocyanates). The thickness of application is relatively easy to control, and the polymer bonds to a wide variety of surfaces. Bond strengths are significant and the material has not delaminated under airblast loading. The application system is designed to be both practical and require minimal operator training.

Trailer Retrofits

The success of the elastomeric polymer retrofit was so significant that AFRL decided to tackle an even tougher problem — improving protection for people inside lightweight structures such as trailers. Explosive tests at Tyndall (and countless incidents of hurricanes and tornadoes destroying trailer parks) had demonstrated how fragile these types of structures are.

We applied the elastomeric polymer to both the inside and outside of a 10-foot by 20-foot construction trailer to test for blast resistance. The trailer survived a blast from 500 pounds of ammonium nitrate-fuel oil (ANFO) explosive with only minor structural damage — the interior space was completely survivable.

Blast test results on a 10-foot by 20-foot construction trailer with a polymer retrofit applied to both the inside and outside. With only minor structural damage occurring to the trailer, the interior space was completely survivable.

What's Next?

Based on successful proof-of-concept testing to date, we project this polymer coating will provide an effective and affordable solution to reducing fragmentation in terrorist bomb attacks.

Before this approach can be fielded, however, several important issues need to be resolved, including:

- Selecting a polymer with acceptable strength that is low cost, easy to apply and has no environmental or flammability problems
- Defining acceptable failure criteria (e.g., How much wall deflection *into* a room is acceptable?)
- Quantifying the relationship between amount of explosive and the required standoff distance (important for site planning)
- Designing a structural frame retrofit to prevent a *structural* failure (in addition to stopping wall debris fragmentation using the polymer coating)

In response to Maj Gen Robbins' request, AFRL has directed laboratory funds to answer these and other important questions related to the lightweight structure problem. Protection of lightweight structures will be the first of several technology fielding phases to address the number one AF/ILE priority —protection of the troops. Follow-on efforts will address the application and use of elastomeric retrofits to prevent wall fragmentation from masonry, metal, concrete and timber or steel stud walls. Col Bruce R. Barthold, commander, Air Force Civil Engineer Support Agency, has committed to field this technology as soon as research is complete and thus provide a safer environment for our men and women in uniform.

Lt Col Donald R. Huckle, Jr., is Deputy Branch Chief, Force Protection Technology Branch, Air Force Research Laboratory, Tyndall AFB, Fla. He is responsible for USAF research in civil engineering systems, force protection and robotic applications.

Dr. Kenneth J. Knox is the Force Protection Group Leader with Applied Research Associates, Inc., supporting the Air Force Research Laboratory at Tyndall AFB, Fla. He conducts research in protective construction and explosives characterization for the USAF.

Planning and Preparing for Weapons of Mass Destruction

by Marty Spikes
HQ AFCESA

In times past, our war planners concentrated primarily on large-scale conflicts. Today, insidious new threats have emerged — *terrorism and Weapons of Mass Destruction* (WMD). We must be prepared to detect and defend against both.

WMD options are at the forefront of terrorism. The rise of second and third tier states acquiring WMD assets is driving joint military and civilian cooperative efforts such as Top Off 2000, a nationwide crisis management exercise held in May. Top Off, an acronym for "Top Officials," aligned several government agencies such as the Department of Defense, Federal Emergency Management Agency, FBI and others in a 10-day, multi-agency crisis management and consequence management exercise. The goal — assess the nation's response capability to a challenging series of no-notice, integrated, geographically dispersed terrorist threats and acts. The conclusion – we have a lot of work to do.

The need to respond quickly to, and mitigate, WMD incidents is changing the way our military is trained and equipped. We are no longer concentrating only on large-scale attack scenarios, we are also seriously planning and preparing for clandestine terrorist attacks and the employment of WMD. It is no longer a question of "if" terrorists will use WMD, but when, where and how.

Plans and Programs

The Air Force Civil Engineer (AF/ILE), the Nuclear and Counterproliferation Directorate (AF/XON), and the Air Force Civil Engineer Support Agency have combined forces to develop and implement a Full Spectrum Threat Response (FSTR) program.

FSTR includes converting some of the 32-Series (Civil Engineering) Air Force Policy Directives, Air Force Instructions, Air Force Manuals, Air Force Handbooks, Air Force Pamphlets and Air Force Visual Aids to 10-Series (Operations) publications.

Following are a few examples:

- AFPD 32-40, *Disaster Preparedness,* becomes the basis for AFPD 10-25, *Full Spectrum Threat Response*.
- AFI 32-4001, *Disaster Preparedness Planning and Operations* (in draft), will become AFI 10-2501, *Full Spectrum Threat Response Planning and Operations*.
- AFMAN 32-4004, *Emergency Response Operations,* will convert to AFMAN 10-2503, *Full Spectrum Threat Response Operations*.
- AFMAN 32-4005, *Personnel Protection and Attack Actions,* will convert to AFMAN 10-2504, *Personnel Protection and Attack Actions*.

AFI 10-2501, *Full Spectrum Threat Response (FSTR) Planning and Operations*, is a new publication that addresses the "all hazards" threat response for Air Force personnel. FSTR is basically an integration of natural and technological disaster, accident and response activities that will cover pre- and post-incident actions.

AF/ILE is developing AFI 10-2501. This instruction will cover natural disasters; major accidents; hazardous materials; nuclear, biological, chemical and conventional attacks; and terrorist incidents including the use of biological, nuclear, radiological, incendiary, chemical and/or explosive materials. It will also define the roles, responsibilities, installation planning tasks, training programs, equipment standards, exercise evaluation requirements, detection, identification, warning and notification systems, and domestic support needed to clearly meet any threat.

Equipment

Today's technology affords the terrorist numerous ways to wreak havoc — from a vial of biological agent to a truck full of explosives. To counter this our training and equipment has to be cutting edge.

From point detectors, stand-alone and mobile detectors, to new protective suits and masks, we must be ready. What follows is a brief description of some of the latest initiatives in joint

MSgt Ron Childs demonstrates the Automatic Chemical Agent Alarm (M22), which will provide automatic point detection and identification of nerve and blister agents. *(AFCESA photo)*

service anti-terrorism equipment.

Automatic Chemical Agent Alarm (M22) — The ACAA will provide automatic point detection and identification of nerve and blister agents. This man-portable vapor alarm will provide enhanced capability over currently fielded M8A1 detectors. The ACAA replaces the M8A1 Alarm as an automatic point detector and augments the Chemical Agent Monitor/ Improved Chemical Agent Monitor as a survey instrument. ACAA is compatible with the Multipurpose Integrated Chemical Agent Detector information transfer system.

Joint Biological Point Detection System — The JBPDS will provide common biological agent point detection capability for Individual Service Platforms, detecting biological warfare agents in less than 15 minutes and providing automated, knowledge-based, real-time detection and identification. JBPDS will provide our first biological warfare agent point detection capability.

Joint Service Lightweight Nuclear, Biological and Chemical Reconnaissance System — The JSLNBCRS is a complete nuclear, biological and chemical (NBC) detection and identification system. It will provide accurate and rapid NBC intelligence data by sampling, detecting, identifying, marking and reporting the presence of NBC hazards within the unit's area of responsibility. The system will consist of a base vehicle equipped with hand-held, portable and mounted, current and advanced NBC detection and identification equipment, surface samplers and collective protection, environmental control, auxiliary power supply, navigation, meteorological data processing and internal and external communication systems. It will be configured while deployed to allow full operation with the standard warning and reporting system.

Joint Service Lightweight Integrated Suit Technology — The JSLIST will increase chemical protection for the entire joint community. It will reduce heat stress, have an improved fit (reduced bulkiness) and extended wear. It replaces the battle dress overgarment (BDO), the chemical protective overgarment (CPO) and the Saratoga (the first version of the HSLIST suit originally fielded by the Marines).

Bio Immunoassay Tickets — These hand-held biological agent surface detection and identification kits will provide commanders with a quick tool to identify biological warfare agents and determine the need for expansion and reduction of response efforts.

> "Hence to fight and conquer in all your battles is not supreme excellence; supreme excellence consists in breaking the enemy's resistance without fighting."
>
> — Sun Tzu, *The Art of War*

Response to, and mitigation of, a WMD incident will require the efforts of everyone in the joint community. Accordingly, NBC equipment has become a joint responsibility in accordance with the National Defense Authorization Act of 1994, Public Law No. 103-160, Section 1703 (50 USC 1522). Previously the Services researched, developed and acquired equipment for their own branch, now this is a joint endeavor as well. The planning process is complex since Air Force plans must dovetail into those of other Services and federal agencies and those of state and local community response forces, but the extra efforts are worth the ultimate goal — defending our country.

Marty Spikes is the NBC Equipment Logistics manager, HQ AFCESA, Tyndall AFB, Fla.

The need to respond quickly to, and mitigate, WMD incidents is driving joint military and civilian cooperative efforts such as Top Off 2000. Here, members of the U.S. Marine Corps Chemical Biological Incident Response Force supporting Joint Task Force Civil Support prepare simulated terrorist attack victims for decontamination at Exercise Top Off 2000. *(Photo by MSgt Steven M. Turner)*

McConnell Civil Engineers Shape Total Force Into Reality

by Jason Whited
931st ARG Public Affairs

Reaching across lines that have traditionally separated them, a handful of Reserve, active duty and Air National Guard civil engineers spent the last year developing a chemical and biological decontamination system they believe will not only help save lives but will prove that the idea of a Total Force is a workable reality.

The 10-man team was led by Reserve civil engineers from McConnell's 931st Air Refueling Group and included airmen from the 22nd Air Refueling Wing and the Kansas Air National Guard's 184th Bomb Wing. They spent the last year overcoming prejudices and misperceptions each unit had about the others and have formed the close working relationships officials insist are necessary for the Air Force to become a Total Force.

Formed in late 1998, McConnell leaders tasked the team with developing a way for troops to decontaminate themselves and their uniforms in the event of a chemical or biological attack. Up to that point, none of the three units had a viable system (the 22nd ARW came closest). Base officials were looking for something they could use to train airmen to decontaminate themselves during exercises and take with them on real-world deployments.

The team brainstormed and came up with the idea of buying raw materials and building a system based on their own design. They worked side by side for months, throwing around ideas, creating and then scrapping various concepts, until they hit upon the idea of using PVC pipe and plastic containers to build something resembling an assembly line where troops could go from station to station, decontaminating and removing different items of clothing at each stop.

"We found that our system was cost-effective, easy to repair and superior to any outside system that was available," said Findley. "It's also easy to palletize, and we can adapt it for any situation we're in, including the three different groundcrew ensembles in the inventory."

Base officials were so impressed with the contamination control area (CCA) system that all three units adopted it as their standard. In addition, they believed the team's invention was good enough to become the standard for the entire Air Force. Before long, Findley and his team were on the road demonstrating their CCA system for everyone from officials at the Air Force Civil Engineer Support Agency to Pentagon brass. Officials who examined the McConnell system liked what they saw. MSgt Sam Love, AFCESA readiness plans manager, said there are many good things about the system.

"It was easy to put up, it was lightweight — it was a really inventive idea," Love said. "It was the first system I've seen come through the Air Force suggestion program that complied with the regs."

AFCESA officials said that although the McConnell system probably won't become the Air Force standard (a commercially manufactured system has recently been approved by Air Staff), the initiative and creativity the McConnell troops showed was impressive.

Capt Joe Wible, 931st ARG performance planner and the team's facilitator, said the system is so effective it's being considered by the Kuwaiti military as their official CCA system.

Wible added that Air Force leadership has been so impressed with both the team and their new CCA system, the project was both the Air Force Reserve Command and the Air Mobility Command nominee for this year's Chief of Staff Team Excellence Award. Wible praised the team's efforts and predicted victory at the Air Force level. "This is the first operational project I've seen that actually used the quality tools to develop a great product. Their results speak for themselves."

Team members said they feel good about meeting their goal and being able to gel as one unit. That sense of teamwork has carried over into the three CE units' day-to-day operations as well, said Findley. "There's a lot of sharing information," he added. "I'll teach a class for the 22nd during the week when they need help, and they help us on weekends. And the Guard is very helpful with the mask fit program. We no longer view one another as Guard, active duty or Reserve, but as readiness troops with the same goals and responsibilities."

McConnell AFB civil engineers developed a processing line that is lightweight and easy to assemble. Airmen go from station to station decontaminating and removing items of clothing. *(Photo courtesy TSgt Morris Findley)*

60 Years of Aviation Engineering

by Lois E. Walker
HQ AFCESA Historian

In June 1940, a handful of officers and 80 enlisted men assembled at Fort Benning, Ga., to form the Army's first engineer regiment dedicated to meeting the construction needs of Army Air Corps units overseas.

As Air Corps leaders began assembling the world's largest air armada in preparation for America's inevitable entry into World War II, they recognized that a successful multi-theater war would require far more than Congressional appropriations, airplanes, aircrews and equipment. What the Air Corps needed was its own engineers — troops that trained and worked with aviators, spoke their language and understood the needs of aerial combat units.

An Aviation Engineer uses a bulldozer to clear a hard stand area for a Boeing B-29, Guam, Marianas Islands, March 1945.

The 21st Engineer (Aviation) Regiment, activated and trained in the sweltering summer heat of Georgia in 1940, was the first unit of its kind and the forerunner of more than 150 Engineer Aviation Battalions that saw duty during World War II.

More than 150,000 Aviation Engineers served the Army Air Forces during the war. They were trained to rapidly construct advance airfields close to or even behind enemy lines and were equipped to repair airfields damaged by enemy bombing. They were skilled in the camouflage of airfields and the construction of defensive works and they were also armed, taking an active part in defending their airdromes with bazookas, antitank and antiaircraft guns, grenade launchers, armed half-tracks and antitank mines.

In Europe, Aviation Engineer units built bomber, transport and fighter bases for Eighth Air Force in England. After the invasion of North Africa in November 1942, they constructed airfields along the coasts of North Africa and in Kenya, then on the islands of Sicily and Corsica. By the end of the campaign the 10 battalions in theater had built or improved 129 airdromes.

Aviation Engineers played a critical role in the Normandy invasion and the advance across Europe. Under Ninth Engineer Command, the first engineer units landed on Utah Beach on D-Day and, despite heavy losses of men and equipment, had an emergency landing strip built within 11 hours. By D plus 16, five fighter-bomber groups were based in Normandy, operating from four newly constructed airfields. Engineers followed the front across Europe and worked on airfields in Germany, Austria and Czechoslovakia. By V-E Day, 11 months

An Engineer Aviation Battalion constructs a bomber runway near Eye, England.

later, nearly 250 airfields had been constructed or reconditioned for Allied use. During their peak period, Ninth Engineer Command put an airfield into service every 36 hours.

Aviation Engineers were a precious commodity in the Pacific, prompting General Douglas MacArthur to comment, "This is an engineer's war." The challenges for the Aviation Engineers in the Pacific were nearly insurmountable. To carry the war to the Japanese required staggering logistical support. They constructed airfields in the heart of impenetrable jungles. They constructed facilities on coral atolls where every stick of lumber and bar of steel had to come from 3,000 miles away. They off-loaded heavy construction equipment through pounding surf without harbors. They secured water supplies on desert islands where fresh water was nonexistent and attempts to dig wells were met by seawater at a depth of four feet.

In the Philippines they repaired airfields, scraped out emergency runways, and eventually served as infantry before surrendering at Corregidor. Aviation Engineers and Seabees worked together to provide airfields on newly-captured islands like Christmas, Ellis, Tarawa and Kwajalein. American aircraft were flying missions from these new facilities often before the Japanese were ever aware that construction was underway.

Airfields in the Marianas were of unprecedented scale to accommodate the giant B-29s. Five 800-man battalions worked around the clock on Saipan, battling coral, bad weather and Japanese infantry attempting to overrun the base.

In preparation for MacArthur's return to the Philippines, Aviation Engineers constructed massive basing complexes at Port Moresby, New Guinea, to serve as a springboard for the invasion. In the China-Burma-India Theater, a handful of engineers advised Maj Gen Claire Chennault on airfield construction and oversaw construction of airfields for Fourteenth Air Force by Chinese laborers.

In Burma there were Airborne Aviation Engineers, units specially equipped to parachute in ahead of other troops to capture airfields or construct new ones with hand tools, then be promptly reinforced by glider-borne engineers carrying light and miniature equipment.

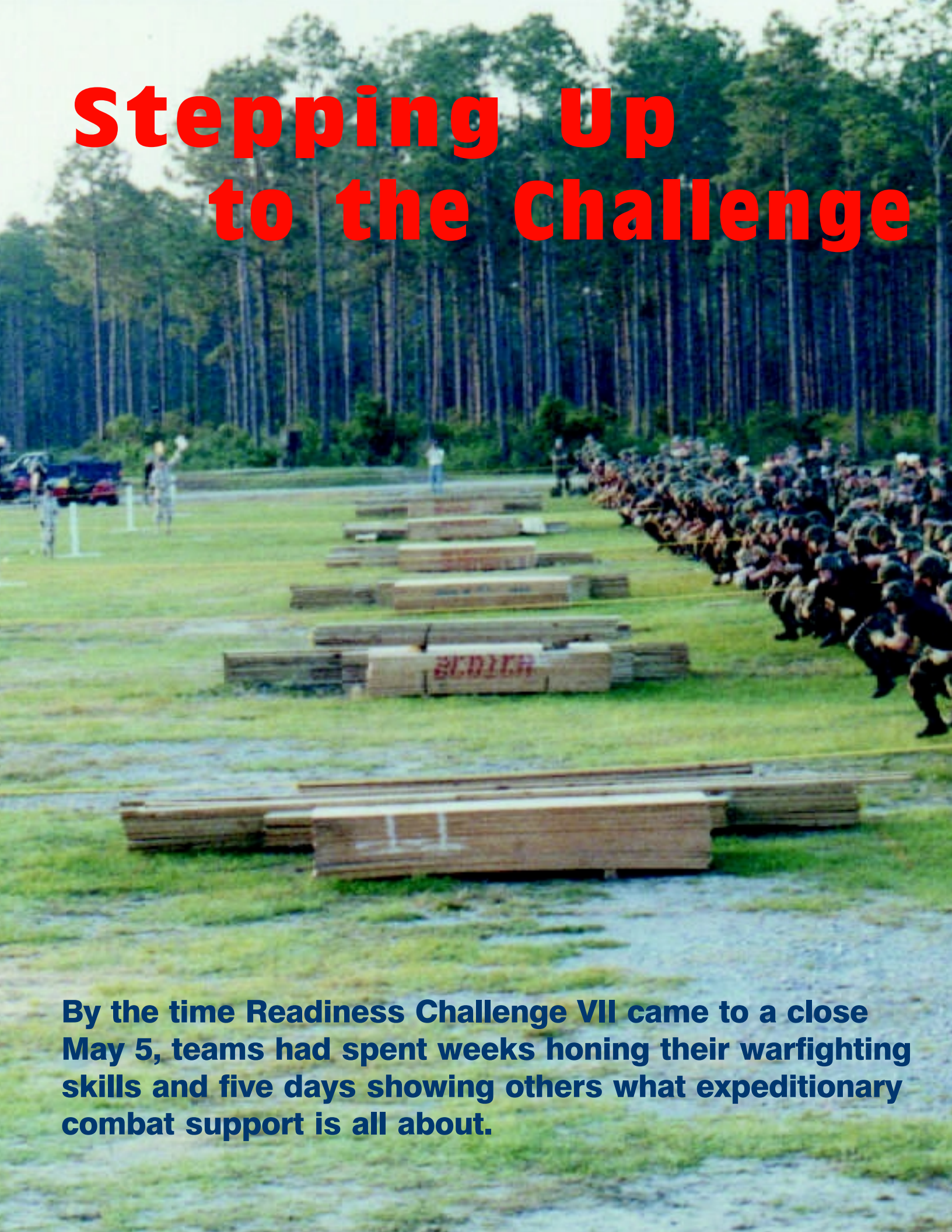
They constructed an airfield behind enemy lines in support of Maj Gen Charles Wingate's famous Chindits. From 1942 to 1944, five Engineer Aviation Battalions faced incredible odds, not to build airfields but to assist in construction of the Ledo Road that stretched from India to Burma to carry supplies on to China. Once the road was finished, they began constructing airfields in China.

By the end of World War II, Aviation Engineers had built or improved 1,000 airfields around the world. A total of 157 Engineer Aviation Battalions saw duty during the war, 48 of which were segregated units composed of African-American troops. In addition, there were 16 Airborne Engineer Aviation Battalions.

Sixty years later, their legacy lives on. In the aftermath of the Readiness Challenge VII competition, we reflect on their valor and sacrifice and honor them for building the foundation for today's Air Force civil engineering force.

The 1884th and 1887th Engineer Aviation Battalions build a protected harbor at Saipan Village on Angaur Island in the Caroline Group. Here, giant bulldozers pull pontoon causeway to a new position, Oct. 1944.

Stepping Up to the Challenge



By the time Readiness Challenge VII came to a close May 5, teams had spent weeks honing their warfighting skills and five days showing others what expeditionary combat support is all about.

"Size is not the key to a strong military, capabilities are." — General Michael E. Ryan, Air Force Chief of Staff

by Letha Cozart
Editor

In a field of competitors the caliber you see at Readiness Challenge, it's often the ability to bond as a team that distinguishes the winners from the others. That bond made the difference for Air Force Space Command, winners of this year's competition.

"Teamwork was everything," said AFSPC team member A1C Justin Rhodes. "We really came together and were there for each other, we showed team spirit throughout the whole competition, and that's what won it for us."

Teamwork and, according to fellow team member MSgt Cliff Backman, a lot of work. "We got up early in the morning and stayed up real late at night," he said. "We had been working on this since last year when the competition was canceled. Most of the team was back from last year, so we all knew each other, and we had 10 or 15 new members. When we all came together, we clicked as a team."

The AFSPC team was made up of individuals from the 90th Space Wing, F.E. Warren Air Force Base, Wyo., augmented by members from the 21st SW, Peterson AFB, Colo.; 30th SW, Vandenberg AFB, Calif.; and 45th SW, Patrick AFB, Fla.

"I love Readiness Challenge and what it brings to the fight," said CMSgt William D. A. Armstrong, Command Readiness Manager, Headquarters Space Command. "This is good for all our folks at home station because when we go back we take this enthusiasm and spread it among our people."

Participants' enthusiasm spread to observers as well, including Chief Master Sergeant of the Air Force Frederick "Jim" Finch who was attending his first Readiness Challenge. "It absolutely charges you up to come out and do this," he said, "Everybody gets pumped up about what they do and the importance of it. When you come to a competition like this, the other types of issues that are happening in the Air Force all get pushed to the back and what we really do, what we bring to the nation, is highlighted. Everyone else like me who comes down to watch this, we come down not just to support people but because it pumps us up to be around great people who are doing great work for the United States Air Force."

Leadership, Teamwork, Ingenuity

Readiness Challenge VII pitted 16 teams of civil engineer, services and chaplain service personnel from nine Air Force major commands, two direct reporting units, the Air National Guard and four foreign countries against one another in 21 competitive events at the Silver Flag Exercise Site, Tyndall Air Force Base, Fla.

The competition is hosted by Det 1, 823rd RED HORSE, operators of the Silver Flag Exercise Site, and Headquarters Air Force Civil Engineer Support Agency. Events are designed by the 823rd RHS, with coordination from the three functional sponsors, to test leadership, teamwork and ingenuity. Teams trained to compete in 45 possible events, not knowing which 21

(Photo by SMSgt Robert Tanner)

3rd Wing
Elmendorf AFB, Alaska

10th Air Base Wing
U.S. Air Force Academy, Colorado

11th Wing
Bolling AFB,
District of Columbia

16th Special Operations Wing
Hurlburt Field, Florida

48th Fighter Wing
RAF Lakenheath, UK

60th Air Mobility Wing
Travis AFB, California

75th Air Base Wing
Hill AFB, Utah

90th Space Wing
F.E. Warren AFB, Wyoming

they would actually compete in until the day they arrived.

Teams were scored on completing timed events with penalties and bonus points factored in. If two teams received the same number of points, the winner was determined by the fastest time. Three event scores were deliberately withheld at each nightly score posting, so the winner wouldn't be known until the awards ceremony the final night.

"What they're doing here translates to their mission in the field," said Chief Finch. "At any deployed location that I have been to, these are the communities that make the most significant impact on quality of life for the people there. They're often better appreciated in a deployed environment than they are back home because people can see the impact of what they do," he said.

"But it's not just about training," the chief added, "it's also about the confidence level that one walks around with that says 'I can go anywhere in the world and I know that pretty much wherever I step I can make this happen.' That's a heck of a confidence level for our young airmen to observe. When we participate in exercises like Readiness Challenge we all get better, not just those who are on the teams."

Partners In Peace

RC-VII teams were originally selected by random drawing in early 1999, before the competition was postponed due to requirements of Operations Allied Force and Sustain Hope in Southern Europe. When the competition was rescheduled, real-world commitments forced a redraw in some commands and forced the German team to withdraw. In the end, four international teams (two full and two partial) competed, while observers came from France, Greece, Israel, Italy and the Republic of Korea — the most international participation in any Readiness Challenge to date.

"Most of the observers we had were weighing participation in a future event," said Lt Col Wayland Patterson, RC-VII project officer. "Going back to Readiness Challenge III, we have a history of countries observing one competition then sending teams to the next one. The Canadians were the first, with three competitions under their belt, followed by the United Kingdom with one."

Representatives from Germany, Japan and Turkey observed RC-VI. The Japanese sent a partial team to RC-VII. "The Germans intended to have a team here," said Patterson, "but had to cancel due to commitments they have supporting their operations in Kosovo and Bosnia."

One item teams took home from RC-VII was experience in working with other countries' equipment. The Canadian and British events, the CF-188 Aircraft Decoy and Field Harrier Hide, respectively, helped level the playing field and test U.S. participants' ability to assimilate new information and learn new procedures quickly.

"The other teams seemed to do quite well in the Canadian event once they got it sorted out," said Capt George Pankiw of the Canadian team. "Having the international events was great. It was fun to see how each team would do."

"These days with expeditionary warfare, my guys operate alongside Air Force engineers in Saudi Arabia, Kuwait, Italy and Turkey and the nice thing is they're meeting people here that they've seen on operations," said Col William A. Bailey, 12 (Air Support) Engineer Brigade, Waterbeach, Cambridge, U.K. "What we should do in the future is meet more in training and then do operations together," he said.

"Based on the experience of the international teams in the competition, there is a definite interest in increasing the number of national allies that participate," said Maj Ken Bailey, chief, contingency training, HQ AFCESA. "Japan has indicated that they are going to attempt to compete with a full team in the next competition."

Training to Win

International teams faced several challenges before arriving, the two most pressing being language and equipment. The Japan Air Self Defense team studied and trained for Readiness Challenge for two years. They also sought advice from the experts — Pacific Air Forces, winner of Readiness Challenge VI.

The U.K. and Canadian teams trained for two weeks with the 201st RED

HORSE Flight cadre at Fort Indiantown Gap, Pa., using U.S. equipment and procedures. The Air National Guard team trained there as well.

"We really enjoyed training with the other teams at Fort Indiantown Gap, the Air National Guard and the United Kingdom," said Capt Pankiw. "We developed quite a bond between our three teams."

Colonel Bailey said the U.K. team couldn't have done it without the help of personnel at Ramstein or the ANG team. "We went out and did some training at Ramstein, and that was topped off and reinforced by the Guard looking after us a bit," he said. "You just can't compete with the level of professionalism displayed by these engineers. Then, coming down here, I've never seen such a well organized competition. It demanded so much from the team as a whole, but we got so much out of it," the colonel said.

For the Air Force Reserve Command and Air National Guard teams, the logistics of getting everyone together to train was a challenge. The AFRC team was made up of members from 10 different states. They trained independently on weekends at five different sites.

The Air National Guard team had a similar obstacle to overcome. "We were only able to compete due to a total team effort of families and employers. The true heroes in our mind are the spouses, children, significant others, parents and employers who make sacrifices," said ANG team OIC Maj Chico Messer.

"Readiness Challenge is a great investment," he said. "Our team members say they've received more intense training in three months than in three years. You can see it in their increased confidence.

"We want to have a good competition and enjoy it, but the most important thing to get out of this, is to go home better for the experience, better trained and with the confidence that we can perform the mission in concert with the active duty Air Force. And we want our counterparts on active duty to have confidence that the Guard is ready for any contingency, in peacetime or wartime," Messer said.

International Engineers Meet

This Readiness Challenge included the first-ever Senior International Engineer Meeting, attended by officers representing the four competing countries, along with France, Israel, Italy, Greece and the Republic of Korea. Maj Gen Earnest O Robbins, II, The Air Force Civil Engineer, hosted the forum at the Silver Flag Exercise Site to take advantage of the opportunity to exchange civil engineer ideas and concepts.

The meeting included briefings by the participants on their service's engineer organization, capabilities, deployment implementation and strategies. An open discussion chaired by Col Timothy Byers, Readiness and Installation Support Division Chief, Office of The Civil Engineer, covered deployment capabilities and response to humanitarian operations, peacekeeping and wartime CE requirements. The exchange was so successful that the international engineers decided they should meet annually. Colonel Byers is working with the United Kingdom to host next year's event.

Founders' Forum

Readiness Challenge is built on the contributions of several retired Air Force civil engineering senior leaders, known as the Founders. Among Founders attending RC-VII were Maj Gen Eugene A. Lupia, Brig Gens William T. Meredith, Archie S. Mayes and John Peters and CMSgt Arthur J. Hanrahan.

The Brig Gen William T. Meredith Award is given to the team that compiles the highest overall score in the competition. The award honors General Meredith's work on behalf of civil engineer and services people, which paved the way for Prime BEEF, RED HORSE and Prime RIBS teams.

"What I see today is that Prime BEEF continues to pay off tremendous benefits, thanks to the dedicated performance of these people," General Meredith said, "Their integrity and *esprit de corps* are second to none."

MSgt Gerald Stroud and MSgt Tom Allocco, Readiness Challenge VII Media Center, contributed to this report.

134th Air Refueling Wing
McGhee Tyson ANGB,
Tennessee

314th Airlift Wing
Little Rock AFB, Arkansas

366th Wing
Mountain Home AFB, Idaho

927th Air Refueling Wing
Selfridge ANGB, Michigan

14 Wing
Greenwood, Nova Scotia,
Canada

Kouku-Shisetsutai
(Air Civil Engineer)
Tokyo, Japan

Base Defense Group
Camp Kolsås, Norway

48 Field Squadron
(Air Support)
and the Royal Air Force
Waterbeach Cambridge, UK

Brigadier General William T. Meredith Award

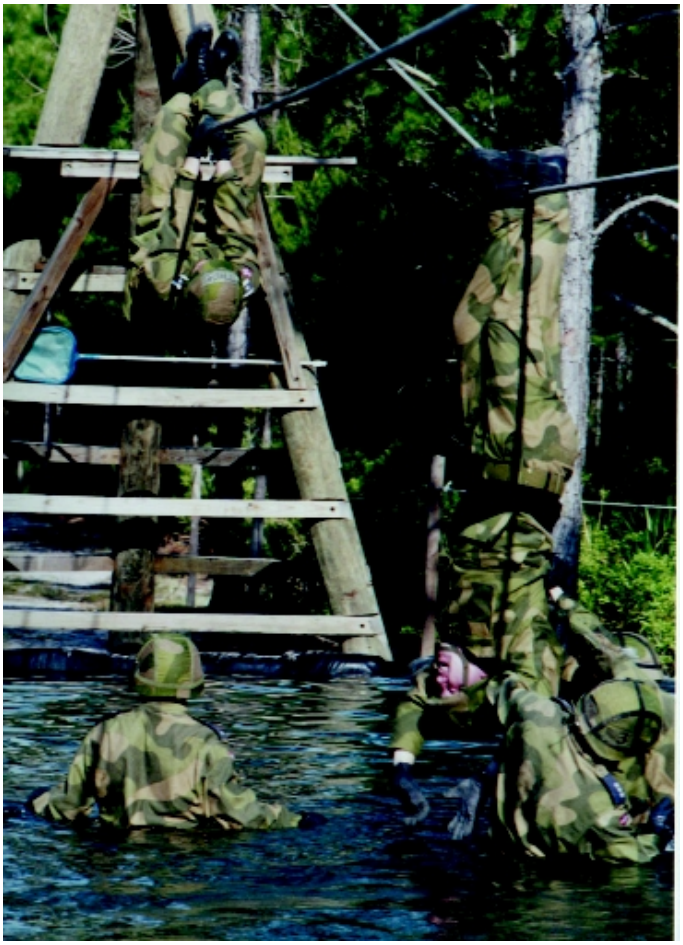
Awarded to the "Best of the Best"

Air Force Space Command
1st Runner-Up - *Pacific Air Forces*
2nd Runner-Up - *Air Mobility Command*

Major General James E. McCarthy Readiness Award

Awarded to the team winning the Fog-of-War event.

Air Force Special Operations Command
Runner-Up - *11 Wing*



(Above) **The ANG team competes in the U.K.-sponsored Field Harrier Hide event, which tested their ability to hide a warfighting jet from enemy forces.** ***(Photo by SMSgt Robert Tanner) (Top, right)*** **The Team Obstacle Course event is the downfall (in more ways than one) of many, especially the "slide for life" rope climb over water. Here, Norway members wade in to help a teammate down the rope.** ***(Center)*** **AFRC hammers in the roof assembly during the Hardback Construction with Lighting event. The hardback tent is constructed without power tools.** ***(Photo by SMSgt John Chapman) (Right)*** **USAFA competes in the M-2A Burner event, where they are evaluated on safely disassembling, assembling and lighting the unit.** ***(Photo by SMSgt Robert Tanner)***

Chief Master Sergeant Arthur J. Hanrahan Award

Awarded to the team that receives the highest composite score from all Prime BEEF events.

Air Force Space Command

Force Beddown Award

Awarded to the team that receives the highest composite score from all force beddown events.

United States Air Forces in Europe

Force Beddown Event Winners

Tent Extendable Modular Personnel (TEMPER) Tent Erection
Air Force Space Command

Hardback Construction With Lighting
United States Air Force Academy

General Purpose (GP) Medium Tent Installation With Heater
Air Mobility Command

Camouflage, Concealment and Deception (CCD) Procedures
Air Force Space Command

Live Fire Operations
Air Mobility Command

Ventilation and Fire Rescue Operations
Air Mobility Command

Contingency Airfield Operations
Air Education and Training Command

CF-188 Aircraft Decoy (Canadian Event)
Canadian Air Force

Base Recovery Award

Awarded to the team that receives the highest composite score from all base recovery events.

Air Force Space Command

Base Recovery Award Winners

Team Obstacle Course
Air Mobility Command

Stand-Off Munitions Disruption (SMUD)
Air Education and Training Command

Chemical Munitions Response
Air Mobility Command

M-16 Combat Rifle Marksmanship
United States Air Forces in Europe

Field Harrier Hide (United Kingdom Event)
United Kingdom

11 Wing completes the Live Fire event, which evaluates a team's ability to extinguish an aircraft fire using firefighting vehicles. ***(Photo by SMSgt Robert Tanner)***

There I was ...

Asleep — at the Readiness Challenge VII Awards Banquet. I was just tired, dog tired. So tired that I fell asleep at the table in a hangar filled with a couple hundred rowdy civil engineers and several distinguished visitors, including Gen Michael E. Ryan, Air Force Chief of Staff.

So there I was catching some z's, getting ready to celebrate an Air Force Space Command victory (I knew we were going to win from the start), when the band started playing the Air Force Song and the crowd started cheering. I woke up. General Ryan was sitting right next to me, smiling. He said something, but I can't remember what it was. I couldn't remember where I was. I had no idea what was going on. Luckily, my teammates kindly captured the moment with plenty of photos. *(SrA Trent D. Strayer, 90th CES)*

It just doesn't get any tireder than this. **Gen Michael E. Ryan poses next to sleeping AFSPC firefighter SrA Trent D. Strayer at the RC-VII awards banquet. *(Photo courtesy AFSPC)***

(Above, left) **AFMC competes in the Fog of War event. This year's Fog of War scenario tasked teams with establishing a non-combatant evacuation beddown site following a terrorist bombing. *(Above)* AETC members compete in the Chemical Munitions Response event. *(Photos by SMSgt Robert Tanner)* *(Left)* USAFE completes the Canadian-sponsored CF-188 Aircraft Decoy event, which required teams to rapidly assemble and deploy a CF-188 aircraft decoy. *(Photo by SMSgt John Chapman)***

(Opposite page, clockwise from top) **The U.K. team sets up a minimum operating airfield for the Contingency Airfield Operations event. *(Photo by SMSgt Robert Tanner)* ACC secures a GP medium tent over a hardback during the General Purpose Medium Tent Installation with Heater event. *(Photo by SMSgt John Chapman)* PACAF prepares to camouflage an M-35, 2.5-ton cargo truck during the Camouflage, Concealment and Deception event. *(Photo by SMSgt Robert Tanner)* A1C Les Whitehead, AFSOC, strikes a match to fire up the heater during the Immersion Heater Operation event. *(Photo by SMSgt John Chapman)***

Services Combat Excellence Award

Awarded to the team that receives the highest composite score from all Prime RIBS events.

Air Mobility Command

Prime RIBS Event Winners

M-2A Burner Unit with Safety Device Operations
United States Air Forces in Europe

Immersion Heater Operation
Pacific Air Forces

Pallet Build-Up and Forklift Course
Air Mobility Command

Remains Processing
Air Mobility Command

Chaplain Robert P. Taylor Award

Awarded to the outstanding chaplain readiness team.

Air Mobility Command

Chaplain Service Event Winners

Global Ministry
United States Air Forces in Europe

Crisis Intervention
Air Force Special Operations Command

Chaplain Service M-16 Combat Rifle Marksmanship
Air Combat Command

Major General George E. Ellis Award

Awarded to the most outstanding civil engineer participants demonstrating the spirit and principles of professionalism, leadership and teamwork.

AFRC — TSgt William L. Cohoe, *927th CES*
USAFE — TSgt Patrick J. Cowhey, *48th CES*
Canada — MCpl Eric Critchley, *CE Section, CFB Halifax*
AFSPC — TSgt Thomas DeVille, *90th CES*
ANG — MSgt Michael A. Dishman, *134th CES*
AFMC — TSgt Michael G. Gribble, *75th CES*
Japan — SSgt Hideki Inoue, *Japan Air Self-Defense Force*
AFSOC — SSgt Christopher W. Long, *16th CES*
USAFA — TSgt Gary McCubbin, *10th CES*
UK — Cpl David Price, *48 Field Squadron*
AMC — TSgt H. Tod Rosenberg, *60th CES*
ACC — Capt Mark V. Slominski, *366th CES*
PACAF — SrA Neil W. Sophia, *3rd CES*
Norway — Capt Oyvind Vindenaes, *Base Defense Group, Camp Kolsås*
11 Wing — SSgt Wayne W. Wood, *134th CES*
AETC — TSgt Brenton G. Woolley, *314th CES*

Chief Master Sergeant William E. Morrison Award

Awarded to the most outstanding services participants demonstrating the spirit and principles of professionalism, leadership and teamwork.

AFSPC — MSgt Clifford H. Backman *90th SVS*
USAFE — MSgt Kenneth J. Garnand, *48th SVS*
AFSOC — SrA Christopher D. Griste, *16th SVS*
UK — Sapper Darren I. Ingram, *48 Field Squadron*
ACC — A1C Dax A. Keehu, *366th SVS*
AFMC — SSgt Jeremy A. Kell, *75th SVS*
AFRC — SSgt Mary C. Miller-Huff, *934th SVS*
AETC — TSgt Archie D. Morgan, *314th SVS*
PACAF — SSgt Efrain Reyes, *3rd SVS*
Canada — MCpl Gerald Riles, *14 Wing Greenwood*
ANG — MSgt Cecil Risden, *134th SVS*
USAFA — SSgt Herb Romero, *162nd ANG*
11 Wing — SSgt Diana B. Williams, *11th SVS*
AMC — SSgt David S. Wisecarver, *60th SVS*

(Above) **Canada competes in the M-2A Burner Unit event.** ***(Left)*** **Japan team members set up an immersion heater for the Immersion Heater Operation event.** ***(Photo by SMSgt Robert Tanner)***

(Opposite page, top) **Chaplain (Capt) Brian Plate, AFMC, gives support to an acting security forces individual during the Crisis Intervention event, which was run simultaneously with the Chemical Munitions Response and Remains Processing events.** ***(Center)*** **AETC picks up their TEMPER tent and places it on the plywood floor for the Tent Extendable Modular Personnel (TEMPER) Tent Erection event.** ***(Photos by SMSgt John Chapman)*** ***(Bottom)*** **AMC competes in the U.K.-sponsored Field Harrier Hide event.** ***(Photo by TSgt Scott Thompson)***

Filling the Joint Engineer Gap —
Preparing to staff a JTF

by Lt Col Gregory J. Schmidt, P.E.
Joint Warfighting Center

Recent worldwide deployments have shown that U.S. Air Force civil engineers must be prepared to go beyond working alongside their service counterparts. To succeed in a joint environment, they must be prepared to coordinate and synchronize their activities with other services to meet mission requirements. This coordination normally occurs within a Joint Task Force (JTF) headquarters, which is formed *ad hoc* to meet specific missions in a defined Area of Responsibility (AOR).

The JTF engineer staff, typically captains, majors and lieutenant colonels, has responsibility for coordinating engineer activities, both troop and contract, throughout the AOR. While familiar with Air Force capabilities and requirements, civil engineers are generally not provided with much training on other service capabilities, nor with standing procedures for working in a joint environment. As a result, most face a steep learning curve when called upon to serve in a JTF.

This article will describe some key responsibilities of engineers in a joint environment, keys to success learned from recent deployments, training opportunities offered at the Joint Warfighting Center, and reference sources for joint engineer doctrine.

JTF Engineer Responsibilities

The JTF engineer has a big job: Establish JTF engineering policy and guidance; exercise staff responsibility for facilities, real estate, design and construction, real property maintenance and environmental management; and forecast and monitor the flow of engineer resources (people, equipment and supplies) in the Joint Operations Area (JOA). To execute these significant responsibilities, the JTF engineer chairs the Joint Civil-Military Engineering Board (JCMEB). This board, which may include U.S. Embassy, Defense Agency and JTF staff representation, sets policies, procedures and priorities for the overall civil-military engineering effort in the JOA.

The JTF engineer also chairs the Joint Facilities Utilization Board (JFUB), which reconciles service component requirements for real estate, facilities and inter-service engineer support, and the Joint Environmental Management Board (JEMB), which establishes policies and overall direction for environmental management in the theater.

These boards are optional, but are contained in doctrine as a common template from which JTFs may draw to organize their efforts. The JTF engineer and staff must determine if and when to establish these boards, as well as their span of control and relationship with each other.

Keys to Success

Discussions with engineers who have successfully completed joint deployments, and observer-trainers from U.S. Joint Forces Command (USJFCOM), yield several important themes that can result in well-coordinated engineer support.

Establishment of Command and Control relationships is critical to JTF success.

If the JTF mission is focused on sustainment, such as a humanitarian assistance deployment, the engineer often works for the J4 (director of logistics). If ground conflict is anticipated, the JTF engineer and his staff may fall under the J3 (operations) to take advantage of their combat engineering capabilities such as mining, or building and breaching obstacles. (In this case, Air Force civil engineer Prime BEEF teams would normally report through the Joint Force Air Component Commander, or JFACC.) If the JTF has a heavy engineer mission, such as response to a natural disaster, the JTF engineer may work directly for the commander as a special staff element.

In practice, engineers often argue in favor of working directly for the commander. If this option is chosen, special care must be taken to ensure good communication with the J4 staff to avoid duplication of effort — for example, logisticians simultaneously writing contracts to execute projects in the JOA while engineers deploy troops to accomplish the same requirement.

Sometimes a split-based JTF configuration is chosen to minimize the JTF's footprint, logistics tail and exposure to risk. Since no doctrine exists to define which functions are "forward" and which remain in the "rear," the engineer's job then includes determining responsibilities and lines of communication for the staff.

Regardless of where the JTF engineer fits in the staff, engineers should be engaged on the J4 logistics staff, J5 planning staff and often the J2 intelligence staff. The bottom line is, the JTF commander has authority to structure his staff according to mission requirements and his discretion, but engineers need to maintain good communication across all staff lines to effectively support the mission.

It is important to remember that the JTF engineer is always serving in a "staff" role and exercises no command authority. Deployed engineers have command authority over their units in the field and are the "operators" that make it happen.

A detailed mission analysis, comparing engineer capabilities to requirements, must be performed by the engineer staff.

Engineer requirements are determined by the mission and end state, and could range from constructing bare base infrastructure to building refugee camps. Engineer capabilities include not only deployed forces, but contracted capability such as AFCAP (Air Force Contract Augmentation Program), and may include host nation support. It is the JTF engineer staff's responsibility to know the capability of various engineer units and make recommendations for their proper employment.

As the engineer staff prioritizes competing requirements, they should consider that "force multipliers" are not always the silver bullet they may appear to be. For example, if civilian contractors are used, they may require force protection assets, which have sometimes been drawn from military engineers, degrading organic capability. Also, if requirements are contracted and materials or equipment must be shipped into the theater, there is presently no effective method for incorporating the contracted deployment requirement into the time-phased force and deployment data (TPFDD). Thus, if airfield or seaport space is at a premium, other mission areas will be impacted when the APOD (aerial port of debarkation) space is used — the process will simply become more difficult for the Joint Movement Center (JMC) to manage.

In addition to prepositioned stocks and force beddown assets such as Harvest Falcon, often substantial "hidden" assets such as Defense Logistics Agency stocks and allied coalition supplies may be available, but simply not considered because they are not normally visible to the engineer. Good staff communication is key to ensuring the engineer staff has full visibility of the spectrum of assets.

Once a mission analysis is completed, tracking resources and maintaining situational awareness is critical to success.

Manpower, equipment and materials are tracked to the AOR using the TPFDD, which is maintained by the JMC under the J3. Staff engineers should monitor the TPFDD, which is a dynamic document, to ensure engineers arrive with adequate time to construct and maintain facilities.

Key items such as construction materials are often in short supply. Since logistics support is generally a service responsibility, most JTF engineers can track critical materials through the service components, or by working closely with the Joint Material Management Board situated in the J4. JTF engineers should know that Unified Commanders-In-Chief (CINCs) have logistics directive authority, which means they can direct one service to provide critical supply items to other services to best meet theater mission needs. Logistics directive authority is a powerful tool which, at the CINC's option, can be delegated to the JTF Commander.

The JTF engineer staff should also monitor the condition of key airfields, seaports, roads and bridges, as well as the progress of assigned engineer projects. Monitoring the information flow in a dynamic environment where computers are used heavily for communication is a significant challenge. Defining Critical Information Requirements (CIRs) and determining/communicating locations for posting updates is critical. In the early, hectic days of a deployment, some JTF engineers have found it useful to devote an engineer exclusively to scanning message traffic and watching web sites to ensure that all key information is compiled and up to date.

Establishment of facility standards simplifies resource allocation and troop labor, contract costs and construction materials planning.

Allowing a variety of standards can result in well-publicized quality of life differences between services, which are ultimately counterproductive.

By simulating troops and weapons systems in the field, JWFC can train both JTF and Unified CINC battlestaffs while minimizing operations tempo and cost. For example, JWFC conducted Fuertes Defensas 98-99 last fiscal year, engaging the U.S. Southern Command battlestaff, the XVIII Airborne Corps commander and staff and service component staffs. It was conducted using advanced computers to train more than 1,500 service members. It was executed with the support of about 1,500 members and cost less than $4 million. In comparison, to conduct a field and fleet exercise of this magnitude would require the support of approximately 90,000 troops and cost roughly $25 million.

Joint Training

USJFCOM is a unified command, one of five combatant commands. Now that the U.S. military has reduced its forward deployed presence, USJFCOM has a significant role as "force provider" to the other unified CINCs. In this role, its mission is to:

- Train (meet the supported commander's requirements)
- Integrate (blend technology, systems and doctrine to improve interoperability)
- Provide continental U.S.-based, general purpose forces to combatant commanders in support of worldwide operations.

While each service uses its own training and education programs to meet *service* requirements, USJFCOM relies

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Decentralizing Central Heat Systems: ESPCs Help Make It Happen

The quest for greater energy efficiency is moving the Air Force toward decentralization of central heat plants at some installations. Civil engineers at Grand Forks AFB used an ESPC to finance this multi-million dollar switch.

by Tim Adams
HQ AFCESA, and
Michael Anderson
319th CES

Like most Northern-tier Air Force bases, Grand Forks AFB, N.D. has a central heat plant. The plant is unique, with seven contractor-owned boilers and three government-owned boilers tied together to run the entire base central heat plant system. The utility service contract was costing the base over $1.5 million and was up for renewal. It looked like a good time for a change — parts of the system were old, sections of the distribution systems were deteriorating, and the government was still responsible for operating and maintaining the entire system.

Grand Forks AFB used an ESPC contract to fund base infrastructure improvements such as these gas-fired, infrared heaters. *(Photo by TSgt Charles Morris)*

Decentralizing, converting buildings from high temperature hot water distributed from the central plant to natural gas heating systems installed at the point of use, would bring the heating load requirement of the central heat plant within the capacity of the government's boilers and eliminate the need for the contractor's boilers. In addition, energy consumption and costs would be reduced by installing more efficient heating systems and by eliminating heat loss from sections of the high temperature hot water lines that were deactivated.

Point of use or distributed systems included gas-fired infrared heaters and stand-alone boilers. Stand-alone boilers need occasional shop maintenance but not the 24-hour operations required by large heat plant systems. Also, infrared heating actually warms the skin and objects in the heated space, providing crews more comfort than a forced air heating system, which blows hot air down in a localized area.

An added benefit would be the removal of some unsightly above-ground distribution lines, pleasing everyone with improved base appearance. But while distributed systems are new and nice to have, they are also expensive.

With no federal funds available to make massive changes to their system, Grand Forks' 319th Civil Engineer Squadron turned to Headquarters Air Mobility Command and the Air Force Civil Engineer Support Agency for assistance with implementing an Energy Savings Performance Contract (ESPC) to solve their central plant problems.

ESPCs were developed as a contracting vehicle to reduce energy consumption at an installation while improving base infrastructure and quality of life for base personnel without up-front government investment. An ESPC contractor, or ESCO (Energy Service Company), pays all up-front costs to identify potential energy-saving projects, then acquires, installs, operates and maintains the new equipment for the duration of a long-term agreement. The contractor is paid out of the savings that result in the base utility service account due to the more efficient equipment. If the contractor's guaranteed savings don't materialize, then they make up the difference.

For Grand Forks, using an ESPC meant new infrared systems in the hangars, new boilers, new lights, new energy management control systems and new natural gas distribution lines throughout the base. Asbestos abatement and building demolition were an added bonus for the base.

Project implementation had a very tight time frame. Construction had to be started in March and completed by September for Grand Forks to meet its winter heating requirements. This meant knocking an 18-month construction program down to seven or eight months.

Getting a lot of people involved and keeping HQ AMC in the loop helped this happen very quickly. The base civil engineer, Lt Col Joseph Schwarz, chaired meetings involving HQ AMC, the BCE shops/design sections, financial management, contracting and legal, making sure everyone understood the process and assuring the task order would fulfill the government's requirements, and then briefed the wing commander on these actions. Having HQ AMC and the BCE at the meetings also provided the ESCO assurance of both Grand Forks' and the Air Force's commitment to this venture.

The preliminary evaluation was completed by the ESCO in less than six weeks, and by the beginning of December, 1999, the ESCO had the go-ahead to begin an intensive energy audit-analysis. The ESCO took only 2.5 months to perform this investment-grade audit, which included design analysis, cost breakdowns, potential energy savings, and development of a comprehensive implementation strategy and schedule. The final signed task order implemented improvements totaling over $10 million.

The plan was approved and construction began mid-March. The construction phase is now on track to be complete in August. Coordinating ESPC construction with a previously scheduled runway closure helped expedite the installation of the equipment in buildings located in the flightline area.

The BCE working to put everything together in one big package made this ESPC work. HQ AMC, the BCE shops/design section, financial management, legal and contracting were involved in the process every step of the way. Everything came together as a team effort — it would not have been possible otherwise.

Tim Adams is an ESPC project manager at HQ AFCESA, Tyndall AFB, Fla. Michael Anderson is the energy manager for the 319th CES, Grand Forks AFB, N.D.

Filling the Joint Engineer Gap

(continued from page 29)

on the Joint Warfighting Center (JWFC) as an avenue to train and exercise military personnel to work together in a *joint* environment. The JWFC trains potential JTF commanders and CINCs by exercising warfighting and support skills. The training audience forms the JTF, plans and executes the mission using powerful, state-of-the-art computer simulations.

Much JWFC training takes place at the Joint Training, Analysis and Simulation Center (JTASC) in Suffolk, Va. Here, engineers in the training audience are taught the fundamentals of joint engineering by USJFCOM observer-trainers, then coached as both planning efforts and execution unfolds.

Engineers have a pivotal role in planning, as detailed deployment plans are synchronized with infrastructure development and culminated in a validated TPFDD. For example, JFACC planners must not only de-conflict airfield use for Navy, Army and coalition airframes, but consider the limitations of sparse infrastructure when deploying forces in the TPFDD.

JTASC computers create high-fidelity simulations of combat forces that respond to weather, terrain and opposing forces. Simulations also replicate infrastructure conditions and can enforce limitations (damaged bridges, for example) on all exercise players. Roads, airfield pavements and petroleum, oils and lubricants storage capacity are other factors that must be considered. Each can be degraded or destroyed.

All training and education efforts are aimed at achieving the Joint Mission Essential Tasks (JMETs) defined by the unified CINC. If computer-based simulations do not produce results that engage engineers in achieving training objectives, scripted problems are inserted by the JWFC staff to ensure all JMETs are achieved.

The Way Ahead

Engineers with educational background and well-honed skills for working in a JTF can make a tremendous difference to mission accomplishment. Such leaders can provide clear direction, and minimize waste and duplication of effort in the field, by ensuring engineers on the ground get the resources they need.

While JWFC exercises are effective in training and exercising joint engineers, the number of personnel requiring training far exceeds JWFC capacity. Engineers can find out more on their own by reviewing current joint engineer doctrine in Joint Publications 3.34 and 4.04 at www.dtic.mil/doctrine/jel/index. Excellent references for background in planning and executing joint missions are in JP 3.0 and 5.0, as well.

Additionally, the HQ JTF Standard Operating Procedure is available on the Joint Distributed Learning Center page on the JWFC web site. Capabilities and limitations of other service engineers are available in Annexes of this SOP. The Joint Center for Lessons Learned can be contacted via JCLL@jwfc.jfcom.mil, or accessed through the JWFC web site at www.jwfc.jfcom.mil for updates and lessons learned from recent joint engineer actions. A training page on the Joint Staff J-4 web site, www.dtic.mil/jcs/j4/divisions/ed/ed.html, will soon be available as well.

The author wishes to credit material from the USJFCOM J4 Engineer Observer/Trainers curriculum and articles by Lt Col Anthony Vesay, "Engineer," April 1999, and Lt Col Vesay and Maj Jerry Kline, "The Military Engineer," June-July 1999, and the JTF HQ SOP, which were used in compiling this article.

Lt Col Greg Schmidt is the JWFC Training and Exercise Engineer, Suffolk, Va.

Reserve Civil Engineers Keep Rhein Main in Good Repair

Since the drawdown of the active duty civil engineer squadron at Rhein Main Air Base, Germany, a backlog of work orders has occurred across the installation. Twenty-six members of the 910th Civil Engineer Squadron, Youngstown/Warren Air Reserve Station, Ohio, deployed there on annual tour from March 4-19 to perform duties that had fallen behind.

"I've been very impressed with the work these people do here for us," said Col Stephen Nelson, commander of Rhein Main's 469th Air Base Group.

TSgt Gary Simmones, a structures craftsman with the 910th CES, ensures the bricks he is laying are level during a manhole project at Rhein Main AB, Germany, where he was on annual tour. ***(Photo by TSgt Bryan Ripple)***

"I've been around to see some of the work that's been done, and the facility managers are very thankful."

Through an agreement with Air Force Reserve Command, teams from Reserve civil engineer squadrons are rotated through the base to help local contractors with the backlog. The CES members spread out across the base in teams from their respective shops, tackling job orders that people have been waiting on for some time.

"This is an excellent opportunity for our people to receive Air Force specialty code-specific training," said Maj Chris Kenny, 910th CES mission commander.

Frank Bahm, a contractor in charge of coordinating arrangements for the reservists while at Rhein Main, helps coordinate projects that coincide with the type of training they need for their wartime skills.

"We'll have nine teams of civil engineers from various Air Force Reserve units here this year," he said. "I work closely with each team to make sure they have work that they need to be trained on in the required areas."

"It's great to see different ways of doing things," said SSgt Derek Sherman, an electrician with 11 years experience. "The construction codes are a little different here in Europe and that makes the job interesting," he said as he filled a work order to install electrical outlets in a security forces squadron dormitory. According to the work order, the job was requested two years ago.

Elsewhere on base, TSgt Randy Shimp, a carpenter and masonry specialist, helped install a new manhole cover over a power and communications junction near the Air Mobility Command passenger terminal. "I do this type of work for a living at my civilian job," said Shimp. "I grew up around this type of work, but I still enjoy learning and sharing experiences with other people."

"Although Rhein Main AB is scheduled to be given back to Germany Jan. 1, 2006, the work the 910th CES members did was very important for the continued operation of the base," Bahm said.

A second team from the 910th CES arrived at Rhein Main from April 8-23 to continue working on projects at the base.

"It's impressive to come in after our first team and see how much they accomplished and how well they did their work in the two short weeks they spent here," said Lt Col Fred Antoon, 910th CES commander. "The squadron as a whole did such a great job that on our last day, Col Nelson came out to personally thank us and extended an invitation to us to return anytime."

Reserve civil engineers from the following units are scheduled to perform annual tours at Rhein Main this year: 512th Airlift Wing, Dover Air Force Base, Del.; 434th Air Refueling Wing, Grissom Air Reserve Base, Ind.; 446th AW, McChord AFB, Wash.; 302nd AW, Peterson AFB, Colo.; and 913th AW, Willow Grove ARS, Pa. (*TSgt Bryan Ripple, 910th Airlift Wing Public Affairs)*

EOD Recovers WWI UXO

One recent Sunday afternoon in Tucson, Ariz., a couple went to a yard sale where they noticed a war souvenir. It was a 25-pound MK III fragmentation bomb that was made sometime between 1918 and 1930. Not fully knowing what the souvenir was, the couple decided to buy it.

As the new owners were driving home, they heard a ticking sound coming from the bomb, which was now in the back seat of their car. They quickly pulled into a gas station, removed the bomb from their car and placed it in the parking lot. To make the situation worse, the gas station was at one of the busiest intersections in town. The frantic couple then called the Tucson Police Department (TPD).

TPD uniformed officers arrived on scene, secured the area and began to divert traffic from the incident site. TSgt Raymond Fillion, SSgt Edward Patton and SrA William Raile, members of the 355th Civil Engineer Squadron Explosive Ordnance Disposal Team, Davis-Monthan Air Force Base, Ariz., responded to assist TPD's Hazardous Device Team in examining the bomb.

The bomb was initially examined with the "Bomb Robot." Next, Airman Raile performed a more thorough examination and X-rayed the device. The team determined that the bomb's fuze was mechanical in nature and that further disturbance of the bomb could cause it to detonate.

Together, both teams developed a safety plan for the incident site. TPD extended the cordon perimeter to ensure public safety and sandbags were ordered to create a barricade around the bomb. The EOD team then performed a standard de-arming procedure to render the device safe.

The teamwork of both units ensured the successful safing of the MK III Bomb without damage or injuries.

(Above) **The 25-pound MK III fragmentation bomb.** ***(Left)*** **An X-ray photo of the fuze head.**

Each year unsuspecting people put themselves and others in harm's way with "war souvenirs." Although most are harmless, many are still capable of maiming or killing a person. EOD personnel must be alert to the dangers of "antique" ordnance. No matter what its age, it could still be live. (*355th Civil Engineer Squadron)*

2000 Major-Selects

The following CE officers have been selected for promotion to major. Congratulations to all on their dedication and achievement.

David C. Abruzzi
Mark S. Allen
Craig S. Biondo
Matthew J. Bobb
Robert D. Bowie
Gregory K. Brown
Sherry A. Brown
Charles K. Busch
Frederick B. Cade
Daniel J. Clairmont
Andra B. Clapsaddle
Ardyce M. Clements
Matthew D. Conlan
Ricky D. Cox
Brett E. Crozier
Jacqueline Crum
Jon Y. D'Andrea
Christopher O. Darling
Justin C. Davey
Andre R. Dempsey
Timothy J. Denis
Timothy C. Dodge
Brian P. Duffy
John T. Enyeart
Earl A. Evans
Michael L. Furey
Brian K. George
Robert T. Germann
John M. Griffin
Douglas D. Hardman
Valerie L. Hasberry
Marc V. Hewett
Anthony A. Higdon
Carolyn S. Jacobson
Bruce B. Jones
Dathan B. Jones
Steven E. Keller
Richard S. Krysiak Jr.
Andrew A. Lambert
Aaron H. K. Leong
Michael P. Lightfoot
Steven M. Loken
Joseph Marcinkevich
Paul S. Martin
Mark E. Matson
Michael A. Mendoza
Linda E. Moschelle
Ray A. Mottley
Brian C. Murphy
Michael S. Nelson
Mark N. Neulander
Eric J. Oswald
Jeffrey W. Perham
David C. Piech
Brian A. Pollock
Paul A. Schantz
Gary J. Schneider
Christopher L. Sharp
Nam N. M. Shelton
Dwayne E. Thomas
Brian D. Weidmann
John C. Womack
Stephen D. Wood
James P. Zemotel
Mark A. Zimmerhanzel

CE PEOPLE

AFCEE Engineer Earns National Recognition

William P. "Bill" Kivela of the Air Force Center for Environmental Excellence, Brooks Air Force Base, Texas, is a White House Closing the Circle Award winner for 2000. He was one of 27 winners chosen from 210 nominations submitted by 16 federal agencies.

Kivela, an environmental engineer assigned to AFCEE's Environmental Quality Directorate, was honored in the Executive Order 12856 Individual Challenge category which recognizes persons who have demonstrated outstanding leadership in implementing the executive order's pollution prevention provisions.

The award, signed by both the president and vice president, was presented at a formal ceremony in the Old Executive Office Building in Washington, D.C. on June 6.

Kivela, an 18-year civil service employee, is program manager of the Air Force Environmental Management Information System, or AF-EMIS. The computer software program helps installation environmental managers manage and track hazardous materials from purchase to final disposal and also assists them in preparing reports required by environmental regulators. The program is now deployed to more than 168 Air Force installations worldwide.

The Closing the Circle Awards are sponsored by the White House Task Force on Greening the Government Through Waste Prevention and Recycling. The program recognizes federal employees and their facilities for efforts that result in significant contributions to or have a significant impact on the environment. *(AFCEE Public Affairs)*

RED HORSE Round-Up

The 823rd RED HORSE Squadron is hosting a 35th Anniversary RED HORSE Round-Up Sept. 12-14, 2000, at the Ramada Plaza Beach Resort in Fort Walton Beach, Fla.

All present and former RED HORSE unit members are invited. Social events include two history luncheons, a stable stomping social, an "I was THERE" Round Table, a combat dining-in, a Hall of History Dedication, a sports challenge, a Cajun Seafood Boil/Turkey Fry at the Eglin Air Force Base Beach Club and more.

For an event registration packet, call CMSgt Susan Floyd at (850) 881-2189; DSN 641-2189; or e-mail Susan.Floyd@823rhs.hurlburt.af.mil. For Ramada Resort reservations, call 1-800-874-8962 and inform them you are a member of the RED HORSE party.

Souvenirs or photos of past operations are being sought for the Hall of History, as well.

Air Force Secures DoD Environmental Awards

The Air Force captured seven out of 17 fiscal year 1999 Secretary of Defense Environmental Security Awards — more than any other Service. Winners of these awards were automatically nominated as a result of their winning a 1999 Air Force General Thomas D. White Environmental Award.

The Secretary of Defense Environmental Security Award winners are:

- Cultural Resources Management Award (Individual) — Robert R. Peterson, Vandenberg AFB, Calif.
- Environmental Quality Award (Industrial) — Patrick AFB, Fla.
- Pollution Prevention Award (Industrial) — Robert R. Tomlinson, U.S. Air Force Academy, Colo.
- Pollution Prevention Award (Weapon System Acquisition Team) — Logistics Environmental Team, HQ Air Force Materiel Command, Wright-Patterson AFB, Ohio
- Recycling Award (Industrial) — Robins AFB, Ga.
- Recycling Award (Non-Industrial) — Grand Forks AFB, N.D.
- Environmental Cleanup Award (Installation) — Elmendorf AFB, Alaska

New Enlisted Matters Chief on Board

CMSgt Michael F. Doris, Jr., replaced retiring CMSgt Richard D. Park as Chief of Enlisted Matters for The Air Force Civil Engineer in June.

Chief Doris was most recently assigned to Headquarters Air Mobility Command, Scott Air Force Base, Ill.

New USAFA CE

Col Scott K. Borges succeeded retiring Col Susanne M. Waylett as the U.S. Air Force Academy Civil Engineer and 10th Civil Engineer Group commander in May.

Col Borges was formerly chief, Agile Combat Support Mission Area Team, Langley Air Force Base, Va.

Lt Gen Zettler Succeeds Gen Handy

Lt Gen Michael E. Zettler is the new Deputy Chief of Staff for Installations & Logistics, Headquarters U.S. Air Force, Pentagon, Washington D.C., succeeding Gen John W. Handy.

General Zettler was most recently assigned as commander, Oklahoma City Air Logistics Center, and installation commander, Tinker Air Force Base, Okla.

General Handy is now vice chief of staff, Headquarters U.S. Air Force.

McCall Signs Statement of Unity

As part of this year's Earth Week activities, Tad McCall, Deputy Assistant Secretary of The Air Force (Environment, Safety and Occupational Health) on behalf of the Air Force signed a Statement of Unity with other federal environmental organizations.

The signatories committed to environmental innovations that lead to smarter business practices that will help sustain the environment, creating a federal network for sustainability. Other participating agencies include the Navy, the Department of Energy and the General Services Administration.

Misawa Snow Removal Team Wins Balchen/Post Award

The 35th Civil Engineer Squadron, Misawa Air Base, Japan, received the Col Bernt Balchen/Wilfred M. Post Award during the International Aviation Snow Symposium May 3 in Buffalo, N.Y.

The annual award recognizes outstanding achievement in base and airfield snow and ice control. The 5th CES, Minot Air Force Base, N.D., was runner-up.

The Balchen/Post Award, which is sponsored by the Northeast Chapter of the American Association of Airport Executives, is presented to the outstanding snow removal team in one military airport and four commercial airport categories.

Although snowfall is just one of many criteria for the award, Misawa received a staggering 214 inches in 1999, including 100 inches that fell during January and February with an average wind speed of 42 knots. The 35th CES' outstanding performance ensured base roads remained open and the airfield never closed — accommodating over 17,000 sorties.

Customer service was significantly enhanced through development of a snow control web page. This provided agencies with quick access to snow plans and pertinent data. The 35th CES also provided winter briefings to the base community, informing them of winter hazards, increasing safety awareness, and providing an overview of snow operations. Their efforts ensured no personal injuries were recorded.

"I'm really proud of our snow control folks — dedicated to the mission, community support and quality of life while maintaining a high safety standard," said Maj Dimasalang F. Junio, 35th CES Operations Flight commander.

The award, previously known as the Balchen Award, was named for Arctic aviation pioneer Col Bernt Balchen and for Wilfred "Wiley" Post, a founder of the International Aviation Snow Symposium. *(SMSgt Clyde Young, HQ AFCESA)*

(Left to right) **SSgt Roger Pelletier, 35th CES NCOIC horizontal repair; Shinji Ebina, 35th CES engineering technician/quality control; SSgt Joseph Jenkins, 35th CES NCOIC equipment operations; Jane Post, wife of Wilfred Post; Shigesada Takahashi, 35th CES heavy equipment foreman; Alex Kashanie, AAE Northeast Chapter President; and SMSgt Vincent Davis, 35th CES chief, heavy repair.**

Readiness Challenge VII

Hell Yeah, Space Command!

"The entire competition was a great event," said Col Carl Tickel, the Air Force Space Command Civil Engineer. "It showed off civil engineering, services and chaplains and all that they can do. Our team put together a winning combination of everybody working together and I couldn't be more proud of them."

(Above) **Gen Michael E. Ryan, Air Force Chief of Staff *(left)*, and Brig Gen William T. Meredith (ret) *(right)*, present the Meredith Award to Lt Dan Mumm, AFSPC's team OIC. *(Photo by SMSgt John Chapman)***
(Left) **AFSPC takes on the obstacle course. *(Photo by SMSgt Robert Tanner)***

SrA Shane White, AFSPC, uses a chain saw to ventilate the roof during the Ventilation & Fire Rescue Operations event. *(Photo by SMSgt John Chapman)*

RC-VII winners AFSPC claim their trophy on stage. *(Photo by SMSgt Robert Tanner)*