

# Engineering IN EUROPE

## Taking Deliveries Seriously

DoD's only dedicated birthing pavilion  
key to Vicenza community

## Cultural Cooperation

Corps employees, Israelis, focus on  
cultural similarities to get job done

## Schooling in the Streets

Sophisticated training center in  
Israel's Negev desert one-of-a-kind



US Army Corps  
of Engineers  
Europe District  
Vol. 9 Winter 2006

# PHOTOS from the field

## SHARING SCIENCE ▶

Thomas Kies, civil engineer, U.S. Army Corps of Engineers, shares his interest in science with students of Wiesbaden American Middle School, Feb. 21. Kies visited from Kaiserslautern to join other Europe District employees to promote the diverse aspects of engineering during Engineering Week.



Photo by Brian H. Temple



Photo by Mark Wingate

## ◀ TEAMWORK

David Stanton (left), Europe District, joins safety personnel from throughout the United States to provide continued safety awareness during Hurricane Katrina recovery efforts. Engineers are conducting Right of Entry analysis and safety personnel play a key part in keeping our employees safe.

## READY, SET, GO! ▶

Maj. Kevin Stoll, Edward Argueta, Matt McCullough, Regina Jugueta-Vetter, and Shaleigh Daniel joined in the "Run Through History 10k" March 4 in Vicksburg, Mississippi. These Europe District employees were in Vicksburg to participate in the annual FEST-A training held at the Engineer Research and Development Center, Feb. 28 to March 8.



Photo by Brian Loden

# Engineering in Europe

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*Engineering in Europe* is an unofficial publication of the U.S. Army Corps of Engineers, Europe District, authorized under the provisions of AR 360-1. The editorial views and opinions expressed are not necessarily those of the U.S. Army Corps of Engineers or the Department of the Army. *Engineering in Europe* is a command information publication of the U.S. Army Corps of Engineers, Europe District. Circulation is 800 copies. Articles, photographs, and other contributions are welcome. The editor reserves the right to make changes to all material submitted. The submission deadline is the 1st of the month preceding quarterly publication. Send submissions to: Editor, *Engineering in Europe*, U.S. Army Corps of Engineers, Europe District, CMR 410, Box 1, APO AE 09096. Details may be obtained from the PAO at (011) 49-611-816-2847 or DSN 336-2847. Material may be sent via e-mail to: [brian.h.temple@usace.army.mil](mailto:brian.h.temple@usace.army.mil) An electronic version of *Engineering in Europe* may be viewed on the Europe District Internet homepage at: [www.nau.usace.army.mil](http://www.nau.usace.army.mil)

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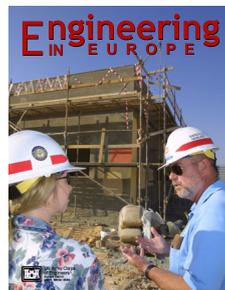
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### On the Cover

Bob Sommer, project engineer, Europe District Southern Israel Program Office (right), updates Col. Margaret Burcham, commander, Europe District, on the new flight squadron complex for the Israeli Air Force on Hazerim Air Base. Sommer and the joint team of Corps and Israeli Defense officials are managing 40 projects on 13 installations and placed \$37.5 million worth of construction in fiscal year 2005.

Cover Photo by Brian H. Temple

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# Taking Deliveries Seriously



**Story by  
Lou Fioto**

**Photos by  
John Rice**

The U.S. Army Corps of Engineers is putting the finishing touches on the Dr. Frank V. Benincaso Mother and Infant Pavilion at Caserma Ederle, Vicenza, Italy; the only stand-alone birthing center within the Department of Defense.

Thanks in part to the Corps' efforts, Army families now have something they were sorely lacking; continuity of United States standard quality health care before, during and after childbirth.

The Corps provided project management, design review and oversight, and construction management to the facility when it was originally built, and is tweaking a few last things to ensure maximum efficiency of the facility.

"I just can't say enough positive things about not only the quality and caliber, but the expertise that the Corps brought to the construction project," said Lt. Col. John Alvarez, Deputy Commander of the Vicenza Health Clinic. "The facility has benefited the community in a number of ways. The first is the overall quality of care of the delivery for the wives and spouses of the military community. ... What this does is provide United States standard inpatient health care ... here in Vicenza. It also provides continuity of care for the families."

Before the facility was built, expectant mothers would receive care for the first seven to eight months and then have to go elsewhere for the actual delivery and follow-up care.

"They would have to go back to the states," Alvarez said, "or up to Landstuhl Regional Medical Center in Germany. They'd have to go to Aviano, or they'd go to a host nation hospital." Now, a woman is treated by the same physician, obstetrician, gynecologist, etc., in the same location throughout her pregnancy, and after, because the new birthing facility is designed to handle it all, Alvarez said.

Alvarez said the facility is very important to the morale of the Army family. It's a little piece of the United States in a foreign country.

Ask a new mother and you'll hear the same. The facility provided the capabilities to perform a Caesarean section close to home with a highly trained

and compassionate staff said new mother Anna-Lisa Whiten; who gave birth to Noah January 26. "It is a comfort to have the ... center because with a possible language barrier you don't have to worry about a miscommunication when you are receiving care," she said. "The most positive aspect about having access to the ... center is knowing that it is here for us ...to monitor our pregnancy and to have a birth either way."

Alvarez said the clinic provides that familiar environment to the Army family. Family support groups are here and available to assist in those roles that the father would normally provide. "It's really the quality of care, the continuity of care, and it's a morale and family support boost."

The facility means a great deal to the Soldiers of the twice deployed SETAF and 173<sup>rd</sup> Infantry Brigade, Alvarez said, and now "the Soldiers can do their mission, in part, because they know we are taking good care of their loved ones."

The trend in the medical community today is to design new facilities to meet the demands of the population to be served by the facility.

"Our community," Alvarez said, "is a 19 to 34 year old, primarily healthy, population. So we're configuring our facility to meet the specific needs of our population. That's in contrast to our very much 'cookie cutter' approach to hospitals in the past history of the Army's medical department and the Department of Defense as a whole."

The birthing facility establishes a hybrid health care model for locations where service members serve on bases with similar populations and health care needs.

Construction was completed in May 2005 and the Benincaso Pavilion opened the following month. It is named for Dr. Frank V. Benincaso, a pediatrician who worked for 13 years in the installation's health clinic. Benincaso retired from the Army Medical Corps as a colonel after a 30-year Army

**"The Soldiers can do their mission ... because they know we're taking good care of their loved ones. "**

career. The pavilion provides full spectrum service for mothers expecting normal deliveries, and can manage the birth and care of up to four babies daily. High-risk pregnancies are still referred to appropriate medical facilities.

Europe District is now conducting modifications, including upgrading the existing emergency generator system to meet NFPA codes. The district will also revise the Preventive Maintenance Plan, and change the exterior Air Handling Units to meet local noise ordinances.

The Corps, working on a fast track with the European Regional Medical Command (ERMC), built the normally three-to-five-year-project in seven months. The Corps named Bill Delozier, who had previous medical facility construction experience at Fort Stewart, the project manager, and devoted engineering support from both Germany and Italy.

In October 2004 the Deputy Director of Public Works in Vicenza requested Europe District to serve as the Contractor Officer Representative (COR) and project manager, said Delozier, Europe District's



**Capt. Yvonne Heib, head nurse, operating room / central material service, prepares for another delivery at the Dr. Frank V. Benincaso Mother and Infant Pavilion on Caserme Ederle, Vicenza, Italy. The state-of-the-art birthing center was completed in seven months and is the only dedicated birthing center in the Department of Defense.**

# SUPPORTING FAMILIES

Regional Program Manager supporting the U.S. Army Garrison, Vicenza. Delozier said the Vicenza Resident Office was asked to provide inspection and Quality Assurance support during the construction.

This was a design-build contract with the ERMC reviewing and approving the design submittals, he added. The DPW and Naval ROICC provided technical review and approval for those areas involving the Italian codes. Europe District's Engineering Branch provided design review support in the areas of mechanical and electrical disciplines.

"Mr. Delozier ... understood the complexity of building a medical facility," Alvarez said. "His experience in Europe also helped him understand the complexity of having an Italian firm design a U.S. specification medical facility and all the challenges that involved. The Corps of Engineers were critical in making that building."

Alvarez applauded Delozier's ability to understand and manage the variety of intricate challenges involved in building such a fast track project.

"I've got a lot of acquisition training," he said, "and it was almost one of those situations where they say at the school house, 'this is what the ideal project would look like if we could make it happen in reality'. And, I actually saw the ideal happen out here in reality."



▲ Staff prepare Anna-Lisa Whiten for her delivery at the birthing pavilion on Caserma Ederle, Vicenza, Italy. Construction of the facility was managed by Europe District and was completed in seven months.

▼ Noah Whiten takes his first breath at 10:28 a.m., Jan. 26, 2006.





◀ Doctors proceed with a Cesarean section at the Dr. Frank V. Benincaso Mother and Infant Pavilion. The pavilion provides full-spectrum services to mothers expecting normal deliveries and contains state-of-the-art equipment to ensure medical procedures run smoothly.

▼ Anna-Lisa, newborn Noah, and Sgt. 1st Class Christopher Whiten at the Dr. Frank V. Benincaso Mother and Infant Pavilion on Caserma Ederle, Vicenza, Italy. The only birthing pavilion in the Department of Defense; the facility provides a great quality of life improvement for Vicenza families.



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# SUPPORTING OTHERS

## CULTURAL



## COOPERATION

Story by Lou Fioto

Photos by Brian H. Temple

### Sababa!

One of its meanings is akin to Swahili's "hakuna matada," made popular by Timon, the worry-free meerkat in Disney's *The Lion King*.

However, this modern-day Hebrew slang, ranging in meaning from "excellent" to "no worries," was not borrowed from Swahili lingo; it was borrowed from Arabic.

Language is a reflection of culture and an exchange among cultures can bring people together. It did just that for many of Europe District's employees in Israel.

"Best office I've ever worked in," said Bob Sommer, project engineer, who has 35 years in government service. "We're learning how to improve. The trick here is that the Israeli construction and business model is different (but) the teamwork has been phenomenal."

Sommer and his colleagues managed 40 projects on 13 installations and placed \$37.5 million in construction in fiscal year 2005. From construction on a Black Hawk hangar to a high-tech flight squadron command facility, he said this tempo was sustained, in part, because of his Israeli colleagues.

Sommer said success lies in the ability of Corps employees and their Israeli partners to see eye-to-eye on a common mission, despite different business cultures.

"We are a warm people, and we are open, but not in conducting

business," said Ofer Davidi, project engineer, Southern Resident Office.

Davidi, who once worked for the Israeli Ministry of Defence, said it is stressful working on larger projects because one needs to ensure time and energy are not wasted. He said with his countrymen, emotions sometime trump processes, and people challenge each other. However, the Corps lends business procedures that help keep projects in check, he added.

Michael "Miki" Goldstein, electrical engineer, Israeli Ministry of Defence, has worked with the Corps for four years, and began his tenure on a two-year base project for Israeli paratroopers. "I

enjoy every day of my life working with the Corps because their way of thinking and ... way of doing business is the way that I like to do business," he said.

Goldstein said his colleagues were initially hesitant to volunteer to work with the Corps, but he said he volunteered without reservation. Ironically, it is the Corps' structured approach toward business that appeals to Goldstein.

"Their standards are very clear," he said. "There is a lot of bureaucracy, but I think it's the right way to do the job because ... without all the paperwork, big projects ... you never will do right. No one can remember things that were agreed to two years ago on multimillion dollar projects. It is impossible."

Goldstein said he knows it's the open exchange that translates



Gary Segal, project manager, M. Gordon Construction (right), shows Col. Margaret Burcham, commander, Europe District (center), Ofer Davidi (far left) and Bob Sommer, a blueprint of the flight squadron building on Hazerim Air Base, Israel.

into reliable, relevant and responsive professionalism; ideals that most Corps customers value and appreciate.

Mutual respect is also appreciated, and Davidi said he certainly respects his Corps colleagues.

"Corps of Engineers people mingle with the locals and get involved with the local culture," he said. "(For Europe District employees) coming from the streets of Germany, this is a culture shock. ... They choose to live among the locals. They invite their neighbors over. We are one."

This camaraderie, mutual respect, and dedication toward achieving the same end state bring people together.

Approximately a two-hour drive north of the Southern Program Office lies the Nachshonim Storage Base, a \$125-million base 40 minutes east of Tel Aviv.

A small city in the desert, it consists of 210 buildings sitting on 400 acres of land connected by 23 kilometers (14 miles) of asphalt. It took four years to construct and was turned over to the Israel Defense Forces (IDF) during a December ribbon cutting ceremony.

It is the largest project in the Corps' Wye River Program (an outgrowth of the 1998 Wye River Memorandum between the Palestinian Authority and Israel) and aids the IDF's relocation of troops out of the West Bank with the continued hope in stabilizing the region.

The base is designed to help store military equipment for decades. With specialized storage units keeping control of humidity and dust levels, this base stores supplies, vehicles, and other equipment for reserve artillery, infantry and armored brigades that will fall in on their equipment in the event of a rapid deployment.

Michael Roach, originally from the Norfolk District, serves as resident engineer for Nachshonim. He said he and his family moved to Israel four years ago and feel a deep sense of community; although it took some adjusting. It was a difficult move for the Roach family, traveling 6,000 miles to a totally different culture.

"This was our first overseas assignment, so it was especially difficult for us," he said. "Then, adjusting to the new culture and all the ... things associated with that. That took a while."

Roach said the project delivery team was "varied" with many Corps employees coming from the East Coast, and from Germany, to work with the Israeli construction team.

"As far as teamwork," he said, "I think we've meshed together very well. We've had our struggles like any family. ... We have our internal squabbles back and forth, but in the end I say we did come together."

People came together to make the facility a reality, overcoming language barriers, cultural differences, engineering and construction challenges, you name it.

The Corps has a long history of service in the Middle East. It oversaw billions of dollars of work in Saudi Arabia in the 1960s and early 1970s, and has been working in Israel since the Camp David Peace Accords in 1979. That's nearly three decades of supporting our allies while working to secure international peace and helping to increase their quality of life.

The Corps has done its job too, according to Miki Eari, an Israeli Army sergeant and Nachshonim dining facility manager. His new kitchen features state-of-the-art equipment that allows him to prepare a greater variety of food and meals quicker and easier.

Eari, who runs the dining facility to feed a small contingent of garrison Soldiers operating the base, said cooking will be much more enjoyable for him now as preparing meals can be done in half the time.

"I now have time to prepare seven types of salads," he said. "I can now prepare more food, because I have more equipment and facilities. The customer gets a much better quality of food."

During the interview with Eari an Israeli Soldier came into the kitchen and spoke to Eari in Hebrew. "There is your answer," Eari said. "This is a guy that came in and shook my hand and said 'thank you so much for the excellent food'. He was not invited to do so." It was an appropriate example of customer satisfaction.

Roach summed up the feelings of just about everyone involved in the Corps' efforts in Israel. "I'm awfully proud of what we've done here," he said. "I'm not a politician. I'm not sure how this base will fit into the greater picture, but the Corps has done a great job here. And, I'm proud to be a part of this organization."



**Construction continues on the Black Hawk hangar on Hazerim Air Base. The Southern Resident Office staff worked 40 projects on 13 installations, placing \$37.5 million in construction in fiscal year 2005.**

# SUPPORTING OTHERS



Photo by Brian H. Temple

- ▶ The Israeli Central Command's rabbi blesses the mezuzah after installing it on the headquarters building. The ceremonial ribbon was cut afterward, officially opening the base.
- ▼ The Central Command Orchestra plays during the ribbon cutting ceremony, December 6, 2005, at the Nachshonim Storage Base.



Photo by Brian H. Temple

- ▼ Rock foundations are a prevalent aesthetic feature of the base. Walkways and steps throughout the base were placed among these rock walls.



Photo by Brian H. Temple



Photo by Yair Shani



- ▲ **Nachshonim Storage Base, a \$125-million storage base east of Tel Aviv, was turned over to the Israel Defence Forces (IDF) during a December ribbon cutting ceremony. It is the largest project in the Corps' Wye River Program, and stores supplies, vehicles, and other equipment for reserve artillery, infantry and armored brigades that will fall in on their equipment in the event of a rapid deployment.**



Photo by Michael Roach

- ▲ **Four hundred acres of land east of Tel Aviv became the largest project for the Corps's Israel Program Office.**
- ▶ **The pie-shaped base provides a wedge to each unit to store equipment in humidity and dust controlled facilities.**

## **Nachshonim Storage Base**

- \$125 million**
- 210 Buildings - 230,000 M2 on 400 acres**
- Asphalt Roads - 23 KM**
- Perimeter Security Fence - 4.2 KM**
- Underground Water Pipes - 25KM**
- Underground Sewage Pipes - 6KM**
- Cement Stabilized Fill (CSF) - 120,000 M3**
- Earthwork - 3,100,000 M3 Excavation and 1,600,000 M3 Fill**
- Electrical underground infrastructure - 222 KM**
- Reinforced Concrete - 155 ,000M3**
- Insulated Panel Wall and Roof Cladding - 310,000 M2**
- Rockery for Covering Berms - 50,000 M2**
- Concrete Pathway - 9KM**
- Concrete Road - 16,000 M2**



Photo by Brian H. Temple

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# Schooling in the Streets

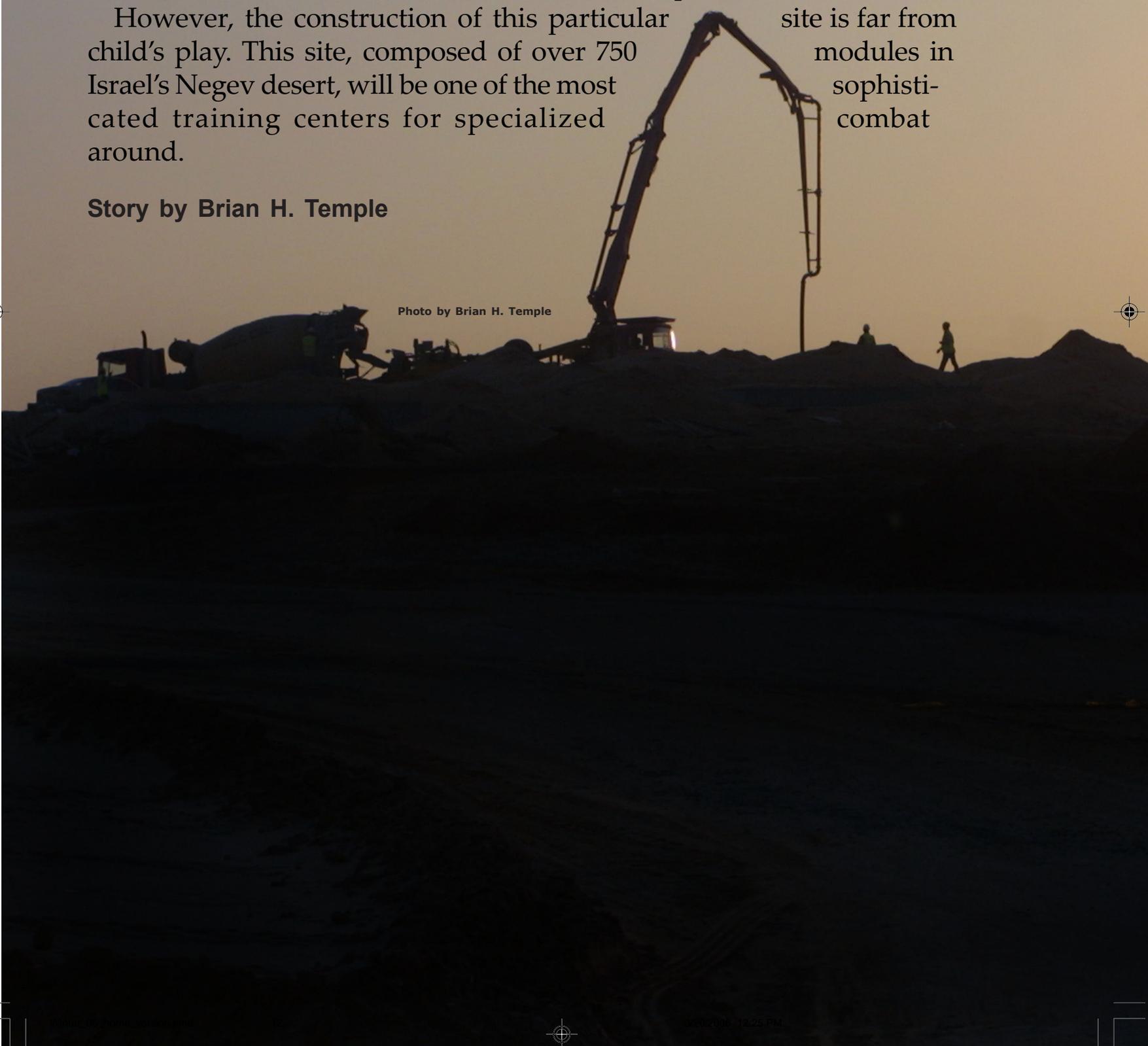
The construction is real simple: concrete and rebar steel manufactured blocks stacked one atop another. Blocks upon blocks are placed over rolling hills giving the site the appearance of something one would see on a playroom's wrinkled rug. Add the Erector Set used to hoist these modular boxes and the overall site is complete.

However, the construction of this particular child's play. This site, composed of over 750 Israel's Negev desert, will be one of the most cated training centers for specialized around.

site is far from modules in sophisti-combat

Story by Brian H. Temple

Photo by Brian H. Temple





# SUPPORTING THE GWOT

With advanced technology incorporated into the design, this \$12.5 million center's capabilities are not to be underestimated.

The 45,000 square meter facility, designed to simulate the region's typical urban structures, will combine the use of cameras, motion detectors, real-time top view monitoring, laser rifles and a combination of pyrotechnic means to simulate combat zone activities, according to Maj. Emanuel Atiya, project manager for the Israel Defence Force's Civil Engineering and Construction Center.

"I don't think there are any sites that combine the quality of building of this one, and the technology," he said. "The combination of the construction and the technology is amazing."

As insurgents increasingly use friendly populations as part of their terrorist operations worldwide, it is important for modern-day forces to train realistically to help minimize casualties among noncombatants.

"We are ... putting live fire sounds and sounds of people surrounding the Soldiers. We are designing it to feel that the trainee is in a real fight," Atiya said. These technical accoutrements are important, not only to increasing safety in training, but also in terms

of the culture of training, he said.

Atiya, who has helped construct more traditional live-fire sites, has also witnessed his share of arguments during after action reports on performance.

"Every time when there is training at a site, each soldier sees things from his point of view, and they argue, 'I wasn't there. I walked over there. I saw this happen', but (here) there are no arguments because you are recording everything," he said. "You can play the video and ... learn from the Soldier's behavior much better than the usual training, or even the standard way we are training right now. Always there is arguing."

However, this arguing is apparently reserved for Soldiers post training, not those on the project delivery team.

Although there are differences among U.S. and Israeli business cultures, the Israeli Defence Force, and Ministry of Defence team members worked fabulously with those from M.W. Zander and the Corps of Engineers, said David Vale, with Europe District's Israel Southern Resident Office.

"The Israeli's are very hard workers, and the efforts to

get the project built on time, within budget and quality is outstanding," he said. "I've been impressed with the attention to quality and concerns about getting the project built on time."

Vale said the cohesive teamwork helped the unique construction process move smoothly.

"We started with nothing here - just sand. Now we have infrastructure: water, electric, trailers, a concrete batch plant, a precast plant, four tower cranes, two mobile cranes ... and all will be built essentially in one year," Vale said.

The design / build process allows for simultaneous construction at the actual training site, while production of the concrete modules are built in 10 manufacturing stations just hundreds of feet away. This resulted in acceleration of the construction rate, and reduced construction said Atiya.

"The people at the site needed to think very carefully how to

**David Vale, project engineer, Israel Southern Resident Office, looks over foundations that will support concrete and rebar manufactured blocks. The 45,000-square-meter training facility will combine the use of cameras, real-time monitoring, laser rifles and a combination of pyrotechnic means to simulate an urban combat zone.**



construct this site. It wasn't very obvious to use a custom site for (precast) concrete," he said. "I think it is going well right now."

With seven to eight blocks being completed daily, the site is approaching completion. Two hundred and fifty four of 470 buildings have been constructed and placed giving this city in the desert some shape, as well as some prominence.

Both the commanding generals for the United State's Training and Doctrine Command, as well as the National Guard, have visited the site, as have dignitaries from countries such as Turkey, Brazil and Singapore. Vale said all have expressed their interest in the continued Global War on Terrorism and commented on the impressive nature of the site.

Block-by-block buildings on the training site take shape in an unconventional project. And, Vale said it is all something to be proud of. "I will remember this project as the best and most gratifying, it will be hard for another project to beat this one. It will be great to see this completed, and (see) troops training in a real urban environment. It will save lives and be invaluable to the Global War on Terror."



▲ Concrete blocks are placed and stacked in the southern Israeli desert to construct a 45,000 square meter urban training facility for the Israel Defence Forces. These blocks will be transformed into a city of 470 multistory buildings replicating the region's typical urban structures.

▼ Keith Riddle (left) and David Vale, Israel Southern Resident Office, walk among the molds used to build concrete cubes used in the construction of the training site.



# Katrina Clean Up

Chain saws, tangled storm debris and fallen timber, heavy machinery, high-speed traffic, steep roofs and workers toiling long hours in unfamiliar territory could be a recipe for serious injury or death. **Story by Grant Sattler**

**T**hat is why preventing accidents is Job 1 for eight safety officers deployed to U.S. Army Corps of Engineers Task Force Hope – Mississippi.

By communicating required safety measures and observing field operations, safety officers are doing all they can to prevent mishaps in the Corps' FEMA-assigned missions for temporary roofing, debris removal, and set up of temporary public structures and temporary housing.

"We're keeping the prime contractors and subcontractors operating in a safe manner," said Tom Knapp, safety officer covering Corps operations in six counties from the Emergency Field Office North in Hattiesburg, Miss. "When we see a violation, we correct it on the spot. But it's really about teaching. Educating the subcontractors about standards."

Safety Officer Jim Moore, also working from EFO North, said the Corps is taking a team-building approach. "Our charge from Vicksburg District was that we aren't here to shut people down for safety violations," he said. "We are here to help people work safely."

But if the same problems continue to crop up, or represent

an immediate life risk, operations are stopped, corrections are made and safety training occurs before work is allowed to resume, Moore said.

Most safety problems are not deliberate noncompliance, said Knapp, deployed from Sacramento District after recently returning from Iraq. Rather, "... it's a lack of training. A lot of the subcontractors really haven't done this type of work before," he said. "In most cases they are very receptive to corrections."

Hurricane recovery operations across southern Mississippi are not routine for many Corps employees either, explained Dave Stanton, TF Hope – Mississippi Safety Manager from the Recovery Field Office at Keesler AFB, Biloxi.

"Back at home station, if you're a military district or civil works, ... there are people familiar with our Corps safety requirements and so things run pretty smoothly," he said. "Here,

we've got hundreds of QAs – in debris disposal site towers, out at the pick up points – from not just the Corps, but other Federal agencies." QAs working in TF Hope – Mississippi include employees from the Corps of Engineers, Bureau of Reclamation, Bureau of Land Management, Bureau of Indian Affairs, U.S. Forest Service, National Park Service, and even contractors hired to represent the government.

"One of our challenges is to give them some basic training because the hazards are the same as a lot of construction sites where you've got moving equipment," Stanton said. Stanton is deployed from Europe District, Wiesbaden, Germany.

Moore agreed that for those without a construction background it is a new experience with lots of new hazards.

Moore, who is deployed from Omaha District, said the biggest danger now is complacency.

"We've performed all this work and nobody's died, therefore one might say we must be doing something right. Or does it just

**"When we see a violation, we correct it on the spot."**

mean we haven't gotten caught yet?" he said. "As operations go on longer we tend to become more complacent."

Stanton agreed, "We're out of the emergency response mode and we're in the recovery mode, so we are ratcheting up our efforts on safety because people are into that 'now things are running smoothly' attitude." Stanton said operations continue to be hazardous, especially working around public roadways, something most Corps employees do not routinely do. "Like traffic control, for example," he said. "We're worried that crews are going to get complacent and aren't going to have flaggers out where they're supposed to be."

Moore said all federal agencies that have come to southern Mississippi to support hurricane relief have teamed together to support a safe recovery operation. Participants at regular meetings include FEMA, OSHA, the Operation Blue Roof and Debris mission managers, and Corps Resident Engineers.

While it has strong command emphasis, to be effective a safety plan has to be implemented at all levels.

"Every person is a safety officer," Moore said. "Our QAs are primarily in place to ensure that the government specifications of the contract are met, but every set of eyes ... has a safety role."

But it is not just contractor workers who are at risk.

"FEMA and the Corps are doing very well protecting their own," Knapp said. "The required six hours off gives a needed break." Corps personnel are working a seven-day, 12-hour schedule but must take six hours off out of that schedule each week. Moore said, "A profit motive will cause people to work longer hours than sometimes they should, so the Vicksburg District commander has dictated downtime each week."

Another hazard is exacerbated by the high number of miles Corps employees are driving daily to accomplish their missions.

"We don't practice defensive driving; we drive scared," Stanton said. "There are still stoplights and stop signs missing, but even where they've been replaced, people may not notice."

Safety officers are among those traveling Mississippi highways, regularly visiting more than 28 debris reduction sites, observing debris crews in operation, and checking facilities. Moore has averaged more than 5,000 miles each month he has been deployed. Most of the deployed safety personnel have extended beyond the initial 30 days, he said.

Stanton said, "We have a long way to go, a lot of work in front of us. We need volunteers. We're in Afghanistan, we're in Iraq, and all over the world doing great work, but here we're taking care of our own."



- ◀ **David Stanton, Europe District, and others, compose a team of safety personnel who are working to keep employees, contractors and the local populous safe.**
- ▼ **The Mississippi coast is tattered with a tangled web of debris. Corps' safety personnel are ensuring that restoration operations run smoothly as Corps employees help restore miles of destruction.**



# Sharing a Wealth of Knowledge



## Story by Grant Sattler

Across the Gulf Coast of Mississippi, U.S. Army Corps of Engineers employees are giving their time and expertise to help communities recover from the devastation of Hurricane Katrina. One recently spent a morning sharing his enthusiasm for science and nature with local school children.

Thomas Kies, deployed from the Corps' Europe District in Germany, met with more than 70 children at Lizana Elementary School, north of Gulfport, Miss. Kies was deployed in support of Task Force Hope - Mississippi as a member of a Forward Engineering Support Team - Augmentation working with installation of temporary public structures.

After a visit to Lizana Elementary to site a structure, Kies offered to make the presentation he has shared with several classes at Department of Defense Dependant Schools at Ramstein Air Base, Germany. Kies, a UCLA graduate in civil engineering, shared a world map projection developed by visionary thinker Dr. Richard Buckminster Fuller that presents geographic information in a single, comprehensive picture without breaks in any of the continental contours, or any visible distortion of the relative shapes or sizes of the landmasses.

By way of a simple comparison game played using a globe, Fuller's Dymaxion Map, and a traditional Mercator map, the children were able to determine themselves which map more accurately depicts the spherical globe.

"Distortion is introduced when information is transferred from a spherical globe to a flat surface" Kies said. Unlike traditional maps where distortion is visibly apparent, the Dymaxion Map's distortion is so minimal that it is not perceptible to the naked eye, he said.

"I like to make them think, to steer them to the point of discovery on their own. When the students think for themselves they will learn and remember," he said of his teaching method.

Demonstrating the advantages of the Fuller Projection, Kies showed the children a reconstruction of how the Dymaxion Map can be folded from a two-dimensional flat map into a three dimensional icosahedron, a polyhedron with 20 triangular faces, which accurately depicts the spherical globe.

But this was not a just a geography lesson. Slicing an apple, Kies moved the question and answer discussion to the structural symmetry characteristics of nature.

"The symmetry of the seed chamber of an apple, when it's sliced horizontally, will almost always reveal a five chamber star, which is similar to the five sided pentagon," Kies said, "sometimes there might be six which depicts the hexagon, but it almost always will be five."

With the pentagon introduced, an icosahedron can easily be constructed which models the apple's shape.

"Fuller died in 1983, when I was about the age of these kids," Kies said. "I just recently discovered his work and I've been fascinated about learning more."

Kies, a hobbyist beekeeper, said bees do not build the hexagonal cells in honeycombs. Rather, they build close packed cylinders, and it is the material itself, the beeswax, that takes on the well-known hexagonal honeycomb shape. The effect can be demonstrated with soap bubbles gently compressed between two sheets of glass. "Bubbles and beeswax don't think...it is the way nature builds. Nature is always optimal and most efficient," Kies said. "We can learn a lot from applying nature's design to what we build."

Blowing soap bubbles will always yield a sphere, no matter the shape of the pipe or wand opening. "Spheres enclose the maximum volume for the least amount of surface area." Kies said. "Ergo, it's most efficient."

With magnetized rods and ball bearings, and sticks jointed with flexible tubing, he demonstrated the inherent structural instability in squares, the basic structure of contemporary architecture designed on right angles.

"Only the triangle is inherently stable, and to physically show the pupils this using models, the lesson experience is reinforced." Kies said. Diagonal bracing can be added to a square, yielding a triangle, and thus making it stable, he explained.

He then introduced the geodesic sphere which is entirely composed of triangular construction. "There can be thousands of hexagons in a geodesic design, but only 12 pentagons will exist in a geodesic sphere. The 12 pentagon caps of the icosahedron are the basis and foundation of geodesic domes," he said, breaking

down complex concepts into simple components. Even at his home in Germany he constructed a two frequency, 18 foot diameter Geodesic Dome greenhouse.

Peppered by questions, Kies continued to share with the children until the lunch bell compelled them to leave. Not only was the morning an opportunity to share lessons he enjoys, but it was also another way to give back to the people of Mississippi. He said that as his first experience visiting the southern states, he has found the people really gracious, and resolute in the face of the disaster.

"The other day I was having dinner at Chef Scott's Sushi Bar in Ocean Springs and started talking with a couple who, as it turned out, had their home damaged and were living in a trailer. I told them a little about what the Corps is doing to help. They left and when I finished and went to leave, I was told they had paid my bill," Kies said. "It should have been the other way around. It's obvious to me that the southern hospitality is still alive after Hurricane Katrina."



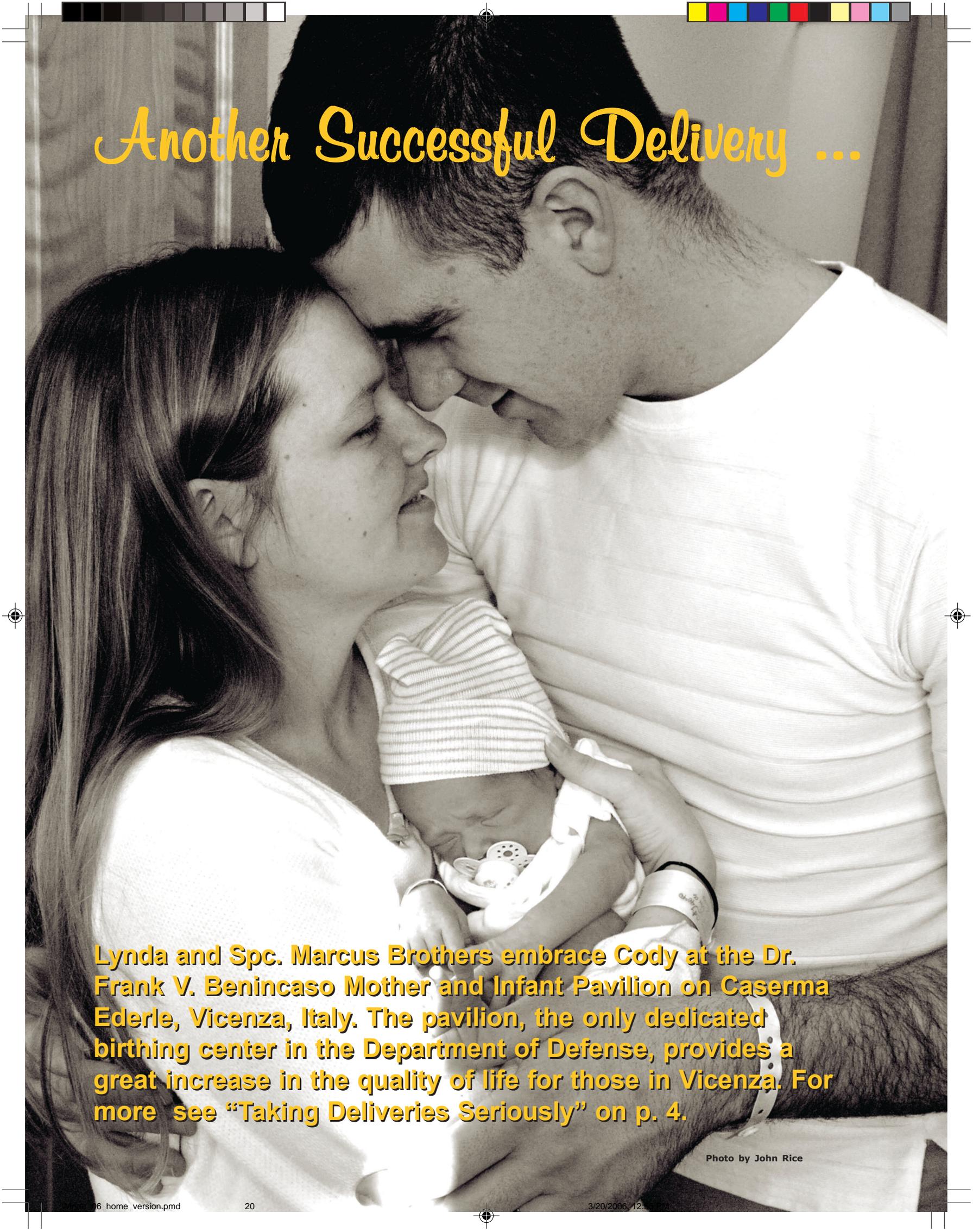
Photo by David Stanton

- ▲ **Thomas Kies (left), Stephen Martinez (center) and Maj. Tom Asbery, all of Europe District, stop to take a look at photos to be documented for a structural analysis. Kies and team deployed to help with Task Force Hope - Mississippi.**
- ▼ **Kies shares his interest in science and nature with more than 70 children at Lizana Elementary School, north of Gulfport, Miss. Kies took time from his deployment in support of Task Force Hope - Mississippi to spend time with the local students.**



Photo by Grant Sattler

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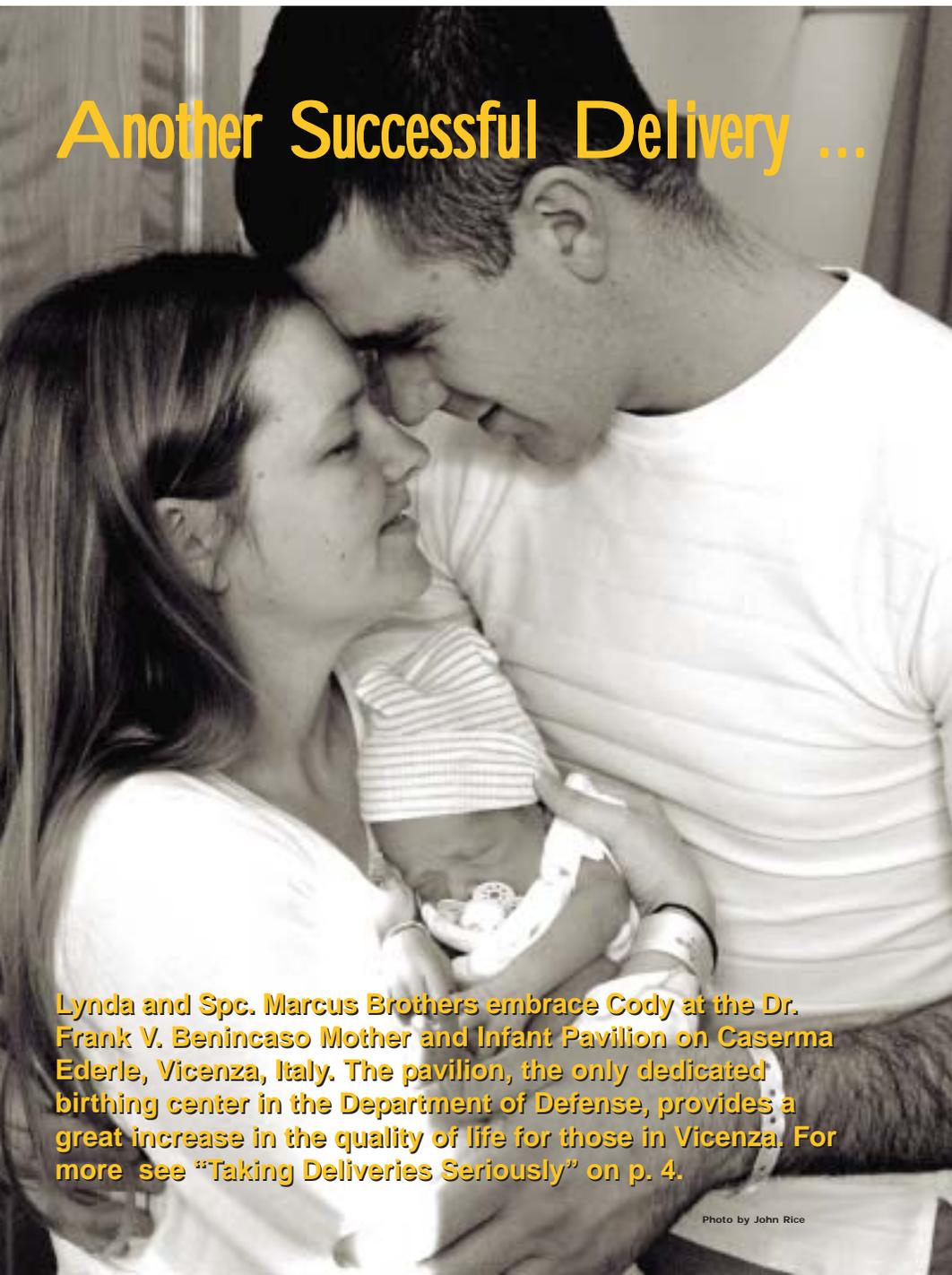


# Another Successful Delivery ...

**Lynda and Spc. Marcus Brothers embrace Cody at the Dr. Frank V. Benincaso Mother and Infant Pavilion on Caserma Ederle, Vicenza, Italy. The pavilion, the only dedicated birthing center in the Department of Defense, provides a great increase in the quality of life for those in Vicenza. For more see "Taking Deliveries Seriously" on p. 4.**

Photo by John Rice

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Photo by John Rice