

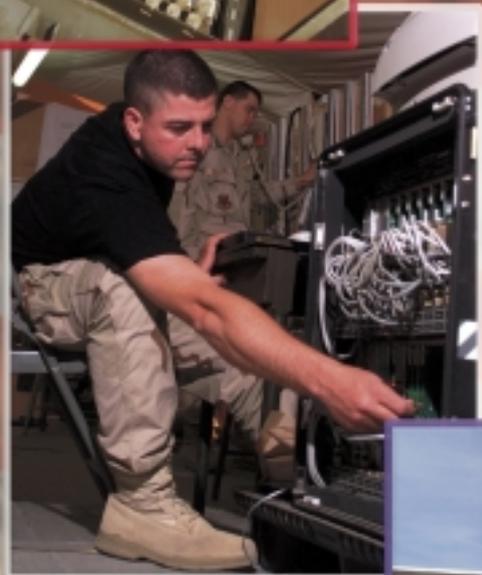
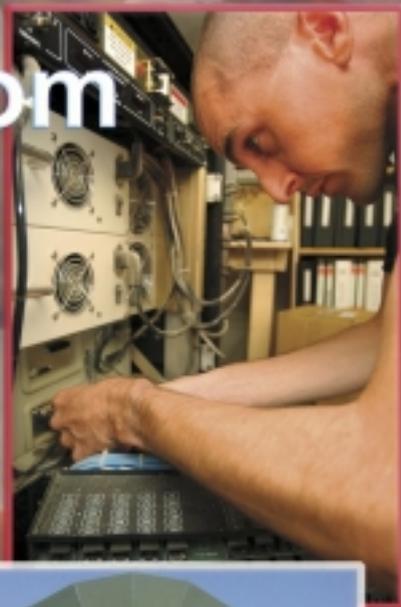
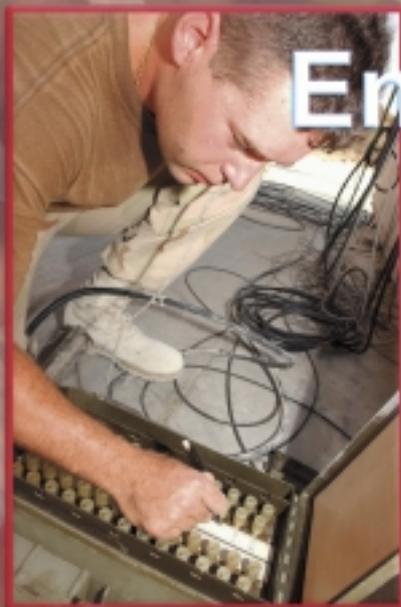
September 2002

intercom

*Journal of the Air Force
C4 Community*



Operation Enduring Freedom



Call to
Arms



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Operation Enduring Freedom

Perseverance with a 'big picture look' is key to integration Page 5

Maj. Gen. Robert F. Behler, AFC2ISRC/CC, talks about experimentation and looking at the big picture as the Air Force seeks to link systems for machine-to-machine dialogue for the 21st century.

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Perspective of a senior comm and info leader who became deeply involved in OEF. Col. David Cotton served as the JTF-SWA director of Communications (J6) and then as the CFACC's comm chief (C6), partnering with CENTAF's director of Comm and Info, Col. David Kovach.

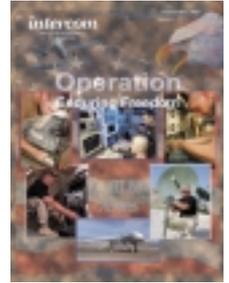
Combat Camera Page 24

OEF has been documented through the eyes and lenses of Combat Camera. Its videographers and photographers have provided a record



Front cover

This month's cover focuses on critical C4 and ISR support for Operation Enduring Freedom.



Cover by Lori Manske

Back cover

Top image is the World Trade Center Sept. 14, 2001.

*Navy photo by
Journalist 1st
Class Preston
Keres*



Bottom image is of firefighters battling smoke and fire at the Pentagon following the terrorist attack.

*Photo by Tech. Sgt.
Gary Coppage*

for generations of servicemen and women performing their duties at home and abroad.

Perspectives of an OEF comm warrior Page 44

“The Combined Forces Air Component Commander deployed forward at the onset of the conflict, and fought the most technologically advanced battle in history.”

Engineering and installation units play critical role in OEF Page 46

More than 50 EI teams have deployed to 16 military installations within 13 countries to support OEF efforts. EI teams have been in action at military bases throughout Southwest Asia, USAFE, and from Diego Garcia, to Guantanamo Bay, to former Soviet republics.



**Visit the Computer Based
Training System Web site at
<http://afcbt.den.disa.mil>**



Air power critical to success in OEF

For the first time in the history of warfare, the entire ground operation in land-locked Afghanistan—infiltration, exfiltration, sustainment of supplies and support equipment—has been accomplished by air. Air power continues to be critical to success in Operation Enduring Freedom. Air Force bombers, fighters, airlifters, tankers and intelligence, surveillance and reconnaissance assets are in action every day. The vast majority of these flights has been managed by what (Gen.) John Jumper calls a new “weapon system”: the Combined Air Operations Center, where Air Force, Navy, Marine, Army and coalition partners work side-by-side.

ISR performance has been outstanding, including the most extensive use of unmanned aerial vehicles in history. Our UAVs – Predator and Global Hawk – are reflecting great credit on the American defense industry that produces them—even though they are not yet ready for prime time! Our thanks go to U.S. Army Gen. (Tommy) Franks (combatant commander, U.S. Central Command), for his support and vision in allowing us to test out systems and concepts in this environment. We’ve learned a great deal, and we probably have saved millions in development costs.

On the space side, our systems have performed equally well:

The Global Positioning System navigation system, which is key to many of our precision guided munitions;

The military SATCOM or Satellite Communications systems—the backbone of our ability to operate, communicate and strike in that very difficult terrain;

Our satellite collection systems for weather and imagery—which have been more responsive to our strike packages in the air and our warfighters on the ground than at any other time in our history.



“The vast majority of these flights has been managed by what (Gen.) John Jumper calls a new ‘weapon system’: the Combined Air Operations Center...” – Secretary Roche

As I said, OEF is also a joint and combined campaign. We have integrated air tasking orders that go out to Air Force, Navy, Marine and Army aviation assets in real time. We’ve never worked more closely with special forces troops on the ground, developing effective targeting, and creating fully integrated air-land battle operations reminiscent of (Gen.) “Hap” Arnold’s Army Air Corps assisting (Gen.) George Patton’s armored forces in the breakout from the hedgerows in Normandy in the summer of 1944.

Heavy bombers and fighter-attack aircraft have employed Joint Direct Attack Munitions, or JDAMs, for close air support of ground forces, in all weather. We have F-14s and F-18s, as well as F-16s, being provided precise targeting for laser-guided and GPS-guided weapons employment for the first time by a young special forces trooper, or a Predator UAV. Further, coalition allies have flown more than 5,300 sorties themselves, thereby highlighting international resolve – and coalition capabilities – in this war on terrorism.

I think you will agree that this is simply a remarkable record, which speaks to the professionalism that exists at all levels on this great team.

(Dr. James G. Roche, secretary of the Air Force, Remarks to the 49th Annual National Security Forum, Air War College, Maxwell AFB, Ala., May 31, 2002)

General Behler:

Perseverance with a ‘big picture look’ is key to integration

By Maj. Gen. Robert F. Behler
Commander, AFC2ISRC
Langley AFB, Va.



One afternoon, 90 years ago, Gen. Henry H. “Hap” Arnold, then a young lieutenant involved in experimentation at Fort Riley, Kan., was trying to get greater effects and results through the aerial adjustment of artillery fire.

He flew with an observer who would spot where the shells were falling, jot down the information on brightly colored cards that were weighted with iron nuts, and drop them through a piece of stovepipe to the cavalry troops riding below. The cavalrymen would gallop back to the command post with the intelligence information.

Although Arnold demonstrated intelligence could be relayed to the decision-maker via the airplane, he was confronted with the perplexing challenges of the aircraft being limited to air-to-ground communications as they searched for ways to make the airplane into a weapon system.

Fast forward 90 years to August 2002. The experimentation accomplished at Nellis AFB, Nev., during Joint Expeditionary Force Experimentation (JEFX ‘02) – with scenarios involving Global Strike Task Force and Paul Revere, using a Time Sensitive Targeting scenario – was exactly what we were after. We determined through experimentation that some things worked and some didn’t. It is determining the best of the breed with respect to systems and capability.

The key to getting to where we want to be is Darwinian evolution ... achieving the best capability by continuing to develop that which holds greater promise and dropping that which can’t hack it.

Next month we’ll conduct another TST experiment with our first field test of the Smart Tanker capability using a program known as Roll-On-Beyond-Line-Of-Sight-Enhancement, or ROBE.

The setting will be the test range at Nellis AFB. We intend to take a device about the size of a dorm-room refrigerator and place it in the back end of a KC-135R tanker. This will allow the tanker to relay information beyond-line-of-sight, over-the-horizon through a gateway over a tactical datalink broad



“We are continuing to break down traditional tribal stovepipes and integrate communications systems to achieve seamless connectivity...” – General Behler

spectrum network to give the warfighter increased situational awareness and a clearer picture of the battlespace.

JEFX ‘02 was important to the warfighter. Our single purpose for experimentation is to figure out what works best, so when the chips are down in battle, we can be confident the warfighter has been equipped with the best resources and capability.

Since the AOC was declared a weapons system, we have begun to see the results of focusing the right emphasis and resources on developing and fielding the C4ISR system necessary for future Air Force operations.

One of the most successful efforts has been the Combined Air Operations Center-Experimental, or CAOC-X, at Langley AFB, which has proven itself to be an excellent venue to rapidly test and field systems that enhance command and control within the CAOC.

As we move toward the Advanced Technology AOC, I believe we must rapidly identify and target new major transformational opportunities. It’s possible to incorporate the lessons learned from the CAOC-X experience as well as other focused efforts such as Time Critical Targeting, to strive for a transformational leap ahead in the way we identify, develop, test and field the C4ISR systems of the future.

We recently cut the ribbon on the next level of experimentation for the Air Force. We call it the “C2ISR Transformation Center.” But it’s more than experimentation. It’s also about integration.

The Center stood up the C2ISR Transformation Center to better link the individual process

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AFC2ISRC

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and system improvement efforts that have traditionally evolved within functional areas, to a broader focus of achieving the overarching capabilities identified as essential by the CSAF Task Forces.

The C2ISR Transformation Center will integrate the Combat Air Forces, Mobility Air Forces, and space activities across our traditional tribes and weapon systems.

In addition to working horizontal and vertical integration of Air Force activities, the C2ISR Transformation Center will work closely with Joint Forces Command as they mature the Distributed Joint C2, Standing Joint Forces HQ, network centric warfare, and other concepts. In conjunction with maturing these concepts, we will use spiral development to increase operational input early in the process and ensure we reduce the time required to field 21st century capabilities.

The C2ISR Transformation Center is testament to an Air Force born of innovation and transformed throughout its history.

Thomas Alva Edison, the great inventor and scientist, once said: "Genius is 1 percent inspiration and 99 percent perspiration." One of Edison's most famous qualities was his perseverance. While working on the nickel/iron storage battery at his invention factory in Menlo Park (N.J.), he performed 10,296 experiments to get it just right. He once said it would take a matter of a few weeks to invent the light bulb. In reality, it took almost two years of failed attempts, new discoveries and prototypes before he found success.

Edison tried more than 6,000 different carbonized plant fibers, looking for a carbon filament for his light bulb. By concentrating and inventing a whole lighting system rather than just a single light bulb, Edison succeeded where others had



failed. He chose to look at the big picture and created a lighting system including wiring, plugs, connectors, and so on, to operate more than one light bulb at once.

We can learn a lot from Edison's example of perseverance and looking at the big picture as we seek to link systems for machine-to-machine dialogue for the 21st century. The C2ISR Transformation Center will do just that.

A year has passed since the terrorist attacks of Sept. 11. No one will forget that fateful day and the images will be forever embedded in our minds.

We have come a long way since then. A leap forward is a capability the Center and Electronic Systems Center collectively fielded called the NORAD Contingency Suite. I am extremely proud of this product. Most importantly, it allows us to have a bigger picture of what's going on within our borders with respect to air traffic. In this issue of *intercom* you will read about it.

You've heard me say it before and I'll say it again: We are continuing to break down traditional tribal stovepipes and integrate communications systems to achieve seamless connectivity throughout our Air Force. The end goal is to synchronize these activities with the joint warfighting community. As the Air Force Chief of Staff said, "It's not about platforms ... it's about capabilities ... effects ... results!"

Communicators support war on terrorism

By Lionel Timmerman

*Air Force Communications Agency History Office
Scott AFB, Ill.*

The day started innocently enough for the four-person Air Force Protective Communications Support Team. Assigned to Air Force Communications Agency, Scott AFB, the team was on a routine mission in New York City to provide communications support for upcoming United Nations General Assembly and Special Assembly meetings. Three members were on the tenth floor of the World Trade Center's Building 7, across the street from the twin towers – the other, a block away.

At 8:46 a.m., a hijacked commercial airliner smashed into the north tower. Minutes later the team was advised to evacuate, and as they did, a second plane plunged into the south tower. Ini-

tially separated in the confusion, the team eventually rallied at a school softball field within sight of the World Trade Center, then moved to the Holland Tunnel, several blocks away. After they moved to Chelsea Pier, police boats evacuated them to New Jersey, where they caught a chartered bus to Washington and finally ended their 15-hour ordeal.

Although these were the first Air Force communicators affected by the attacks, the entire Air Force communications community soon became embroiled in the day's events and their aftermath.

When a third hijacked plane slammed into the Pentagon at 9:43, smoke and fire created a hellish environment. Personnel were caught up in a chaotic evacuation, unable to determine where to rally due to inadequate evacuation plans and overloaded cell phone circuits that failed. People quickly dispersed, making personnel accountability the priority of units and staff functions which spent hours locating members and determining their status.

Air Force Pentagon Communications Agency leadership rallied at a nearby unit warehouse and established a temporary unit control center to account for their evacuees and to monitor activities of personnel who remained in the Pentagon to support the National Military Command Center. The Air Force Frequency Management Agency, about 4.5 miles south of the Pentagon in Alexandria, Va., also quickly set up a unit control center.

Meanwhile, half a continent away, AFCA established a unit control center (later renamed the communications support cell-rear) for mapping internal actions to protect facilities, and to account for its personnel. An immediate concern was the status of all personnel on temporary duty, including the Protective Communications Support Team, which returned to Scott on Sept. 13.

Most people assigned to the Air Force deputy chief of staff for Communications and Information, or AF/SC, were located in Rosslyn, Va., two miles northwest of the Pentagon. When it became evident the WTC had been deliberately attacked, several members reported to the Pentagon to serve on the Air Force crisis action team. Remaining on duty for nearly an hour after the Pentagon attack, the CAT was forced by acrid smoke to move to an alternate site. It returned to the Pentagon 24 hours later.



Tech. Sgt. Chad Valentine, 376th Air Expeditionary Wing Communications Squadron voice switch technician, installs a telephone interface card on the legacy telephone switch while Tech. Sgt. Scott Sellers, 376th AEW CS, checks cross connects for dial tones at a forward deployed site in Kyrgyzstan while supporting OEF. The Legacy module is part of the telephone switching system that serves as a hub for the base telephone service.

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HISTORY

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The Rosslyn staff formed a crisis support cell within hours. Serving as the SC's base of operations, the cell served as the reporting structure for personnel accountability and force protection for the SC staff and its three field operating agencies: AFPCA, AFFMA and AFCA. The cell also monitored and coordinated all emergency communications requests in the National Capital Region, concentrated on securing communications networks, and tried to determine what communications assets were available for disaster relief, both in New York and the NCR.

Personnel security was a primary concern, especially for those working in leased facilities in Alexandria and Rosslyn. Located on major city thoroughfares, these buildings didn't have the same level of force protection as the Pentagon or established bases, and were more vulnerable to follow-on terrorist attacks. Reliant on contract security, both agencies worked within the bureaucracy to improve security, a slow process that ultimately took weeks to fully resolve vulnerabilities.

Returning to their Pentagon offices on Sept. 12, AFPCA personnel manned a crisis support center for several weeks, coordinating reconstitution of essential communications links in the Pentagon and providing communications support for Defense functions and agencies temporarily relocated throughout the NCR. They installed 190 classified and unclassified computer systems throughout the NCR to support those dislocated by the Pentagon attack, and installed a Defense Red Switch Network for the Army to support secure voice teleconferencing.

AFPCA's other immediate tasks included upgrading communications at existing governmental relocation sites, and developing communications architecture for additional relocation and alternate sites. Several key offices had lost critical computer applications during the Pentagon attack. To prevent a recurrence, AFPCA reengineered the "infostructure" to make networks and systems more redundant and more reliable. By dispersing servers and replicating data in the Pentagon to support operations at the alternate sites, the infostructure is now more robust and less vulnerable to single point of failure.

AFPCA technicians installed secure video teleconferencing so key Air Staff members could view real-time pictures from theaters of operation, a feat accomplished in 2.5 days. Air Force leadership

was able to keep close tabs on the global war on terrorism.

Within 48 hours, AFFMA established a national-level frequency coordination cell with members from all services to respond quickly to requests for spectrum support. Spectrum frequency management was essential to ensure interference-free, interoperable communications by assigning appropriate, cleared frequencies, and reducing or preventing communications interference and blackouts. This cell was the vital link between customers and the National Telecommunications and Information Administration, and significantly reduced approval time – processes that normally took up to 15 days were now done in minutes. Then AF/SC, Lt. Gen. John L. Woodward Jr., noted, because the "right people were focused" on the problem, this streamlining of spectrum requests was "unheard of in terms of the coordination process."

AFCA immediately developed lists of skills, talents, capabilities and equipment to help Air Staff reconstitution efforts. Twelve days later, four members deployed to the Pentagon to augment the Rosslyn cell and the Air Force CAT. Two engineers later re-deployed to Langley AFB, Va., to serve as liaison with Headquarters Air Combat Command and 9th Air Force – Rear as they developed plans for the war on terrorism – Operation Enduring Freedom, which began Oct. 7.

These members worked time-phased force deployment data issues, reducing time to get communications assets into the theater; resolved network engineering issues; and collected, analyzed, and massaged data to build numerous briefings. Col. Michael K. McCullough, AFCA's director of Technology, said the Pentagon and Langley teams successfully responded to customers with ravenous appetites for information. Timeliness and accuracy were essential. Key deployment decisions were being made in a highly dynamic environment.

As the Pentagon team processed information, it ensured data flowed in both directions, facilitating understanding by communicators in the field as well as the Pentagon staff. The team's primary responsibility was to answer questions to help decision-makers better understand communications capabilities and limitations.

Key to this effort was the schema developed by Capt. Francis Afinidad. It eventually became the "Bandwidth 101" briefing used to explain bandwidth processes and problems to Gen. John P.

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Comm and info support to CFACC: successes and lessons for future contingency ops

The success of U.S. forces in Afghanistan was not due just to the response to Sept. 11, but to efforts begun years earlier with a new vision to conduct coalition warfare and to operate a theater-wide supporting command and operations center. The following article provides the perspective of a senior communications and information leader who became personally and deeply involved in Operation Enduring Freedom, and who played a major role in operationalizing the Combined Air Operations Center, Col. David A. Cotton. He served as the Joint Task Force - Southwest Asia director of Communications, or J6, and then served during OEF as the Combined Forces Air Component Commander's communications chief, or C6 – partnering in that role with Central Air Force's director of Communications and Information, Col. David J. Kovach. These officers were a prime force

in developing the vision and plan that built our new complex in Operation Desert Shift, bringing together the efforts of disciplines from across the U.S. Air Force, and ultimately establishing unprecedented C4ISR capabilities in the SWA theater at a critical time in our nation's response to terrorism. Together these men integrated a global effort to successfully achieve a common goal: unquestioned combat capability in the hands of the CFACC. While the team they led was successful, there are many lessons to be learned and recorded for the benefit of future operations. We can all benefit from their experiences.

– Lt. Gen. T. Michael Moseley, commander, 9th Air Force and U.S. Central Command Air Forces, Shaw AFB, S.C., and Combined Forces Air Component Commander, Operation Enduring Freedom

By Col. David A. Cotton
Commander, 5th Combat Communications Group
Robins AFB, Ga.

This article provides an overview of the communications and information successes and lessons learned from support of Joint Task Force – Southwest Asia and the Combined Forces Air Component Commanders during Operation Enduring Freedom. Moreover, it discusses some of the challenges associated with the transition from steady-state JTF operations to a rapidly expanding military operation in which all eyes, national and international, were upon us. Finally, the article points out changes suggested by our experiences that may be required in the way we develop Air Force professionals – including members of the communications and information community.

Joint Task Force - Southwest Asia

After the attack on U.S. personnel at Khobar Towers in 1996, the HQ JTF-SWA element relocated from the U.S. Military Training Mission complex in Riyadh to facilities at nearby Eskan Village. From 1996 until 2001, HQ JTF-SWA operated from facilities at Eskan Village, and its



A GP-Medium tent housed the JTF-SWA CAOC operations cell — a precursor of the vastly larger and more capable weapon system ultimately established.

CENTAF KSA-based air arm at Prince Sultan AB. At Eskan Village, the combined air operations center, or CAOC, manned by U.S., British and other elements, was a sprawling complex centered around an operations cell. That ops cell was comprised of a tactical general purpose shelter outfitted with traditional computer workstations, various telephone systems and one large-screen projection of the common air picture for Operation

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Southern Watch. Its basic layout and function bore remarkable similarity to 1960s-vintage theater air control centers. A sound doctrinal foundation was the success of this command center.

Over time, technology had been overlaid on processes to enhance available national and coalition capabilities. Information that at one time would have been plotted on a map by hand to give an operational commander situational awareness was now displayed on an electronically-integrated, computer-generated display. Each of 23 operations personnel had one workstation and secure telephone for sharing classified information internally with U.S. members of the JTF staff and with deployed units. The air tasking order was generated and distributed through the Contingency Theater Automated Planning System and on the SIPRNET. Sharing of the ATO with coalition partners was done via secure facsimile, the Internet, or a standalone point-to-point computer network comprised of only two terminals (which were not connected to any nation's network) – a true stove-pipe system with limited utility. The common operational picture was injected into the U.S. Global Command and Control System for dissemination throughout the AOR and to higher headquarters. Technologically, the JTF's Eskan CAOC had been incrementally enhanced by a steady diet of enhancements, each providing the JTF commander with new capabilities. For example, in early 2001, the JTF-SWA CAOC activated its first real-time UAV downlink, using video compression over a 512 kbs tactical comm link. However, these enhancements paled in comparison to what lay ahead at the new CAOC at PSAB and the follow-on enhancements.

When HQ JTF-SWA relocated to its new facilities at PSAB in August 2001, the project realized then-COMUSCENTAF's vision to base theater C4ISR capabilities in a complex capable of conducting major theater war-scale, coalition-capable air operations. The project, known as Operation Desert Shift, included design and construction of three buildings: the commander's headquarters with offices for U.S. and coalition members; the Joint Intelligence Center; and the CAOC's operations complex. An amalgam of Air Force communicators designed CAOC C4ISR systems, the "guts" of the facility, and Air Force Civil Engineering Red



1964 version of a CAOC (Theater Air Control Center).

Horse teams constructed the buildings and supporting facilities. The project was a brilliant example of a total force effort, with contributions from a variety of U.S. Air Force commands and staff elements, including active duty, National Guard, Air Force Reserve, civil service and contractors. The project was completed in just 11 months from system design. The USCENTAF/A6 and the Desert Shift Program Management Office led the entire effort, with major support from Electronic Systems Center and Air Combat Command's Directorate of Comm and Info Systems. Communicators were also called upon to perform diplomatic duties to obtain permission for siting and construction of the complex. While many of these tasks are not normally expected of the communications and information community, those called upon stepped up and succeeded.

The Day the World Changed

Sept. 11 started out as a normal day in the AOR. Within JTF-SWA/J6, we were still performing operational checks of the new CAOC systems, and managing operation and configuration of the AOR's pre-existing communications infrastructure in coordination with USCENTCOM and its respective Army and Navy components, USARCENT and USNAVCENT. As in the previous days, we were discussing "exit strategy" for dismantling the Desert Shift PMO and integrating its remaining tasks into J6. In the few weeks since our relocation from Eskan Village, we'd identified most of the issues requiring resolution for the facility's current mission: OSW. However, we soon realized there was much more to do to prepare remaining

CAOC systems if the nation decided to employ our facility in a military response to the terrorist actions.

Our biggest challenge was to rapidly field and support the Theater Battle Management Core System for creating and disseminating the air tasking order and air control order. This system is much more complex than its predecessor – the contingency theater air control system, or CTAPS – and the military services had yet to grow a plentiful crop of experts to deploy for quarterly Air and Space Expeditionary Force requirements. The same contract team that had supported the installation during Desert Shift was still providing many of our needs.

In addition to accelerating integration of planned capabilities into the center, we needed to integrate new systems into the facility with minimal warning or planning – the new CAOC’s design included 49 baseline systems and applications, and another 60 or so “extensions” – systems required by COMUSCENTAF to plan and execute theater-level operations. In many instances, we had no exposure or experience with these systems. Some systems hadn’t reached the level of maturity to complete formal operational test and evaluation. They hadn’t been tested in a baseline CAOC and their interaction with other CAOC systems was unknown. Fortunately, one of the remaining members of the PMO at PSAB was Mike Mercurio, a contract engineer supporting Electronic Systems Center. Mercurio not only solved many CAOC puzzles, but mentored company grade officers in their technical craft. Our experience with Mercurio and other ESC system developers provided a wake-up call for us to develop much broader skills and competencies in our communications and information officers.

Twenty-four/Seven

After the CAOC surged into full 24/7 operations with all critical positions covered around the clock, we worked alternating 12-hour shifts. To support OSW, the engineering branch, led by Capt. Bill Poirier, was dual-hatted as the theater communications planner. As planning intensified, Poirier found himself serving as lead engineer in the largest, most rapid expansion of a pre-existing tactical communications network ever attempted. Supported by Air Force Communications Agency, ACC and the Air Staff, he provided vision and direction for a 150 percent expansion of the network in just three weeks, to support a 300 percent increase in combat capability, six new bases and 15,000 addi-

tional personnel. During his one-year tour with JTF-SWA/J6, Poirier implemented new capabilities for the JTF commander. But J6 needed augmentation, especially in planning.

Help Arrives

On Sept. 19, the first increment of additional personnel arrived, allowing quick ramp-up of various functions, including intelligence, ATO development, logistics, medical and communications. Another 575 personnel soon arrived to establish operations, including the director of Mobility Forces and Special Operations Liaison, as well as people from other services, such as the Army’s Battlefield Coordination Detachment. Our immediate focus in J6 was to beef up theater engineering and create a plans branch, while urgently preparing the CAOC “weapon system” to conduct full-scale theater operations.

The new plans function became heavily engaged with CENTAF, ACC, CENTCOM, and the J6 theater engineers in force lay-down planning and communications. Without the help of planners from the 609th ACOMS, AFCA, and ACC units like the 3rd and 5th Combat Comm Groups, we couldn’t have developed the communications support plan for expansion of AOR basing. Many of these personnel had recently spent multiple tours deployed in the AOR for Desert Shift, AOR exercises and AEF rotations, and their expertise and familiarization with regional issues were invaluable.

Communications Activation and Its Lessons

Compared to the rapid pace of aircraft being deployed for OEF, comm service activation was slower than desired. The huge increase in planned theater architecture was not fully in place or activated until two to three weeks after the start of combat operations. Even bare minimum services were not available at all sites when combat operations began. At least two sites received their initial ATOs and special instructions by secure dial-up INMARSAT e-mail, and we employed TALCE-assigned UHF TACSATs to disseminate info to several of our deployed elements.

Causes of delayed activation were many, not the least of which was the sheer scale of the task. One key obstacle was inability to get communicators and equipment on site prior to arrival of operational units with their aircraft and ordnance. Airlift priorities changed, aircraft broke, and equipment and personnel packages – unit type codes, or

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UTCs – were split. In addition, several units were caught in mid-transition from the TRI-TAC family of tactical communications equipment to theater deployable communications, or TDC, packages, the current generation of deployable communications capability. These factors, and the mix of tactical and commercial systems in the existing theater infrastructure, resulted in people having less training and experience than necessary for rapid activation. Fortunately, the plans and engineering branches attacked each activation challenge and, in time, successfully resolved them and provided sufficient service to each site to support “D-day” on Oct. 7. The MAJCOM directors of comm and info and their staffs also created and pushed many innovative solutions forward with their deploying units. In the end, no sortie or mission was canceled, delayed or adversely impacted due to communications shortfalls. Communicators achieved success with the available resources and creative processes.

More Modularity Needed

Lessons learned were many. The operational need is to move combat forces rapidly as a show of national resolve and determination. This often left combat support forces with insufficient airlift in early stages of movement. Communicators must develop a plan that provides for limited, but acceptable, initial command and control, and then follow-on growth to afford fully-capable comm services. OEF was the first operational deployment of the new TDC UTCs. We quickly learned that while TDC equipment is quite modular, deployment and employment of TDC must be even more modular to take advantage of limited transportation. This contrasts with the classic desire to pack and ship the UTC’s entire logistics detail. Consequently, AFSOC, AMC and ACC are looking at better ways to employ TDC for greatest efficiency. Whatever implementation is

developed must be modular, lighter and more scalable. The first components on site must not only provide basic services, but have the architectural compatibility to be rapidly augmented by each ad-

9th AF
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Base-Level Comm
Preparing for ...

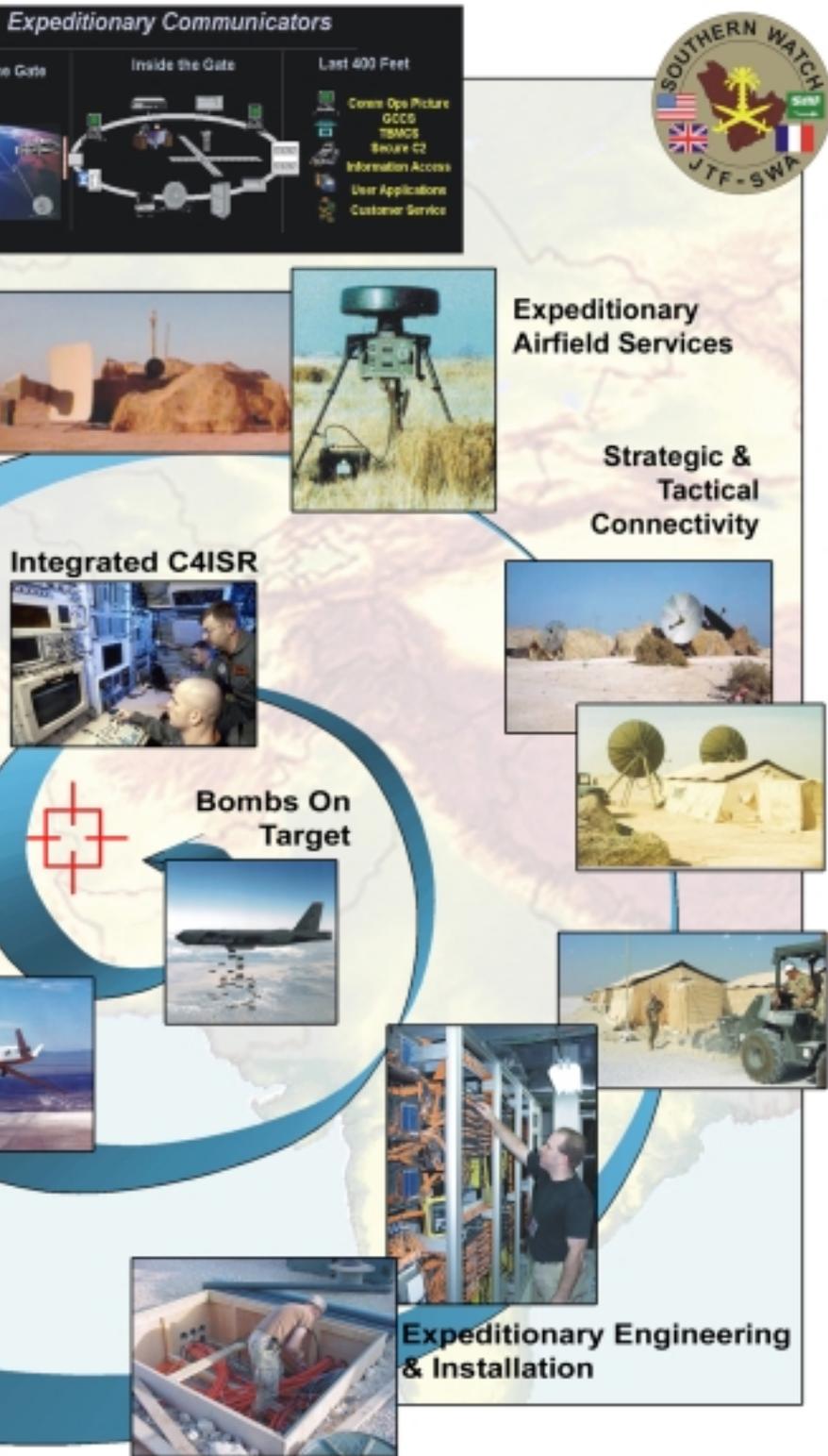
C2 & Mission Planning

CFACC C2

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Connecting CFACC
Eyes To Target



quality of service, and not require changing users' components. An example is providing the wing commander a secure telephone and laptop computer for SIPRNET access. While off-base connectivity might initially be through man-portable SATCOM and secure recovery activation signal service, the operators' interactivity with comm systems shouldn't change when a more capable SATCOM terminal arrives, regardless of the demands of infrastructure connectivity. What was installed in the first increment should only be augmented and not replaced.

Same Comm Services, Same Equipment, Different Configurations

In addition to the challenge of getting comm equipment on site, was attempting to activate six new bases while concurrently integrating their communications into an existing AOR network. This overwhelmed existing tactical communications hubs developed for the steady state JTF, and supporting strategic and tactical entry points to the Defense Information Services Network. Available people were insufficiently skilled to activate a new base and interface it with the theater network. To solve these problems, we developed "SWAT teams" comprised of engineers, technicians and Air Force Engineering and Technical Services personnel, to quickly deploy to sites needing assistance or augmentation. In essence, they were agents of the theater engineer, ensuring sites complied with standard installation practices and equipment string configurations.

A major finding of the teams was a need to standardize circuit design and implementation. Now that units across multiple major commands – including ACC, AMC, AFSOC, PACAF and USAFE – possess the same TDC equipment,

additional comm increment. Communications support must also be seamless, especially in regard to customer connection to site infrastructure. Enhancement of capabilities should only change the

a body is required with responsibility for developing and promulgating standards. Deploying

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units would then have a central repository and body of corporate knowledge to draw on for assistance before, during and after deployment.

Unprecedented and Advanced Capabilities

In the CAOC, not a single day passed that we weren't tasked to implement and support new, highly advanced systems that enhanced operations and intelligence capabilities, but with which most communicators had little or no experience. Many requests focused on establishing and proliferating the full-motion video capability of the Predator UAV, and the Tasking, Processing, Exploitation and Dissemination, or TPED, requirements of other ISR platforms like Global Hawk, the sensors aboard U-2 and Rivet Joint aircraft, and various targeting pods on other U.S. and coalition aircraft throughout the theater. We were not only providing eyes on target to the CFACC and his CAOC, but relaying it to other echelons of command, other services and our coalition partners. We were similarly required to integrate the vast capabilities of JSTARS into the air picture, which allowed the CFACC and CAOC weapon systems operators to view the ground and air battles simultaneously. These capabilities became integral to combat ops throughout the theater – just as the common operational picture, or COP, we provided through the Global Command and Control System gave all theater-assigned operational units, and many elements outside SWA, a common view of the air battle.

As a consequence, we learned that communicators must grow a “weapon system operator” mentality. We need a much greater awareness and better understanding of technologies required to receive, exploit and disseminate video and other intelligence products. We also need a better understanding of the TPED process of collecting, analyzing and distributing intelligence information. Ownership, or establishment and management, of the COP taught many lessons as well. Theater architecture for the JTF-SWA COP couldn't support rapid AOR expansion, so the CFACC relied upon his comm leadership for battlefield situational awareness, or SA. We developed a two-phased attack. In the first phase, we worked with a Navy-assigned theater Joint Interface Control

Officer to employ AWACS, Navy Hawkeyes, deployed ships and the tactical networks to create an air picture in the first days of OEF operations. Then we studied what additional sensors and components had to be integrated to provide a ground-based infrastructure to support a 24/7 SA, without relying solely on airborne C2 platforms. Joint interface experts from Fort McPherson, Ga., home of Joint Interface Control Officer training, sent their Joint Information Coordination Center – Deployable team to the AOR with 90 transit cases of equipment, including their joint range extension unit. This colonel-led team essentially included the entire instructor cadre of the JICO schoolhouse. With their expert support, we were able to provide the CFACC a sustainable, 24/7 COP for command and control needed in all the areas of the fight. Within the Air Force, the number of officers with these special talents is much too small, at least among communicators. JICO competencies should be highly prized and integrated into development of future comm and info professionals. This gap in capability illustrates that most of today's communicators need a much greater understanding of the air battle at theater level, the air operations center mission and its information requirements. Communicators at MAJCOM and wing level need to be able to directly support the CFACC and his C4ISR requirements – now, rather than after weeks or months of “spin up.” These competencies should be added to the communicator's kit bag in Advanced Comm Officer Training, and our community should immediately begin to send our “best and brightest” to JICO training.

Summary

This is essentially a “good news” story. Despite a variety of challenging circumstances, communicators played direct supporting roles in many critical venues. Most importantly, communicators transcended their traditional “service provider” role, and successfully developed and operated the 21st-century C4ISR weapon system needed by the CFACC and deployed combat and combat support units to bring air power to bear rapidly and decisively upon our enemies. End result: No sortie or mission was scrubbed or negatively impacted due to performance of communications systems and infrastructure, and for the most part, our senior decision-makers had “eyes on target” where and when

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they needed it. Nevertheless, we comm and info professionals must continue to increase our contribution to Air Force warfighting by developing a concept of operations that provides a more responsive and modular capability – and by ensuring our personnel are better versed in the operations and intelligence missions we support, and better trained to rapidly integrate C4ISR capabilities for the warfighter. I don't expect communicators to be experts in all operational mission areas, but rather to learn the lexicon and operating environment of the warfighter, and to prepare to bring comm and info to the fight in ways that enhance operational capability. As the information technology experts for the Air Force, communicators must take on, more than ever before, a "weapon system operator" role. Lt. Gen. Leslie F. Kenne, our senior communicator and Air Staff director of Warfighting Integration, is leading the charge in this regard, and we must follow. Comm professionals must be the integrator of new and existing communications and information capabilities to support warfighting capabilities. The time has arrived to better develop our comm and info professionals to bring to the battle the capabilities the warfighter needs - *capabilities*, not just services. Our OEF experiences gave us insight to the possibilities. Now it's up to us to act.

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Jumper, Air Force chief of staff, and was developed into the "smart book" used to brief the senior staff. This briefing helped senior Air Force leaders appreciate the amount of bandwidth required for various scenarios, helping immeasurably with planning OEF deployments.

McCullough served as interpreter for network modeling and simulation activities at AFCA. Ron Price built the topology of anticipated forces and equipment, and simulated appropriate communications loads on the devices, highlighting potential concerns. Building a thousand-node network in five days – a process that normally takes six months – the models identified gaps in planned topology, forecasted vulnerabilities and suggested solutions. This was the first use of modeling and simulation to indicate possible communications problems and solutions before a deployment, which greatly enhanced operational planning.

Communicators at all echelons were deeply involved in Enduring Freedom after operational missions began. Air Force Special Operations Command quickly deployed communications teams to the various "-stan" countries (whose names have that ending), where, in many cases, they served as the sole communications function. Other major commands deployed communicators to Southwest Asia to augment forces that were already in-place or establishing new bases. AFCA deployed two four-person Scope Network teams to SWA to validate and verify networks, assure they were working at peak performance, and install the Air Staff information man-

agement system throughout the theater. The agency also deployed military and civilian members to SWA to install a global broadcast system to allow live video feeds from unmanned aerial vehicles. The AFCA Communications Support Cell–Rear helped rework architectures and bandwidths to permit additional Predator missions. Several agency Defense Message System "strike teams" deployed throughout Europe and SWA, assisting with installation of the system and ensuring DMS was working properly.

Technology soon became a key ingredient of the war, with near real-time information capture and transfer married to near-instantaneous weapons delivery. As a result, Air Force planners and leaders quickly realized communications was a leading, rather than supporting, player in warfighting operations.

Operation Noble Eagle, the homeland air defense initiative which took effect Sept. 18, became a massive undertaking. First Air Force, Tyndall AFB, Fla., had to completely revamp the continental air defense system. At the time of the attacks, all 54 military air defense radars were designed to observe flights outside our borders, because the threat's origin was perceived to be external, rather than internal. The 1st redesigned the network to "look in." It added 76 short- and long-range radars, and built a communications network between air defense sectors, command posts, and Federal Aviation Administration air route traffic control centers, to ensure command and control of fighters flying combat air patrol missions.

Planning for the new air de-

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Staffer relates communications ‘war stories’

By Lt. Col. Bob Steele
Deputy Communications Director
HQ AFSOC
Hurlburt Field, Fla.

I watched with interest a recent deployment of communications troops to support Operation Enduring Freedom. It was the latest of many since 9/11 to provide world-class communications and information to AFSOC’s aviation elements and a blend of U.S. special operations, conventional and coalition forces. Though deployment had become routine for me, the scene of these proud and capable airmen showing normal signs of anxiety and uncertainty brought back memories.

On my 105-day deployment in November, I was a member of AFSOC’s team of “front line” communicators, focused on providing an essential competency for any military operation. After a lengthy departure delay and logistics delays en route, I was greeted at about 2 a.m. local time by several eager faces at what I thought was my final destination. We were at a support base where I was to serve as director of communications for a combined joint special operations task force for southern Afghanistan, also known as Task Force K-Bar.

“Boy, are we glad to see YOU,” was the comment that commonly greeted me. I soon learned communications equipment and people to run it were needed to support this staff and their operational forces, including U.S. Air Force, Army and Navy special operators, along with coalition warriors from seven nations. It was Nov. 29, and I had entered the war “late” — several weeks behind the rest of the K-Bar staff. It would take a lot to catch up.

The initial weeks at K-Bar put me on a steep learning curve. I had to refamiliarize myself with the details of tactical computer networks, secure voice systems, and tactical satellite networks. A senior noncommissioned officer and I were “the comm staff” for the group’s day-to-day responsibilities. The pace was hectic and demanding. There weren’t enough hours in the day, and we, like many others, worked 14, 18 and 20-hour days to keep up. By mid-December, our headquarters would relocate to Qandahar Airport in Afghanistan.

Arrival in Qandahar was very interesting. We flew blacked out for several hours with plenty of



Photo by Master Sgt. Edward E. Snyder

Senior Airman Christian Fiore (left), a satellite communications technician from the ANG’s 267th Combat Comm Squadron, Otis ANGB, Mass., and Senior Airman James Edwards, satellite comm technician from the ANG’s 240th Combat Comm Squadron, McEntire ANG Station, S.C., install a giant voice speaker system on the roof of a building at a forward deployed location.

“yanking and banking” to avoid missiles and ground fire. This appeared to be successful, as we landed – again at around 2 a.m. – to a blacked-out and bombed-out airport. The smell of explosives remaining from the bombing campaign was strong. The only light was from a few chemical sticks around the concertina wire, so I was glad I’d brought a small flashlight. I soon learned the inadequacy my “intermediate cold” sleeping bag for the 30-ish, windy temperatures.

Conditions clearly reflected the recent two-week battle. Mines, rocket-propelled grenades, mortar shells, shrapnel and abundant battle dam-

age were visible everywhere. Because of thousands of undetected landmines around the airport, we were restricted to well-traveled roads and paths. On my first day, a young Marine lost his leg by stepping on a mine in a previously cleared area. Bullet, rocket, mortar and bomb damage was reflected in every surface, wall and window. The floor of the room where I spent my initial few nights showed signs of blood from the fierce battle earlier that month. For once in my career, I was glad to have a 9mm pistol with me at all times. The first order of business was to satisfy basic personal needs, yet mission planning had to proceed at once. Communications would be critical to this effort.

Because we initially had no deployable equipment, our basic communications support came from Marine Expeditionary Units already on site. These professionals provided voice and data systems until K-Bar's communications equipment and people arrived. This sharing enabled Task Force K-Bar to conduct our first combat missions. This spirit of cooperation continued to be key to our success.

The order of business was to equip deployed staff with communications in the airport building through the Joint Communications Support Element. Using a small, lightweight satellite terminal and base-band equipment, JCSE provided SIPRNET, secure voice, and network connectivity by early January. Considering Qandahar airport still had no electricity, latrines or showers, this was an amazing accomplishment.

We also had to blend and synchronize communications plans for every mission. This required great knowledge of Army, Navy, Marine, and coalition ground and air communications systems. Every fighting element brought slightly different equipment and tactics. Fortunately, the TF K-Bar commander placed interoperable communications high on his priority list, which meant I had a seat at the planning table. All this was done as facilities were slowly transformed from a bombed out shell to a functioning military base.

As time went on, the base increased security, particularly after one night in January. Just after departure of the first load of detainees from Qandahar to Guantanamo Bay, Cuba, we were



Photo by Cecilio M. Ricardo Jr.

Tanker Airlift Control Element members were the first team to land in this undisclosed forward deployed location in support of OEF. They improvised to construct their own living area.

startled by gunfire on the west side of the airport. I remember feeling very glad I had my 9mm nearby. This prompted us to review emergency destruction procedures for communications equipment and other materials at our site.

Eventually, we established robust communications for the K-Bar commander and staff, as well as an effective mission communications planning cell. It was a collective effort of U.S. and coalition members. As the months went by, the team became close-knit and highly effective, striking several major blows to al-Qaida and Taliban forces left in Afghanistan. The experience was a high point in my career.

The lessons I took away from TF K-Bar are probably familiar to many who will read this. First, effective understanding of the mission and force is essential. Second, communicators must be part of the earliest phases of planning, for combat operations as well as staff support. For us, it required opening new areas of expertise, such as airborne communications systems and detailed call sign matrices. Third, interservice and coalition interoperability must be carefully evaluated and planned. Finally, there is no substitute for effective training and adequate equipment – including sleeping bags! Fortunately for our nation and our allies, we've learned and applied these lessons throughout our OEF experience.

As I think about those young 16th CS troops on the ground at their OEF base, our Air Force and our nation can take great pride in the fact that no matter how surprising their missions turn out to be, they are there, trained and ready, and doing well the job that's expected of them.



ACC's comm and info warriors lead the fight against terrorism

By Brig. Gen. (sel.) William T. Lord
*Air Combat Command Director of
Communications and Information Systems
Langley AFB, Va.*

On Sept. 11, we as a nation survived an unprovoked foreign terrorist attack against our people, on our soil. Let there be no mistake: We are at war. The motive behind these acts was to try to change us as a society, to alter our beliefs, values, and morals, and to strike fear in our hearts. Instead, these unthinkable acts filled us with pride, unity, determination and resolve.

Immediately after the attacks, Air Combat Command's communications and information warriors sprang into action, providing the Secretary of Defense and the FBI critical radar information describing the flight paths of the four hijacked air-

craft. Our comm experts were able to provide tracking plots and follow-on analysis. All the information enhanced senior leadership's decision-making ability, enabling them to provide real-time direction to change our national air defense posture.

Within the first week of Operation Enduring Freedom, the melding of efficient and effective teams spanned the United States and overseas. We deployed more than 250 airmen – from active duty, Air National Guard and Air Force Reserve units – effectively integrating 145 short tons of deployed equipment into the combat communications infrastructure.

They laid hundreds of miles of fiber and copper cable, installed secure and unsecure voice communications, provided NIPRNET and SIPRNET connectivity, established postal services, built air-



From left, Staff Sgt. Jeffrey Kistler, a network administrator, Tech. Sgt. Berkley Asbury, a radio maintenance technician, and Senior Airman Brian Yannarelli, a technical controller, all from the 438th Expeditionary Communications Squadron, run fiber to upgrade communications services at a forward deployed location supporting OEF.



Photo by Staff Sgt. Cecilio Ricardo

Airman 1st Class Jason Pischoff, 2nd Civil Engineer Squadron, Barksdale AFB, La., helps put up tents at a forward deployed location in support of OEF. He, along with many other Air Force members, arrived after 24 hours without sleep, and with 12 more hours of work ahead.

field and weather systems and activated JWICS (Joint Worldwide Intelligence Communications System) VTC circuits and terminals. They also supported new missions such as the Alternate Air Operations Center, several different Special Operations Task Forces, and hundreds of aircraft flying sorties over Afghanistan. These tasks were accomplished in spite of intense scrutiny, tremendous pressure, unbelievable time constraints, and in some cases, under the most austere conditions.

Since Sept. 11, we've deployed communicators and equipment from 16 of our 18 ACC "base communications squadrons" in direct support of OEF.

Five of our high speed communications squadrons and a combat communications squadron provided primary communications support, with their newly fielded theater deployable communications packages in a number of locations.

Other personnel and equipment requirements streamed in for command and control communications from CENTCOM at MacDill AFB, Fla. Total commitments added up to more than 1,200 personnel and 900 short tons of equipment. This was over and above the nearly 800 communicators already deployed for Air Expeditionary Force rotations in support of Operations Northern Watch and Southern Watch.

Deployed people were not the only ones working long hours, under extreme pressure. After the terrorist attacks, in-garrison folks were also pulling double duty. Home station secure communications requirements skyrocketed to coordinate mobilization of forces and flying combat air patrols inside U.S. airspace. The ACC Network Operations Security Center was preparing for another kind of attack—a cyber attack. In preparation for all possibilities, the NOSC tightened cyber security by locking down the ACC enterprise. Communicators were also major force protection players, as one of the prime providers of Security Forces READY program augmentees.

Many more comm and info personnel deployed to stateside locations to support Operation Noble Eagle, to cover for deployed personnel, and to provide critical reachback support to our forward deployed locations. The numerous ACC comm initiatives happening concurrently around the world needed a central focal point, and the ACC SC Contingency Action Team filled this critical role. They stood up a 24/7 operation to provide support to combatant commanders and their deployed personnel and equipment.

In the months following the terrorist acts, Americans came together with diligence, courage and American pride. The nation commissioned the U.S. Armed Forces to carry out its will. We've executed and will continue to execute the war on terrorism – and U.S. Air Force communicators will be there. No comm – No bomb!



AMC communicators respond to OEF, ONE

By Maj. Scott Pinkman
Directorate of Communications and Information
Air Mobility Command
Scott AFB, Ill.

Air Mobility Command's communicators are accustomed to being "global mobile." Their core competency is communicating from anywhere, anytime, every day to accomplish the global mobility mission.

When President Bush called for a global war on terrorism, they jumped into the Central Asia area of responsibility with both feet and pumped up the volume for U.S. Transportation Command and U.S. Central Command. In response to numerous taskings, AMC personnel from virtually every comm career field began deploying throughout the world.

Within days, AMC combat camera photographers began gathering combat imagery for theater commanders. Air National Guard and Air Force Reserve Command technicians accompanied their aircraft to establish command and control links at tanker bed-down locations. Rapid response packages from AMC's air mobility operations groups began establishing critical data infrastructures at forward deployed bases. Meanwhile, communicators at Scott AFB provided vital support to build an air bridge from CONUS to Qandahar and many points in between.

AMC's 1st Combat Camera Squadron based at Charleston AFB, S.C., was among the first out the door. The news of attacks on the World Trade Center and Pentagon was only a few minutes old when the 1st CTCS began assembling teams of photographers and videographers to document the dramatic scenes of destruction with thousands of photos and video images. Within days, images transmitted to the Joint Combat Camera Center were published for use throughout DOD. COMCAM personnel soon began deploying worldwide in sup-



DOD photo by Tech. Sgt. Cedric H. Rudisill

Aerial photograph shot Sept. 14, 2001, shows some of the destruction caused when a hijacked airliner slammed into the Pentagon Sept. 11.

port of Operation Enduring Freedom. As special operations forces attacked the Taliban and al-Qaeda, COMCAM crisis response teams from the 1st CTCS and Air Force Reserve Command's 4th Combat Camera Squadron based at March ARB, Calif., flooded combat imagery into the JCCC.

Air refueling and tanker support were vital to the rapid deployment of U.S. aircraft and special operations forces into Afghanistan. AFRC and ANG personnel accompanied tanker forces, establishing and maintaining crucial command and control channels in extremely austere environments. Well known for their expertise and resourcefulness, they installed telephones, radios and data networks under difficult conditions to link aircrews, operators and support staff to stateside and deployed commanders. AFRC and ANG personnel continue to maintain 24/7 deployed support to overseas and stateside airlift and tanker bases.

As special operations forces tanker squadrons were bedded down throughout the deployed AOR, USCENTCOM established main operating bases which eventually saw virtually all types of AMC aircraft including the C-17 Globemaster. A critical component of the buildup was providing robust communications for these bare bases. AMC de-

ployed teams from the 615th and 621st Air Mobility Operations Groups to establish communications infrastructure at three main operating bases. Personnel from the 43rd Communications Squadron from Pope AFB, N.C., and AFRC's 349th and 514th Communications Squadrons from Travis AFB, Calif., and McGuire AFB, N.J., later replaced the 621st and 615th Air Mobility Operations Groups at their respective deployed locations.

These personnel were part of AMC's theater deployable communications packages. Designed to eliminate deficiencies identified during the Persian Gulf War, this relatively new capability gives deployed base commanders a command and control, communications, computers and intelligence infrastructure. TDC includes high-capacity satellite communications, NIPRNET, SIPRNET, secure and nonsecure voice switching, and Defense Message System services.

On Sept. 11, the 621st and 615th AMOGs had owned their TDC equipment for less than a year, and were training their personnel on its capabilities, operations and maintenance. AMC and AFRC communications squadron leaders immediately knew TDC would be critical to the war effort and accelerated unit training schedules.

AMC also debuted two new air traffic control and landing systems: the one-of-a-kind AN/MRN-23 mobile VORTAC, and the MN/MPN-25 deployable ground control approach radar. Although new, both systems performed superbly, far

exceeding AMC headquarters expectations.

The MRN-23 deployed early in the campaign to provide the only instrument flight rules navigation in Afghanistan. Installed by AMC technicians from McGuire AFB and Travis AFB, this capability was critical for both civilian and DOD aircraft in order to meet mission requirements.

The MPN-25 followed the MRN-23 with duty in Diego Garcia, bringing the first airport surveillance radar and radar approach control to the island since Operation Desert Storm. Personnel from Scott AFB, Ill., installed and flight-checked the system within 24 hours, providing navigational guidance to more than 4,000 airlift, refueling and bomber missions.

Throughout all the deployments and missions to far-flung locations, technicians working in the AMC Tanker Airlift Control Center provided vital lifelines to AMC personnel. After OEF and Operation Noble Eagle kicked off, TACC's already busy 24/7 mission kicked into overdrive.

The increased operations tempo skyrocketed requirements for command and control communications. Washington ANG's 252nd Combat Communications Group quickly augmented AMC's TACC personnel, providing skilled network operations and security technicians and assisting with deployment planning. The 252nd expanded TACC communications capability by more than 40 percent and provided key expertise in planning global war on terrorism deployments.

To some, AMC support to OEF and ONE was just an increase in the daily 24/7 operations tempo. Supporting flying operations, acquiring combat imagery, establishing and maintaining deployed base infrastructure, and augmenting TACC operations is what AMC communicators are trained for. Yet, as OEF and ONE have demonstrated, the constantly changing global environment will continue to challenge AMC and its communicators.

Our highly trained and motivated active duty, Air National Guard, and Air Force Reserve personnel will continue to rise to the task, providing C4I support anywhere, anytime our nation needs us.



Photo by Staff Sgt. Ricky A. Bloom

Staff Sgt. Suzanne Rogers, a videographer for the 1st Combat Camera Squadron, Charleston AFB, S.C., documents coverage of coalition forces at a deployed location supporting OEF.



PACAF communicators in the fight

By Maj. Michael Croslen

*Directorate of Communications and Information
Pacific Air Forces
Hickam AFB, Hawaii*

Pacific Air Forces communicators soared into action after the Sept. 11 tragedy and ensured that the right information got to the right location at the right time. The PACAF communications and information team provided immediate combat communications support and innovative design solutions that shortened the kill chain and enabled warfighters to do their jobs faster and smoother.

Immediately after the actions on Sept. 11, PACAF SC rapidly addressed the myriad IT requirements that surfaced as a result of the emerging United States response. PACAF engineered innovative solutions that supported unique missions for Operations Enduring Freedom and Noble Eagle.

They integrated radar feeds into the common operational picture that were made available through SIPRNET to terminals that were rapidly installed at required locations. Communicators from PACAF deployed to locations across the globe and installed systems in places such as Diego Garcia, Thailand and South Korea. In Korea, deployed communicators enabled the bed-down of F-15Es and supported the operation for 90 days in bare base conditions. This allowed the Navy to swap carrier battle groups while maintaining protection of the sky.

One of the hot issues was secure communications. Within 24 hours of the attacks, additional secure voice equipment was installed in the Pacific Operations and Support Center. The POSC coordinates command and control activities. This initiative strengthened PACAF's mission-essential C2 capabilities. It proved essential for supporting evolving operations throughout the PACAF area of responsibility, including maintaining a real-time situational awareness for air defense of the Hawaiian Islands.

The comm and info team engineered a capability to provide real-time air pictures of Guam and the Hawaiian Islands. Deployment of an air defense systems integrator to Andersen AFB, Guam, allowed commanders

to view the integrated FAA and Marine Corps radar picture ensuring positive control of air space.

The Global Command and Control System/COP suite was installed by Sept. 16. This capability provided PACAF leadership with real-time, 24/7 visibility into air operations over Hawaii and Guam. Eventually, the common operational picture for Guam, Hawaii and Afghanistan was installed in the POSC.

PACAF SC also championed approval of \$100,000 in funding for permanent radios and antennas for installation in the POSC and at Air National Guard installations at Mt. Kaala and Kokee AFS. The equipment was essential for long-term continuation of the homeland air defense mission and freed deployable assets for other missions.

The comm and info team installed remote radio controller equipment in the POSC that allowed extended radio coverage for communications between PACAF leadership and U.S. Air Force aircraft on homeland air defense missions. This extended PACAF's capability to communicate with Navy assets supporting the homeland defense mission. Operationalized communications ensured proper equipment and manpower were sourced and allocated to sustain military operations.

The contributions made by operationalizing communications created a seamless integration of C2 and ensured success of Air Force missions.

Tech Sgt. Jimmy Kuwahara, 40th Expeditionary Communications Squadron radio maintenance journeyman, installs a UHF antenna that will be used for ground-to-air communications at a deployed location supporting OEF. Kuwahara is a member of the Hawaii Air National Guard.



Photo by Senior Airman Mike Dickson



Photo by Master Sgt. John Nimmo

Senior Airman Lawrence Mangino, an Air Force Reserve computer network and crypto switching systems specialist from the 514th CS, McGuire AFB, N.J., fills in new phone numbers on a junction box at a forward deployed location in support of OEF.

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fense system was 80 percent complete by Sept. 18. The Air Force Command and Control, and Intelligence, Surveillance and Reconnaissance Center, Langley, coordinated deployment of theater battle management core system, and global command and control system, assets to Tyndall to assist the 1st's effort.

The communications network connecting air route traffic control centers, aircraft scramble sites, radio sites, and individual radars was a massive planning and execution effort for Air Force communicators at all levels, contractors and the Defense Information Systems Agency. Communications

went from the 1960s to the 1990s overnight.

In the period between the terrorist attacks and the onset of OEF, the Air Force directed attention to postal matters. Considering more than 200 million pounds of mail moved through military postal facilities each year, there was concern the system might be used to deliver other types of threats, primarily bombs. Bob Eichholz, chief of Air Force postal policy, and Chief Master Sgt. Richard Small, career field manager for airmen in postal specialty duty, completed an emergency mission needs statement to fund and field ion-scan equipment to detect chemicals associated with bomb-making materials. The new machines were fielded at every location where mail is delivered by military postal personnel.

The FAA virtually shut down U.S. commercial air operations until Sept. 13, and restricted mail to cargo flights for several weeks thereafter. This decreased European flights by 90 percent in the first week, and greatly reduced military mail flow. The German FAA decreed that all cargo and mail on aircraft had to undergo pressure chamber checks, further restricting mail delivery. While some airlines allowed mail to depart overseas areas on passenger flights, it wasn't always permitted to enter countries on passenger flights. As a result, the European postal region had to establish supplemental postal facilities and dispatch mail to locations all over Europe by truck. While mail returned to semi-normal operation in December, packages sent overseas still spent an average of five days longer in transit than before Sept. 11.

Anthrax incidents in October threw another wrench into the mail picture, drastically slowing the mail, particularly around Washington, where most incidents occurred. Eichholz and Small concentrated on educating mail handlers (designated postal personnel, as well as individuals working in unit mail rooms) on use of protective respiratory masks and latex gloves, and mail handling procedures. These efforts helped ensure no Air Force mail handler contracted anthrax. An ancillary result of the anthrax threat was Small's success in gaining \$110 monthly specialty pay for military postal workers.

Exhibiting professionalism, flexibility and determination in meeting challenges on several fronts, communicators proved their ability to serve as the "reins of command" in the new war on terrorism.



Photo by Staff Sgt. Jeremy T. Lock

Members of a coalition force prepare to be extracted by a CH-47 Chinook transport helicopter from a mountainside 7,500 feet above sea level May 2, in Tora Bora for Operation Torii. In December, the Tora Bora region in Afghanistan was the last known site where

Osama Bin Laden had commanded and fought. Targets in Tora Bora were bombed with 2000-pound GPS-guided Joint Direct Attack Munitions with hopes of taking out Bin Laden and his followers while closing caves.

By Tech. Sgt. Lisa M. Zunzanyika
1st Combat Camera Squadron
Charleston AFB, S.C.

When I tell people I'm a combat camera photographer, they often respond, "So all you guys do is take pictures?" We do much more than that. Through our eyes and lenses, we record history.

Although combat camera has only existed a little more than 50 years, its roots can be traced to civil war photographer Matthew Brady. Credited with recording the only images of war on American soil, Brady laid the groundwork for present day military photography.

Based at Charleston AFB, the 1st Combat Camera Squadron's mission is to support Department of Defense and Air Force leadership with timely and informative visual imagery to enhance daily

operational decisions and assessments during combat and peacetime contingencies. With 150 skilled videographers, photographers and support staff, 1st Combat Camera manages a global mission.

Since unit personnel deploy worldwide to document Air Force assets in various conditions ranging from well-established bases to tent cities, they undergo special training to prepare them to work in diverse settings.

Combat camera men and women routinely undergo field training for survival in a combat environment and for primary duty performance. Coupled with career field specialized training, unit members are well versed in search, escape, rescue and evasion, desert survival, and weapons qualification with both 9mm and 16-caliber weapons. Because the Air Force's mission is not limited to the ground, personnel also receive aerial qualifi-



Photo by Staff Sgt. Jeremy T. Lock

A member of the Afghan Military Forces prepares to patrol the area around Gardez May 10 in support of Operation Enduring Freedom. The AMF helps with security of safehouses in Gardez.

cation training to document air-to-air and air-to-ground operations.

Some people question the purpose of combat camera, and why civilian media can't inform the public about military operations. Foremost, combat camera is a military asset ready and trained to deploy worldwide on short notice to known and unknown locations, often for an extended time. Personnel have the access, knowledge and experience required to operate in a combat environment without becoming a liability. All of these factors give combat camera an advantage over civilian media.

Though we're sometimes confused with public affairs, the mission is different. PA provides counsel to leadership on public matters affecting the mission, provides two-way communication tools to strengthen morale and readiness, and works with communities and media to maintain public trust and support.

Combat camera serves in more of an operational capacity. When deployed personnel document military troops in action, whether in wartime or peacetime, the imagery is transmitted to the DOD Joint Combat Camera Center in Washington, which is the hub of combat camera imagery for all aspects of military operations. From there, imagery is distributed to key military and civilian decision-makers.

While each branch of the armed forces has combat camera units, the 1st Combat Camera Squadron is the only



Photo by Tech. Sgt. Mike Buytas

A B-1 crew chief from the 405th Air Expeditionary Wing documents work in a maintenance log during Operation Enduring Freedom.



Photo by Staff Sgt. Shane Cuomo

A U.S. Special Forces soldier gives Afghan National Army recruits a list of items they will receive for training at a military academy near Kabul, Afghanistan. The ANA is being trained by U.S. Special Forces soldiers.

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CAMERA

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active duty unit in the Air Force. It's augmented by the 4th Combat Camera Squadron, at March ARB, Calif., and by active duty combat camera assets at Hill AFB, Utah; Lackland AFB, Texas; and Vandenberg AFB, Calif. When an operation or exercise takes place, personnel request combat camera coverage through Air Mobility Command, at Scott AFB, Ill. With as little as one hour's notice, teams can be deployed anywhere in the world.

After Sept. 11, the squadron pre-positioned documentation teams at three locations for Operation Noble Eagle and recorded historical footage of ground zero in New York City. The imagery provided the Federal Emergency Management Agency and the Federal Bureau of Investigation with a crucial tool for damage assessment. The squadron was the first DOD combat camera unit to place personnel into Afghanistan and transmit imagery back to JCCC. The unit also documented the first of many C-17 Globemaster III

high-altitude humanitarian airdrops over Afghanistan.

Through comprehensive video and photographic coverage of Operations Enduring Freedom and Noble Eagle, combat camera has provided a record for generations of servicemen and women performing their duties at home and abroad.



Photo by Staff Sgt. Jeremy T. Lock

A CH-47 Chinook aircrew member from Hunter Army Airfield, Savannah, Ga., preflights his helicopter before a mission at Bagram AB, Afghanistan. Their mission was to extract an Army Special Forces team from Cha-e-ab, Afghanistan, and move them to another location.

1st CTCS keeps busy after 9/11

 Pre-positioned teams at three locations to document Operation Noble Eagle

- Captured historical and significant events including aerial footage of ground zero in New York
- Conclusive documentation provided a significant tool for FEMA and FBI to assess damage

 Documented first casualties arriving from Pentagon at Dover AFB, arrival/departure of President, and buildup/deployment of Air Force personnel in support of Operation Enduring Freedom

- Transmitted more than 200mb of video files and more than 40 captioned still images to Joint Combat Camera Center imagery server

 Documented first of many C-17 high-altitude humanitarian airdrops over Afghanistan region

- Captured first video footage of an operational C-17 landing in an unimproved combat zone

- First to document operational airdrop mission using the Tri-wall Aerial Delivery System

 Captured first DOD aerial imagery of damage to Pentagon from the terrorist attacks on Sept. 11

- Provided views of site previously unseen by command personnel; invaluable to investigators

 1st CTCS ground videographer captured first video footage of damaged interior of Pentagon

- Imagery aired within 24 hours by multiple news agencies; provided instant global coverage of site

AFIWC brings new IW capabilities to front lines

By Maj. Darwyn Banks
*Air Force Information Warfare Center
Lackland AFB, Texas*

The Air Force Information Warfare Center and its units have provided an array of support to Operation Enduring Freedom warfighters. AFIWC analysts tailored computer network defense analysis for the Air Force Computer Emergency Response Team, major command network operations and security centers, and Joint Task Force-Computer Network Operations to protect Air Force and Department of Defense networks.

Analysts also assessed computer network vulnerabilities at all Air Force bases. They compiled IW target studies providing data for both kinetic and non-kinetic IW targeting. They populated the command and control network database supporting joint planners and the Joint Information Operations Center's targeting cell. AFIWC technicians installed the common intrusion detection director system at 11 sites to enhance AFCERT and MAJCOM NOSC ability to protect Air Force networks.

After 9/11, the Air Force Information Warfare Battlelab accelerated operational demonstrations, providing new options for OEF commanders and planners. The battlelab modified previously decommissioned munitions canisters to replace the existing M-129 leaflet bomb for psychological operations. Supply of serviceable M-129s was limited, so proving that modified SUU-30s and Rockeye canisters could be used successfully to deliver leaflets immediately provided more options to air campaign planners and expanded the environment in which PSYOPS leaflets could be employed.

AFIWB's Vulture program made significant upgrades to the ALQ-131 jamming pod. Numerous Air Force aircraft carry the ALQ-131 for protection from radar-directed ground and airborne weapons. AFIWB incorporated an interferometer from an existing platform into the pod to increase the ALQ-131's ability to counter threats. Additional improvements included a new milli-computer and updates to the pod's core memory. The Vulture pod was flight tested on Air National Guard F-16s by the Air Force Reserve and ANG Test Center in Tucson, Ariz. Flight tests proved so positive that Vulture was briefed to the Air Force chief of staff.

AFIWB accelerated demonstration planning for miniature jamming devices that can be used against a range of targets, and for a new Ciphony encryption capability for unclassified telephones. Ciphony encrypts voice, modem and fax calls traversing the untrusted public telephone network to protect sensitive but unclassified information. Ciphony doesn't require special phone equipment, but since its Triple-DES encryption is adequate only for unclassified information, it's not a replacement for current STU-III communications.

The 453rd Electronic Warfare Squadron provided threat analysis products for aircrew mission planning, operational level planning, and Air Force decision-makers through its Global Garrison Support Cell. Special operations forces commanders have no way of knowing the environment or threats facing a crew after it departs on a mission. During OEF, Global Garrison worked with AFSOC on partial solutions. The 453rd's models and simulations provided integrated intelligence from live feeds into a distributed simulation environment using the distributed IW constructive environment, or DICE. The DICE platform enabled SOF officers to carry complete models onboard the aircraft on a laptop computer, allowing the EW officer to view integrated intelligence while airborne, and giving commanders a near real-time picture of events in the area of operations.

The 92nd and 262nd Information Warfare Aggressor Squadrons worked with Air Force Communications Agency and MAJCOM network owners to execute a perimeter security assessment of Air Force computer networks after 9/11. The aggressors scanned and analyzed more than 8 million Internet protocol addresses in three weeks. They identified and assessed vulnerabilities of systems accessible on the Internet, and quickly recommended corrective action to MAJCOM owners. This innovative, quick-reaction collaborative effort strengthened overall security posture of the Air Force's network perimeter against intrusion.

Even before OEF, the 23rd Information Operations Squadron was working on a template for an IW electronic target folder, or ETF, based on inputs from numbered air force IW flights, national agencies and Air Intelligence Agency. IW ETFs must be more intricate than traditional target fold-

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Team Holloman supports OEF

By Airman 1st Class Martha Whipple
49th Fighter Wing Public Affairs
Holloman AFB, N.M.

Members of the 49th Communications Squadron deployed to an overseas location to help America fight the war on terrorism.

“Our troops are fired up about the deployment,” said Maj. Dan Birrenkott, 49th CS commander. “I’m proud to work with this great team of people. We have trained for this, and we are ready to do what we need to do for America and the mission.”

“As part of the 49th CS team, I am proud to be a part of this deployment,” said Senior Airman Chad Peterson, expeditionary communications journeyman. “This is our job and we proudly serve

this country and its people.”

The squadron provides communication, satellite and computer support for the deployed command area. The squadron is the hub of the Holloman communications network.

“We serve as a ‘control center’ and provide a channel to keep communications in the area,” said Master Sgt. Brian Walker, 49th CS expeditionary communication superintendent.

“Our job is to keep the mission rolling,” said Airman 1st Class Jessica Maxwell, 49th CS help desk technician. “We fix computers, radios and answer related questions. We are the ‘troubleshooters’ and keep communications going.”

Col. Bryon Mills, 49th Support Group commander, said supporting the U.S. Central Command area of responsibility is the mission of the deployed members.

“The team members at Holloman will be working as hard as their deployed family,” he said.

War on terrorism creates new missions for GCCS

By Master Sgt. Mark Whitmore
NCOIC, GCCS Systems Administration
AFSPC Communications Support Squadron
Peterson AFB, Colo.

Sept. 11 dawned like any other day. Little did we know that the events of that morning would change our lives forever. We watched in horror as the first tower of the World Trade Center burned. When we understood that this was no accident, we began to change our way of doing business to adapt to this unconventional method of attack.

The common operational picture segment of the Global Command and Control System is capable of tracking ships, submarines, satellites, ground forces and aircraft. Before Sept. 11 the users of the NORAD and U.S. Space Command GCCS system had interest in ships, submarines, military aircraft and unknown aircraft only. The use of a civilian aircraft as a weapon suddenly made tracking those aircraft a priority.

We obtained an additional data source and stood up an additional COP server to provide the Federal Aviation Administration picture to the end user. The GCCS user database increased in size

by about 40 percent due to all of the new user account requests. A second system on the Releasable to Canada (RelCan) network provided the same capability to the NORAD Operations Center Sept. 16.

Tracking the U.S. aircraft doing combat air patrol missions over our cities created another requirement. A third system was installed on the RelCan network to provide the “top cover” picture to both U.S. and Canadian forces interested in the homeland defense mission. When operations began in the Afghan theater, it created a requirement to provide tracking of the combatant forces. We obtained still another data feed and stood up a fourth system on the U.S.-only network.

By October, we had provided support to four new missions. Each mission required new user accounts and the configuration of new workstations to access GCCS. By April, the GCCS system administration shop had increased coverage from 16 hours five times a day to 24/7.

Standup of the new Northern Command and the continuing war on terrorism will generate new mission requirements for years to come.

Microwave landing system aids operations

By **Chuck Paone**
Public Affairs
Electronic Systems Center
Hanscom AFB, Mass.

The value of any system is most likely proven in an operational environment. This can be said for the AN/TRN-45 mobile microwave landing system. Officials of Air Force Special Operations Command and U.S. Air Forces in Europe are using the system for critical missions in support of Operation Enduring Freedom. AFSOC is employing it for combat operations, and USAFE officials for humanitarian relief flights. "This system is definitely getting a workout over there, and it's clearly proving to be an invaluable asset," said Lt. Col. Justin Seiferth, chief of the Electronic Systems Center's landing systems division.

The TRN-45 is a mobile microwave landing system, which provides precision navigation guidance for exact alignment and descent of aircraft on approach to a runway. It provides azimuth, elevation and distance information.

Microwave landing systems provide greater precision and capability than instrument landing systems, and are better able to support tactical deployments, said Ray Scalia, of ARINC Inc., a program office support contractor that serves as logistics manager for the system. ILS is the current standard for most worldwide aviation.

TRN-45's compactness provides another significant advantage for tactical operations.

"The system can be loaded on one pallet," said Paul Donoghue, of ARINC.

It's also relatively quick and easy to assemble. A couple of systems were loaded onto trailers prior to deployment to further expedite setup in theater.

"It only takes about 30-60 minutes to set up the trailerized version," said 2nd Lt. Troy LeFever, deputy program manager. "The other version can be set up in three hours or less."

Currently, cargo-carrying C-17 Globemaster IIIs and C-130 Hercules are the only Air Force aircraft equipped with receivers needed to use the system. The six microwave units deployed to the OEF theater are being used to land these aircraft.

"Whatever you need over there, from food to guns, is being brought in by these cargo carriers," Donoghue said.

While it's been used in other conflicts such as Bosnia, the system's really proving itself in current operations.

"It's winter over there, and our planes are coming in with no problems," Scalia said. "The system's been getting heavy use, but it's carrying the load and doing a great job."

A unique aspect of the situation is that depot services are provided by the Global Air Traffic Operations and Mobility Command and



Photo by Staff Sgt. Edward Holzapfel

A C-17 Globemaster III lands at Ramstein AB, Germany, after completing humanitarian airdrops in Afghanistan.

Control System Program Office here, along with prime contractor Textron Systems Inc. When maintainers need spare parts, they come directly to the program office.

"We're more responsive than a depot generally is because we have a very streamlined process," Donoghue said.

Because the program office manages development, production and sustainment of the system, it's usually able to resolve problems quickly.

"We handle failures, conduct trend analyses and make recommendations based on those analyses," Donoghue said. So far, despite heavy use in OEF, problems have been infrequent. The mobile system has been very dependable, Donoghue said.

"We're providing 100 percent operational availability to all aircraft equipped to use the system," said Master Sgt. Lewis Harrington, AFSOC superintendent of air traffic control and landing systems.

"Combat controllers and maintenance personnel have proven their program office training works," he said. "There were no problems during system survey, setup or operation." (*Air Force Print News*)



First in...last out!

1st CCSQ meets OEF challenges

By Capt. Andrew Feth

*1st Combat Communications Squadron
Ramstein AB, Germany*

The loadmaster emerged from the cabin of our C-17 and made his way to the rear to complete his pre-landing checks—a signal that we were close. My back was still sore from sleeping on the floor of the Sigonella passenger terminal the night before, making it a challenge to quickly don my body armor. I snapped the chinstrap of my Kevlar helmet and secured a 15-round magazine into my 9mm.

The voice on the intercom warned that we were about to execute a tactical landing. The engines screamed and tons of communications gear in the belly of our Globemaster III vibrated vigorously as we began the descent. Flares from the rear of the aircraft lit the dark night sky as we could only imagine the ground getting closer and closer. Were we being shot at? The aircraft hit the tarmac so hard that the rear lift gate of the plane wouldn't open. We waited impatiently as the aircrew fiddled with the controls. They finally opened the front hatch and hot desert air quickly filled the plane. We made our way to the exit, not knowing what awaited us outside.

As we climbed down the stairs of the aircraft, we noticed a forklift driver in a T-shirt and shorts.

We were relieved that things were safer here than we'd expected. Our elite crew had arrived in Pakistan, our home for the next five months...providing 44 combat communicators an experience that would last a lifetime.

We were not alone. Members of the 1st Combat Communications Squadron at Ramstein AB deployed to eight locations spanning three areas of responsibility to support Operation Enduring Freedom. Everyone has their own war story about their part in the war on terrorism, but they all began the same on Sept. 11, 2001.

On that day, the 1st CCSQ was engrossed in a huge exercise in France and Germany. Following the attacks our first challenge was to recover the 27 personnel and 39 weapons already in France. Exercise planners were on the phone continuously with the U.S. Embassy in Paris working on escorts and clearances to get folks home. Within 18 hours of the attacks on the United States, the convoy of 5-ton trucks rolled past our headquarters building. All personnel and equipment were accounted for and we knew things were going to get busy.

Our deployment planning cell was working 12-plus hour shifts coordinating our support for the war. We were working with the newly formed USAFE Theater Aerospace Operations Support Center, or UTASC. Designed from lessons learned from USAFE's involvement during the war in Kosovo and the former Yugoslavia republics, the Center was not supposed to stand up until Oct. 1, 2001, but these events accelerated its timeline. Several members of the 1st CCSQ were called to permanently staff or augment the UTASC A6 staff.

The real world experience and expertise of these select few would prove invaluable to build-

From left: Tech. Sgt. John Sturdevant, Senior Airman Matthew Pacheco, Staff Sgt. Wilford Medina, and Airman 1st Class Elliott Sephus 'show the colors' in front of a Predator UAV in Pakistan.





From left: Master Sgt. Mike Crump, Tech. Sgt. Otto Viteri, Senior Airman Aaron Leary, and Staff Sgt. Jamie Williams guard the TRN-26B in Pakistan.

ing an air bridge across Europe, making humanitarian assistance air drops over Afghanistan, and deploying personnel and equipment to the front lines of the battlefield.

OEF brought many firsts to the 1st CCSQ. This was the first wartime deployment of our integrated communications access package and transit case TTC-39E tactical telephone switch. Our technicians were instrumental in engineering a vital voice-over internet protocol circuit and establishing a backup tactical satellite link that enabled the first beyond-line-of-sight handoff of two Predator UAVs between two geographically separated ground control stations.

The newly acquired USC-60A tri-band satellite terminal was first into Afghanistan providing key command and control capabilities to special operations personnel. The 1st CCSQ provided two high-speed data international maritime satellite packages for initial communications at newly established bases in Pakistan, Uzbekistan and Afghanistan. One of the packages became the primary source of NIPR and SIPR services at the U.S. Embassy in Islamabad, Pakistan.

Whether it was designing a data and voice link to a remote area of a base to significantly reduce combat search and rescue response times, or processing 500,000 pounds of mail, the 1st CCSQ did it with style. During Operation Anaconda, our people rapidly delivered communications services to the crews of five A-10s enabling them to provide close air support to troops on the ground.

Support to the warfighter routinely crossed service boundaries delivering communications capa-



From left: Tech. Sgts. Don Simpson and Brian Jones, Airman 1st Class Keith Jordan (blocked), and Tech. Sgt. Stephen Williams set up an ICAP Microwave Module in Pakistan.

bilities to Army CH-47 helicopters and Marine C-130 aircraft conducting re-supply and refueling operations in Afghanistan.

Members of the 1st CCSQ were some of the last communicators to rotate out of the theater. Our personnel learned first hand what it really means to be, as our motto proclaims, “First In...Last Out!”



ACC reachback enters new era

By 1st Lt. Timothy Cague
Element Chief, Satellite Systems
83rd Communications Squadron
Langley AFB, Va.

Air Combat Command's satellite reachback facility at the 83rd Communications Squadron, Langley AFB, is adapting and expanding its capabilities to become the command's first force level technical control facility, or TCF. Often referred to as just reachback, the satellite facility has played a pivotal role in providing core communications services to deployed and in-garrison warfighters for more than 10 years. Now, as part of a partnering effort between ACC Intelligence and ACC Communications and Information, reachback is transforming itself to monitor and rapidly respond to outages on critical intelligence circuits serving deployed warfighters for Operation Enduring Freedom.

The need for timely and reliable intelligence information has increased steadily since Sept. 11, placing additional importance on quickly responding to outages on circuits that supply key Air Force leaders with actionable intelligence information. In the past, troubleshooting and restoration on these high priority data and video circuits were cumbersome due to the lack of a centralized circuit coordinating authority.

To resolve this, senior leaders in the communications and intelligence directorates formed a partnership to create the force level TCF, which acts as the circuit control authority for intelligence circuits supporting in-theater units. Circuits are monitored continuously and members of the 83rd are always ready to respond and correct circuit outages.

The facility decodes, troubleshoots and routes a variety of Motion Picture Experts Group, or MPEG, video circuits operating in support of OEF and Operation Southern Watch. The TCF will soon be able to re-encode these circuits in different MPEG formats using the Astria system for deliv-



Senior Airman Charles Suggs, tech controller, shows 2nd Lt. Frank Theising a concept of the new ACC force level technical control facility. Both are assigned to the 83rd Comm Squadron, Langley AFB, Va.

ery to CONUS and worldwide customers. The 83rd's reachback technical controllers have learned how to use and troubleshoot Tektronics and Optivision MPEG-2 video equipment, as well as asynchronous transfer mode technology—items they might otherwise never see in their career field.

Training, procedures and equipment brought online for this initiative are enabling the 83rd to provide top-notch service for OEF. Centralized control helps eliminate unplanned circuit changes by coordinating them with all contact points on the circuit. While they won't have direct control over numerous portions of the circuits, they'll be able to recommend and direct changes to stabilize and correct troubled circuits with organizations such as the Joint Communications Control Center at Prince Sultan AB, the Defense Information Systems Agency, distributed common ground system, and various satellite connectivity providers.

Though the number one goal of this initiative was to increase information assurance to the intelligence community, it's also another step toward fostering a strong relationship between the communicators who move the data, and the intelligence personnel who collect and exploit it.

366th uses latest technology to support warfighters

By Capt. Oscar Delgado
366th Communications Squadron
Mountain Home AFB, Idaho

Sept. 11 began like a regular day for the 366th Communications Squadron. As news of that day's events became clear, one thing soon became apparent: deployment.

Supporting an Air Expeditionary Wing had provided the 366th CS an enormous amount of training and experience in deploying to a bare base and standing up communications.

During the final days before leaving, unit members were briefed on what they might expect. As I looked into the eyes of the young airmen we count on as our technical experts, I detected some fear and uncertainty – but I also saw pride and patriotism.

When we arrived at our deployed location the end of September, we hit the ground running. Within 18 hours, we established secure and non-secure voice and data service to customers. Base support had arrived before the aircraft so we could get it ready for flying operations. This gave us time to “burn in” our networks and stabilize comm.

During this initial phase, we sometimes felt more like civil engineers than communicators, digging ditches and laying conduit for permanent cable installs. When heavy equipment failed, we formed a “chain gang” to remove sand, dirt and rocks with picks and shovels.

Before leaving Mountain Home, we heard the base would be large and have a permanent military presence, so we planned for a robust infra-

structure. We avoided using microwave shots where possible, and ran fiber to create a backbone. Anticipating the situation, we packed more switches and fiber than specified in our logistics detail. With this foresight, we were able to establish a GigE (1000 Mbps) backbone for both NIPRNET and SIPRNET. We also used TACLANES for SIPRNET nodes, making the secure network far more reliable than with network encryption system equipment.

We initiated other measures, not to test new technology, but because our theater deployable communications equipment was only sized to service 1,200 people, and our customer base was more than 2,800. With no “robusting package” relief available, we still had to meet warfighters' needs.

We used voice-over Internet protocol telephones to expand voice capability. It soon became obvious we didn't have enough basic access modules for all our operating locations, or enough cards within the RedCom telephone switch to meet users' needs. VoIP helped us overcome this shortfall and provided the ability to reach locations unserviceable by the RedCom network.

In the end, we were able to support all communications requirements of the flying squadrons, build up the alternate combined air operations center, and support a special operations mission.

We handed over the reins to the next communications squadron knowing we'd done our best to support our warfighters and our country.

AFIWC

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ers to capture detail necessary for IW mission planning. After 9/11, the 23rd expanded the ETF concept by developing thorough essential elements of information for different target types.

This allowed ETFs to become more flexible and let users know what information should be included for specific target sets. The 23rd IOS has since briefed the ETF concept to the National Security Agency, Army 704th Military Intelligence Brigade, and unified commands, includ-



ing USSPACECOM, USSOCOM, USSTRATCOM and JTF-CNO. Air Force IW flights have already adopted parts of the folders, and ETFs are quickly becoming the model for joint IW targeting.

AFIWC units and people have been instrumental in bringing new and improved information warfare capabilities to the front lines for Enduring Freedom and other operations. As the Air Force's IW vanguard, AFIWC gives the warfighter new tools and technologies, improved targeting, and better tactics techniques and procedures.



Theater deployable communications

Ready when needed!

By Jim Binniker

*Directorate of Communications and
Information Systems
Air Combat Command
Langley AFB, Va.*

Soon after the Sept. 11 attacks on the World Trade Center and the Pentagon, Air Force communications warriors were called upon to support our nation's war on terrorism by providing essential communications services using the new theater deployable communications system.

Since the early days of Operation Enduring Freedom, TDC has provided on-scene commanders and support personnel with fast, reliable communications vital to the success of modern command and control, and intelligence, surveillance and reconnaissance systems, such as Predator and Global Hawk. Today, as never before, our deployed customers expect the same level of service they've come to rely on at their home stations—services such as NIPRNET, SIPRNET, secure and non-secure telephone service, messaging—using the De-

fense Message System—and local and wide area networks.

Units that first deployed to establish OEF in-theater networks have returned home. Unfortunately, their equipment remained in place, presenting a serious dilemma: how to quickly reconstitute their assets and ensure their people are trained, equipped and ready to deploy again when needed.

The ACC communications and information staff coordinated a plan with the Air Staff, major commands, and the TDC Systems Program Office at the Electronic Systems Center to reequip ACC's Air and Space Expeditionary Force wings in the coming months. Those units are:

- * 1st Comm Squadron, Langley AFB, Va.
- * 2nd CS, Barksdale AFB, La.
- * 4th CS, Seymour-Johnson AFB, N.C.
- * 355th CS, Davis-Monthan AFB, Ariz.
- * 366th CS, Mountain Home AFB, Idaho
- * 51st CS, Robins AFB, Ga.
- * PACAF and USAFE

These units responded to the call when needed, and we're working hard to ensure they're ready to serve again when called upon—anytime, anywhere.

Upgrade of DSCS terminals frees bandwidth

By Richard D. Emmert

*Directorate of Comm and Info Systems
Air Combat Command
Langley AFB, Va.*

To more efficiently use Defense Satellite Communications System bandwidth, a number of ground mobile force, or GMF, terminals supporting the Central Command area of responsibility will be modified with new modems, up-converters and down-converters. These modified terminals will use only half the current satellite bandwidth, freeing scarce resources to support other users.

With these new items, the GMF terminals will be able to operate in the quadrature phase-shift keying modulation mode. Today, because of problems operating in the QPSK modulation mode, Air Force GMF terminals are restricted to bi-phase shift keying operations.

These new components are being procured through the U.S. Army Communications-Electronics Command and are also used in the Army's AN/TSC-85C and AN/TSC-93C terminals. These items are being delivered over seven months beginning last month.

In addition, the time satellite signal processor, a time-division multiplexer, will be replaced with the L3 Communications SHM-1337 enhanced TSSP. This new multiplexer supports higher aggregate data rates than the current TD-1337 (8 Mbps vs. 4 Mbps). The TSSP allows one terminal, referred to as a hub terminal, to exchange data with up to four other terminals, referred to as spoke terminals.

These upgrades will help to assure the success of CENTAF warfighters in Operation Enduring Freedom and other operations.

Contingency action team ... *in action!*

By Tech. Sgt. Dan Carber

*Directorate of Comm and Info Systems
Air Combat Command
Langley AFB, Va.*

The events of Sept. 11 have changed the way the Air Force does business. Air Force people experience longer and more frequent deployments throughout the world and with considerably more urgency. Getting the personnel and equipment into the theater is no easy task, but the ACC Communications and Information Contingency Action Team makes it happen.

At Langley AFB, the CAT ensures command and control needs of combatant commanders are met as quickly as possible. It fills combatant commander requirements, tracks status of deploying personnel and equipment, and reports the status of command and control, communications, and computer systems and personnel to the ACC commander and director of communications.

The CAT is also responsible for partial mobilization and demobilization of ACC-gained communications personnel from the Air National Guard and Air Force Reserve Command. With the demand for communications support, the ANG and Reserve play a key role in the success of Operations Noble Eagle and Enduring Freedom. Mission requirements couldn't be met by active duty forces alone, because 70 percent of the combat communications assets are within the ANG.

Since the scope of both operations is far-reaching, so are the units stepping up to the plate. Active duty, Guard and Reserve personnel from all over the United States are working together to ensure mission success. The CAT support cell is no different. Comprised primarily of Guard members from the 253rd Combat Communications Group, Cape Cod, Mass., the team works with active duty counterparts from ACC, CENTAF, and other commands to meet Air Force needs.

Originally comprised of 20 activated Guard members, the staff has been reduced to seven due to current requirements.

When asked how he thought he was contributing, 1st Lt. Stephen Dillon said, "Having lost a cousin in the World Trade Center attack, I'm very proud to be at Langley helping to provide communications for CENTCOM."

Tech. Sgt. Timothy Buckley, who postponed his honeymoon due to a deployment, said, "In these trying times, it's easy to lose focus on the trials around us, but being in the mix of it all keeps me locked on target."

While most other Guard and active duty members have been participating in the operation on either a 90- or 180-day rotation, the members of the 253rd Combat Communications Group have been deployed since September.

Maj. Bill Gerhard, ACC readiness branch chief, said, "I'm thoroughly impressed with the ANG in general, and the Massachusetts ANG specifically. The dedication and experience they bring to the fight are truly amazing."



Photo by Staff Sgt. Cheresa D. Clark

Senior Master Sergeant John M. Lewis (standing) and Staff Sergeant Eric M. Klein pull wire for a telephone installation at Camp Justice, a forward deployed location supporting OEF. Both are ANG members from the 267th Combat Communications Squadron at Otis ANGB, Cape Cod, Mass. They are deployed with the 321st Air Expeditionary Group.



'Freqs and Geeks' spring into action

By Senior Master Sgt. Larry Triggs
and Kristie Odom

Directorate of Comm and Info Systems
Air Combat Command
Langley AFB, Va.

Air Combat Command's spectrum management branch played a vital role in Operation Enduring Freedom. When DOD tasked forces to deploy for OEF, ACC spectrum managers activated the spectrum support cell and assumed all duties and responsibilities of the CENTAF/A6-Rear spectrum management cell. The cell began 24/7 operations and maintained a database of more than 40,000 frequencies in the deployed area of responsibility.

The cell spectrum managers analyzed pre-deployment frequency requirements and requested frequencies at deployed locations for bare base buildup. On top of that, all AFFOR frequency requests filtered through the ACC spectrum cell. Spectrum managers validated, engineered and nominated more than 1,500 frequencies to support every radio frequency requirement.

Spectrum managers also deconflicted satellite access channels. Sept. 11 drove new satellite equipment installations. Aircraft were quickly retrofitted with new equipment to meet mission requirements. Units needed no-notice satellite access to test and evaluate equipment. The spectrum branch worked with USCINCFJCOM to give units satellite access to check operational capability of their newly installed radios. This process allowed units to deploy knowing their equipment was reliable. Other high-priority requirements included emergency requests for rescue operations.

OEF increased the need for information flow. Workgroup managers played a major role to assure classified and unclassified computers were online and ready. Immediately after 9/11, Guard and Reserve members were called to active duty to staff crisis action teams, battle staffs and AFFOR-Rear. WMs sprang into action, setting up LAN drops, locating computers and printers, creating accounts, and establishing access to Langley domains for about 50 clients.

This was no small feat. Normally SC operates with a few spare computers. SC WMs—civilian and

military—literally had to build working computers from remnants on their way to disposal. Two conference rooms were transformed into 24-hour communications hubs requiring installation of LAN drops where they had never existed before. During the first 60 days, WMs were placed on call to handle any computer problems. Out of the limelight, WMs worked days, nights, weekends and on holidays, side-by-side with decision-makers.

WMs were called upon, rose to the task, and performed their duties with pride and diligence.



Photo by Staff Sergeant William Greer

Assured comm for warfighters

Staff Sergeant Randall Collins, computer operations craftsman from the 438th Expeditionary Communications Flight, at a deployed location supporting OEF, removes a faulty portion of a theater deployable communications/integrated communications access package network module. The network control center provides secure and non-secure e-mail and Internet service, reliable data storage and recovery, and vital communications security material.

Predator provides vital support for OEF

By Bob Fitzgerald

Directorate of Comm and Info Systems
Air Combat Command
Langley AFB, Va.

What is the RQ-1 Predator, and what has it meant to the war on terrorism? In the words of Gen. Hal M. Hornburg, Air Combat Command commander, during the Air Armament Summit at Eglin AFB, Fla., in March, "Without going into too much detail, I was watching a mission in the combined air operations center during Operation Anaconda. I watched our people target from a Predator. I watched our forces flush some of these wild people out of some caves. These people actually got into a Land Rover or something like one, and started driving off. It wasn't long before they stopped and got out. I don't know what they were doing...(but) it was the wrong place to stop, because the next thing you see is a 500-pound bomb come in..."

The Predator unmanned aerial vehicle's contribution to the war on terrorism becomes crystal clear as you listen to warfighters and leaders involved. A recent *Aerospace Daily* article quoted testimony to the House Armed Services Committee by Maj. Gen. Randall Schmidt, assistant deputy chief of staff for Air and Space Operations. "Intelligence collected by the Air Force's Predator UAV in Afghanistan proved to be a tremendous asset...our ability to provide that asset to operational and tactical level commanders, I think, is absolutely critical now and in the future."

Predator's success in Enduring Freedom wouldn't have been possible without the hard work and creativity of communicators around the world. From pre-deployment activities through weapon delivery on target, communications plays a critical role in the Predator mission.

Unlike any other weapons system in the inventory, Predator requires communications support

and coordination before it even deploys.

So what happens then? The video needs to reach imagery exploiters and warfighting decision-makers. Even more communications!

During OEF, communicators have leveraged virtually every form of communications and data transport available, including satellites, microwave, fiber optics, asynchronous transfer mode, user datagram protocol and Internet protocol, and ethernet. Col. Wayne Scott, ACC chief of Warfighter C3 Support, said the first operational use of the lightweight multiband satellite terminal was in direct support of OEF Predator operations. Theater communicators also employed a



Predator receive terminal, designed to pull raw data directly by satellite from the aircraft, effectively bypassing the ground control station. Predator's vital cargo has traversed up to five communications paths simultaneously to ensure near-immediate de-

livery of time-critical information to targeteers.

This high-demand video asset didn't go unnoticed to bandwidth managers around the globe. In fact, Predator support accounted for seven commercial satellite transponder leases, 63 Mbps of leased commercial satellite access, and common-user communications totaling 37 Mbps for initial video dissemination. This was just part of the 700 percent increase in required bandwidth supporting OEF from September through March.

After more than five years of real-world mission support, including OEF, Predator communicators and operators continue around-the-clock operations today. Not bad for a weapons system that declared initial operating capability earlier this year. Its impact has been realized at the highest echelons of command. Secretary of Defense Donald Rumsfeld said, "The linkages between UAVs, combat aircraft and bombers, and people on the ground, and the value that is created by those linkages ... creates a very powerful effect."



Combat Track II leads the fight

By 1st Lt. Jared Hale
509th Communications Squadron
Whiteman AFB, Mo.

The 509th Bomb Wing links stealth bomber technology with satellite communications to provide en route targeting in support of its unique mission to fly and fight from home station. The 509th Communications Squadron played a key role in the installation, testing and evaluation of the Combat Track II system shortly after Sept. 11 supporting the wing's role in Operation Enduring Freedom.

When one thinks of stealth, the B-2 bomber comes to mind. This sleek plane is the tip of the spear for the Air Force's core competencies of global attack with precision engagement, achieved by our "kick down the door" approach. Even before Sept. 11 there was a need for a secure beyond-line-of-sight communications capability for the B-2. This capability is enabled by the use of Combat Track II.

Combat Track II uses satellite communications to transmit and receive encrypted global positioning system positions, messages and imagery. It improves the B-2's satellite communications by offering secure communications, text and graphics, and a map display that shows current position, flight characteristics and a track for all aircraft participating in the same Track II network. The system also provides in-flight, real-time targeting information to assure mission objectives are met.

Implementation of this highly technologi-

cal system consists of in-transit units located in the plane, and one master station known as a control and relay station, in one satellite footprint. The control and relay station reports data to the in-transit units, allowing pilots to receive or change targeting information en route to the destination. Each control and relay station has a classified network connection as a backup for reliability.

The significance of Combat Track II is the command and control link it provides for the 509th Bomb Wing, making it possible for fewer deployed troops to support a forward location due to the B-2's global reach capability. After Sept. 11, the importance of Whiteman's mission is more evident.

In its first OEF missions, the B-2 made history by flying the longest combat sortie in American airpower history – more than 44 hours. During these missions, the 509th CS helped ensure air superiority over the theater by targeting planes, surface-to-air missile batteries, runways, and other strategically valued targets. Combat Track II led the way in helping to achieve wing objectives.

Communications warriors of the 509th CS and members of the 509th Operations Support Squadron assure Combat Track II remains operational. Keeping the system running is imperative to having it work when the call comes. Combat Track II is one of the many activities that have made the communications warrior an integral part of the B-2 flying mission, and just another example of the 509th CS motto: "We make it happen!"

Jungle Mail

Postal specialists set up operations in Philippines

By Isaiah Ravenel
PACAF Air Postal Squadron
Republic of the Philippines

When U.S. troops were deployed in the ongoing war against terrorism, as part of a Joint Task Force to the southern islands of the Republic of the Philippines, Det. 2, Pacific Air Forces Air Postal Squadron, provided postal support.

In addition to the requirement to provide a qualified postal specialist, a mobile contingency post office with more than 100 line items was packed and made ready for immediate deployment. Personnel assigned to Det. 2 aerial mail terminal coordinated with Yokota AB personnel to ensure the mobile post office reached its final destination, Mctan AB, as quickly as possible. Within 24 hours

of arrival in the Philippines, postal operations began providing much appreciated mail service to more than 1,300 Air Force, Army, Marine and Navy personnel at three separate locations.

The contingency APO, operating seven days a week, was served by postal clerks who worked long hours in the sweltering jungle heat, often exceeding 100 degrees. During a routine day one could find them providing financial services and collecting, processing and distributing mail manually for the three camps and Navy ships they served.

Their biggest challenge was processing incoming mail, which was broken down by manageable containers and then transported to outlying areas by heavily guarded trucks, helicopters, and occasionally C-130 aircraft.

“Without a doubt one of the biggest mail challenges to ever hit Det. 2 was met head-on and with a positive attitude,” said Maj. Helen Lento, PACAF AIRPS commander. “Their willingness to adjust as new situations arose resulted in quality postal service being provided to every American service member deployed to the Philippines for Operation Enduring Freedom.”



Master Sgt. Alfred C. Wilhite, Det. 2 Pacific Air Forces, Air Postal Squadron, loads mail in the back of a truck.



NORAD Contingency Suite

New C2 system enables NORAD to 'look in'

LANGLEY AFB, Va. — One of the most significant improvements in the 45-year history of the North American Air Defense Command has come in the form of a computer software program.

At the time of the Sept. 11 attacks, NORAD could only “see” several hundred of the thousands of planes in U.S. air space. This was because the large air-tracking radars NORAD jointly operates with the Federal Aviation Administration are focused on planes coming toward U.S. borders, not flights originating in the United States, and crossing the country’s interior.

By creating a so-called NORAD Contingency Suite, which uses a special software application, the Air Force Command, Control, Intelligence, Surveillance and Reconnaissance Center, Langley AFB, Va., along with the Electronic Systems Center, Hanscom AFB, Mass., are helping to resolve this problem.

“Within hours of the terrorist attacks, I traveled to Tyndall AFB and worked closely with Maj. Gen. Larry Arnold, commander, 1st Air Force, to identify capabilities the (AFC2ISRC) center was already working on to best match the requirements in addressing this shortfall,” said Col. Steve Callicutt, technical director AFC2ISRC.

Because NORAD issued a combat mission needs statement, ESC completed a fast-track acquisition, purchasing all the equipment off the General Services Administration schedule. A key technology piece in this acquisition is a data fusion software program produced by the Laurel, Md., based Solipsys Corporation called the multi-source correlator tracker.

Initial installation was completed late last fall, though it took four more months before the system “tested clean and stable,” according to Canadian Air Force Maj. Gordon Hales, a foreign ex-



Photo by Maj. Dave Branham

U.S. Navy Capt. Skip Hiser, president of a local Armed Forces Communications-Electronics Association chapter, listens with headphones during a demonstration of the Battle Control System, the future Control and Reporting Center of the Theater Air Control System, which aims to update the CRC to support input from various types of radar and sensors and fuse it into a centralized C2 node. Looking on are Johann Pfeiffer and Steve Kelley, AFCEA.

change officer who works in ESC’s Battle Management Command, Control and Communications Capability System Program Office. He is deputy program manager of the Regional Air Operations Center Air Defense Sector replacement program.

Still, the air defense sectors used portions of the suite during that time, and the Western Sector used it fully to support the Salt Lake City Winter Olympics in February.

Now, after many more months of use and testing, the contingency suite is at interim

“We have long touted the benefits of a common C2 software interface shared by the front-line C2 nodes; the cost savings in software development alone would save the Air Force millions.”

— Col. Joe May

initial operational capability. NORAD users are now using it to see and do more than ever.

“This effort to shore up our air defense capability following 9/11 has required \$9 million of Defense Emergency Response Funds,” said Maj. Eric Firkin, AFC2ISRC’s chief of battle management systems. Considering how much increased capability was delivered, this shows the acquisition was economical as well as quick, officials say.

“We have long touted the benefits of a common C2 software interface shared by the front-line C2 nodes. The cost savings in software development alone would save the Air Force millions,” said Col. Joe May, C2 operations division chief for AFC2ISRC.

“This is a bold success for the Noble Eagle tiger teams, and it revalidated proof of our commitment to transform to spiral development,” said Col. Dave Temple, chief of Electronic Systems Command’s battle management and crisis action division. “We have gone from a Cold War capability to monitor 300 tracks per sector, to the ability to view well more than 15,000 radar tracks per sector – way more than would ever be airborne at any one time,” said Firkin.

The same correlator tracker is being developed for use by PACAF, the Navy and the Air Force

“This will allow operators from one system to seamlessly cross over to another C2 platform with little or no system training, familiarization, or spin-up.”

— Maj. Eric Firkin

control center demonstration at Langley AFB.

Firkin noted the battle management software that serves as the basis for the NCS is called TDF (tactical display framework) and is being evaluated for use in both the airborne (AWACS) and the mobile ground-based (control and reporting center) C2 systems. ACC officials said the requirement for ground-based fixed and mobile C2 nodes and airborne platforms work toward the use of the same battle management software interface.

“This will allow operators from one system to seamlessly cross over to another C2 platform with little or no system training, familiarization or spin-up,” said Firkin.

By connecting FAA radars throughout the U.S.

to regional air defense sectors, the Air Force is enabling NORAD to see, identify and track virtually all U.S. air traffic, according to Hales.

To provide connectivity, designers used the ACC enterprise network as the communication backbone, adding a “bridge” that allowed bringing in feeds from selected interior radars. Combined with the existing feeds from the outward facing radars, air sector defense operators now have a much more complete air picture.

Phase two of the NORAD Contingency Suite program, due to be completed next month, will back up and add significant capability to the AN/FQY-93 central processors, which receive and process data received from the outward-facing sensors. Installed nearly 20 years ago, the “Qs,” as they’re called, had become hard to sustain, according to Hales. They also lacked desired capabilities and the capacity to add them. “They’d reached the point where any time you wanted to add something, you had to take something else away,” said Temple.

“There’s also an auto-initiate track feature, which automatically maintains the air picture, identifying and keeping track of planes in the air.”

— Canadian Air Force
Maj. Gordon Hales

Still, NORAD users are thrilled with the new capabilities. Workstation displays, for instance, have been dramatically improved. Previously, operators stared at monochrome vector displays. They now have full-color, graphics-intensive, LCD flat panel screens. Users can display and define multi-level overlays and graphics.

There’s also an auto-initiate track feature, which automatically maintains the air picture, identifying and keeping track of planes in the air. With Q, users had to manually pick what they wanted to track from radar plots. “That’s a giant leap in capability,” Hales said.

The suite offers a weapons package, too, which permits intercept calculations and tracks assets and weapons available to respond, if needed. Users can conduct interactive queries and can zoom, pan and re-center the picture.

This breakthrough fusion technology has immediate application in other C2 venues ... like the Advanced Technology Aerospace Operations Center which is just begging for this capability,” said May. (Courtesy AFC2ISRC and ESC public affairs offices.)



'Mighty Mudbugs' claw into terrorism



By 1st Lt. Jim Coughlin
608th Air Communications
Squadron (8th AF)
Barksdale AFB, La.

Since Sept. 11, the 8th Air Force "Mighty Mudbugs" have been in the thick of the war on terrorism. On the day of the attacks, one of the 608th Air Communications Squadron's senior NCOs, Master Sgt. Pryor "P.J." Evans, was working at Prince Sultan AB, Saudi Arabia, on beddown efforts for the theater battle management communications system's move of the combined air operations center from Eskan Village.

It was established that a modernized intelligence database needed to be set up at PSAB. When it arrived, Evans and a Lockheed Martin contractor employee found the database format had to be fixed, and targets loaded into the database. Evans got the database up and running in just 18 hours.

Within weeks, the 608th ACS deployed more people for Operations Enduring Freedom and Noble Eagle. One of its communications officers, 1st Lt. Mel Sabale, was the sole member of 8th Air Force assigned to work with 5th Combat Comm Group comm warriors. The team established relays for unmanned aerial vehicle communications from the deployed location to stateside and the CAOC. With short notice to deploy, they developed a plan, and headed to the desert. Splitting themselves into two teams, they boarded aircraft headed for their destinations.

Upon arrival each team set up their satellite communications and communications paths as quickly as possible. In about two days, and with about three hours of sleep, the UAV feed was established to various locations. The feed was critical to success of intelligence, surveillance and reconnaissance efforts. At one point, they even merged the Operation Southern Watch UAV feed with the OEF feed to pass them in one communications path.

On the receiving end of the UAV feed was Tech. Sgt. Diane Ray. She and her husband are squadron members and deploy regularly. She'd been to

the desert the previous year and was home just a few weeks when her husband deployed. He returned in September and just before Thanksgiving she was notified she'd be going back for OEF.

When she arrived at her deployed location, she was made a Global Command and Control System systems administrator for the first 45 days, pushing the Air Expeditionary Force and OEF air picture to local and remote sites. Then she became night shift NCO in charge of GCCS, TBMCS, and air defense systems integration operations, responsible for the air picture from the time it entered the CAOC until it reached the user's desktop. Ray also worked with video specialists on the Predator feed creating and pushing the air tasking order.

The unit sent comm and info troops around the globe in support of OEF and ONE, including its deputy commander, Lt. Col. Diedre Briggs, and flight commander, Lt. Col. John Hennigan. "It was great to see the mix of folks from all over the Air Force coming together to get the job done," Hennigan said.

Civilians also deployed. Michael Byard accompanied the 2nd Comm Squadron, Barksdale AFB, and their TDC equipment to an undisclosed location. A recognized TDC expert, he was instrumental in providing communications there. Mark Winderweedle went TDY to Langley AFB, Va., and Shaw AFB, S.C., for liaison duty between Air Force Forces-Rear and all Air Force Engineering and Technical Services troops deployed for OEF. This entailed making sure all had the equipment needed to do the job.

As members of the "Mighty Eighth," the numbered air force responsible for CAOC training in the CAOC-T, troops from 608th ACOMS stepped up to train people from all over the world to be ready to deploy. This included just-in-time training for 11 systems administration troops en route for deployment. Headquarters 8th AF culminated the training mission with the Blue Flag 02-4 exercise, called "Rainbow Blue Flag," in February, with warfighters from all military branches, Australia and Great Britain.

The unit still has members of 8th AF's Mighty Mudbugs on OEF deployment front lines, doing their part to thwart terrorism. With a positive mindset continuing to dominate in the 608th ACOMS, the unit will always be there to meet communications needs of the warfighters.

Communications assures OEF success

By Col. John L. Hayes

*Communications and Information Director
Central Air Forces
Shaw AFB, S.C.*

On Sept. 11, Brig. Gen. Mike Peterson, then Air Combat Command's director of comm and info systems, activated ACC's crisis action team to begin planning to provide combat ready forces to component commanders at Central Air Forces and 1st Air Force. One of the first actions was to implement the standing agreements with Air National Guard combat communications group staffs to bring in expertise to augment the ACC/SC CAT and the CENTAF/A6 staff. The Guard folks, under the command of Col. Mac McCurdy, 226th CCG, and Col. Sandy Warde, 253rd CCG, showed up within a week with superb attitudes and reminded us of the Old West cavalry units showing up in the nick of time to save the day.

Air Force Materiel Command stood up an engineering and installation planning cell under the command of Maj. (now Lt. Col.) Jeff Lewis, Ohio ANG EI, at Langley AFB, Va. The cell built the EI portion of the Time Phased Force Deployment Details for both operations. The cell identified EI requirements, sourced units to required UTCs, and synchronized partial mobilization actions to bring forces on active duty in time to meet deployments.

Where do you begin to source the units after you've built the requirements into the TPFDD? We started with the Air Expeditionary Force construct of seeing which units were in their AEF bucket on Sept. 11. Since most of the AEF-tasked units were already committed to "steady state" taskings, we rolled forward to select units that were lined up to deploy in the next AEF pair. When we exhausted these, we rolled forward to the next AEF pair. We also looked to see what taskings were good fits to any of our combat comm units and our Air Force Reserve Command deployable forces. While we were sourcing the units, we looked at the status of resources and training system ratings of each identified unit to ensure they could accomplish their tasked missions.

Air Flow

When executing a deliberate, pre-planned war plan, we scrutinize TPFDDs to make sure the highest priority equipment arrives first at the deployed locations. TPFDDs are normally wargamed sev-



Senior Airman Vincent Majors, computer systems maintenance specialist, 514th Comm Squadron, New Jersey ANG at McGuire AFB, checks the power meter for an antenna being installed at a forward deployed location supporting OEF.

Photo by Senior Airman Cheresa D. Clark

eral times before execution to ensure they are "transportation-feasible." In a crisis action scenario, such as after Sept. 11, there isn't time. TPFDDs are manipulated on the fly and sometimes airflow gets hosed up. In OEF we had aircraft units arriving before communications units at some of our beddown locations. We had one base that housed AWACS aircraft being supported by a suitcase INMARSAT system for several days before multi-channel systems arrived.

Lessons Learned

Probably the most important lesson in OEF is that our deployable communications packages need to be more flexible and more robust. Air Mobility Command has done a great job trimming its theater deployable communications packages into smaller, more scalable increments of capability. Our TDC packages need to be more robust in areas of Promina nodes and information assurance. None of our deploying communications units deployed enough "last 400 feet" capability with them. At every deployed base, CENTAF planners had to go back and provide additional land mobile radios, secure voice instruments, public address systems, and personal computers. Funding shortfalls prevent communications units from pre-ordering these packages, which drives us to use ESP-coded contingency funds. This leads to capability delivered late.

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Perspectives of an OEF comm warrior

By Capt. William Stegemerten

*Transmission Systems Flight Commander
Central Air Forces
Shaw AFB, S.C.*

Since Sept. 11, many of us have seen some of the best and worst our nation has known. The attack borne of hatred and ignorance has scarred lady liberty. Yet in her resolve to overcome adversity, we've seen her finest performance. The foolishness of global terrorism has been met with the wisdom of solid command and effective control, and CENTAF's communicators have led the way.

When the tragedy struck, many of us were already in-theater. The Combined Forces Air Component Commander deployed forward at the onset of OEF, and fought the most technologically advanced battle in history.

Command and control was essential as communicators built the largest tactical network known to man. Ten new bases were integrated into joint operations, and within weeks engineers activated more than 80 megabits of satellite connectivity and hundreds of new C2 circuits. Providing information to the warfighter became priority #1. We benefited from our preparations, relying heavily on roadmaps for communications operations from the special instructions for communicators in CENTAF's area of responsibility. These instructions documented essential procedures and guidance to conduct successful communications operations within CENTAF's AOR.

Communications engineers and planners joined to architect and construct the pioneering spider web of connectivity and services that supported warfighters. The system maintained accountability, prioritized restoration actions, deconflicted theater authorized outages, tracked preventative maintenance schedules, and provided direction through the daily communications tasking order. The CTO supplied essential information to the CFACC and maintained positive control over deployed network control centers as we provided operational management for this new \$1 billion enterprise.

Pushing and pulling summary information occurred twice a day. Hourly status of vital C2 circuits was essential for conducting combat opera-



Photo by Staff Sgt. Cheresa D. Clark

Tech. Sgt. Shawn T. Corcoran digs sand out of the opening of a conduit at Camp Justice, a forward deployed location supporting OEF. An Air National Guard member from the 267th Combat Comm Squadron, Otis ANGB, Cape Cod, Mass., Corcoran is deployed with the 321st Air Expeditionary Group.

tions over Afghanistan. The ability to deliver the air tasking order to deployed locations was critical. Engineers worked sleepless hours resolving routing and networking issues at base, theater, and global enterprise levels. Air Force-wide and joint teamwork was important to our success.

Airlift delivered our communications packages on short notice and the civil engineers provided on-demand power. Over the long term, we were able to fully operationalize communications across the AOR and achieved 99 percent operational availability for the most complex tactical communications network ever built.

Standing strong in CONUS was CENTAF's network operations and security center-deployable. These professionals acted as the first line of defense for all OEF data networks, and maintained positive operational control 24/7. Once OEF circuits were fully engineered and operationally tested, our NOSC-D took over operations to provide system and enterprise network management. Leveraging bandwidth management techniques and alt-route agility was key to success. Mission critical reconfigurations often appeared seamless to warfighters.

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Base Comm Support

Generally, deployable TDC and TRI-TAC systems performed well in their OEF roles. The TDC basic access modules and the lightweight multi-band SATCOM terminals, or LMSTs, ran better than expected. Every site had at least two different communications paths providing DISN and tactical services. More bandwidth was available at each site than ever before in any operation.

Intelligence, Surveillance and Reconnaissance

ISR support was a huge communications architecture determinant in OEF. With an ISR environment that included four Predator unmanned aerial vehicles, a Global Hawk UAV, and multiple U-2s, commercial SATCOM was valuable. In a lesson learned from previous military operations, DISA beat the commercial news services to the punch and procured \$75 million of commercial SATCOM bandwidth in advance of actual requirements. The ISR assets and use of the Ku-band portion of the LMSTs quickly devoured this bandwidth. At the peak of OEF operations, each of the four Predator UAVs was feeding a primary and a secondary path of streaming video for time sensitive targeting. Any theater communications architecture that doesn't plan for ISR assets is doomed to failure.

Air Operations Support

Lt. Gen. Charles F. "Chuck" Wald and Lt. Gen. T. Michael Moseley, the two Joint Force Air Component Commanders for OEF, fought and commanded the air war.

When I arrived in October, the JFACC was satisfied with communications support—in fact, like

most senior Air Force leaders, he assumed communications support would just be there for him. What the JFACC expected from his senior communicator was the technical expertise to help intel and ops staffs tighten the time-sensitive targeting kill chain. The JFACC expected the communications community to bring a high level of information technology expertise to close the gaps in the kill chain and rapidly meld various ISR assets into an effective killing machine. For instance, the JFACC asked the comm and info community to integrate Predator UAV video with JSTAR moving target indicator radar to measure precise coordinates on pop-up targets. The coordinates were then fed to JDAM-equipped aircraft for precision attack.

It was evident that the Air Force comm and info community superbly integrated active duty and air reserve component forces. ANG staffs rapidly blended with existing MAJCOM and NAF staffs. ANG forces were filling about 500 AEF rotational slots at the height of OEF, and more than 100 EI projects in Southwest Asia were being worked by an EI force that was more than 90 percent ANG.

Deployable communications equipment and highly trained forces allowed the JFACC to prosecute an air war over a part of the world where we've never fought before—in less than a month after Sept. 11. OEF had more bandwidth available than was ever conceived during Operations Desert Storm/Desert Shield. Air tasking orders and ISR information had multiple paths to get to intended audiences. The tremendous success of OEF was in large part the result of these outstanding comm and info forces.

COMM WARRIOR

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The high speed broadcasts of large quantities of video and data were essential to air operations. Predator video via direct links and over the global broadcast service was indispensable for intelligence, reconnaissance and surveillance. Communicators rapidly engineered circuits that continually provided, monitored and maintained high volume military data and video files. The effi-

ciency of data delivery supplied critical intelligence and cut time-sensitive targeting decisions in the "kill chain." The Defense Science Board said we'd achieved the fastest sensor-to-shooter decision time in history. The nearly instantaneous "eyes on target" data information delivery and exploitation enabled the CFACC to provide quicker decisions and hit emerging targets within minutes of discovery. The real heroes were communicators behind the scenes engineering, installing

and maintaining those circuits.

America's response to the cowardly acts of 9/11 caused military communicators to rise to the occasion and demonstrate the power of information superiority.

From the delivery of beans, bullets and Band-Aids by our logisticians, to the building of a bare base environment by our civil engineers, to delivery of bombs on target from our pilots ... it's communicators who put the C in effective command and control.



EI units play critical role in OEF

Capt. Chris Miller
Commander,
Rapid Response Flight
738th Engineering
Installation Squadron
Keesler AFB, Miss.

Air Force Engineering Installation Squadrons are alive and well and playing a critical role in Operation Enduring Freedom.

There are 20 EI squadrons in the Air Force. Nineteen are Air National Guard units, located in 17 states. These ANG units are structured to provide sustained in-theater EI support of semi-permanent and permanent command, control, communications, and computer systems. The single active duty unit, the 738th EIS at Keesler AFB, Miss., is organized as a Rapid Response Force prepared to provide immediate EI resources in a crisis in addition to traditional EI services.

All these forces contributed to recent upgrades that provide the warfighter with enhanced information operations platforms to support critical command and control functions, secure voice and data communications, and intelligence gathering, assessment and delivery of time-sensitive targeting data.

Within days following Sept. 11, a combined team of Air Guard and active duty EI members deployed to ACC headquarters at Langley AFB, Va., to begin planning use of EI assets to support the war on terrorism. These strategists realized that while mobile comm forces could support OEF communications requirements at the onset, EI resources were clearly required to provide rapid engineering solutions for installing and upgrading comm and info systems to support sustained military operations.

There was also an immediate need in the AOR for secure communications teams. The EI planning cell immediately tasked the 738th to deploy



738th Engineering Installation Squadron members dig trenches in the AOR.

two of its secure comm unit type codes as well as two initial engineering UTCs. Within hours of being tasked they were ready to move.

Meanwhile, hundreds of ANG EI personnel were called to active duty to implement a host of comm and info systems upgrades to support OEF initiatives. Within days, more than 30 ANG UTCs were deployed to 10 key AOR installations. Maj. Mike Girardin, 243rd EIS initial communications engineering team member and chief of OEF EI force management, said, "We aggressively activated EI forces to effectively meet all of our initial requirements, plus we continuously responded to changing OEF mission needs and priorities." In addition, two ANG large management team UTCs deployed to robust a small EI management team that had been operating at Shaw AFB since May 2000 supporting ongoing C4 projects in the AOR. Upon arrival, the teams integrated seamlessly into the existing operations at Shaw, organizing to provide nearly 24-hour support to the EI teams deployed for OEF. They are managing more than 100 active communications projects and the activities of more than 150 deployed personnel.

The other primary responsibility of the Shaw efforts lies with the EI materiel control function.



738th Engineering Installation Squadron members working in the AOR.

Once the engineering teams finished developing their respective project packages, a list of materials for each project was provided and teams of EI logistics specialists began purchasing, receiving, inventorying, storing, packaging, staging and tracking thousands of line items of critical materials required for OEF projects.

As materials were procured and shipped to project sites, installation teams deployed to provide manpower and expertise. More than 50 teams have deployed to 16 military installations within 13 countries to support OEF efforts. EI teams have been in action at military bases throughout Southwest Asia, USAFE, and from Diego Garcia to Guantanamo Bay, to former Soviet republics.

“The flexibility of the EI installation teams is just amazing. Many times they reengineer projects on the fly to better meet the changing needs of the customer,” said Capt. Chris Miller, flight commander of the 738th Rapid Response Installation Flight. Whether installing nearly 10 miles of fiber optic cable at Guantanamo Bay, bringing the old Soviet control tower at Bagram up to USAF standards, or designing and implementing cutting edge



738th Engineering Installation Squadron members install cable at Guantanamo Bay, Cuba.

technological platforms for the DOD’s number one communications project—Desert Falcon—EI warriors are meeting a variety of communications challenges.

“It’s been a team effort,” said Lt. Col. Ismael Burgos, commander of the 738th EIS. “Both ANG and active duty forces are working side by side to make some amazing things happen. This has been total force in action.”



Ramstein VI produces first DVD-video in USAFE

By Master Sgt. Brian Brownsberger
786th Communications Squadron
Ramstein AB, Germany

Ramstein Visual Information, 786th CS, made USAFE history by producing a visual record of the Afghanistan humanitarian airdrop on DVD-video.

The airdrop was a huge undertaking that provided food relief to millions of starving people in Afghanistan. C-17 Globemasters flew round trip from Ramstein to drop the humanitarian daily rations. A seven-person team of VI professionals immediately began recording the activities of the flight crews, tri-wall air delivery system riggers, and loaders.

Without pause, they started assembling hundreds of hours of video footage, numerous photos, and created graphics and animations. Three weeks later, a comprehensive library of visual information was delivered on one small disc.

With real-world mission taskings, the video shop was down to just three people for this project. The 31st CS at Aviano volunteered videographer Staff Sgt. Steven Neal. Shooter Airman Bryan Magee from the 28th CS, Ellsworth AFB, S.D., extended his Aviano AEF deployment to come to Ramstein to help. With Ramstein's Senior Airman Channa Johnson as crew chief, they comprised the 'video team'.

Graphics, animation, and still photo personnel also responded to make the DVD-video a top-notch communicative device. Graphics designer Staff Sgt. Deidre Hines said she enjoyed learning how to create products especially for television. VI animator Senior Airman Erich Fink's rendering of the TRIADS containers ripping apart from below the in-flight C-17 illustrates how the rations disperse. The containers have a static line that tightens and flips the containers once they clear the aircraft. Once open, the pre-packaged food rations disburse over the drop zone.

Ramstein Video's Tech. Sgt. Allen Billings, the project media director, said, "We could add so much more capability that we sometimes had to say, 'slow down, we're getting information overload.'" Learning the DVD hardware and software while assembling the media pieces under tight deadline provided some serious on-the-job-training. "Having



Photo by Master Sgt. Sam Shore

Master Sgt. Brian J. Brownsberger, 786th CS, chief video production/documentation section, and videographers Staff Sgt. Steven C. Neal, 31st CS, Airman Bryan K. Magee, 28th CS, and Senior Airman Channa D. Johnson, 786th CS, review the Operation Enduring Freedom video at Ramstein AB, Germany.

such talented teammates helped us deliver a great product on a short schedule," he said.

A project of this scope requires help from other people as well. Command and wing public affairs, the USAFE Band, and many others worked to ensure operational information was correct, key interviews were scheduled, and we had enough pizza and homemade cookies to work through the night. The C-17 aircrews at the 437th EAS volunteered their time even with their exhaustive ops tempo to ensure VI "got the story."

Ramstein Visual Information has a history of firsts to its credit. Placing the first video clip and animations on the USAFE Command Media Server (<https://media.usafe.af.mil>), and documenting EUCOM Exercise Combined Endeavor, a first for a Base Visual Information Center, are two of many achievements of these communications warriors.

"Part of the reason we selected Ramstein VI to produce this DVD is their history of mission dedication and expertise," said Chief Master Sgt. Richard Smeeth from HQ USAFE/SC.

Comm role crucial in setting up airfields

By Tech. Sgt. Andrew Gates
5th Combat Communications Group
Robins AFB, Ga.

“We were one of the first groups into Kyrgyzstan—another C-130 of equipment landed before us, but we were the first people on the ground,” said Capt. Dennis Scales, 5th Combat Communications Group.

Thus began one of the biggest tasks faced by Scales and Tech. Sgt. John Hunt, 5th CCG, at the start of Operation Enduring Freedom. Hunt and another Air Combat Command terminal instrument procedures specialist joined Scales in Germany, after setting up airfields in Uzbekistan and Pakistan.

“Our initial job was to establish a command post,” said Scales. “We were joined by the 1st Combat Communications Squadron from Germany.” Their top priority was to establish communications using an international marine/maritime satellite, or INMARSAT. After that, the two set about creating an airfield and comm site for the warfighters who would soon join them. Their tasks were to prepare incoming communications services, devise an engineering plan, and coordinate with local and military officials to get property for the site.

“When we first arrived, nothing was available,” Scales said. “One of our first orders of business was making sure we had a living area for everyone coming in.” Contractor specialists negotiated with local nationals for land near the airport for living quarters and equipment. At the same time, Hunt negotiated with airport and defense officials for communications frequencies and for places to put microwave transmitters and other communications equipment. “Kyrgyzstan was the dream job of all the places I went,” Hunt said. “I had to develop a number of procedures to get planes in and out of Pakistan and Uzbekistan, but at Kyrgyzstan, most procedures were already in place.”

The Kyrgyzstan airport, called Beskek Airport locally, had a lot of 30-year-old or older equipment, Hunt said, but most of it was in good condition and had the infrastructure to handle more modern equipment. “I worked with the equipment to add to the existing facilities,” the sergeant said. “We put in some tactical radios and a tactical navigation radar.”

While Hunt was setting up the airfield, Scales

put together engineering plans for distribution of voice and data services. “I was making sure there was a plan before anyone got there with equipment,” he said. “That way, all the leg work was done and people could put up equipment quickly when they arrived.”

The captain said actual operations were slowed until the contracting process acquired enough land for equipment and living areas.

However, putting together a team to make arrangements for the arrival of warfighters was essential for mission success throughout the area. “Getting a team like we had out there was crucial – in all respects. In fact, it’s helpful to look at the whole picture. Right now, the Air Force has a lot of units dedicated to going to a bare base and setting up their piece of the network, with no official concern for what other organizations may need later. We need to work closer together on the overall situation, and not just focus on our particular area, when we deploy,” said Scales.

He stressed that stovepiping can cause problems in a deployed environment. “Initial support functions need to operate as one piece – not as security, civil engineering, communications, and logistics. If we have at least one person at each site thinking about all those areas together, the site will go together much smoother.”

He added communications networks should be tied to the site, rather than to incoming aircraft or warfighting units. “In most cases, the backbone for communications – the bare necessities – are the same no matter what aircraft you’re supporting,” he said. “There are a few special cases – like the Predator – if we know about them in advance, we can have comm ready when they arrive.”

To help prepare for operations warfighters, Hunt advises people who aren’t on the front lines to maintain a warfighting mentality – to take care of people who are doing the job. “When you’re on the ground, anywhere, and have a mission to do, you do what it takes to get it done. It was amazing how many times we called for support just before a weekend or holiday and were told we’d have to wait. People in the field were incredibly flexible and did what they had to.”

With a coordinated and concerted effort, when organizations roll into a deployment location, the work of the men and women who preceded them will have paved the way for operations to begin.



Wake up to JUICE

By Capt. Yehodi Scott
*Officer in Charge,
DMS Deployed Program
Scott AFB, Ill.*

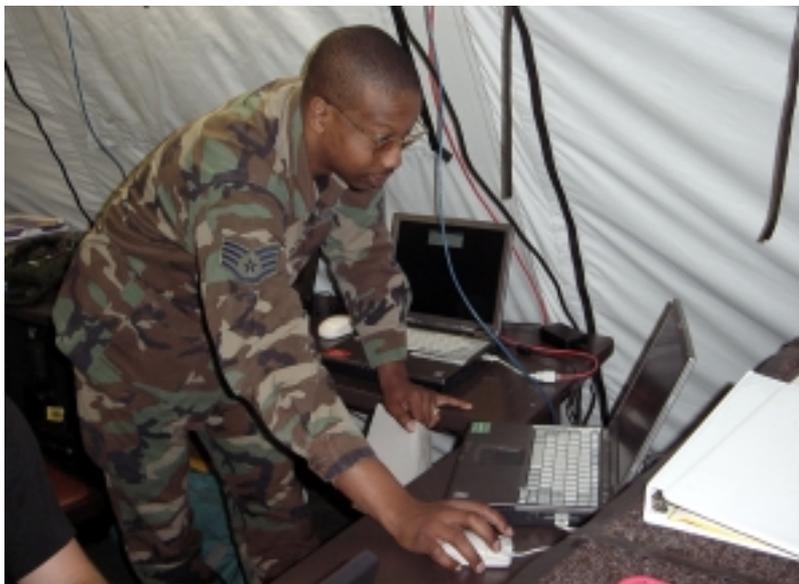
The Joint Users Interoperability Communications Exercise, or JUICE, is an annual communications exercise hosted by the Executive Agent for Theater Joint Tactical Networks (EA-TJTN).

Not just for operators any more, JUICE is designed to test new capabilities and train communications personnel. It maximizes effectiveness of the Air Force's deployable networks and ensures the skills to manage them are widely available. Geared toward units with a tactical mission, JUICE '02, which took place Aug. 5-30, addressed interfacing schemes, new networking arrangements, joint networked system interoperability, and the Defense Message System.

The responsibilities of the EA-TJTN encompass all aspects of tactical networking, including network switching and routing, network management, and network connectivity (airborne, satellite, and terrestrial), deployed in a joint environment. They're also responsible for ensuring synchronization and interoperability of service and agency efforts to acquire hardware and software in support of theater joint tactical networks. Because sharing information among the services is so critical, messaging has an important role.

JUICE activities involved extending strategic messaging services (AUTODIN, DMS, and SMTP e-mail) to a simulated deployed operating environment that represented a JTF and JSOTF communications architecture, down to and including Federal Emergency Management Agency and service component headquarters levels. These activities allowed participants to test deployable communication configurations and their interfaces to the real-world Global Information Grid.

Realism was an important aspect of JUICE. Participating units gained practical experience with the planning, procedures, techniques, and resources needed to install, operate, and maintain tactical



Staff Sgt. Thomas Millender, 269th Combat Comm Squadron, Springfield, Ohio, sends a DMS message using his unit's deployable equipment. JUICE gives units the opportunity to use equipment as it was intended—in a deployed environment, via satellite and without assistance from their base infrastructure.

access to the JTF DMS backbone infrastructure. End users also became familiar with multiple U.S. Messaging Text Format applications within a DMS organizational messaging environment.

A key feature of the architecture was that it allowed communication from strategic (in-garrison) units to tactical (deployed) units, and vice versa.

JUICE '02 contained a DMS infrastructure that included Air Force, Army, and Marines, along with joint entities JFCOM, EUCOM, JITC, and JCSE, as well as FEMA.

Because AUTODIN will close Sept. 30, 2003, we need to revise messaging doctrines so they're in line with the many capabilities and few limitations of DMS. JUICE '02 allowed participants to identify improvements leading to development of practical information assurance policies and procedures. Combatant commands, military services, defense agencies, FEMA, and DISA will eventually implement the revised policies and procedures with greater confidence.

The core services provided by the network such as DMS provide critical information to support strategic and operational decisions affecting the warfighter.

SATCOM delivers critical info for war on terrorism

By Airman 1st Class Tarkan Dospil
*379th Air Expeditionary Wing
Public Affairs*

In today's information age, satellites are a vital link for global communication. Commanders and troops rely on them to ensure information is at least one step ahead of the enemy in the war on terrorism. At this forward deployed location, that job falls to a satellite communications team from the 114th Combat Communications Squadron of the Florida Air National Guard.

"We operate and maintain satellite ground terminal equipment capable of transmitting and receiving data over great distances," said Staff Sgt. Richard Calvert, a satellite operator whose team is assigned to the 379th Expeditionary Communications Squadron. "We can transport, set up, and operate satellite ground terminals virtually anywhere in the world in a short time, and we can relocate as needed."

Besides providing information for the war, the SATCOM team is responsible for many other communications links as well. "Many computers and phones are on this base, and they have to be routed and switched through several types of equipment," Calvert said. "Eventually, their signal comes to SATCOM. You could call around the base with us, but if you want to talk to Europe or to the United States, you have to go through SATCOM."

The SATCOM equipment is manned 24 hours a day. "Many people depend on that link," he said. "We perform preventative maintenance, alignments and repair to off-line equipment (such as drawers or racks of electronics) that can be brought on-line quickly if something fails."

Calvert likens his job to a fireman. "We monitor the equipment and wait for something to go wrong," he said. "And if it does, we race to get it fixed as fast as possible. Good preventative maintenance makes outages rare."

The most difficult part of the job is the initial set-up, Calvert said. Setting up the ground terminal in the middle of nowhere is hard," he said. "Once we're in place and we have stable power, we can monitor the satellite. At that point, our job is



Photo by Airman 1st Class Tarkan Dospil

Tech. Sgt. Mark Darragh, assigned to the 379th Expeditionary Communications Squadron at a forward deployed location, checks a satellite dish barrier to ensure it is secure. Darragh is deployed from the Florida Air National Guard.

to make sure the link stays up. We only use the satellite, we don't control it."

Calvert said he loves his job not only because it interests him, but also because of the role satellites play in modern warfare. "Throughout time, wars have been won not only by the army with the most proficient fighters on the front lines, but also the army with the best logistics and communications supporting them," he said.

"Satellite technology has transformed combat communications by providing secure, real-time communications over great distances," Calvert said. "This has become the standard today. The incredible scope of the war on terrorism covers several continents with constantly changing situations. Satellite communication is essential to the proper coordination of our efforts against terrorism around the world." (*Air Force Print News*)

*"A terrorist
attack
designed
to
tear us
apart
has instead
bound
us together
as a
nation."*

*President
George W. Bush*

