HEROES
OF THE SIGNAL REGIMENT

Plus -

Chief of Signal Comments on the Future of the Regiment

PATRIA VIGILANS PRO

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COMMAND

EDITORIAL STAFF

Army Communicator
Voice of the Signal Regiment

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Cover: Army Communicator *Fall 2008 focus is on heroes of the Signal Regiment. A couple of Soldiers are highligted for their bravery and achievement. (See pages 48 and 49)*

Cover by Billy Cheney

Departments

Some updates on your Regiment and Signal Center

Regiment,

In our last edition we explored the Warfighter Information Network-Tactical program in depth. This time, I'll share some updates about your Regiment and your Signal Center.

People: We are developing a proposal to align our current warrant officer military occupational structure with the NETOPS construct of Network Management/Enterprise Systems Management, Information Dissemination Management/Content Staging and Information Management/Computer Network Defense. Proposed MOS titles will be Network Management for the NM/ESM technician, Information Services for IDM/CS and Information Protection for IA/CND. The potential results of this action are exciting—especially the enhanced capabilities for IDM/CS to enable knowledge management and for IA/CND to mitigate network vulnerabilities. A separate-unrelated proposal will add Functional Area 53 officers and MOS 25B Soldiers in the Corps KM cells underscoring the need for Signal skills in support of KM. Also as a regiment we have met our retention goals for fiscal year 2008 - a powerful statement to the commitment of our NCO Corps!

We have significantly strengthened our ability to coach, teach and mentor the brigade/battalion S6 staffs during mission readiness exercises at the three Combat Training Centers. Working with Human Resources Command, one former brigade S6 with recent operational experience has been assigned to each CTC as senior observer/controller; and three warrant officers (MOS 250N, 251A and 254A) possessing former brigade experience have been assigned to each CTC as members of the brigade O/C teams. The CTCs have also received funding to hire one Signal subject matter expert contractor for the Leader Training Program at each location; one is already on board at the National Training Center. All are already making a difference to units on rotations.

Training: We have just started work on a virtual Signal Warfighter Forum: a Community of Purpose for the Signal Regiment. We will partner with Forces Command, Network Enterprise Command, and CECOM Lifecycle Mangement Command to ensure capabilities, toolkits, professional discussion forums, and downloadable content are relevant to Signaleers at all echelons of our Army.

We are also pursuing making

BG Jeffrey W. Foley
Chief of Signal

available all New Equipment Training packages to units across the Regiment through LWN eUniversity. We can deliver the NET training, but I would also like to know how you conduct on the job training for low density, non-program of record, and mission specific equipment such as Asynchronous Transfer Mode switching as required in the Republic of Korea? We will collect the best of your contributions and share them across the Regiment to increase our common knowledge base. Just email army.signal.center@us.army.mil with a summary of how your unit conducts this training. If your unit has an effective, exportable digital training package that you would like to share, let us know and we'll get it on LandWarNet eUniversity for download.

Our newest Forward Operating Base run by the Regimental Non-Commissioned Officers Academy opened in fourth quarter 2008. In addition, 15th Signal Brigade's facility in which to train specific fiber skills will be ready 2QTR 2009. It sets the foundation for much needed fiber training and possible industry certification for the graduates.

Futures: During transformation the Army became more brigade-centric and focused on developing modular organizations that provided a mixture of land combat power that were easily organized, flexible, and responsive. Signal doctrine was rewritten to address new tactics, techniques and procedures that derived from modularity. The latest Signal Doctrinal Field Manuals recently

approved for publication and posting on Reimer Digital Library; FM 6-02.40, *Visual Information Operations*, provides information on visual information activities, roles, management and support from the operational through the tactical levels of war; FM 6-02.43, *Signal Soldier's Guide*, provides signal Soldiers an overview of current signal doctrine and fielded communications systems, and an understanding of implementing signal support under modularity from maneuver battalion through theater level; FM 6-02.53, *Tactical Radio Operations*, a reference document for tactical radio systems providing doctrinal procedures and guidance for using tactical radios on the modern battlefield, and FM 6-02.71 *Network Operations*, provides doctrine for the overall guidance and direction pertaining to the command and control of Army communications systems and networks (voice, video, and data) and information services (collaboration, messaging, storage, mediation, etc.) throughout strategic, operational, and tactical levels. For further details see page 47 in this edition. Current Doctrine status is available at http://www.gordon.army.mil/doctrine and concept products i.e., Concept of Operations for the Network Service Center, the CONOPS for the Global Network Enterprise Construct are available at http://www.gordon.army.mil/concepts

On the materiel side, we're partnering with CECOM Lifecycle Management Command Software Engineering Center and Program Manager WIN-T to help disseminate information about upcoming software releases for WIN-T Increment 1 in future issues of the Army Communicator. The Army will field WIN-T Increment 2 to 36 Brigade Combat Teams and nine Division Headquarters by FY14 providing embedded line-of-sight capabilities and less reliance on tactical hubs as covered in the Summer 2008 issue of the *Army Communicator*. WIN-T Increment 2 recently earned approval from the Functional Capabilities Board/Joint Capabilities Board. The WIN-T Increment 2 Limited User Test will occur March 2009.

Thanks for your continued service around the world. I remain so very proud to be your Chief of Signal!

**BG Jeff Foley
Army Strong!**

CSM's Comments

Stories of heroes and human interest in the Regiment

Greetings Signal Warriors!

In this edition, we will share some stories of heroes and human interest with you. In future features, we'd love to hear about other heroes across the Regiment. You can read about SFC Augustin Mendoza and his courage under fire. A true American hero.

You can also read about SFC Clay Usie. The Home Box Office special *"The Recruiter"* which profiles Usie started airing in July 2008. He is making a difference by recruiting one volunteer patriot at a time to keep our Army strong.

I believe SFC Usie and his fellow recruiters who are out there representing the Army everyday are key to our ability to meet our personnel requirements again for fiscal year 2008. These are the kind of inspiring, dedicated non-commissioned officers of whom we can be so proud. They are why I continue to serve this great Army. In other stories, we share an effort here at Fort Gordon to help Wounded Warriors receive apparel that supports their mission to heal. I know many of you are also out there supporting our Wounded Warriors and remembering our fallen. You can read about 44th Expeditionary Signal Battalion's participation in a Run for the Fallen in Iraq--"Outstanding".

Lastly, please remember that the Gold Order of Mercury and the Gold Wahatchee are intended to recognize the Signal Regiment fallen and their Families. Only eleven have been presented to date.

Please help your unit recognize those who have made the ultimate sacrifice.

For more information please contact Signal Corps Regimental Association at manager@signalcorps.org for assistance.

Thanks for all you do.

CSM Tom Clark
Army Strong and Signal Proud!

CSM Thomas J.Clark
Regimental Command Sergeant Major

SFC(P) Clay Usie: 25U

The Recruiter
HBO

Building the Team, One Soldier at a Time...

SFC AUGUSTIN MENDOZA JR

TELECOMMUNICATIONS OPERATIONS CHIEF

Army
JNN enters Joint Network

By 1LT Ryan C. Boileau

Abstract: 1BCT 3ID JNN adapted to provide secure and non-secure data and voice entry point into the Marine network, a first for the system and a validation of the true portability of the joint network node.

Background

When 3rd Infantry Division's 1st Brigade Raider Combat Team was notified of its mission and area of responsibility in 2006 for the 2007 deployment, one thing was immediately apparent to the network planners –history would be made. For the first time in its relatively short operational life, the Joint Network Node would truly bridge the gap into joint operations.

The mission of Bravo Company, 1-3 Brigade Troops Battalion was to integrate their JNN equipment into a primarily commercial, existing network which bridged into the Marine Deployable Ku Band Earth Terminal Hubs in Al Asad and Fallujah. From a planning perspective, this required extensive reprogramming of the routers and switches on both Joint Network Nodes in the company, as well as the six command post nodes within the brigade.

The brigade's Area of Responsibility during Operation Iraqi Freedom V was within Area of Operations Topeka. Specifically the brigade assumed command and control for the city of Ramadi and surrounding province of Anbar, Iraq. This region fell under the Multi-National Force – West control, which was predominately Marines. This marked the first time an Army brigade, with the Joint Network Node as its communications package, would be the maneuver commander for a joint force [A Company, 141 Signal Battalion from 1st Armor Division was previously in Ramadi, but used the Node Center and Small Extension Nodes to provide command and control].

This article provides an overview of the operational phases under which Bravo Company functioned. They are: planning, programming, employment, management, forward

All non-uparmored vehicles had to be long-hauled to location. Here, JNN 6705 is downloaded for its forward deployment at FOB Hawass.

deployment, and retrograding. Each is significantly disparate in its support or management needs as to warrant an in-depth look.

Planning

While the maneuver commander would be Army, the parent network the JNN would integrate into was to be Marine. Bravo Company, 1-3 BTB's JNNs would be linking into the Marine DKET hubs in Al Asad and Fallujah, rather than the traditional unit hub nodes used by the 3rd Infantry Division. The systems are similar, but differ in the protocols used. When creating its routing standards, the Army chose to use OSPF as the standard routing protocol during the tactical high speed data network upgrade of mobile subscriber equipment. All Army routing is predicated on the use of open, shortest path first protocols, which is a non-vendor specific solution. This is a great concept when backwards compatibility is required, as any router is able to translate and operate with the standard.

Marines, on the other hand, use Enhanced Interior Gateway Routing Protocol, a Cisco™ proprietary method of routing data between two systems. The benefit of this is it is much simpler to operate, knowing all systems in the network are using that same protocol, and it uses less overhead; the downside is that all routing systems integrated into the network must be Cisco brand.

Although it is possible to layer these protocols over one another on a Cisco router, this is not the best practice, because it will raise the latency between switches due to the increased traffic overhead. Each routing protocol in use adds to the overhead of that connection link, which then degrades the bandwidth available for actual traffic. One option considered called for establishment of a translation router between the two networks. This would have allowed the Army equipment to operate independently of the Marine network, using its standard OSPF protocols, with a bridge into the hub

through the translator. The translator would effectively connect the two networks through a single link, allowing data to pass between each independently. The advantages of this solution were the ability to keep the OSPF protocols intact on the Army systems, and still link up with the Marine equipment. However, this created a single point of failure into the network (logically speaking), and it was decided instead to migrate the Army equipment from OSPF to EIGRP. The benefit realized in doing so would be reduced routing metrics, as each system would be able to independently arrive at the best route based on data gathered from its surrounding nodes. EIGRP is designed for low overhead in Cisco-specific networks, allowing greater throughput of actual data.

Knowing the need to integrate with the Marine hub, Bravo Company liaised with the Marines at Camp LeJeune, N.C., and coordinated joint network training prior to the actual deployment, to ensure our network cell was able to effect the transition to the Marine EIGRP network routing. CWO3 Michael Rivera, SSG David Sizemore and SSG Kevin Hinds were chosen to attend the training, and formed the hub of the Network Operations cell within our signal company (later complemented by SSG Nakkisha Streat, and SGT Crystal Austin-Wong). This weeklong face-to-face meeting was an integral step in ensuring the seamless transition of the JNN into the Marine network, as it allowed our planners to meet with their Marine counterparts and establish a working relationship before arriving in-country, laying the groundwork for successful interaction later during the deployment.

Programming

Compounding the difficulty of the transition was the fact that during the Brigade's Mission Readiness Exercise prior to final deployment, validation would have to be conducted using the Army's 3ID unit hub node and it's accompanying OSPF protocols. In a sense, while the equipment hardware would be

certified as being mission ready, the actual routing protocols were not validated, because of the EIGRP/OSPF disparity. This was recognized as an acceptable risk, due to the lead time allowed for reprogramming in Iraq. Prior to reprogramming, the 3ID JNN's bridged into the 82nd Airborne's Hub Node at Victory Base, Iraq. Network planners allowed for a 90 to 120 day overlap before bridging solely into the Marine DKET network.

The migration plan called for a graded transition from the Army's network to the Marine. During this time, one JNN set up with a link to the Army hub, and the other to the Marine DKET in Fallujah. Simultaneous with the kinetic operations cycle the brigade was undergoing, members of each Command Post Node, along with CW3 Rivera's team, worked to reprogram the CPN routers to use EIGRP. Over a ten day period, each CPN was brought off of the Army network, and reprogrammed to use EIGRP and brought back online and validated into the Marine network.

Although physically right next to one another, a CPN to CPN call processed from an Army CPN to one of the CPNs on the Marine network would have gone from the CPN to a satellite, back down to the Army hub, bridged through the STEP site into the Marine network, back up to a satellite, and down to the Marine-programmed CPN. While there was increased latency with the additional satellite transmissions, this method allowed the networks to autonomously determine the best routing path rather than requiring a single translation router for all data to pass through.

Employing

Before Bravo Company's arrival, the Ramadi network consisted of one Promina 800 as a data nexus and two Redcomm analog voice switches; both data and voice centers were split into two sites to increase survivability, with fiber interconnectivity between them. Local analog calls and Local Area Networks traffic were routed through the

JPG - JNN 6705 setup at FOB Hawass. The platoon operated out of a converted LMTV Shopvan (behind the JNN).

lowest-cost path to the destination node. Trunk calls, Voice Over Secure Internet Protocol, and external Non-secure Internet Protocol Routers/Secure Intrnet Protocol Router data ultimately passed through the southern Technical Control Facility, where it was routed out through the Promina. Distant end connections were provided through an lightweight multi-band satellite terminal, Video Storage Wide Area Network, Logistics Support Wide Area Network and a TRC 170 troposphere scatter shot. Line of sight connectivity through A/141's Node Center to the local System Evaluation Networks extended the network to areas unreachable by standard wire or fiber connections.

With the arrival of the Joint Network Node, the Southern TCF gained a high-speed FDMA satellite connection, increasing the amount of throughput the network could handle to external links. This link was provided by the JNN satellite trailer, which then connected through the TCF Promina. Doctrinally, the JNN should have had the KU satellite for itself, with the JNN being the primary assemblage in the network for data routing. Due to B Company augmenting an existing commercial network, it was necessary to bring the KU shot into the TCF, then to the JNN, rather than the normal method. Adding the FDMA shot significantly increased the amount of available outgoing bandwidth in Ramadi. This approach was deemed the most

effective given the SASO mission of the company, as it allowed for greater versatility in the network – the TCF itself could determine the best routing path for external traffic, allowing less latency in the network.

The initial plan called for the Northern TCF to receive the second JNN's FDMA shot, but due to a lack of open transponders on the KU satellite, it was not possible. The northern JNN instead created a line of sight FDMA link between itself and the southern TCF using HCLOS shelters, allowing for high speed data transactions between the two, reducing demand on the local network. In addition to this high-speed (4MB) link, both JNN's also operated in a TDMA satellite mesh, linking each of the CPNs. All six CPN's routed primarily through the northern JNN before entering the Ramadi network, with the southern JNN as a secondary entry point. External connections were terminated at Al Asad (primary) and Fallujah (secondary).

Routing metrics were such that individual packets determined the most effective method out, which could vary depending on type of media and congestion on the network. In all cases, highest quality of service was reserved for the SIPR voice and data connectivity to the CPNs and external sites, ensuring that maneuver commanders were able to maintain sufficient communication with the Brigade commander.

Over time in Ramadi, the mis-

sion posture of the camp changed. Small outposts, security stations and patrol bases were set up within the city as hot spots were identified, allowing quicker response to insurgent activity as it developed. These sites, once set up, became permanent or semi-permanent in nature (with Iraqi Police, Iraqi Army, or U.S. Military personnel occupying them on a random [but predetermined] basis) to keep the insurgents off balance. With their creation, the need arose for reliable communications at these sites. A combination of Marine equipment – WPPLs and MRC-142 (equivalent in capability to a SEN, but not mounted on a vehicle) – and Army LOS data packages (similar to the MRC 142) were set up at these locations. The WPPLs and MRC-142's were terminated at either the north or south TCF, as determined by terrain and location of the distant end. The LOS data packages – six in all – were connected into the Ramadi network through the JNN LOS's. By the time Bravo company redeployed, over 40 external links were terminated at Camp Ramadi, providing secure voice and data communications over a 12,000 square kilometer area.

Managing

All network management was controlled through the Company Network Operations cell. While each JNN (and the distant end CPNs) had operators who maintained awareness of their piece of

the network, the NetOps cell served as a data nexus for all control issues. When mandatory router upgrades, routing path changes, and other issues were sent to the company, they were integrated into the subordinate sites in a controlled manner. This allowed for graduated updates to non-critical equipment, and immediate push-outs for time sensitive changes. All sites, including NetOps, the JNNs, the TCFs, and the distant end CPNs, worked on 24-hour operational cycles in order to ensure maximum efficacy of the network. This tempo was sustained throughout the 15 month deployment, with no degradation during R&R leave or other operational requirements.

The NetOps group was the sole point of contact to the Marine Command and Control Cell, which operated the next higher network.

All activities on our network were input into their database for continuity tracking, as well as to ease communications with adjacent units when planned outages were occurring. This worked well from the ground-up perspective, in that NetOps proactively reported all activities affecting the local network. The reverse was also supposed to be true, but often activities which affected our external paths were not pushed down to NetOps; it would not be known about an outage until after it began, and only then by NetOps calling MCCC to receive the information.

As the network footprint changed over the course of the deployment, initial IP address allocations became unwieldy and required reconfiguration. Constantly over our tenure in Iraq, IP addresses were

reallocated and subnets reconfigured. As units pulled out for redeployment, their subnets were unused. The NetOps cell would reallocate those IPs into more usable configurations for the current network before reassigning. This efficient reuse plan allowed forward portability without compromising existing networks, and was only possible by the NetOps cell thinking proactively about future network topology and acting quickly to maximize the benefits of freed addresses from departing units.

Forward deployment

Bravo Company's mission is: deploy, install, operate, and maintain the Brigade's command, control, communications, computer, intelligence, surveillance, and reconnaissance network. It establishes net-

JPG - JNN Team that deployed to FOB Hawass. (From left to right: 1LT Boileau, SSG Ferguson, SGT Pulley, SPC Weber, SPC Lingerfelt.)

Brigade Joint Network Nodes and Command Post Nodes are validated in Kuwait prior to deployment to Iraq.

works that support Brigade operations and integrate with the Division Army Force, Joint Task Force, or theater networks.

Doctrinally, the company has two Joint Network Nodes to support two command posts (CP1 and CP2), which under MSE would have been the TAC and TOC. This doctrine was validated in 2007 when 1BCT deployed its CP2 slice to a forward operating base for a 39-day combat mission. The company's northern JNN was detached from the Ramadi network, with all external links it was receiving rerouted dynamically to the southern JNN as soon as it pulled from the network. While it was en route to the forward location, the in-system CPNs were reprogrammed to see the forward JNN as a secondary path rather than primary, because it would not have a FDMA connection and therefore quality of service from it would be degraded. In a standalone configuration, a JNN usually provides both TDMA and FDMA connectivity; due to the satellite saturation in Iraq this was not possible, which reduced the capabilities of the forward JNN. By limiting CPN traffic to that JNN, no degradation of services was apparent to the maneuver and support battalions.

The forward JNN was able to seamlessly link its local subscribers back to the Ramadi network and other outside elements without

noticeable attrition; SIPR voice and data were a priority on the network and functioned superbly. Due to the limited available bandwidth, NIPR data and voice were limited in quality but not to such an extent as to be unusable.

Throughout the time of the forward deployment, the command post was able to maintain C2 of its battlespace using the capabilities provided by the JNN. Streaming video, UAV feeds, fire and counter-fire support, secure voice and data were all maintained with no degradation over the TDMA link. The maneuver commander was able to direct combat operations from the forward position, ultimately reducing the insurgent threat within the area of operations.

Retrograding

Long before the company began its relief in place, the planning process was begun to effect its replacement. It was known that a like unit would not be replacing the company, and its capabilities would likely be less. In order to ensure a smooth transition without degrading the communication paths provided by the company's presence, the company began additional Ramadi LAN upgrades. The north TCF received a Promina 800 to serve in lieu of the JNN which had been there, as well as a LMST satellite shot to increase external bandwidth from Ramadi.

These systems were in place and ready to go before the RIP began. As units began replacing the outlying elements at the CPNs, Marine WPPLs were established on a one-for-one basis to relieve the CPNs. The CPN requires a JNN or Unit Hub Node to integrate it into a network, so was not able to remain once the JNN's were pulled out of system. The north side JNN ceased its services, with all CPN and LOS data packages routing to the south JNN only, allowing early recovery of the first JNN.

Once all CPNs had been replaced with WPPL links, the CPNs retrograded to Ramadi. With the cessation of the last CPN transmission, the company's final JNN was able to shut down. This freed a transponder on the KU satellite for the new north TCF LMST to use, effectively removing the company's signal assets from the picture with no loss of capability to Ramadi or its external connections.

Prior to the company's retrograde, a microwave tower was built on Ramadi to accommodate two high bandwidth antennae, allowing two 8 MB line of sight paths to Al Assad and Fallujah, which became the primary path out.

Lessons Learned

The mission of Bravo Company to provide C2 to the maneuver commander for AO Topeka was a

Solar shades were used to mitigate heat around the equipment. Wooden platforms were necessary to prevent the mud buildup in traffic areas.

success. In departing, the system left behind was more robust than the one the company fell in on, and plans for improving the backbone were in place to be acted upon by the Marine and Joint Task Force Headquarters contingents replacing the company. As with any mission, there were areas on which to improve. Among them:

o MOS Training: Soldiers slotted by Human Resource Command were sent from cross-levelled MOSs, and were sufficient to count as filling a specific slot in terms of readiness for Unit Status Reporting. As an example, Soldiers with MOS 25F were assigned to the company, which has only one 25F billet (SMART-T operator), and counted against the 25N allocations.

While these Soldiers worked in the 25N position for more than a year, while deployed, they were unable to compete for promotions in that MOS, and effectively bottlenecked – unable to attend schooling due to being deployed, and unable to gain promotion in an MOS undergoing drawdown during the transition to Joint Network Transport Capability. If you are in a JNN unit and deploying, utmost attention should be taken to ensure your Soldiers are qualified for the MOS to which they are slotted, rather than "compatible" for that MOS.

o Fiber-optic competence was a must in the predominately commercial network our company operated. Although the company MTO&E calls for four 25L Soldiers, none are

required to be BIC or fiber trained. This created a need for on-the-fly training while performing critical repairs to the local network backbone. A better approach would be to ensure at least one Soldier in the company, preferably more (all the 25Ls if possible), is qualified with fiber-optic cable splicing and repair. The Basic Installer Course at Fort Huachuca is a great solution for this.

o The majority of communications requirements in Iraq are of the Sustainment and Support Operations variety rather than combat-kinetic. As such, one should approach preparation for deployment to this theater with that mindset. While fusion splicers, cable conduits, and reels of multi- and single-mode fiber optic are not part of a tactical unit's

standard issue, they (and Soldiers who know how to use them) are integral to a sustainment mission. The primary mission of the signal company (provide maneuver communications) should never be dismissed, but proactively planning for foreseen ancillary missions is a good step to take when the greater resources available in the United States are present. As once told to the author, "Better to have and not need than to need and not have."

o The Army deploys its systems with tactical generators. While this is required for communications on the move, serious thought should be given when entering a known SASO mission to acquiring commercial power generation. Although Kellogg, Brown and Root provided electrical services to buildings on the camp, they could not or would not allow the military systems to connect to them, placing an unnecessary strain on the unit's tactical generators.

o Heat is an enemy as much as insurgents are. In the Iraqi summertime, heat took a toll on the tactical systems, requiring additional cooling measures to be emplaced. On all CPNs and the JNN KU satellite

trailers, commercial air conditioners were added to augment the cooling process, lest the systems overheat. One should plan for the air conditioners to break, and have emergency solutions in place to counter the loss. In our company, each JNN air conditioner, both JNN KU air conditioners, and the CPN onboard air conditioner broke down during the high heat of the Iraqi summer (where ambient air temperatures exceeded 120 degrees at times). Failing to plan for the heat is planning to fail. We added a total of four additional snowbird air conditioners (the ones on the JNN) to our organizational property, as a spare and a backup: since the systems are under warranty, work on a JNN air conditioner had to be sent to the GD support site, which took as long as 90 days before being returned.

1LT Boileau is currently the executive officer of B Company, 1-3 Brigade Troops Battalion. He is an honor graduate of the Battlefield Spectrum Manager's course and served as the lead element of Force Modernization in 5th Signal Command during the prefielding phase of the JNN.

MG Stevenson explains operational capabilities for future

By Paul Wein

A Department of Defense program designed to replace the current fleet of Tactical Quiet Generators in 2011 could save up to $3.7 million a week in fuel savings, said the incoming Army G4, MG (P) Mitchell H. Stevenson.

Stevenson spoke of the transition to the new Advanced Medium Mobile Power Sources program during Project Manager Mobile Electric Power Users' Conference, held June 10-12 at Fort Belvoir, Va. The inaugural conference was held as an information exchange between representatives from PM MEP and tactical electric power operators.

The conference provided PM MEP with the opportunity to introduce future products and services and receive recent, relevant field comments on the performance fielded systems.

Stevenson said that researchers are reviewing potential technologies like Stirling engines, which is a closed-cycle regenerative heat engine with a gaseous working fluid. "Closed-cycle" means the working fluid, the gas which pushes on the piston, is permanently contained within the engine's system. Stevenson said that direct energy conversion from fuel cells and thermoelectric converters which could decrease the use of JP-8 fuel as potential power sources for future combat systems is also being researched.

In addition, PM MEP is looking into standing up a Product Manager Batteries, which will ensure all batteries throughout the DoD will be synchronized and managed by one source. This could make it easier to procure and replace them.

"Each are things that we are interested in and we're paying attention to," he said. "Some of these appear very promising and some may not be very practical for us."

MG (P) Stevenson speaks to the attendees at the Project Manager Mobile Electric Power User Conference at Fort Belvoir, Va.

Alternative sources of power, like solar and wind power could reduce the fleet's fuel consumption by up to 50 percent, Stevenson said.

"By using inexhaustible resources like solar energy, we can reduce our fuel use," he said. "Sometimes the answer isn't always to bring in another generator; maybe solar power is the way to go. So we are keeping an eye on that as well for how it might be applied. If you can get into the use of these inexhaustible sources of power like sunlight, then it can certainly reduce our fuel use."

CASCOM is the Training and Doctrine Command proponent for general purpose power sources from 500 watts to 200 kilowatts and writes the tactical electric power capability documents for the entire DoD.

Stevenson and his staff at CASCOM write the capabilities documents for future equipment. In those documents, they put very specific requirements called Key Performance Parameters into each document. A KPP describes the minimum essential requirements for the capability for which the document is written. According to MG(P) Stevenson, KPPs are very important and must be met by each vendor that is manufacturing equipment for the Army.

"If the vendor that bids to provide a generator to us can't meet that requirement, we stop," he said. "We can not procure a system that does not meet a KPP. We've never done that before with a generator procurement. When you establish a KPP, it's a big deal. If they can't meet it, we don't buy it."

He went on to say that the KPPs CASCOM puts in place will ensure that the future fleet of generators will be lighter, quieter, and consume less fuel, which saves money and ensures the warfighter's safety.

AMMPS is one program that has used KPPs to its benefit.

Presently, a 10kW TQG consumes 0.97 gallons of JP-8 type fuel per hour, operating for 168 hours, totaling 163 gallons of fuel used. Using a burdened cost of $14 per gallon, the 10kW TQG consumes $2,282 per week of fuel. When the new 10kW generators from the AMMPS program replace the TQGs, they must, according to the KPP, operate for the same amount of time, but only use 0.82 gallons of fuel an hour for a total cost of $1,932 per week.

Once the presently fielded 9,500 TQGs (50 percent of all 10kW TQGs) are replaced, that will amount to a savings of 25 gallons of fuel and $350 per generator per week, and a fleet savings of 237,500 gallons of fuel and $3.7 million per week.

"We are addressing the long-

term operational imperative to reduce fuel and maintenance needs," he said. "When we reduce fuel consumption and increase reliability by design, we'll accrue the beneficial effects such as a reduced footprint, less spare parts and labor, and fewer tanker convoys. These are benefits the warfighter will experience."

Another area of importance to Stevenson is the equipment's ability to run with little maintenance.

A requirement was written in the document that will require fewer tools to repair any generators manufactured in the future. In addition, he put in a requirement that all new generators must have a maintenance ratio of 0.025, meaning that for every 1000 hours the generator is operational, it should only be maintained for 25 man-hours.

"We want that maintenance ratio down as low as we can drive it so that you're not having to spend a lot of time, when things do break, fixing them," he said. "It may make the equipment we buy a little more expensive, but that's OK, because while it may cost us more to acquire it in the beginning, if its cheaper to operate over the long run, then that's a good deal for the Army."

Stevenson then went on to discuss emerging operational capabilities that he envisions for future power sources, noting that there was a common theme of operating in severe climates and reducing their sustainment needs.

One emerging capability was focused on portability and the need for lighter weight systems that must be handled by Soldiers.

"Looking at what warfighters must endure, they want power sources that don't add to their burden," he said.

"They want to reduce supportability requirements and they want that power source to work anywhere. These are all tough requirements, but with each generation, we make great progress."

Supportability and reducing the sustainment tail is another one of the general's focuses.

The possibility of integrated

MG Stevenson receives an award from Michael Padden, Project Manager for Mobile Electric Power.

power, such as a self-powered space heater currently in the field, eliminates the need for a stand alone generator. This is one less generator the Army has to procure and maintain.

"When you can integrate your power output, then I think you have made things easier on the user and the maintainer, as well," Stevenson said. "An integrated power source also makes sense. When you eliminate a towed generator set that frees-up space aboard aircraft and watercraft for early entry operations."

In the future, according to Stevenson, the Army will be more aggressive when it comes to procuring technology.

"We are going to be a more demanding customer in the future," he said. "We need to be for the Soldier and for the Army's budget, because we can't afford to have the kind of reliability and fuel efficiency that we've been living with as we've grown up in the Army. It's just not good enough anymore."

Mr. Wein, Data Systems Analysts, Inc., is a journalist supporting the Program Executive Office, Command Control and Communications-Tactical Chief Knowledge Office and Strategic Communications Team. He holds an associates degree in applied science from Kingsborough Community College in Brooklyn, N.Y. and was a former Press Secretary for New York City Mayors Rudolph Giuliani and Michael Bloomberg. He was also editor-in-chief of several Brooklyn and Long Island newspapers. He is now a writer with PEO C3T Chief Knowledge Office, Fort Monmouth, N.J. He can be reached by e-mail at paul.wein@us.army.mil.

Project Manager -
Mobile Electric Power
– *powering the battlefield*

By Paul Wein

The military's array of technology is vast, and contains countless computers, satellite terminals and various other electronic equipment. But, none of the electrical equipment in the Armed Forces would function without electricity. The Department of Defense Project Manager Office for Mobile Electric Power has been assigned the mission to provide tactical electric power to the battlefield for all of DoD's Services, to include the Coast Guard.

"Without tactical electric power, the military could not fight and win America's wars," said Michael Padden, project manager for MEP. "We provide the ultimate battlefield enabler."

Founded following the Vietnam Conflict, PM MEP was created out of necessity to fix a growing problem throughout the military. Attempting to meet the demand for electrical power during the war, the military purchased thousands of different types of generators in order to power its fighting forces. By the end of the war they found themselves with over 2,000 different makes and models of generators that were not only unable to operate cohesively, but unable for the military to support from a logistics standpoint. Seeing this problem, in 1967 DoD established Directive 4120.11, entitled, "Standardization of Mobile Electric Power Generating Sources," which established the PM MEP office and tasked the organization with the responsibility to develop a standardized family of military power generation equipment suitable for use by all of DoD's Services. For the past 41 years, PM MEP has continued to fulfill this mission.

Located at Fort Belvoir, Va., and supported by matrix support elements from the CECOM Life Cycle Management Command, the PM MEP staff ensures units have the power generation equipment they are authorized to meet their mission needs.

There are several reasons why the DoD requires a family of military generators rather than resorting to commercial power generation equipment. First and foremost, commercial generators are simply not designed for use on a tactical battlefield.

"Ironically, most of our tactical generators are made from commercially available components," said Paul Richard, PM MEP's deputy project manager. "However, it's the integration of those components into the end item that makes military generators survivable in the tactical environment and separates them from commercial generators."

Surviving the tactical environment is the most difficult performance requirement for military generators to meet. Military generators are designed to operate in 90 percent of the world's climatic conditions. Therefore, they must operate at temperatures ranging from -50F to 135F, altitudes from sea level up to 10,000 feet, and in varying conditions including sand and dust storms, driving rain, high humidity, and salt fog conditions.

In addition, they must be designed to withstand the manner by which our military deploys its fighting forces, which includes transportation by air, land and sea, including surviving the shock and vibration of military air drops and off road transportation. Finally, there are the military unique requirements that separate military generators from commercial generators.

These requirements include noise and infrared suppression systems, survivability in Nuclear, Biological, and Chemical contaminated environments, withstanding high altitude electromagnetic pulses associated with nuclear weapons, and electromagnetic susceptibility/interference. And, military generators must accomplish all of this while being as lightweight as possible to enhance Soldier mobility. Military generators are also designed to have a longer lifespan and greater reliability than their commercial counterparts.

"Military generators are presently designed for a 15 year life span," Richard said. "Commercial manufacturers typically expect their customers to replace their systems within five years."

The power quality of military generators is also much higher quality than most commercial generators in order to meet the power needs of the DoD's various electronic equipment. Most power on the battlefield is produced as alternating current, which is produced in a sine wave and is similar to the type of power people have in their homes. One measure of power quality is determined by how much deviation the power produced deviates from a true sine wave. The power quality of military generators is typically much cleaner than commercial systems, Richard said.

"We've tested commercial generators where the waveform deviation of the output power was as much as 30 percent. Requirements for military generators only allow for a five to six percent deviation," he said. "Dirty power can cause additional heat build up in electronic components, which can cause them to fail prematurely or require the use of power conditioners to clean the power before it powers their systems. So instead of having power conditioners on everything that requires clean power the Army

has chosen to field generators that provide clean power. Designing generators from the start to produce cleaner power is easily done during the design phase of the program at little additional cost. Doing so can cause the generators to be a little bit heavier, but the power they produce is clean and eliminates the need for each piece of using equipment to have its own power conditioning equipment to clean the power."

The family of generators supplied to the DoD by PM MEP consists of small generators of the two kilowatts and three kW power range, to larger generators that can provide up to 840 kW of power. They also supply the Power Distribution Illumination System Electric, which allows for the distribution of power through a series of distribution boxes and power cables, and Improved Environmental Control Units, which are designed to keep both the military's equipment and soldiers cool and comfortable.

For the future, PM MEP is looking to develop a common architecture for battlefield electric power that will have the capability to intelligently manage both power producers and power consumers via a battlefield power grid. In addition, the common architecture is being designed to ensure interoperability between multiple sources of power to include solar, wind, fuel cells, on-board vehicle power and even locally available utility power. At PM MEP there is only one focus – developing tactical electric power systems to enable the warfighter to accomplish their mission.

Mr. Wein is with PEO C3T Chief Knowledge Office, Fort Monmouth, N.J.

RASigs: Supporting communications for our critical ally

By CPT J.W. Snawder

Background

Over the past six months, I have had the privilege of serving as an exchange officer at the Defence Force School of Signals. By instructing on several professional education courses, I have been able to gain an interesting insight into the educational system that develops the quality communicators that the Royal Australian Corps of Signals is known for. Australian "chooks" have been distinguishing themselves as consummate professionals and important allies for the United States in every major world conflict since WWI, including Vietnam. Most recently, their efforts have been essential to successful coalition interoperability on the battlefields in Iraq and Afghanistan. Through ongoing modernization initiatives, the Australian Defence Force has established even closer ties with the U.S. in an effort to ensure that we can successfully cooperate for many years to come.

This article seeks to compare the RASigs force structure, training continuum, communications equipment, and culture with that of the U.S. Signal Corps and highlight some of the challenges the Australians face. Additionally, two modernization programs for the ADF will be introduced that will significantly influence how U.S. and Australian forces work together in the future. This article will focus solely on the active component of RASigs.

Force structure

Self-labelled as the small army of a medium power, the Australian Army numbers approximately 41,000, including reserve units. With an active core of 26,000, the
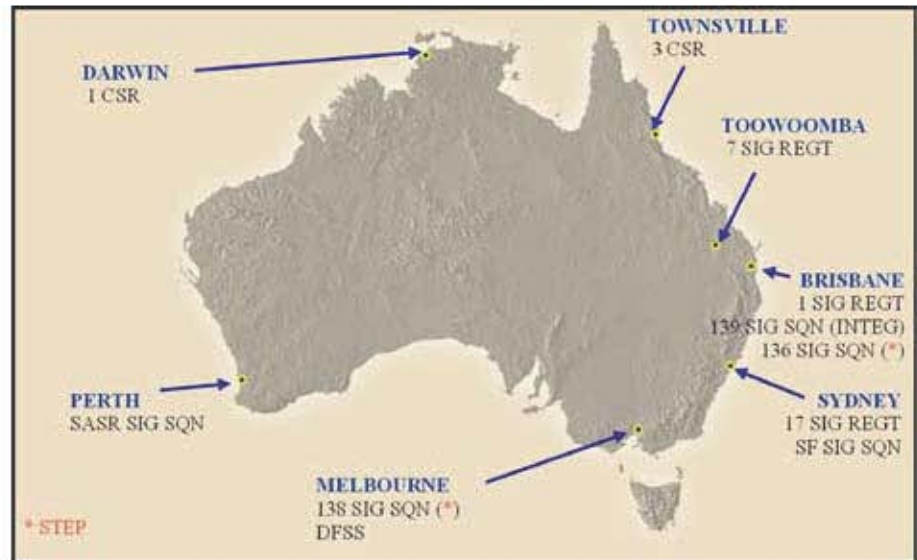

Figure 1.

Army is organized into the equivalent of two U.S. brigade combat teams and one deployable division headquarters.

In support of the Army, RASigs is tasked with the mission of creating a decisive information advantage through the use and manipulation of the electromagnetic spectrum and the provision of tailored, robust, and secure information infrastructure. Simply put, RASigs is responsible for providing communications information systems and electronic warfare capabilities to the commander. In order to complete this mission, RASigs is structured as follows (ref. Figure 1):

- One and three Combat Signals Regiments (mobile subscriber equipment signal battalion equivalent) for each maneuver brigade
- One Signals Regiment (division signal company equivalent) for the deployable division headquarters
- Seven Signals Regiment

(electronic warfare) supporting the Army's electronic surveillance, protection, and attack requirements

- 17 Signals Regiment supporting the Army's combat service support brigade and specializing in commercialization tasks
- Two Signals Squadrons (U.S. heavy Signal company equivalent) supporting the Commandos and Special Air Services Regiment
- 136 and 138 Signals Squadrons supporting tri-service (e.g. Army, Navy, and Air Force) strategic interface requirements around Australia
- RASigs personnel conducting strategic level intelligence collection and analysis at the Defence Signals Directorate (National Security Agency equivalent) in Canberra
- Tri-service Defence Force School of Signals teaching all levels from AIT to battle staff

With approximately 2,000 personnel, RASigs is tiny in comparison to the U.S. Signal Corps and
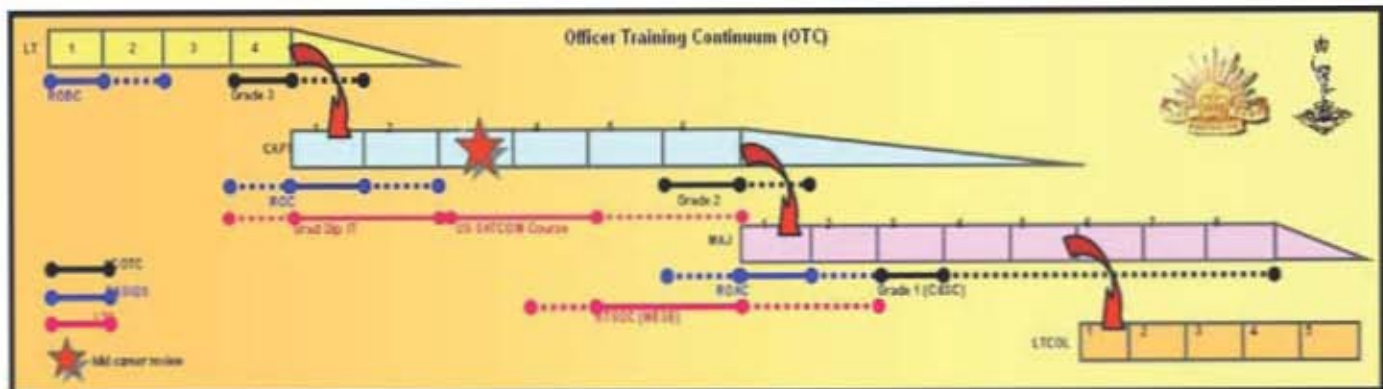
Figure 2.

Training

its 61,000 personnel. In support to maneuver forces, RASigs provides approximately 30 O-3 Regimental Signal Officer billets and a limited number of Regimental Signals sergeant (battalion commo chief) positions. As in the U.S., a number of these positions are filled by junior lieutenants with little experience. RSS and communications platoon slots are typically filled by Regimental Signaleers, who are combat arms military occupational specialty qualified personnel that cross train on communications equipment.

Despite their size, RASigs does an excellent job of providing extensive command and control capabilities during deployments and supporting numerous coalitions and unit level training exercises. Recently, the concept of a Force Communications Unit was adopted in which one Signal Regiment will simultaneously support Australian contingents in Iraq, Afghanistan, and East Timor during an eight month rotation. With three deployable units, commanders can expect approximately 16 months of dwell time to recover and retrain their units before rotating into theater.

This concept is significantly more supportable than the previous practice of pulling individuals from all units to form ad hoc communications elements every six months. As in the U.S., Soldiers with special commercialization skills (e.g. ASI J2 tower qualification, fiber-optic installation) are at a premium in RASigs and have been continually deployed over the past five years.

Through multiple signal courses over the course of their careers, Australian officers and NCOs return to DFSS three times to update their equipment knowledge and refine their communications planning skills. Of note, RASigs is one of the few branches in the ADF that conducts its professional development courses in a combined environment of officers and NCOs learning together. The RASigs officer training continuum can be seen at Figure 2.

(Editor's Note: Senior NCOs in the ADF have the rank of warrant officer. The ADF does not have the equivalent of the U.S. warrant officer system.)

The Regimental Officer Basic Course/Subject 2 for sergeant (Basic Non-Commissioned Officer Course equivalent) is very similar to that of the U.S. Officer Basic Course. Over the course of nine-15 weeks, senior corporals and junior lieutenants are introduced to the ADF's communications equipment and electronic warfare suites and basic CISEW planning concepts. The course concludes with a capstone three week field exercise that formally assesses students on their platoon leader/sergeant abilities, communications node siting knowledge, and network monitoring skills.

The Regimental Officer Course/Subject 2 for warrant officer (Advanced Non-Commissioned Officer Course equivalent) is targeted for senior lieutenants, junior captains, and senior sergeants. The ROC/Sub2WO introduces the Joint

Military Appreciation Process (very similar to the MDMP) and focuses on using the process to develop students as battalion and brigade level Joint Task Force CISEW planners. Over the course of five weeks, students are continually exposed to planning scenarios that require them to design communications networks to support operational requirements. In addition to homeland defense scenarios, students plan for non-combatant evacuation and U.N. operations in which the ADF would typically deploy as a coalition partner.

The Regimental Officer Advanced Course/Advanced Warrant Officer CIS Operations Course is a tri-service course targeted at the major and senior NCO levels as a MEL requirement for further promotion. Through reinforcement of the JMAP process and introduction to strategic level organizations, students spend five weeks planning networks at NETCOM, Army CIO/G-6, and combatant command equivalent levels. Workshops on spectrum management and C-IED planning considerations have been recently implemented. This course is akin to the Joint Command, Control, Communications, and Computers Planner's Course conducted in the U.S.

A major challenge for RASigs is that the current training continuum does not include a course to develop personnel assigned as unit S6s. As the ADF increasingly deploys at Battle Group level (e.g. battalion level combat team) on operations, properly trained and experienced S6s will

be critical to achieving connectivity with coalition forces and mission success. In an effort to redress this, RASigs is currently investigating the feasibility of restructuring the ROC into an S6 course that all Signals officers and NCOs would attend.

Equipment

RASigs strives to support the commander's CISEW requirements with extremely limited resources. Without the luxury of controlling a defense owned satellite constellation (i.e. DSCS III, SkyNet 5), RASigs is forced to rely heavily on commercial and coalition networks for long haul communications requirements. In an effort to counter this where possible, the use of single channel CNR and military telecommunications networks to their fullest potential is emphasized. (See Figures 3 and 4.)

CNR:

RASigs currently uses the RAVEN family of radios in the VHF and HF bands as the primary means of voice and data communications from brigade to battalion level. This series of radios is very similar to first generation SINCGARS with external COMSEC devices for encryption and single channel operation. Limited frequency hopping capability in manpack role exists, but is not compatible with current coalition SINCGARS and UK BOWMAN systems. RASigs employs AN/PSC-5 single channel TACSAT where possible, but again must rely on limited coalition DAMA channel space. HF is heavily used as the primary alternate long haul means to satellite. Radio operators spend significant training time learning how to "fight for comms" and develop their confidence in the system.

BTN:

The Battlefield Telecommunications Network, fielded in the early 1990s under Project PARAKEET, is the core system used by ADF in training and operations. Virtually identical to the MSE system, large wideband voice and data networks can be rapidly deployed with LOS radio systems, node center switches,

Figure 3.

and transit case data packages. This system also includes a satellite terminal very similar to the AN/TSC-156 Phoenix with X, C, and Ku band access when available. ADF TACSAT terminals typically access commercial Ku satellites from Optus, with the coverage areas primarily limited to Australia and the South Pacific. Additionally, the ADF can access US and UK X band networks through MOUs. The major challenge with the BTN system is scalability, in that wideband trunk communications have limited supportability in extending services down to battle group level.

EW:

RASigs are additionally responsible for providing the ADF's electronic warfare capability, whereas the Military Intelligence branch handles this function in the U.S. Most systems cannot be discussed here due to classification; however, the ADF has considerable electronic surveillance and protection capabilities available and in use on operations. RASigs personnel work at all levels from strategic intelligence analysts to field FP-ECM planners.

Due to limited CIS rotational capacity, the ADF emphasizes the rapid commercialization of its deployed military networks. By replacing its green fleet with a white solution, RASigs can quickly repatriate BTN assets back to Australia for reset and retasking as needed. In supporting operations, the first RASigs unit deployed focuses on rapidly commercializing the tactical network over the course of 6-8 months that remains for follow on forces will operate. This commercial solution provides a significant improvement over BTN in bandwidth for a large subscriber base, but results in limited mobility and flexibility. For small unit and mobile platform C2 requirements (i.e. LNO, SOF, Navy ships), the Australians spend approximately $45 million USD a year on INMARSAT and Iridium transmission mediums.

Culture

Upon initial glance, the Australian Defence Force looks very British in nature. With sergeants-major carrying pace sticks, toasting the Queen at dining nights in the officers' mess, and talk of cricket during morning tea, it is easy to see the English roots and traditions. However,

upon closer observation, one sees a group of "fellow colonials" that have adopted many American systems and are quick to point out that they should not be mistaken for "whinging POMEs" (Prisoners of Mother England).

As mentioned before, RASigs does an excellent job of supporting the commander's C2 requirements around the globe. Providing quality communications support for three Australian operational deployments and training exercises across a country 80 percent the size of the U.S. is a monumental task for a very small corps. With extremely limited resources, RASigs expects expert technical competence and ingenuity from its Soldiers and junior leaders to make the mission happen.

The Australians place considerable emphasis on cooperation and interoperability with their ABCA partners. CISEW planners are instructed on coalition planning considerations and formally assessed on their ability to plan networks that are integrated with these partners. RASigs personnel attend U.S. and UK programs like the Battlefield Spectrum Manager and ASI 1C Satellite Controller Course and are embedded as exchange officers in branch schools and HQs in an effort to ensure commonality in planning and training. Additionally, the ADF routinely looks to its allies' doctrine, equipment systems, and lessons learned to develop training programs and update their TTPs.

Modernization Programs

In an effort to expand to three brigades and continually update technologies through 2016, the ADF developed a large number of equipment acquisition programs worth hundreds of millions of dollars. Through these initiatives, the ADF seeks to upgrade and acquire systems. Several of these programs will directly affect how U.S. and Australian communicators work together in the future.

JP2008 MILSATCOM:

In an effort to improve satellite connectivity over the traditional DSCS MOUs, Australians have invested enormously in the Wideband Global System. The Australian government committed over $900 million USD to build and launch the sixth satellite of the program. In return for this investment, the ADF will be allocated:

• 10 percent power and coverage capacity across the entire constellation

• 95 percent transponder allocation in Australian and South Pacific region

Under this program, the ADF embeds satellite controllers in Wideband SATCOM Control Centers and Regional SATCOM Support Centers around the globe. Additional planners will be stationed in the Global SATCOM Support Center at Peterson AFB, CO and USSTRATCOM HQ.

Land 75/125:

Under this program, the ADF seeks to field a battle group and below command, control, and communications system similar to FBCB2. This battle management system will provide dismounted, mounted, and command post versions of real time situational awareness, electronic battle maps, and combat messaging tools. It has been mandated that this system be compatible with the U.S. Joint Tactical Radio System for interoperability down to Soldier level and envisions using tactical Internet radio systems similar to EPLRS.

Conclusion

RASigs may be a small organization, but it is an extremely competent and close knit group of professionals. Making the best use of resources and talent, RASigs has successfully completed the mission for 90 years and are a coalition partner for the U.S. As modernization proceeds, the U.S. Signal Corps will see a lot more of RASigs from the schoolhouse to the battlefield.

CPT Snawder is the U.S. Exchange Officer to the Australian Defence Force School of Signals in Melbourne, Australia. He serves an instructor in the Advanced Training Wing. Snawder graduated from Virginia Military Institute with a BS in civil engineering.

ACRONYM QUICKSCAN

ABCA – American, British, Canadian, Australian
ADF – Australian Defence Force
AIT – Advanced Individual Training
ANCOC – Advanced Non Commissioned Officer Course
ASI – Additional Skill Identifier
BGC3 – Battle Group and Below Command, Control, and Communications
BNCOC – Basic Non Commissioned Officer Course
BTN – Battlefield Telecommunications Network
C-IED – Counter-Improvised Explosive Device
CIO – Chief Information Officer
CISEW – Communications Information Systems Electronic Warfare
CNR – Combat Net Radio
COMSEC – Communications Security
DAMA – Demand Assigned Multiple Access

DSCS – Defense Satellite Communications System
EPLRS – Enhanced Position Location and Reporting System
FBCB2 – Force XXI Battle Command, Brigade and Below
FCS – Future Combat Systems
FCU – Force Communications Unit
FP-ECM – Force Protection-Electronic Counter Measure
HF – High Frequency
INMARSAT – International Marine/Maritime Satellite
JTRS – Joint Tactical Radio System
LNO – Liaison Officer
LOS – Line-of-Sight
MDMP – Military Decision Making Process
MEL – Military Education Level
MOS – Military Occupational Specialty
MOU – Memorandum of Understanding
MSE – Mobile Subscriber Equipment

NETCOM – Network Enterprise Technology Command
NSA – National Security Agency
POMES – Prisoners of Mother England
RASigs – Royal Australian Corps of Signals
RSS – Regimental Signals Sergeant
SASR – Special Air Services Regiment
SATCOM – Satellite Communications
SINCGARS – Single-Channel Ground-to-Air Radio System
SOF – Special Operations Forces
STEP – Standard Tactical Entry Point
TACSAT – Tactical Satellite
TTPs – Tactics, Techniques, and Procedures
UN – United Nations
U.S. – United States
USD – U.S. Dollar
UK – United Kingdom
VHF – Very High Frequency
WGS – Wideband Global System

Multi-service procurement of AN/PRC-152 marks another milestone in hand-held multi-band radio

By LTC (ret) David M. Fiedler

If the wars in Iraq and Afghanistan and the Global War on Terrorism has proved anything to the Army and the signal community it has to be that good hand-held small unit radio transceivers are critical to command, control, and situational awareness for all types of forces performing all types of missions.

Reports coming back from deployed forces indicate that those equipped with good military hand-held communications are much more successful in accomplishing their missions, inflicting damage on the enemy, preventing security compromises, and avoiding fratricide than forces equipped with other less capable military or commercial types of hand-held radios.

A significant step forward in the long saga of United States Army hand-held radio development (see *Army Communicator* Summer 2005) has recently been taken with the development and tri-service fielding of the AN/PRC-152 multi-mode/multi-band hand-held radio (**see Figure 1**). The tri-service procurement of the AN/PRC-152 indicates that the radio is an excellent hardware platform for the software needed to generate the modern waveforms that ride the radio spectrum and make combat communications in all services function. The software communications architecture of the AN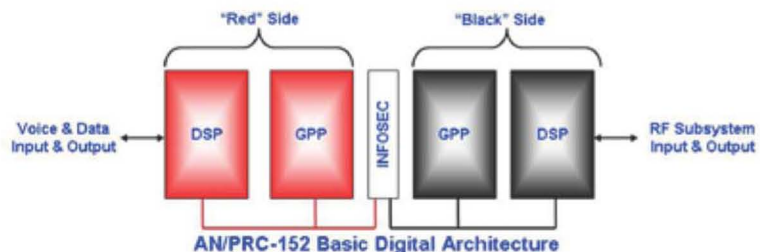/PRC-152 is already compliant with that of the eagerly anticipated Joint Tactical Radio System now being developed to meet tri-service requirements including the needs of the Army's much heralded future combat system. To meet JTRS requirements, the AN/PRC-152 contains excellent separate general-purpose digital processors and digital signal processors for both encrypted and clear voice and data communications. In fact, the AN/PRC-152 is the only hand-held small unit transceiver in production that includes separate covered and clear (red and black) general-purpose processors (**see Figure 2**).

By using this approach, the useful life of the radio is extended well into the FCS timeframe since the radio hardware will more easily accept advanced communications waveforms as they are developed. This software controlled approach also cuts the time and costs associ-

Figure 1. AN/PRC – 152 Multi-Band handheld radio is shown. AN/PRC-152 Multi-Mode Multi-Band hand-held radio is also selected as part of the Consolidated Interim Single-Channel Hand-held Radio family.

Future Waveform Support

"Red" Side   "Black" Side

Voice & Data Input & Output → DSP — GPP — INFOSEC — GPP — DSP → RF Subsystem Input & Output

AN/PRC-152 Basic Digital Architecture

- The black-side general purpose processor (GPP) is the key to JTRS library waveform support
  - All JPO library waveforms assume there is a black-side GPP
  - Without the black-side GPP:
    - Waveform porting is much more difficult, increasing cost & schedule
    - For waveforms with intensive black-side protocols, porting may not be possible

Figure 2. Future waveform support

ated with "porting" new waveforms on to the existing radio hardware platform.

Capabilities of AN/PRC-152 hand-held radio now being delivered to all services include:

- 30-512 MHz VHF/UHF radio hardware/platform

- 5 watt transmitter with 10 watt "burst" mode for UHF-SATCOM

- VHF/UHF AM and FM for tactical, aviation, maritime, civil, and coalition band operations

- SINCGARS tactical VHF waveforms compatible with current tactical radios

- HAVEQUICK I&II UHF waveforms for ground to air communications in ECCM modes currently in use

- The capability to interoperate with existing multi-service, coalition, and civil military radio systems

- MIL-STD-188-181B waveforms (including ANDVT voice) compatible with tactical radios using these waveforms

- high performance digital waveform software capable of sending error free data at rates up to 56kbs for applications such as a Local Area Network, sensor-to-shooter data links, and TOC-to-TOC data communications. The same 56kbs data rate is maintained through SATCOM for beyond line-of-sight communications

- NSA certified Type-1 encryption using Sierra-II technology and standard fill devices. COMSEC modes include KY-57, ANDVT, KYV-5, and KG-84C.

- built in GPS (optional)

- night-vision compatible alphanumeric keypad and LCD display

- internal speaker and microphone

The AN/PRC-152 hardware is self contained in a rugged 9.6 × 2.9 × 1.7 inch box weighing 2.4 pounds that passes MIL-STD-810F environmental requirements. Each radio comes with a VHF tactical band (30-88Mhz) vertical whip type antenna and a wideband VHF/UHF (30-512Mhz) antenna. For operation on frequencies below 90 Mhz the longer more efficient VHF antenna is highly recommended. In addition for units using the AN/PRC-152 for mobile satellite (SATCOM) applications a 21 inch vertical UHF antenna (see Figure 3) is also available. The SATCOM antenna will support burst power levels of 10 watts to aid in seizing the SATCOM channel. The radio, as deployed, comes with a rechargeable lithium ion battery capable of powering the radio for eight hours of normal operations (with a 6:3:1: receive/standby/transmit ratio). Standard Army handsets like the H-250 and other audio accessories are compatible and can be used with the radio to augment the built-in speaker/microphone but are not provided with the radio.

The radio hardware and software as now provided to all services can produce all of the significant tri-service tactical communications waveforms currently in use across the VHF/UHF (30-512MHz) tactical frequency spectrum. The military waveforms now supplied include classic ground-to-air (AM/FM) for LOS communications, SINCGARS both with and without ECCM (frequency hopping) protection, USAF standard HAVEQUICK I&II ECCM waveforms, and MIL-STD-188-181B with narrow band voice. In addition the AN/PRC-152 has a high performance waveform capability that can provide 56+ kbs data communications using both LOS and TACSAT (BLOS) transmission media.

The AN/PRC-152s HPW is fully interoperable with the popular HPW contained in the AN/PRC-117F man-pack radio that is widely fielded and used to send images and critical mission data over both LOS and TACSAT systems. This capability makes the AN/PRC-152 suitable for military applications such as "data hauling" between tactical operations centers, speeding up the tactical internet, local area networks, sensor to shooter data links, and situational awareness systems. Beyond these features, the addition of an optional embedded GPS receiver can turn the AN/PRC-152 into its own

RF-3163 SATCOM Antenna

- Mobile SATCOM (SOTM) applications
  - Geography Dependent
  - NB SATCOM
- Flexible gooseneck design
- TNC base attaches directly to radio
- Minimum peak gain: 0 dBi
- Supports 10 Watt burst mode
- Critical Dimensions
  - Overall length 20.68 inches
  - Largest Diameter 1.38 inches
- Available on a case-by-case basis

Figure 3. RF-3163 SATCOM Antenna

independent situation awareness system for small unit missions that can reduce the type of fratricide that has plagued the Army for decades. Also available are several digital voice modes including Mixed Excitation Linear Processing digital coding software that can improve by several orders of magnitude voice and data performance under degraded, high noise, or jamming conditions.

Recent domestic emergencies such as Hurricane Katrina, have again uncovered the serious consequences that result in not having a civil-military radio communications interface capability present at the military's lowest tactical levels. The AN/PRC-152 removes the communications roadblock between civil agencies and military forces engaged in civil support missions by incorporating the Association of Public Safety Communications Officials – Project 25 waveform into its software library.

By incorporating the APCO-P25 capability into the military radio deployed forces can create a seamless interconnection with first responding civil agencies virtually all of whom use widely distributed APCO-P25 capable radios. Since the AN/PRC-152 is a true software defined radio and APCO-P25 is a set of industry standards designed for public service digital radios this many decades old interoperability problem was solved in software both quickly and cheaply.

Deployed military and civil forces can now exchange digital radio packet information on either 6.25 or 12.50 KHz channels between both individuals and address groups if the military force is equipped with the AN/PRC-152. The need for dual band repeaters, expensive cross band interfaces, liaison parties with two types of radios, or equipment swapping among forces etc is now removed saving time, people, and money. National Guard units who are habitually involved in civil support missions should particularly appreciate this capability of the AN/PRC-152.

As with the APCO-P25 waveform, the Collection of Broadcasts from Remote Assets waveform is also in the AN/PRC-152 library but not yet fully implemented. The COBRA waveform is used for special communications, combat search and rescue, blue force tracking/situational awareness, and combat survivor evader locator communications missions. COBRA implementation has begun with use of the beacon transmitter function. When fully implemented, AN/PRC-152 will be fully interoperable with or could replace air crew type COBRA radios in the future force.

A key component of the AN/PRC-152 is its software controlled, programmable, NSA Type-1 certified COMSEC. The use of this type of COMSEC in this small unit transceiver removes the danger of enemy intercepted communications that was a distinct possibility when a less capable SUT is provided. In addition as new COMSEC software algorithms are developed to meet FCS or other requirements or to thwart new threats they can be easily added without hardware modifications that have been so difficult to accomplish in the past.

The Sierra – II hardware used in the AN/PRC-152 was developed with JTRS requirements in mind.

The Sierra – II chip-set, can be scaled up from battery powered radios like the AN/PRC-152 to cover large scale high speed systems. In order to provide lower battery power consumption and higher data throughput a combination of software and hardware "accelerators" are used in the AN/PRC-152. The AN/PRC-152 hardware provides much more power efficiency a critical factor for a battery powered hand-held SUT.

The COMSEC portion of the radio provides "on chip" power management with the ability to turn off COMSEC subsystems when not required. A "scalable clock" is also provided for software synchronization. This clock allows the COMSEC and the waveform selected to operate at a matched speed selected for the best transmission throughput. The COMSEC provided meets the requirements for the NSA COMSEC modernization program and is certified for use with up to top secret level voice and data traffic. AN/PRC-152 COMSEC fully meets both Army and Department of Department COMSEC policy requirements for covered tactical communications at all levels of classification.

Another advantage of the AN/PRC-152 is its ability to both inter-

Figure 4. Product family interoperability

operate with and/or replace a huge assortment of legacy equipment that will have to remain in the force for the foreseeable future (see Figure 4).

Because of its wide frequency spectrum, and its ability to accommodate a large variety of waveforms and modulation schemes, a very short list of common compatible/replaceable legacy equipment would include: SINCGARS and AN/PRC-126 VHF tactical radios, AN/PRC-117F and AN/PSC-5 UHF/TACSAT radios, AN/PRC-113 UHF aircraft band radios, AN/PRC-112 air crew survival radios, AN/PRC-148 tactical radios, all marine band radios. Interoperability with these radios includes end to end communications security since the AN/PRC-152 can operate in the KY-57 (VINSON), KG-84C, and ANDVT secure modes as required. COMSEC compatibility even extends to APCO-P25 civil agency users since the AN/PRC-152 is able to generate digital encryption standard covered communications used by commercial civil agency radios.

The Soldier/machine interface is another positive feature of the AN/PRC-152 (see Figure 1). The radio has a full keypad and display making the control of the radio easy. The keypad/display/menu system is identical to that of the widely used and popular AN/PRC-117F man-pack radio which helps to simplify training. In addition, the radio has been designed to take advantage of many existing proved and Soldier accepted ancillaries. The battery, audio, and antenna connectors all accept Soldier proved "standard issue" hardware. This approach not only lowered costs and reduced development time, but also reduces the logistics burden generated by the introduction of a new radio at the operational unit level.

Experience has proved that no matter how good a SUT such as the AN/PRC-152 is there are occasions where gains achieved by superior digital signal processing capability cannot make up for the lack of brute radio frequency output power, or losses due to inefficient (small) antennas. For these situations, the

services are procuring the AN/VRC-110 system which is a dual radio vehicular version of the AN/PRC-152 (see Figure 5). The main components of the AN/VRC-110 are two AN/PRC-152 radios fitted to a high performance vehicular amplifier adaptor which in turn mounts on a standard SINCGARS mount (MT-6352) and installation kit. This configuration can also be used as a base station if required by adding an appropriate antenna and 24 volt power supply.

The VAA using the AN/PRC-152 as the receiver/exciter provides two 50 watt (adjustable) channels in the 30-90MHz frequency range thus making it the equivalent to the high power (50 watt) SINCGARS configuration. While current Army policy stops here and considers the AN/VRC-110 merely a radio capable of making up shortfalls in SINCGARS production numbers it is really much more. For example, since the receiver/exciters are fully functional AN/PRC-152s they can operate as hand-held "jerk and run" radios. This means that Soldiers exiting a vehicle or base station just need to connect an antenna to retain

full communications capability in the hand-held mode. Searching for a backpack, battery, and handset etc. for dismounted operations is no longer required since they are integral to the radio. The VAA provides power for the mounted radios while at the same time charging the hand-held radio batteries.

Power circuits in the VAA allow the hand-held radios to be dismounted with power on so that network communications can be maintained during "jerk and run" situations such as dismounting for patrol type operations. Modern internal co-location filtering allows the dual mount AN/VRC-110 to be used in both relay vehicles and retransmission sites with far less mutual interference than present equipment.

Replacing SINCGARS at these types of locations is very easy since the VAA fits on an already existing SINCGARS installation kit. Due to the superior filtering of the AN/VRC-110, a reduction in co-site interference is achieved that will result in more distance and area coverage than would otherwise be the case. For frequencies above 90Mhz RF power levels of five or 20 watts are

Figure 5. AN/VRC-110 consisting of 2 AN/PRC-152s on a dual vehicular mount. Frequency range 30-512MHz, maximum power out 50 watts.

provided internal to the VAA. These power levels are normally sufficient for use in ground-to-air, marine band, civil military, and coalition tactical communications missions and are also more than adequate for closing UHF TACSAT links. If different power levels are needed external power amplifiers can be inserted into the output path to boost signal power levels and the AN/PRC-152 will provide the receiver/exciter functions to the external amplifiers.

In order to optimize performance in both the VHF (30-90Mhz) and UHF (90-512Mhz) frequency bands specifically designed independent antennas are required. In order to accommodate these more efficient antennas the AN/VRC-110 uses a unique two port per each radio (one for VHF one for UHF total of four for the dual system) automatic antenna port switching system. All the operator need do when changing frequency bands to meet mission requirements is to select the desired frequency on the mounted AN/PRC-152. The VAA will then feed the signal automatically to the cor-

rect output port and its associated optimized antenna. It is true that using this optimized antenna design requires four antennas to use the full capability of both radios.

The use of four antennas can cause serious co-site interference problems and the mounting of the antennas particularly on small platforms can be a real challenge. To alleviate this problem users are procuring two port "stacked array" antennas that vertically package a 30-90 Mhz antenna under a 90-512Mhz antenna **(see Figure 6)**. This type antenna array is omni-directional with the maximum efficiency toward the horizon. Antenna length is about 75 inches. Voltage Standing Wave Ratio does not exceed 3:1 at any frequency. Antenna gain ranges from -7 to 0dbi (VHF), to 0 to +3dbi (UHF). Isolation between array components exceeds 32db which make simultaneous operation in both bands off one array possible if the operator wishes to dedicate one AN/PRC-152 to VHF and one to UHF and use a single antenna structure.

Because the AN/PRC-152 and

the AN/VRC-110 were engineered with present and future network versatility in mind, typical tactical voice networks like the one shown **(in Figure 7)** can be built by S-6s and G-6s at any level of command. Further, since the equipment uses identical self-contained hardware and software (waveforms) everywhere, commanders can be physically located at any echelon on the battlefield and still retain their ability to seamlessly communicate to anywhere else on the battlefield. If a commander is forced to dismount or abandon a command vehicle, and takes the AN/PRC-152 with him/her the ability to command and control may be reduced since data systems like EPLRS and FBCB2 must be left behind and less efficient antennas may be used but it is not lost. Digital-voice Soldier communications remain active as long as the Soldier lives and the radio functions.

Moving from a command vehicle to a vehicle with a AN/VRC-110 aboard similarly preserves the ability to command and control. If the vehicle that a commander had to relocate to only had a SINCGARS capability (which is all too common) then the commander would be restricted to the capability of the SINCGARS. That is line-of-sight military VHF frequency band communications band ONLY.

The presence of an AN/PRC-152/VRC-110 gives the commander many more options including beyond line-of-sight communications (via TACSAT), ground-to-air communications (via UHF) and civil-military communications (via APCO-P25) In addition to SINCGARS! This should be borne in mind by those who see the AN/PRC-152 as merely a replacement for an AN/PRC-126 or various commercial hand held radios now being used.

This scenario really needs to be considered in the case of the AN/VRC-110 since the army unfortunately is currently only providing SINCGARS band antennas with the equipment. Providing an antenna only capable of operating in the 30-88Mhz frequency range to a radio that operates across the full
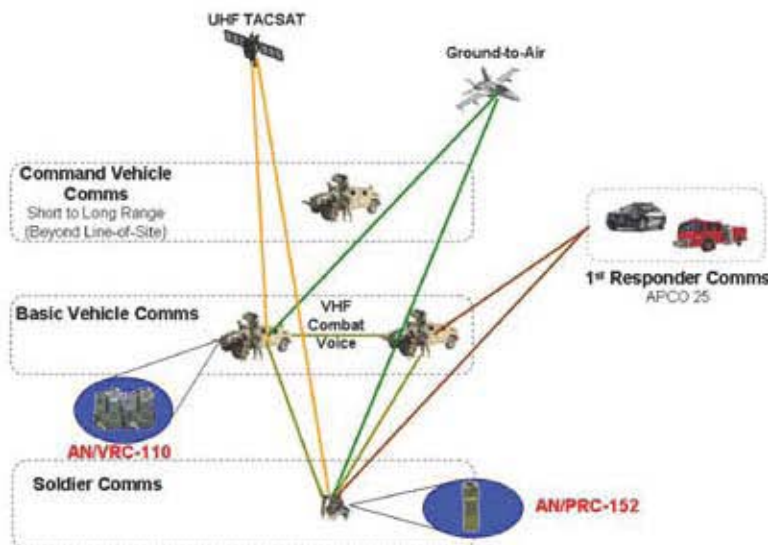

Multiband Multimission Versatility

Figure 6. Dual port 30-512MHz vehicular antenna. Port 1 (30-88MHz) for use with SINCGARS type radios, port 2 (88-512MHz) for other VHF/UHF radios. Antenna can also be configured as a 30-512MHz broadband single port antenna by using a "diplexer" network for radio sets with a single antenna output port.

30-512Mhz frequency band is ill advised to say the least. It is even a little embarrassing since other services are using antenna configurations that use the entire available radio spectrum. Let us not shoot ourselves in the foot before the battle starts.

The AN/PRC-152 has been tested by the Joint Program Executive Office of the Joint Tactical Radio System and is certified as compliant with the JTRS Software Configuration Architecture. By Department of Defense directive, all future JTRS radios must use the SCA software operating environment to run the radios waveforms to be considered a part of the JTRS "family" of equipment. This makes the AN/PRC-152 one of the first widely fielded multi-service procured radio to have been certified as SCA compliant. At the same time, the National Security Agency has certified the AN/PRC-152s COMSEC as Type-1 software programmable encryption compatible with the NSA COMSEC modernization program. This means, that equipment meeting JTRS and NSA standards (20,000 AN/PRC-152 radios by summer 2007) is being fielded early.

In short, the AN/PRC-152 while strictly a commercial development has been a great win for the Army. It is bringing better capabilities to the warfighter sooner, without development, at a reasonable cost and at least in theory, since it is software defined it can never become obsolete. This will be a most welcome addition to the Army's future tactical communications capabilities. In addition, the DoD has

recently announced that the AN/PRC-152 has been selected as part of the Consolidated Interim Single-Channel Handheld Radio program intended to bridge the gap between today's radios and the JTRS. This will assure a long and useful service life for the AN/PRC-152 and marks the next step in hand-held radio development.

LTC (Ret) Fiedler is a former-Signal Corps lieutenant colonel and a retired senior Department of the Army electronics engineer. His past engineering assignments include service with the Army Avionics, Electronic Warfare, and Combat Surveillance and Target Acquisition Laboratories. He has also served as an engineer with the Army Communications Systems Agency, PM-MSE, PM-SINCGARS, PM-ASAS, PM-MCS, the Joint Tactical Fusion Program and the PEO-C3S. Commissioned into the Signal Corps in 1968 after graduation from the Pennsylvania Military College (now Widener University) he is a combat veteran of Vietnam and has served in Signal, Infantry, and Armor units in all components of the Army. He holds degrees in both physics and engineering and a master's degree in industrial management. Fiedler is the author of many articles in the fields of combat communications and electronic warfare. His last government assignment was as the Project Director-Commercial Tactical Radio Procurement for the PM-Tactical Radio Communications Systems at Fort Monmouth. Fiedler now works as a technical consultant to large and small business in the fields of civil and military communications and as a training consultant.

TCM update

TCM-TR

FIRST STEP TOWARD 'SOLDIER IN THE NETWORK'

By Joseph Bailey and COL John K. Dewey

Rifleman Radio is the first step towards Soldier in the network. It provides affordable intra-squad, protected, command and control voice communications in doctrinal voice networks with automatic transmission of position location information to leaders.

Squads should benefit operationally from increased speed of maneuver, reduced exposure to the enemy, and reduced risk of potential fratricide. The underlying advantage that this radio network promotes is the ability for squad and team leaders to make better, quicker decisions because of improved situational awareness in complex terrain.

The resulting battlefield effects are impressive. Squads are able to employ much bolder and more sophisticated tactics to attack identified threats decisively. Team movement distances are increased while halts are minimized, and movement location options are improved. While out of visual or shouting distance, leaders can more confidently coordinate fire and maneuver and make more accurate and timely decisions. Leaders can more efficiently synchronize fire and maneuver in complex terrain. Soldiers can communicate with leaders to conduct individual movement techniques when they would otherwise be out of contact.

Rifleman Radio will be employed worldwide in both hostile and non-hostile environments, and in a variety of terrain and climatic conditions. The radio leverages the Joint Tactical Radio System Soldier Radio Waveform. The physical environment where Soldiers operate is one our most significant communications challenges. Our greatest mitigation of physics is to use radio networking waveforms that enable single radio frequency line-of-sight connections to automatically relay radio transmissions to all other radios within LOS. The result of this attribute is a network of radios exchanging voice communications and PLI defeating the physical constraints of direct, point-to-point, LOS radios. In other words, every radio acts as a network node, and if a LOS connection exists to one radio in the network, then communications are established with all radios in the network.

The recent operational success of Land Warrior and its Enhanced Position Location Radio System-based network have further solidified the need to bring dismounted Soldiers into the network. The current LW, which has a basis of issue that stops at the squad leader, uses EPLRS as its transport. The RR will augment LW to bring the rest of the Soldiers into a network. To accomplish this, the squad leader will carry two radios; the EPLRS-based radio for the classified domain and RR for the controlled, unclassified information domain. This will provide the squad leader the ability to communicate with the platoon leadership in the classified network and his squad in the unclassified network. The squad member's individual PLI that is automatically generated by the RR will provide the Squad leader better situational awareness. A non-LW unit will have the option for leaders to communicate on SINCGARS for classified traffic and RR for CUI.

RR can be integrated into modular and future force architectures. In a Ground Soldier System equipped unit, the squad leader carries a two-channel radio. The squad leader uses one channel to communicate to the platoon leader on a classified network. He uses the other channel to communicate to his squad members on an unclassified network. The two-channel radio is the Small Form Fit B (SFF-B), a JTRS Handheld, Manpack, Small Form Fit product designed to be embedded in the Ground Soldier Ensemble as part of GSS. Non-GSS units will also require two channels to communicate in both security domains.

RR is in the final stages to be certified by the National Security Agency as a Type-2 controlled unclassified information voice and PLI communications radio. RR is integral to the JTRS ground domain and is being developed within the HMS program. RR is a stand-alone version of the JTRS Ground Domain HMS Small Form Factor C radio that can be attached and operated with GSS as an embedded radio.

Although the first iteration of the RR will operate as a self-contained network, the employment of the radio represents the Army's commitment to support a knowledge-empowered, joint force capable of decentralized operations through improved information sharing, collaboration, and situational awareness.

On Aug. 15, 2008 the Army Requirements Oversight Council validated and released the RR Capability Production Document to the Joint Requirements Oversight Council for review, staffing and approval. This validation occurred after Headquarters, Training and Doctrine Command validated and released the RR CPD for AROC staffing on March 21, 2008.

In August 2008 the RR CPD was reviewed and staffed at the JROC level as part of the Joint Capabilities Integration and Development System validation and approval process. The release of the RR CPD for JROC validation and approval is a critical step in the JCIDS process as it places the document at the final stages of the staffing process in preparation for a Milestone C decision. RR Milestone C decision is currently set for June 2009 with Initial Operational Capability achieved in Fiscal Year 2010.

The Army will receive RR engineering development models this year. In November 2008, the JTRS Ground Domain HMS program delivers 40 EDM RR to the Army Evaluation Task Force, Fort Bliss, Texas, to conduct a program-led usability study prior to the formal limited user test scheduled for April 2009. Radio performance is expected to advance as the waveform improves.

Following a successful LUT, low rate initial production deliveries begin in fourth quarter 2009 followed by the Initial Operational Capability. The RR achieves IOC in 2QFY10 when a Brigade Combat Team is equipped, trained, passes an operational test, and becomes logistically supportable. The RR achieves Full Operational Capability when the units in a given, Army Force Generation, reset cycle are equipped and trained.

RR is designed to be replaced every three to five years; new versions of RR will be developed and fielded to take advantage of emerging technologies. RR is part of an evolutionary acquisition approach to develop and field improved radio communications throughout its lifecycle. The strategy is to provide enhancements to support emerging joint warfighter operational concepts as technologies become available. Updated versions of the RR will be based upon an attribute's technology readiness, available funding, and/or schedule constraints. We project the next version of RR uses improved battery life, reduced cost with the

goal of a disposable radio, while maintaining current size and weight constraints. Operational feedback will refine future radio attributes.

The Joint Tactical Radio System has moved a few steps closer to delivering its first networking radio to the force. The current version of RR is a software defined radio with SRW. Delivery of Rifleman Radio represents the initial move to connect dismounted Soldiers on the battlefield in a net-centric way that supports the Department of Defense's movement toward network-centric operations and warfare at all tactical levels.

Currently, Infantry Soldiers and their leaders are operating as part of a networked-enabled force but do not have the resources to conduct operations as part of that force. The lack of intra-squad communications and situational awareness is a significant gap within the BCT. Rifleman radio represents a significant step forward in filling that gap by providing them a communications networking capability.

Mr. Bailey, senior systems engineer, is the TRADOC Capability Manager for tactical radios, with the U.S. Army Signal Center and Fort Gordon.

COL Dewey is the TRADOC

Capability Manager for tactical radios, with the U.S. Army Signal Center and Fort Gordon.

ACRONYM QUICKSCAN

AETF – Army Evaluation Task Force
ARFORGEN – Army Force Generation
AROC – Army Requirements Oversight Council
BCT – Brigade Combat Team
CPD – Capability Production Document
CUI – unclassified information
DoD – Department of Defense
EDM – engineering development models
EPLRS – Enhanced Position Location Radio System
FOC – Full Operational Capability
FY – Fiscal Year
GSS – Ground Soldier System
HMS – Handheld, Manpack, Small Form Fit
IOC – Initial Operational Capability
JCIDS – Joint Capabilities Integration and Development System
JROC – Joint Requirements Oversight Council
JTRS – Joint Tactical Radio System
LOS – line-of-sight
LRIP – Low rate initial production
LUT – limited user test
LW – Land Warrior
NSA – National Security Agency
PLI – position location information
RR – rifleman radio
SFF B – Small Form Factor B
SFF C – Small Form Factor C
SRW – Soldier Radio Waveform
TRADOC – Training and Doctrine Command

TCM-SNE

STATE-OF-THE-ART WIDEBAND MILITARY SATELLITE COMMUNICATIONS SPECTRUM MONITORING ARRIVES

By Frank Stein

Wideband Military Satellite Communication spectrum monitoring came into the 21st century with fielding of WGS Monitoring System for the Wideband SATCOM Operations Centers located at Camp Roberts, Calif.; Fort Buckner, Okinawa; Fort Meade, Md.; Fort

Detrick; and Landstuhl, Germany. Additional WGSMS systems will be fielded at Fort Monmouth, N.J., for testing; and Fort Gordon, Ga., for training. Once fielded, the WGSMS will be capable of monitoring the entire Defense Satellite Communications System, and the Wideband Global SATCOM constellations.

WGSMS is a state-of-the-art Digital Signal Processor-based monitoring device that is specifically tailored to provide an enhanced spectrum monitoring capability for the WGS and DSCS satellites. The newly launched WGS-1 satellite brings new spectrum monitoring challenges that legacy equipment can no longer

adequately support. WGS with its diverse payload flexibility requires a unique approach to spectrum monitoring and the WGSMS accommodates those unique requirements. WGSMS is a powerful, versatile satellite spectrum monitoring system providing the network operator with automated and operator-controlled measurement tools for monitoring and troubleshooting satellite network traffic. WGSMS will orchestrate satellite accesses and de-accesses, transponder power balancing, and satellite and earth terminal anomaly resolution activities.

With the fielding of the WGSMS, controllers in the Wideband SATCOM Operations Center can now perform advanced spectrum monitoring functions due to the addition of time domain measurements. The addition of time domain information allows the controllers to verify the modulation and coding of the SATCOM carriers under their control through the WGSMS signal characterization function. WGSMS also allows the controller to perform both short- and long-term trend analyses of archived performance metrics to assess the overall performance of the satellite and communications links traversing it. WGSMS will also incorporate the Remote Access System, a web-like, remote-access capability that allows managers at multiple sites to access and view results from the monitoring operations at any WSOC.

In summary, WGSMS can measure carrier parameters, verify carrier measurements, extract carrier modulation parameters, run carrier diagnostics, and measure satellite channel performance. It will also provide synchronized monitoring of the WGS, generate alarms for the out-of-tolerance conditions and unauthorized accesses, missing carriers, save measurements and power spectra for retrieval and analysis, assist operators with traffic maintenance and troubleshooting, and assist net operations.

Mr. Stein is employed by DRS Technology and provides contract sup-

port to the Program Manager, Defense Communications and Transmissions Systems and the TRADOC Capabilities Manager for Satellite Communications and Network Extension. Stein can be contacted at frank. stein@us.army.mil or DSN 780-7903.

TCM-N&S

By MAJ Russ Hernandez and Doug Kuehl

WIN-T Increment 1a systems participated in an Initial Operational Test and Evaluation from Oct. 20-30, 2008. Increment 1a is the former Joint Network Node system which now consists of modular components and also includes both Ku- and Ka-satellite communications capability. The primary objectives of the IOTE are to provide data to assess the systems operational effectiveness, operational suitability, and operational survivability. This test ensures lessons learned are incorporated into the system and also supports Full Rate Production and Materiel Release decisions.

The test units involved in the IOTE include I Corps, 1st Cavalry

Division, and 5/2 Infantry Division Stryker Brigade Combat Team at Fort Lewis. The Fort Gordon Network Service Center – Training hub will also participate by replicating a Fixed Regional Hub during the test.

The unit's New Equipment Training began in June and concluded in September. During this NET period the Signal Center Directorate of Training verifed the contractor's training materiel and observed the quality of training Soldiers are receiving.

MAJ Hernandez and Mr. Kuehl are acquisition representatives at the United States Army Signal Center in support of WIN-T Increment 1 at Fort Gordon.

LandWarNet Update

LandWarNet-eUniversity and LandWarNet-eUniversity Signal: Regiment's resource for training

By staff members of LandWarNet e-University

The LWN-eU portal, https:// lwn.army.mil , provides essential LWN network training to nonsignal Soldiers who touch the network. It is the self-development portal for Soldiers and Leaders to access training, training support materials, simulations, reference material, forums, and news and information. It provides relevant LWN content to the Total Force for applications, services, and transport. The LWN-eU Signal portal, https://lwneusignal. army.mil, is the central home for the Signal Regiment's training needs. It provides access to online courses, electronic training materials, and collaborative discussion with peers and subject matter experts. The LWN-eU and LWN- eU Signal portals currently provide training platforms for online training materials supporting resident training, unit universities, Army Force Generation, In-Theater Sustainment training, Mobile Training Teams, and United States Army Reserve/Army National Guard military occupational skill qualification training. Approximately 20,000 Soldiers in resident and nonresident training environments used the LWN-eU and LWN-eU Signal portals during 3rd quarter fiscal year 2008.

LWNeU Unit Universities offer customized training for your unit's specific training requirements

One of the main functions of LWN-eU is to work directly with unit training staffs to identify training requirements and deliver
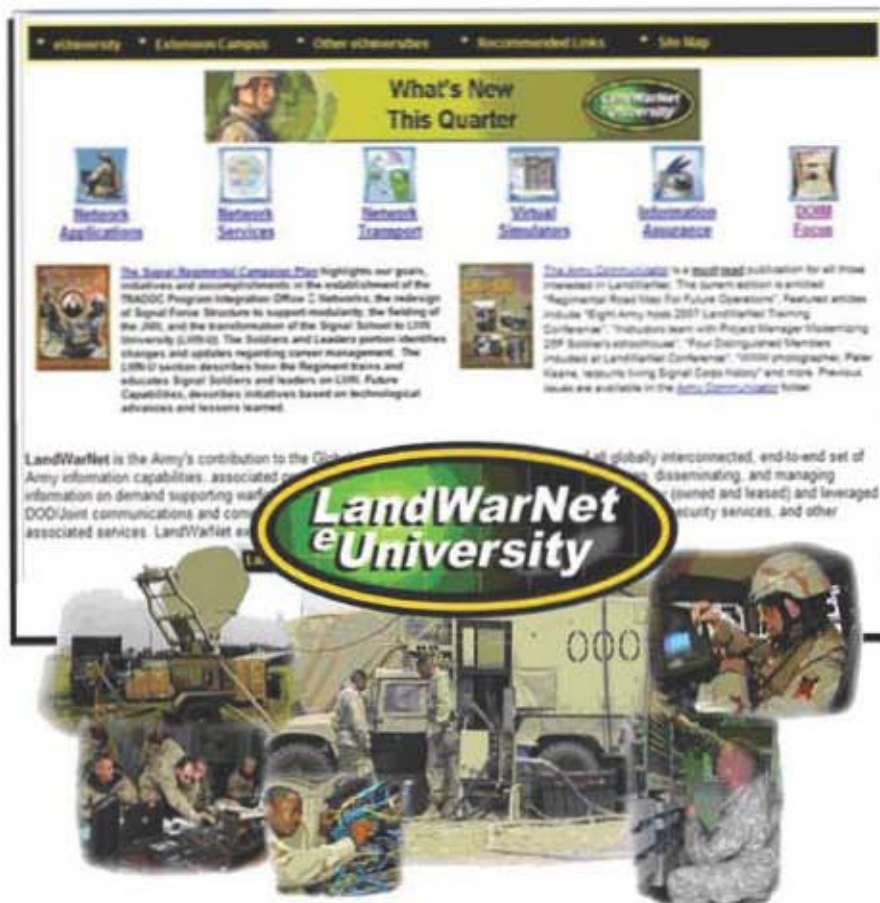
training resources for mission, predeployment, equipment and sustainment support. Whether it is Signal military occupational specialty specific training, common user Signal and Information Technology training, or Battle Command training – LWN-eU has a wealth of training resources available and stored in one convenient area.

Examples of included training in our unit universities are the Joint Network Node Electronic Quick Reference Guide; Simple Key Loader Web-based training; Phoenix (AN/ TSC-156A) simulation; and links to Command Post of the Future, Army Battle Command System and Force Battle Command Brigade and Below Blue Force Tracker training.

We are also actively support-

ing Army Directorates of Information Management and their staffs by providing a platform where each DOIM can access a variety of training resources to support their missions. Current DOIM training examples include: CISCO Certified Network Associate training, Voice over Internet Protocol training, and links to Spectrum Management, Power Steering, and Lean Six Sigma training.

What is a Unit University?

A Unit University is a customizable website used to provide commanders, training staffs, and Soldiers with access to the most upto-date training and training products for their unit missions. Unit

month for training.

Recent Unit University additions to the LWN-eU Extension Campus include: XVIII Airborne Corps, 11th Signal Brigade, 316th Sustainment Command (Exp), 4th ID, 295th Signal Network Support Company, 501st Sustainment Brigade (Korea), 3D Infantry Division G-6 (Iraq), C Co 1st BCT 10th Mountain Division, and the 7th Signal Company RTO Academy, LSA Adder, Iraq. Unit universities can deliver training that cannot be obtained locally to forces in ARFORGEN reset, sustainment, or deployed in Theaters of Operation. Individual Soldiers with a valid Army Knowledge Online account can access their Unit University anywhere they can connect to the Internet.

Can you add locally created unit training to your Unit University?

Yes, many units also use their unit universities to host unit-created training, information briefs, and command briefs.

How long does it take to build a Unit University page for my unit?

Your Unit University can be fully loaded with training and operational within three days.

Five reasons why your unit needs a Unit University:

1. Availability: The training is available to your unit and Soldiers regardless of their location. Soldiers can train at home station, in a theater of operations, at their residence, or anywhere there is access to the internet.

2. Training cost reduction: No need to spend manpower or funds to stand up and manage a separate IT training system for your unit – there are no unit costs for LWN-eU unit universities.

3. Reduction in training planning time: Fort Gordon's LLC staff locates, organizes, and loads your unit's requested training content. Unit universities allow your training staff to focus on training the unit – not on how/where to get training material.

universities provide direct access to Training and Doctrine Command approved MOS training, downloadable training products (computer-based training), simulators, Interactive Multimedia Instruction products), and current links to other available training sites.

What kind of training is available?

Unit universities provide your training staff and Soldiers with direct access to the same course training materials, presentations, and documents used in the Signal Center's resident school training environment. Also available to your Unit University is the LWN-eU Signal knowledge repository, which is a current collection of over 600 downloadable products organized in 47 separate learning areas including 32 high-end simulators, 100 CBT products, signal technical and professional documents, presentations, and manuals. The LWN-eU Signal knowledge repository also provides the Regiment with an upload capability for Soldiers to upload local and unit-developed training content to share across the Regiment.

Examples of training content that can be immediately loaded onto a Unit University range from typical 25B tasks in IT and networking to installing, operating, and maintaining a JNN. All training content posted comes from resident course programs of instruction at Fort Gordon. In addition to the training content developed by Fort Gordon, the Lifelong Learning Center staff can link your Unit University directly to the most current sources of training for Battle Command Systems such as ABCS, All Source Analysis System, Battle Command Sustainment Support System and CPOF as well as Logistics Information Systems that include Movement Tracking System, Property Book and Unit Supply-Enhanced, standard Army ammunition System-modernization, and Standard Army Maintenance System-Enhanced.

Who's using the LWN Portals and Unit Universities?

Currently there are over 135 units with more than 4,000 registered Soldiers receiving Signal training via their own customized Unit University. Unit University sizes range from brigades to squads. In total, over 8,500 Soldiers used the LWN-eU training portals each

25B (All Skill Levels) July 2009 Refresher Training (PC-based Simulator)

S6 Staff Simulation (PC-based 25A, FA53, 250N, 254A, March 2009 Simulation)
25U50

To find out more information about becoming a target audience volunteer for one of the IMI products above or to register to become a target audience volunteer, contact Bennita Freeman; chief, Distance Education Branch, UIT Division, DOT; bennita.freeman@us.army.mil, DSN 780-2303 or commercial (706) 791-2303.

State-of-the-art support for Army Force Generation

Interactive multimedia instruction greatly enhances and standardizes instruction for Active Component and Reserve Component units throughout the Force when self-development, sustainment, refresher and remedial training are conducted. The following Virtual/PC-based simulators are available via LWN-eU (https://lwn.army.mil) and LWN-eU Signal (https://lwneusignal.army.mil) web portals to facilitate communications equipment operations training:

Fielded SIMS
1. SSS (V3)
Fielded: June 08
Target Audience 25N10, 25F10

2. Phoenix Upgrades (Alpha Version)
Fielded: Jan. 08
Target Audience 25S

3. Phoenix Upgrades (Bravo Version)
Fielded: January 08
Target Audience 25S

4. JNN Upgrades (Spiral 5-7)
Fielded: December 07
Target Audience 25N

5. STT Upgrades (Spiral 5-7)
Fielded: December 07
Target Audience 25Q, 25S

4. Unit training status monitoring: The Blackboard Learning Content Management System features provide commanders and training managers the tools and ability to monitor, track, and assess training at the unit or individual Soldier level.

5. Relevant training: Unit universities give units and Soldiers a single location to access the most up-to-date training developed by the Signal Center and the Joint Signal community.

For more information on, or to request a Unit University, contact Clark Solomon, LWN-eU Signal Extension Campus Coordinator, clark.solomon@us.army.mil, DSN 780-2571 or commercial (706) 791-2571.

Target audience volunteers needed to evaluate IMI courseware developed for Signal Corps Soldiers prior to fielding/posting to the LWN-eU

The Signal Center Directorate of Training, University of Technology Division is in need of Soldiers at remote locations to volunteer to be target audience members to review and provide feedback on lessons contained in IMI products (interactive courseware and personal computer-based simulators) prior to the final version of the product being fielded as standalone training available in CD-ROM/DVD format or online via LWN-eU. Members of a target audience are Soldiers of a specific MOS who are the intended training audience for the IMI product. During the group trials validation period for IMI, a sample of the target audience is needed to volunteer to complete the lessons as they are developed to ensure instruction will be suitable for the intended audience once fielded.

At this time, the UIT Division is currently in need of target audience volunteers for the following products planned for development during FY09:

IMI Product Title /Target Audience MOS/Skill Level/Fielding Date

Tactical Message System

6. CPN Upgrades (Spiral 5-7)
Fielded: December 07
Target Audience 25B

7. Baseband Upgrades (Spiral 5-7)
Fielded: December 07
Target Audience 25N

8. JNN Upgrades Lot 9 (Spiral 8)
Fielded: December 07
Target Audience 25N, 25B

9. CPN Upgrades Lot 9 (Spiral 8)
Fielded: December 07
Target Audience 25B

10. Baseband Upgrades Lot 9 (Spiral 8)
Fielded: December 07
Target Audience 25N

11. 85/93
Fielded: April 07
Target Audience 25B, C, F, L, P, Q, S, U, W, 250N, 251A, 53A, 25A, LT/CPT

12. SATCOM Hub (Spiral 5-7)
Fielded: March 07
Target Audience 25S

13. Baseband Hub (S2-4)
Fielded: February 06
Target Audience 25N

14. JNN (S1)
Fielded: October 05
Target Audience 25N

15. BN-CPN (S1)
Fielded: October 05
Target Audience 25B

16. KU (S1)
Fielded: October 05
Target Audience 25Q

17. DTOC
Fielded: October 05
Target Audience 25B

18. TIMS (ISYSCON)
Fielded: October 05
Target Audience 25B

19. HCLOS
Fielded October 05
Target Audience 25Q

20. GSC-52
Fielded: January 04
Target Audience 25S

21. BSN
Fielded: October 04
Target Audience 25F, Q, P

22. FBCB2
Fielded: October 03
Target Audience 25U

23. TRC-173
Fielded: November 01
Target Audience 25P, Q

For more information on the status of virtual/PC-based simulator training products, contact Pat Baker, chief, University Information Technology Division, DOT at DSN 780-7445 or commercial at (706) 791-7445.

Signals

WANTED:
TACTICAL SIGNAL NCOs FOR ALTERNATIVE CAREER PATH

By SFC David W. Gillon

Most readers of this article will know by now that our newest military occupational specialty, MOS 25E Electromagnetic Spectrum Manager, is now starting to appear on unit authorization documents. The overwhelming need for a Soldier with this critical skill set enabled the MOS to be approved by Headquarters Department of the Army in an advanced cycle. The Signal Center has done well in recruiting Soldiers for reclassification who were formerly D9s and now in the grade of E7 and E8.

We need your help, however, at the E6 level where this MOS will now be accessed. Some confusion regarding qualifications to reclassify into the MOS and lagging documentation of the new modular force has created a shortage at the staff sergeant rank in MOS 25E.

For the immediate future, the E-7, E-8, and E-9 grades of 25E will maintain personnel levels at or above 100 percent strength, but the E-6s lag far behind. This article provides the details of this opportunity which may even lead to advanced promotion.

MOS 25E was created Jan. 22, 2007, and Human Resources Command began to reclassify Signal non-commissioned oficers into the MOS in May 2007. Requests for reclass were sought from previous Additional Skill Identifier D9 (Battlefield Spectrum Manager) Soldiers. Those who qualified were converted directly to the new MOS. These actions filled the E-7 and E-8 authorizations immediately and provide enough 25Es to support projected

growth at those grades.

The shortage stems from the past prerequisites for ASI D9; Soldiers in the grade of sergeant first class or above, or staff sergeants who were on an approved centralized promotion list for sergeant first class, and who had completed Advanced Non-Commissioned Officers Course. These prerequisites worked for years and provided the force with all the spectrum managers needed to support operations.

Enter Modularity, the autonomous Brigade Combat Team, the Global War on Terrorism, and Operations Iraqi Freedom and Enduring Freedom, with rapid growth in the number of radio frequency emitters on all levels of the battlefield. Before, spectrum management had only occurred at division and above, now it was required at brigade level. The requirement numbers were projected, it became apparent that a new MOS was called for, and MOS 25E was launched. ASI D9 targeted E-7s and above, so very few E-6s were available for conversion. This fact combined with general confusion regarding the MOS qualifications and assignment potential created the current shortfall.

Soldiers who may request reclassification through their Unit Retention NCO to MOS 25E at grade E-6 are: staff sergeants in Signal MOS 25C, 25F, 25L, 25N, 25P, 25Q, 25S, or 25U staff sergeants who have completed Basic Non-Commissioned Officers Course, have less than 10 years time in service, and meet the following additional criteria:

a) ASVAB Minimum 105 in GT and EL.
b) Security clearance of SE CRET with potential to increase level to TOP SECRET.
c) Normal color vision.
d) Physical Profile of 222221.
e) Physical Demand Rating:

Medium.
f) U.S. Citizen.
g) Ability to read, compre hend, and clearly enunciate English.

The 25E authorizations are only now beginning to reflect in units' Modified Tables of Organization and Equipment and Tables of Distribution and Allowances. Continuing modularity and developing technologies will push requirements to lower tactical echelons in the near future. The result is projected to increase the MOS from 162 positions to more than 400. This growth will produce a robust MOS.

25E is an MOS without traditional platoon sergeant, first sergeant, or command sergeant major positions. Soldiers in 25E will only compete against other Soldiers in 25E for promotion to sergeant first class, master sergeant, and sergeant major. Promotions will be based on the tactical and technical expertise of the Soldier rather than their performance in non-technical positions. This will provide more senior NCO promotion opportunities within the 25 Career Management Field.

For more information contact your Unit Retention NCO or Office Chief of Signal Career Manager, SFC David W. Gillon (david-gillon@ conus.army.mil; DSN 780-8192).

SFC Gillon is the career manager for MOS 25C/25E/25F/25N for the Office Chief of Signal, Fort Gordon, Ga.

ACRONYM QUICKSCAN

ASI – Additional Skill Identifier
BCT – Brigade Combat Team
BNCOC – Basic Non-Commissioned Oficer Course
MTO&E – Modified Tables of Organization and Equipment
MOS – military occupational specialty
NCO – Non-Commissioned Officer
TDA – Tables of Distribution and Allowances

TWO-LEVEL MAINTENANCE AND THE SIGNAL SOLDIER

By SFC Charaz Joseph and SFC Robert T. Wells

What is two-level maintenance and does it impact signal Soldiers? The Army's maintenance policy previously was referred to as four-level maintenance (see Chart 1 below). In 2006, the policy changed to TLM (see Chart 2 below). This article is directed toward Soldiers who previously used technical manuals and the maintenance allocation chart to perform their responsibilities. If you're not in this target audience, this article will mean little. The Office Chief of Signal Enlisted Division has fielded many questions about whether the new TLM prevents signal Soldiers from doing what they were previously authorized to do.

Maintenance Allocation Chart

4 LVL	ORG (10) (20)		DS (30)	GS (40)	DEPOT (50)
MAC	C	O	F	H	D

Chart 1

2 LVL	FIELD (10) (20/30)		SUST MNT (40) (50)	
MAC	C	F	H	D

Chart 2

The Signal Center has partnered with Combined Arms Support Command and Communications and Electronics Command in a series of senior leader meetings and there is agreement that Signal operator-maintainers and MOS 25U will continue to perform the functions they previously performed, but under the new maintenance policy. Previously, the operator-maintainer performed the functions in the C, O, and F columns of the MAC. Now, the appropriate tasks the operator-maintainer was doing in the O and F columns will be moved to the C column.

The 25U only performed work in the MAC O column because the operator tasks in the C column were the responsibility of other MOSs. Under the new MAC format, the O column tasks will move to the C column, annotated with an asterisk (*) by the hours to perform the task. Somewhere, to be determined later, on each MAC the * will be explained as – indicates this is a unit level maintenance task.

Note: The 25U is not part of the crew or an operator; this is the only appropriate place left to cite the 25U's unit level maintenance tasks.

Additionally, AR 700-82, Joint Regulation governing the use and Application of Uniform Source Maintenance and Recoverability code, which list the SMR codes, is also being revised to reflect the new TLM policy and to ensure that operator-maintainer and 25U remain authorized to perform their maintenance tasks.

Signal Operator-Maintaner

What is an operator-maintainer? In order to capture this definition, TRADOC Regulation 350-70 and other sources are referenced. They are uniquely qualified signal Soldiers in the current operational environment that enable items, equipment, or systems to function; also capable of performing troubleshooting required to isolate faults and malfunctions, ensuring efficient restoration and preservation of on-site on-system communication and electronics systems, and associated equipment.

The Army is transforming maintenance into two levels: (1) field, and (2) sustainment. This requires the revision of the maintenance allocation charts in technical manuals and the uniform source, maintenance, and recoverability codes to ensure the signal operator-maintainers are authorized to continue performing what they do now. However, this should be a transparent modernization with the same maintenance activities occurring at field as today's operator level, being performed by the same Soldier

Facts vs. Myths

1: *Why is there a dash for operator-maintainer instead of a slash, operator/maintainer?*

1a: Although a dash versus a slash in terminology may seem trivial or irrelevant, it is actually of significant importance. Operator-maintainers are both operators and maintainers. Soldiers perform both functions. They are not just operators or maintainers only.

2: *The Office Chief of Signal has received phone calls and comments, from Soldiers and other members of organizations supporting our signal force, stating they/Soldiers are operators only, or are no longer allowed to do any maintenance. Please be advised, this is a false rumor or statement. The fact is there are no changes; signaleers remain responsible for performing their operator-maintainer duties.*

If there are any questions, contact the Enlisted Division of OCOS at:

atzh-poe@conus.army.mil
https://www.us.army.mil/suite/page/838

SFC Joseph, 25L/Q/W Career Manager, is located at Office Chief of Signal Fort Gordon, Ga. Reach him by e-mail: charaz.k.joseph@conus.army.mil
SFC Wells, 25U Career Manager, is located at Office Chief of Signal Fort Gordon, Ga. Reach him by e-mail: Robert.t.wells1@conus.army.mil

ACRONYM QUICKSCAN

CASCOM – Combined Arms Support Command
CECOM – Communications and Electronics Command
MAC – Maintenance Allocation Chart
OCOS – Office Chief of Signal
SMR – Source, Maintenance, and Recoverability
TLM – two-level maintenance

OFFICE CHIEF OF SIGNAL WEBSITE

By Willie Gardner

The Office Chief of Signal Enlisted Division community webpage is a simple but yet informative media designed to provide an open, informal forum for the dissemination and exchange of unclassified information, ideas, issues and solutions effecting Signal enlisted Soldiers from all three components (Active, National Guard, Reserve) and Soldiers interested in reclassifying into a Signal Military Occupational Specialty.

The Signal Enlisted Community website consists of the Signal Enlisted Division home/community page (Figure 1.) which contains general information for Career Management Field 25 as a whole. For example, on the page there is a section that contains "Signal Proponent Promotion Board Instructions" for all previously convened (within one year) Department of the Army Centralized Promotion Boards. The premise of these instructions is to educate Promotion Board Panels on what views the Proponent have on their perspective MOSs in regards to promotion. Previously released Promotion Board Panel Review and Analysis are available as well. Another example is a section that contains "Waiver of Formal Training" criteria, targeted MOS reclassification information and MOS 12 month promotion trend reports for SGT/SSG in all Signal MOSs.

From the home/community page, there is a means to navigate to the four distinctively different enlisted "Career Areas of Concentration" webpages. The four webpages are as follows: Information Systems Operations page, a recently added Electromagnetic Spectrum Management Operations page, a Signal Operations page and a Visual Information Operations page; all with detailed information on each area of concentration and points of contact for information not found within the webpage in question.

Figure 1. Snapshot of the Office Chief of Signal (OCOS) Enlisted Division home/community page. Can be found at the following address: https://www.us.army.mil/suite/page/838.

Figure 2. Snapshot of "Signal Operations" webpage. Can be found at the following address: https://www.us.army.mil/suite/page/2823.

The "Areas of Concentration" webpages (Figure 2.) contain targeted information for MOSs within its particular area. For example, all webpages have a section that contain MOS Posture Sheets (with "how to read" by section explanation), DA PAM 600-25 (NCO Professional Development Guide) excerpts and Professional Development Models for all MOSs with that particular area of concentration. Also, each page contains a discussion forum for each MOS for information and issue sharing that's monitored by the perspective MOS Action Officer within OCOS.

On any of the webpages mentioned, there is a point of contact source with email addresses and phone numbers associated to each MOS Action Officer. All Signal Soldiers are highly encouraged to contact their perspective MOS Career Management NCO/Action Officer with any question you may have in regards to any Signal MOS.

ACRONYM QUICKSCAN

CMF – Career Management Field
MOS – Military Occupational Specialty
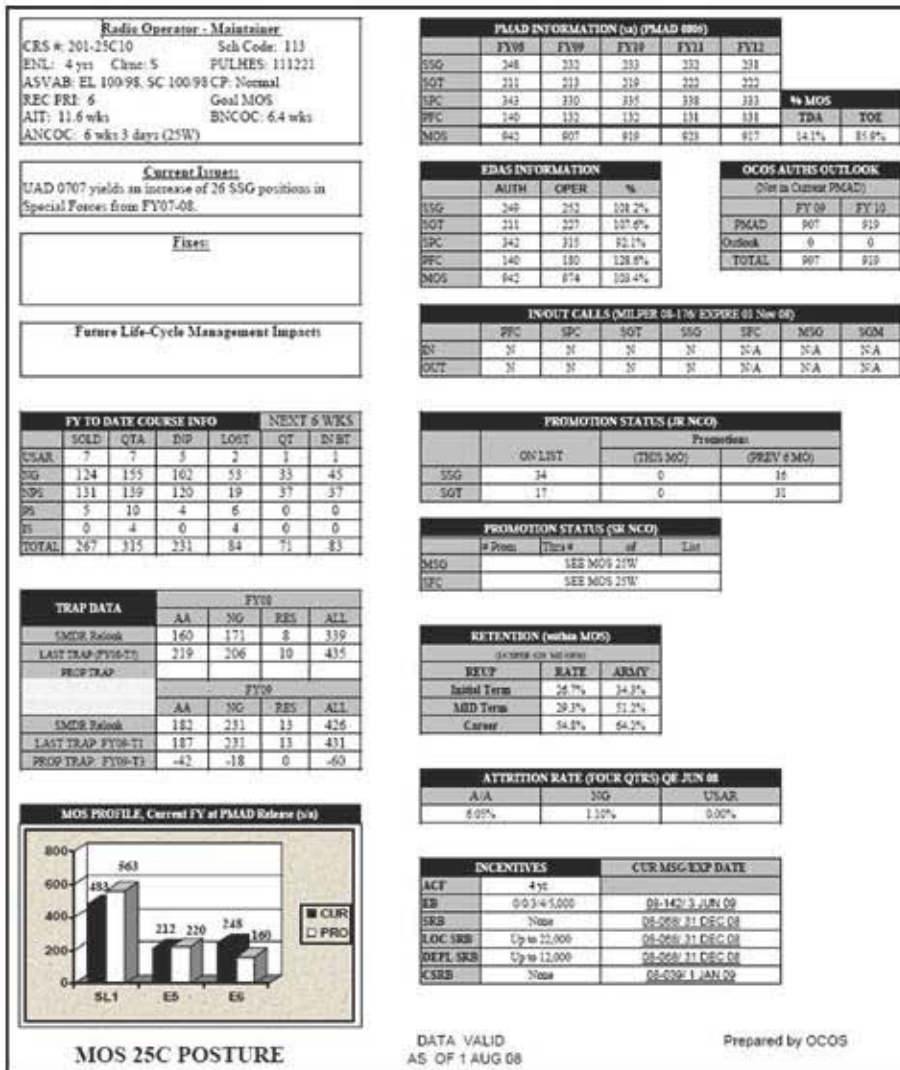OCOS – Office Chief of Signal
WOFT – Waiver of Formal Training

Radio Operator - Maintainer

CRS #: 201-25C10 Sch Code: 113
ENL: 4 yrs Clme: 5 PULHES: 111221
ASVAB: EL 100/98, SC 100/98 CP: Normal
REC PRI: 6 Goal MOS
AIT: 11.6 wks BNCOC: 6.4 wks
ANCOC: 6 wks 3 days (25W)

Current Issues:
UAD 0707 yields an increase of 26 SSG positions in Special Forces from FY07-08.

Fixes:

Future Life-Cycle Management Impacts

PMAD INFORMATION (u) (PMAD 0806)							
	FY08	FY09	FY10	FY11	FY12		
SSG	248	232	253	232	231		
SGT	211	213	219	222	222		
SPC	343	330	335	338	333	%% MOS	
PFC	140	132	132	131	131	TDA	TOE
MOS	942	907	919	923	917	14.1%	85.9%

EDAS INFORMATION				OCOS AUTHS OUTLOOK		
	AUTH	OPER	%	(Not in Current PMAD)		
SSG	249	252	101.2%		FY 09	FY 10
SGT	211	227	107.6%	PMAD	907	919
SPC	342	315	92.1%	Outlook	0	0
PFC	140	180	128.6%	TOTAL	907	919
MOS	942	874	108.4%			

IN/OUT CALLS (MILPER 08-176/ EXPIRE 01 Nov 08)							
	PFC	SPC	SGT	SSG	SFC	MSG	SGM
IN	N	N	N	N	N/A	N/A	N/A
OUT	N	N	N	N	N/A	N/A	N/A

FY TO DATE COURSE INFO				NEXT 6 WKS	
	SOLD	QTA	INP	LOST	QT	IN BT
USAR	7	7	5	2	1	1
NG	124	155	102	53	33	45
NPS	131	139	120	19	37	37
PS	5	10	4	6	0	0
IN	0	4	0	4	0	0
TOTAL	267	315	231	84	71	83

PROMOTION STATUS (JR NCO)			
		Promotions	
	ON LIST	(THIS MO)	(PREV 6 MO)
SSG	34	0	16
SGT	17	0	31

TRAP DATA		FY08			
		AA	NG	RES	ALL
SMDR Relook		160	171	8	339
LAST TRAP (FY08-T2)		219	206	10	435
PROP TRAP					
		FY09			
		AA	NG	RES	ALL
SMDR Relook		182	231	13	426
LAST TRAP FY08-T1		187	231	13	431
PROP TRAP FY08-T3		-42	-18	0	-60

PROMOTION STATUS (SR NCO)			
	# Prom	Thru #	of	List
MSG		SEE MOS 25W		
SFC		SEE MOS 25W		

RETENTION (within MOS)		
(EXPIRE 628 MONTHS)		
REUP	RATE	ARMY
Initial Term	26.7%	34.3%
MID Term	29.3%	51.2%
Career	54.8%	64.2%

ATTRITION RATE (FOUR QTRS) QE JUN 08		
A/A	NG	USAR
6.05%	1.10%	0.00%

MOS PROFILE, Current FY at PMAD Release (u)

INCENTIVES		CUR MSG/EXP DATE
ACF	4 yr	
EB	0/0/3/4/5,000	08-142/ 3 JUN 09
SRB	None	08-068/ 31 DEC 08
LOC SRB	Up to 22,000	08-068/ 31 DEC 08
DEPL SRB	Up to 12,000	08-068/ 31 DEC 08
CSRB	None	08-039/ 1 JAN 09

MOS 25C POSTURE

DATA VALID AS OF 1 AUG 08

Prepared by OCOS

Figure 3. MOS posture sheets were at one time inter-office tools used by each MOS Action Officer to track the status and health of each MOS.

Mr. Gardner (SFC RET) is a government contractor with Janus Research Group with placement in the Office Chief of Signal Enlisted Division as a Force Structure/Data Analyst. He is also responsible for the Enlisted Division website maintainance and updates. Prior to Army retirement, he was a career management NCO for the Visual Information CMF within OCOS Enlisted Division.

Circuit Check

New command coming to Fort Gordon
Army News Release

FORT GORDON, GA – The U.S. Army has approved activation of a continental U.S.-based theater signal command, to be headquartered at Fort Gordon.

The 7th Signal Command (Theater) will have its headquarters element at Fort Gordon, and will have signal brigades stationed on the east and west coasts.

The formal activation ceremony will be held in February 2009.

BG Jennifer Napper, commander of the 7th Signal Command (Theater), will be the third general officer commander at Fort Gordon. Currently, the commanders of the U.S. Army Signal Center and the Eisenhower Army Medical Center are one-star generals.

Napper comes to Fort Gordon from the Defense Information Systems Agency in the Pentagon, where she served as deputy director of Joint Task Force-Global Network Operations, directing the operation and defense of the Global Information Grid.

The 93rd Signal Brigade, which was activated at Fort Gordon in 1998 and inactivated in 2007, will be activated again at Fort Eustis, Va. The second signal brigade to be activated as part of the 7th Signal Command is the 106th Signal Brigade, to be located at Fort Sam Houston, Texas.

The two brigades will be activated in phases, with a planned full operational capability by 2010.

By 2010, the 7th Signal Command Headquarters at Fort Gordon will have a full staff of 171 civilians and 68 military. The employees will be computer network defense, personnel, supply and other specialties.

The mission of the 7th Theater Signal Command is to operate and

defend the Continental U.S. portion of the Army's global computer network, called LandWarNet. The command will assure total global network access for all Signal soldiers from the combat units deployed around the world and those on desktop computers to the White House Communications Agency.

BG Jennifer Napper, commander of the 7th Signal Command (Theater).

7th Signal Command (Theater) will Increase Expeditionary Support to the Warfighter

What is it?

7th SC(T) is the Army's newest signal organization that will pro-

vide unity of effort extending battle command to enable CONUS based expeditionary operations.

The mission of the 7th Sig Cmd (T) is to integrate, operate, and defend the CONUS portion of the LandWarNet.

How will this new Command enable expeditionary units?

Provides a one star headquarters located at Ft. Gordon, GA that will prioritize operational and resource requirements across the entire CONUS LandWarNet. The command will support operational and generating forces in two regions led by the 93d Signal Brigade at Ft. Eustis, VA in the east and the 106th Signal Brigade located at Ft. Sam Houston, TX in the west. This command will focus on increasing network capabilities and support to units during all phases of the ARFORGEN model (train, deploy, reset) by establishing unity of command, standardization, and best practices at installations under the expert leadership of each DOIM Director.

In order for DOIM organizations to meet the challenges of increasing responsibilities, all DOIM Directors are invited to attend the Signal Pre-Command Course where they will learn about command in an executive level forum with battalion and brigade commander selectees. Other DOIM IT Managers can also attend the DOIM Leader Course in direct support of professional development and leader training.

What does the Army have planned for the future?

7th Signal Command (Theater) cadre arrived in July 2008, will establish Initial Operational Capability (IOC) by Jan 2009, and achieve Full Operational Capability (FOC) by Jan 2010.

Why is this important to the Army?

Through the 7th Signal Command's unity of effort, installations will become like "docking stations" to enable realistic information-enabled training to expeditionary units during the "Road to War"; provide increased C2 capabilities during deployment; and conduct a seamless reintegration of network assets and realistic sustainment training upon redeployment/reset.

It is critical for deploying forces to use the same tactical equipment and interfaces in garrison as they use in a combat environment. Commanders need the same network enabled C2 and situational awareness capabilities during all phases of the ARFORGEN model.

Leader Transitions

SECRETARY OF DEFENSE ROBERT M. GATES ANNOUNCED PRESIDENTIAL NOMINATIONS:

MG James H. Pillsbury, United States Army, for appointment to the rank of lieutenant general and assignment as Deputy Commanding General/Chief of Staff, United States Army Materiel Command, Fort Belvoir, Va. He formerly served as deputy chief of staff for Logistics and Operations, United States Army Materiel Command, Fort Belvoir, Va.

MG Carroll F. Pollett, United States Army, for appointment to the rank of lieutenant general and assignment as director, Defense Information Systems Agency/Commander, Joint Task Force - Global Network Operations/deputy commander, United States Strategic Command, Global Network Operations and Defense, Arlington, Va.

He formerly served as chief of staff, United States Strategic Command, Offutt Air Force Base, Neb.

NETCOM CG NOMINATED FOR PROMOTION

FORT HUACHUCA, Ariz. (NETCOM/9th SC(A)) – Secretary of Defense Robert M. Gates announced that the President has nominated BG Susan S. Lawrence, U.S. Army, for promotion to the rank of major general. She serves as commanding general, United States Army Network Enterprise Technology Command/9th Signal Command (Army) at Fort Huachuca, Ariz.

DEPUTY COMMANDING GENERAL NETCOM/9TH SC(A) CEREMONY HELD

FORT HUACHUCA, Ariz. (NETCOM/9th SC(A)) – U.S. Army Network Enterprise Technology Command/9th Signal Command (Army) conducted a welcome ceremony for COL LaWarren Patterson, the command's incoming deputy commanding general Oct. 2, at Fort Huachuca.

LEE NOMINATED TO BECOME U.S. ARMY ACQUISITION CORPS' FIRST GENERAL OFFICER
By Stephen Larsen

COL N. Lee S. Price has been nominated by Defense Secretary Robert M. Gates for the rank of brigadier general in the U.S. Army. Her nomination for promotion has been confirmed by the Senate. She will be the first woman in the Army Acquisition Corps to be promoted to the rank of brigadier general and the first woman to become a general officer while serving in a special operations unit.

Recently assigned as the deputy program manager for the Army's Future Combat System (Brigade Combat Team) at Aberdeen Proving Grounds, Md., Price is responsible for managing development of the Future Combat System's integrated network. She previously served as the deputy acquisition executive for the U.S. Special Operations Com-

Army's 311th Signal Command has new commanding general

311th Signal Command (Theater)'s new commanding general, BG Alan R. Lynn, is entrusted with the command's flag by LTG Benjamin R. Mixon, U.S. Army, Pacific commanding general. Looking on is 311th SC(T)'s command sergeant major Gerald W. Capps. Established at Fort Shafter in 2006, 311th SC(T) directs more than 1,900 Soldiers and civilians who operate the Army's digital telecommunications network in the Pacific.

COL N. Lee S. Price has been nominated by Defense Secretary Robert M. Gates for the rank of brigadier general in the U. S. Army. Her nomination for promotion has been confirmed by the Senate. She will be the first woman in the Army Acquisition Corps to be promoted to the rank of brigadier general and the first woman to become a general officer while serving in a special operations unit.

and the Marine Special Operations Command.

Earlier in her career, Price served as the Project Manager, Defense Communications and Army Transmission Systems at Ft. Monmouth, N.J. For her work in that assignment, in which she managed multiple projects to provide commercial communications infrastructure for U.S. forces in Iraq, Afghanistan and Kuwait, Price was honored as the Army's Project Manager of the Year for 2004 and was selected as one of the six best program managers in the Federal Government by Federal Computer Week magazine in July 2004.

Price credits her father, the late Maurice D. Sherk of Homewood, Ala., with teaching her lessons that she applies every day to performing her duties.

"My dad taught me to hire good folks and let them do the work – to manage the person but not their work," said Price. "He was an artist at providing a set of ears and ques-

tioning possibilities while allowing a person to make the decisions."

Price's awards include the Defense Superior Service medal, Legion of Merit, the Bronze Star, numerous meritorious and achievement medals and a Combat Action Badge.

Mr. Larsen serves as the PEO EIS a public affairs officer and writer at Fort Monmouth, NJ. Contact him at (732) 427-6756 or by e-mail at Stephen. Larsen@us.army.mil

Former Chief of Signal LTG (Ret) Charles Myer buried at Arlington Cemetery

Charles Robert "Bob" Myer, 83, an Army Lieutenant General who was an internationally known leader in developing networks for military communication, died April 30, 2007, of a heart attack at his home in Warrenton, Va.

Beginning in the 1950s, Myer became a specialist in electronic communications for the military, with a particular specialty in combat communications. In 1965, when he was commander of the 69th Signal Battalion at Fort Eustis, Va., he was deployed to Vietnam, where he led his 1,300-member battalion in setting up the communications network in Saigon and other key places throughout the country.

He was assigned to other commands in the United States and Europe before serving a second tour of duty in Vietnam in 1972.

In 1974, Myer was named Commandant of the Army Signal School and commander of the Army Signal Center, both at Fort Gordon, Ga. In this position, he helped establish and coordinate communications methods and computer networks throughout the Army.

His later positions included director of telecommunications and command and control; deputy chief of staff for operations and plans; and assistant chief of staff for automation and communications at the Pentagon. In that post, he implemented Army-wide command, control, communications, and computer pro-

LTG (Ret.) Charles Robert "Bob" Myer, former commandant of the Army Signal School and the Signal Center at Fort Gordon

grams -- C4, and was an adviser to the president and vice president.

Myer's final posting in the Army was as deputy director general of the NATO Integrated Communications Management Agency in Europe, where he planned, engineered, and installed communications systems in 14 NATO countries.

He retired from the Army in 1981. His awards included the Defense Distinguished Service Medal and two awards of the Legion of Merit.

After retiring from the military, Myer was a senior consultant with Unisys Corp. for about 15 years. In 1994, he was named the first recipient of the Eugene G. Fubini Award of the National Security Industrial Association for his contributions to defense communications. He was inducted as a distinguished member of the Army Signal Corps Regiment in 1997.

Myer was born in Wellsburg, W.V., and graduated from the U.S. Military Academy in 1946. (His son and grandson later graduated from West Point.)

He served in the Army of Occupation in Japan from 1946 to 1950 and received a master's degree in

Of Signal Interest

BASTOGNE SIGNAL COMPANY EXUDES WARRIOR ETHOS, ACCEPTS COMBAT ROLE OUTSIDE OF TECHNICAL EXPERTISE

By SFC Kevin Doheny

TIKRIT, Iraq— I will always place the mission first. I will never accept defeat. I will never quit. I will never leave a fallen comrade.

These principles have instilled a warrior's mentality for a generation of Soldiers, which was the vision of former Army Chief of Staff GEN Peter Schoomaker and the Army adopted them. As the Army's top officer, he often stated that regardless of gender, rank, or military occupational specialty, Soldiers are to live by the Soldier's Creed and do whatever it takes to accomplish the mission.

"We need to encourage innovation and increase resiliency," he said, "and most importantly, we need to reinforce the warrior ethos in every Soldier."

In the Salah ad Din province, the Spartans of the 1st Special Troops Battalion, 1st Brigade Combat Team, 101st Airborne Division, follow this ideology and have expanded their 'traditional' role of supporting the brigade in a variety of support missions.

The Spartans still provide the support to the Bastogne Brigade, but have also taken on the additional security responsibility for a vast area of operations.

Taking on this role with limited combat forces, the Spartans adapted and employed their support Soldiers to conduct combat operations.

The commander of the battalion, LTC Rick Rhyne, a Special Forces officer with experience in accomplishing missions with outside-the-box thinking, displayed his confidence in a group of support Soldiers during a recent air assault operation Sept. 7.

Operation Chalcis, an air assault operation targeting possible al

A Soldier from Charlie Company, 1st Special Troops Battalion, 1st Brigade Combat Team, 101st Airborne Division, watches a UH-60 Black Hawk lands during extraction for Operation Chalcis Sept. 7. The air assault operation was aimed at removing al Qaeda fighters seeking refuge in the desert areas near Samarra, Iraq.

Qaeda in Iraq hideouts, wasn't performed by the battalion's attached infantry company or the commander's security team; it was conducted by its Signal Company.

"The opportunity that the battalion commander bestowed upon my company to execute this operation shows his great trust and confidence of my Soldiers," said CPT Alex Peake, commander of Charlie Company, 1BSTB.

The company's traditional role is centered on operating and managing the Bastogne Brigade's signal network operations. They are responsible for nearly all the com-

munication across the province's vast area, which is roughly the size of Vermont.

According to 1SGT Juan Vasquez, his company's ability to balance both technical and tactical skills is a valuable asset to the battalion. He attributes this balance to the warrior mentality exhibited by his troops.

"As the conditions on the battlefield change, so must the mentality of our Soldiers," said Vasquez. "A never quit attitude puts them in a mindset to train on tactics that are not an inherit part of their jobs, however they are an inherit part of

being a Soldier."

Signal Soldiers often find themselves in maneuver units, thus being part of combat operations is nothing new to the mission. Signal Soldiers are often called upon to adhere to the high standards of their combat-arms brethren, while at the same time expertly providing their technical capabilities.

However, command and control of an air assault is not "business as usual" for the Signal Corps Soldiers.

Operation Chalcis was coordinated, planned, and executed under the command and control of Peake and his platoon leaders. Ground breaking, the air assault may have been the first of its kind, and the leaders of the company understand the legacy they will leave behind.

"I am proud to be in Charlie Co., 1st STB, and I'm proud to be a Screaming Eagle," said 2LT Jerome Jose, platoon leader. "I'm grateful that we have been given the opportunity and responsibility to carry on the tradition of the 101st Airborne Division (Air Assault)."

"Being a part of the 101st, it is expected for our Soldiers to adapt to new challenges and perform tasks they may not be familiar with," said 1LT Scott Widener, platoon leader. "The Soldiers in our company are a testament to the warrior ethos."

As the Army evolves as the battlefields change, Soldiers such as the "Cannibals" of Charlie Company understand that they must retain the Soldier-first mentality. This resonates throughout the ranks within the Spartan family.

"I don't think your average Signal Company would have the opportunity to have command and control of an air assault mission, but then again, this is not a normal STB," said SFC Class Christopher Wurm, platoon sergeant. "We are all Soldiers. We have a specific MOS, but any of us can be called upon to be a Soldier, not just a Signal Soldier."

SFC Doheny is with the 1st Brigade Combat Team, 101st Airborne Division (Air Assault).

1LT Joshua Stremlau, Charlie Company, 1st Special Troops Battalion executive officer, goes over specifics with one of his pilots in preparation for Operation Chalcis, an air assault operation targeting al Qaeda fighters in the deserts areas near Samarra, Iraq Sept. 7.

44TH EXPEDITIONARY SIGNAL BATTALION PARTICIPATES IN RUN FOR THE FALLEN IN IRAQ

By SPC Evan D. Marcy

CAMP VICTORY, Iraq (Aug. 24, 2008) – In a show of remembrance for each fallen service member in Iraq, Soldiers from the Mannheim-based 44th Expeditionary Signal Battalion volunteered, coordinated and participated in the Run for the Fallen on Camp Victory, Iraq. The event on the Baghdad post marked the last day of the run held simultaneously in the United States. Both runs had the same mission: to run one mile for every American service member lost in Operation Iraqi Freedom.

The over 4,000-mile stateside run began June 14 at a place called Painted Rocks, just outside of Fort Irwin, Calif., and ended at the Arlington National Cemetery, Va., Aug. 24. The Baghdad run had over 1,050 people running a 4.2 mile course, ensuring at least one mile was run for every one of the fallen. Team

members marked each mile with an American flag and a signed card in an apolitical reflection of remembrance of each service member.

The Run for the Fallen web site: www.runforthefallen.org states: "We run across America to raise awareness about the lives of those who fought, to activate their memories and keep their spirits alive, to support organizations that help wounded veterans and the families of those killed, and to aid the healing process for those Americans whose lives have been affected by the war."

"It's a good way to show that the Soldiers' sacrifice does not go unseen," said SPC Laurence Juarez, 44th ESB.

Along the stage near the starting point of the Baghdad run, a list was displayed with the names of every American Soldier killed during Operation Iraqi Freedom. A special runner's bib was provided to participants so they could individually honor a departed Soldier by writing in a service member's name, and wear it during the run.

"Since the day they said they were having the run, I wanted to run for my friend CPL Victor M. Langarica," said SSG Efrain Baez, 44th ESB. "I went to basic training with him -- he was one of us," he added. Langarica was assigned to the 86th Signal Battalion, Fort Huachuca, Ariz., and died in Baghdad on Jan. 20, 2007, when the UH-60 Blackhawk helicopter he was in crashed.

"I know people who have passed too, so it's a great memorial for me to celebrate what they've done. To be a part of it is a big thing for me," said SPC Andrew Sage, 44th ESB. "I look at this run as a remembrance of those who have fought for their country, and died for their country. I saw a lot of names of people from Basic, Advanced Individual Training, and even some from my hometown high school, listed on the banner," he said.

Sage volunteered to be the event coordinator for the run, after enjoying his experience organizing the 44th ESB 4.4-mile run on

Camp Victory last May. "It was fun organizing the event and making sure everything fit together," said Sage, who was able to get the 10th Mountain Division rock band to play at the start/finish area. Along with setting up the route, helping to get volunteers, making sure people were informed and getting paperwork done, Sage also drove the lead truck to ensure safety for the runners.

As of Aug. 23, at least 4,146 U.S. Military members have died in the Iraq war since it began in March 2003, according to an Associated Press count.

Run for the Fallen at Camp Victory, Iraq, Aug. 24. The purpose of the run was to run one mile for every American service member killed during Operation Iraqi Freedom since the conflict began. The event was held on the last day in which the Run for the Fallen program finishes its ten week schedule in the U.S., running from Fort Irwin, Calif., to Arlington National Cemetery, Va., ensuring one mile is ran for every American Soldier killed in Operation Iraqi Freedom.
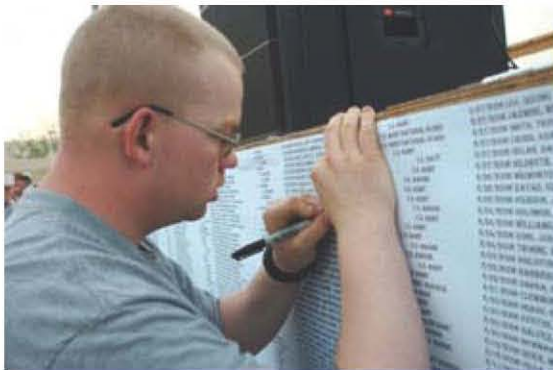
SPC Lance Birchmore, B Co, 44th Expeditionary Signal Battalion writes the name of a fallen Soldier down on a board before participating in the last day of the Run for the Fallen on Aug. 24, at Camp Victory, Iraq.

SPC Evan D. Marcy is with the 44th ESB, Camp Victory, Iraq.

SPECTRUM MANAGEMENT SIGNAL OFFICERS (5D/S9)

By CPT Tilisha Lockley

"I felt the need to attend the Spectrum Management Course after my deployment to Iraq as a brigade/battalion S6. Once I attended the Spectrum Management Course, I had a better understanding for how the communication process works. I did exceptionally well as an S6, but if I knew then, what

I know now, I could have been a much better asset to my commanders."

- CPT Tilisha Lockley
Multi-National Corps Iraq
Spectrum Management Team
OIC

The battlefield in 2008 is drastically changed from conventional warfare. The battle is not just on the ground, it is also on the electromagnetic battlefield. The adversary is constantly changing tactics and techniques including improvised explosive devices and their proven lethality. IED devices are identified a capability gap in the Army. The new battlefield hastened the need for pectrum manager9s0 and skills they provide a commander in support of their mission. As the casualties increase, so does the requirement for qualified spectrum managers.

To address this demand, the Signal Corps created the electromagnetic spectrum manager (25E) MOS. The 25E has the responsibility to support this increasing requirement of managing spectrum de-confliction and mitigating electromagnetic interference on the battlefield. The electromagnetic spectrum manager MOS (25E) gives a signal non-commissioned officer the ability to specialize in electromagnetic spectrum management and maintain frequencies for the individual unit. While factoring in the importance of creating an MOS for NCOs in the Signal Corps, there are no officers or warrant officers who are being used to manage and support this area of communications. Officers in the Signal Corps need to be aware of and address the large electromagnetic quandary facing a communicator. The electronic warfare coordination cell contains specialists called electronic warfare officer who are responsible for ensuring jammers are programmed. It is the responsibility of the signal officer to ensure the commander's frequencies are being de-conflicted. The EWO are trained by the Intelligence Center and have now asked for additional manpower from the Signal Center for the Force Development Unit.

CPT Tilisha C. Lockley checks equipment for a test session during the Joint Spectrum Management Class. Lockley is the first officer in the U.S. Army to receive the S9 Joint Training. She is heading to Iraq as the Multi-National Corps-Iraq Spectrum Management OIC. The position requires her to be responsible for all spectrum in the Iraq Area of Responsibility.

As focused as the Signal Center is in the development of the 25E Enlisted MOS to the future progression of the Army, it should also be the same for the officer side of the corps.

Based on the amount of attention the area of Spectrum Management is receiving from all branches of the armed services, it is also important to have highly qualified signal officers who are also subject matter experts in Spectrum Management.

Vice Admiral Nancy Brown said, "In the past, we operated alone. Nobody else was in our spectrum. It was the military spectrum and that was pretty universal . . .

"It hasn't been until we've gotten into the age now of wireless and all of the other capabilities – cell phones and the technology that everybody's using- that military spectrum has been encroached upon. So those things weren't important before because we weren't competing for spectrum anywhere. Now, everywhere we go, we're competing. We compete in the U.S. It is one of those things that we are being forced to pay attention to."

-- Vice Admiral Nancy Brown,

U.S. Navy, director, C4 Systems J6 Signal Connections, AFCEA International's Official Newsletter, Nov. 15, 2007.

Having officers trained in spectrum management allows for better management of the 25E force. The Army just selected its first 25E sergeant major this year, and currently, there are no senior signal officers responsible for the use and management of this new element. There is no system in place to track the 25A5D (Spectrum Management Officer-5D). At every level of the Army, there are NCOs and officers who work on training and management. The new sergeant major, however very capable, is not able to oversee all aspects of planning for spectrum managers alone. To my knowledge I am one of only a hand full of captains who are 5D qualified in my year group. I am currently only officer in the Army who completed to the Joint Spectrum Manager Course and can carry the SI of (S9).

Why spectrum management is im-

Class participants test equipment for the Army's first Joint Spectrum Management Course. Shown (L to R) are CPT Tilisha C. Lockley, Rickey E. Moore Sr., and SFC Kevin D. Williams.

portant to a signal officer:

As a signal officer in today's Army, it is vital we understand every aspect of communications. The Army Signal Corps no longer has the robust signal battalions and brigades which support the lone S6 signal officer out in the non-signal world. The composition of Brigade Combat Teams puts the brigade and battalion signal officer in the role of chief communications officer for that unit. We also find ourselves in the G6 section at the corps and division level completing network planning and engineering. That was formally the role of a senior signal major, and now we find that junior captains and first lieutenants are filling those large shoes. That is why it is important for our fellow signal officers to be subject matter experts in their field of specialization – communications.

Communications can be broken down into data/switching and transmission. A signal officer's training is mainly data focused planning and training. We usually find transmission training covered under Telecommunications Engineering (FA24) officer training. There are not many units which have a FA24 officer assigned to plan and engineer their network. They do have a 25A

signal officer as their S6 responsible for planning their communications infrastructure. In an S6 section, there isn't always a high-speed non-commissioned officer or warrant officer (250N/251) available to assist with network engineering, and that is why it is important for an S6 to have a knowledgeable understanding on all areas of communication. Transmission is the component of training that a signal officer (S6) needs to ensure that they are a fully informed communicator.

Transmission systems:

"Signal officers need to focus on understanding MDMP (military decision-making process), as a whole, and knowing their role as a signal officer in that process . . . and in doing so, they need to know the capabilities of their organic equipment, so that they can better present their capabilities to their commander."

– SFC Rickerson Combat Net Radio Team, Fort Gordon, Ga.

The role of a transmission system is to provide a commander the ability to broadcast and receive data across a given network. Transmission systems encompass a whole range of items, to include: Single-Channeled Ground-to-Air Radio

Systems, PRC-117, PRC-150, TRC-170, PRC-148, PRC-152, Ku Band Systems, X-Band Satellite System, Troposphere, Trojan Spirit, High Capacity LOS Radios, Very Small Aperture Terminal, and Broadband Global Area Network International Marine Satellite. The electromagnetic spectrum enables a signal officer to convey the message of their commander, in support the mission. Many things can cause a system to prevent the receiver from getting any given message. This is called noise. The difference between in calling for help without interference could be a life-or-death decision. On the battlefield, an S6 requires the ability to fix the problems with communications equipment at a moment's notice. It is very difficult to troubleshoot a problem, and you don't have an understanding for the problem or the equipment that you are troubleshooting.

The life of an S6 is very difficult. The commander wants their systems working right away, no questions asked. That means that both data and transmission need to be working together in order to establish connectivity. The S6 is responsible for the data system, and the transmission method. It took me a long time to realize that the

Participants of the Army's first Joint Spectrum Management Course at Fort Gordon, Ga.: (L to R) SFC Kevin D. Williams, 10th Mountain Divisuion, CPT Tilisha C. Lockley, XVIII Airbome Corps, and Ricky E. Moore Sr., Headquarters INSCOM.

their branch manager for available positions as a spectrum management officer, and try to attend the course as soon as possible. It helps in becoming a more effective communications planner.

CPT Lockley is a member of the XVIII Airborne Corps ACoS G6 at Fort Bragg, N.C., and served as the course class leader.

major piece that I was missing in my skill-set understood my transmission source, and the role a transmission system plays in my communications plan. Understanding the transmission piece, means understanding your electromagnetic battlespace.

The electromagnetic battlespace comprises the air, land, sea, and space within a geographical area, as well as the electromagnetic spectrum. The EMB is defined by its environmental parameters, terrain elevation, and spectrum-use information. The EMB includes: background environmental information and the hostile, friendly, Uinted Nations, host nation and Coalition Forces Electromagnetic Order of Battle within the force commander's area of responsibility and area of interest. Spectrum management planning success depends on prior knowledge of the proposed EMB and as signal officers, we should always be a part of the planning process.

The Electromagnetic Spectrum Management Training Course and the Joint Electromagnetic Spectrum Management Training Course covers every aspect of transmission systems and configurations. This training is known as the 25E MOS Training for Basic Non-commissioned Officers Course and Advanced Non-commissioned Officer Course. Even though the course is geared more towards the non-commissioned officers, officers are allowed to attend the training. On the global scale, there available positions that require a (5D) identifier. The Allied Rapid Reaction Corps is a North Atlantic Treaty Organization assignment, as well as three positions on the unit manning document for U.S. European Command, with a fourth position located at the Frequency Management Field Office in Brussels. This is just one position out of the six combatant commands. It stands to reason that there are more positions for 5D than previously known. There are four classes per year, 10 weeks in length, with an average class of 15-20 students per class. Some of those classes proceed with unfilled seats. I highly recommend to send at least two-three signal captains or first lieutenants (25A) to one of Spectrum Management Class. There could even be one class out of the four classes, geared toward officers. All signal officers should check with

Wounded Warrior Clothing Apparel
Signal senior leaders set the standard on warrior care

Since the inception of the Wounded Warrior Program, Senior Leaders from accross Fort Gordon have set a standard of precedence for other Warrior Transition Battalions to follow.

CSM Thomas Clark introduced the Wounded Warrrior Clothing apparel in February of 2008. With AIR-VAC'd Soldiers from Iraq and Afghanistan monthly and little to no clothing -- the Regimental command sergeant major stepped in.

The idea is to provide at least one set of FG WWCA to each Soldier arriving for WTB care.

"We set the standard on Soldier care."

Following the example of the Regimental command sergeant major, students at the Regimental Non-Commissioned Officers Academy, in the Advanced Non-Commissioned Officers Courses stepped up to the plate. Class 25B 006-08, with Project Manager SFC Charmaine Reyna leading the way raised more than $300 to purchase initial sets. Approximately 12 sets were purchased and distributed at the Charlie Norwood Veterans Affairs Hospital june 17, 2008.

Each wounded Warrior was paired with a student and presented the clothing apparel. Throughout the course of the afternoon, wounded warriors were given the opportunity to dicuss their situations, families, and injuries.

SFC Dennis Sterling proudly presented a set to the only Airman in attedance. The clothing is not branch, MOS or service specific

Each service member diligently serves protecting and defending our Nation. All who arrive here are treated the same with no distinction between services. All receive the equal quality of care.

Anyone interested in donating to the Fort Gorodon Wounded Warrior Clothing Apparel Project can email SFC Charmaine Renya at: wounded warrio_fortgordon@hotmail.com or can call 706 787-0328. All proceeds go toward providing our service members with a set of the clothing apparel.

SIGNAL REGIMENT DOCTRINE PRODUCTS

FM 6-02.40, *Visual Information Operations*

FM 6-02.40 provides information on Visual Information activities, roles, management and support from the operational through the tactical levels of war. It describes the capabilities and components of visual information assets, and defines the organizational structure and responsibilities of visual information activities at each level.

FM 6-02.43, *Signal Soldiers Guide*

FM 6-02.43 provides signal Soldiers an overview of current signal doctrine and fielded communications systems, and an understanding of implementing signal support under modularity from maneuver battalion through theater level. It provides an overview of the network, Global Information Grid, and LandWarNet and its transport systems. It outlines the roles and responsibilities of the G/S-6. This manual also discusses EMSO, MDMP, and has sections on federation of networks, information systems, signal military occupation skills, ABCS, and the application of Army two level maintenance at all echelons. It targets signal soldiers at all echelons.

FM 6-02.53, *Tactical Radio Operations*

FM 6-02.53 serves as a reference document for tactical radio systems. It provides doctrinal procedures and guidance for using tactical radios on the modern battlefield. The manual targets operators, supervisors, and planners. It provides operators and supervisors basic guidance and provides the system planner the necessary steps for network planning, interoperability considerations, and equipment capabilities.

FM 6-02.71, *Network Operations*

FM 6-02.71 provides doctrine for the overall guidance and direction pertaining to the command and control of Army communications systems and networks (voice, video, and data) and information services (collaboration, messaging, storage, mediation, etc.) throughout strategic, operational, and tactical levels. It describes the Army's portion of the Global Information Grid, "LandWarNet" network operations goals and objectives, and the associated roles and responsibilities of applicable organizations, materiel, leadership, personnel, and facilities that must integrate LandWarNet standards, telecommunications, services, and applications for the purpose of enabling warfighters to conduct the information management and knowledge management tasks necessary to achieve information superiority and decision dominance.

Visit the listed websites for

More Signal related subjects.

e-LandWarNet University https://lwneusignal.army.mil/portal/

Signal Doctrine http://www.gordon.army.mil/doctrine/

Signal Concepts http://www.gordon.army.mil/concepts/

Signal Training http://www.gordon.army.mil/dot/

Contact: signal.doctrine@us.army.mil

SFC AUGUSTIN MENDOZA JR.

TELECOMMUNICATIONS
OPERATIONS CHIEF

Mendosa's story

SFC Agustin Mendoza was part of our Military Transition Team during the period of September 2006 to September 2007. On Dec. 1, 2006, Mendoza was involved in a routine mission as part of a quick reaction force in support of a company from the Iraqi Army Division (MECH). The Iraqi Army unit was receiving heavy fire and our mission was to provide them with enough support to extract their troops from the area. We received more heavy fire from roof tops, snipers, small arms, and hand grenades. Mendoza and his team responded with barrages of fires in all directions holding the enemy in their position as the call for Apache helicopters support went out.

Mendoza was the .50 cal gunner in one of the vehicles and on two occasions he took accurate sniper shots, one when retrieving an IA Soldier left behind in the confusion, (never leave a fallen comrade). Both bullets were stopped by the bullet proof glass in the vehicle's turret. A hand grenade landed on one vehicle causing a roll over, but no major damage.

On Dec. 3, the same year, Mendoza was again on a routine mission and as much as they avoid the same route of attacks, the check point to go different ways was inevitable. They had to drive by a market enroute where intelligence revealed a possible attack using propane gas tanks.

Different vendors had gasoline and propane tanks – as they passed by one of the vendors, an IED went off and according to the vehicle behind them their vehicle was completely engulfed by a giant fire ball. The explosion resulted in second and third degree burns to Mendoza's face and neck. He was treated by the team's medic who, fortunately for him, was in the same vehicle. Mendoza was stabilized and taken to the green zone hospital and later transferred to Landstuhl Regional Medical Center in Germany where he spent 25 days recovering from his injuries before returning back to duty in Iraq.

ACRONYM QUICKSCAN

IA – Iraqi Army
IED – explosive devices
MITT – Military Transition Team
QRF – quick reaction force

Building the Team, One Soldier at a Time...

Spotlight on SFC Clay Usie

SFC Clay Usie, a 25U Army Recruiter, was the focal point of the recent HBO documentary *The Recruiter,* which aired in July 2008.

The documentary took a firsthand look into the challenges of enlisting new Soldiers and a glimpse into the personal drama surrounding the recruits' decisions to defend their nation during a time of war.

The film follows the Army Times 2004 Soldier of the Year as he works with four young men and women from various backgrounds as they progress through Basic Training to their initial units and for some, deployment. The Recruiter is available now on DVD at most retail outlets.

Editor's Note: Synopsis of HBO's Documentary The Recruiter. http://www.hbo.com/docs/docuseries/therecruiter/index.html

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