The Eagle

Published for the men and women of the U.S. Army Space and Missile Defense Command — July 2001

Taking care of the Army family

Delegates meet, discuss issues during Army Family Action Plan conference in Arlington, Va.

Story & photos by Jonathan Pierce
Huntsville, Ala.

Change.

We shudder at the word.

There are transfers, promotions, new schools, unaccompanied tours, illnesses, injuries, and retirements. Each affects soldiers and civilian employees, and their families, with varying degrees of stress, paperwork, and hassle.

But. A few Army spouses got together nearly 18 years ago and decided there had to be a way to eliminate policies and actions that were detrimental to the Army Family and the Army mission.

It could be said that was the first issue of the Army Family Action Plan (AFAP)—develop a means by which problems affecting members of the Army Family could be addressed and prioritized.

SMDC AFAP Conference Convenes

From July 11-13, 48 SMDC delegates, including soldiers, civilians, spouses, and young adults, from Kwajalein Atoll to Arlington, Va., gathered

See **'AFAP,'** pages 6 & 7

(Photo by Jonathan Pierce)

Brittany Davis (left) and Angela Watkins (center) lay a wreath at the Tomb of the Unknown Soldiers in Arlington Cemetery. They represented the teen delegates to the SMDC Army Family Action Plan Conference. The youth created the wreath during the conference.

Ground-Breaking Ceremony well-attended by VIPs, local community reps

(Below) Participants of the official Von Braun Complex Ground-Breaking Ceremony conducted July 23, 2001, on Redstone Arsenal, Ala., shovel the first mound of earth of a project that will be constructed in three phases. Once constructed, the total support facilities will cover some 643,330 gross square feet of terrain and will be the new home for employees of the U.S. Army Space and Missile Defense Command (USASMDC). (L to R) Lt. Col. Michael C. Gladbach, deputy for Military Construction, Mobile District Corps of Engineers, Sen. Ted Stevens (Alaska), Lt. Gen. Joseph M. Cosumano, Jr., Commanding General, USASMDC and CG, U.S. Army Space Command, Maj. Gen. Julian A. Sullivan, Jr., CG, U.S. Army Aviation and Missile Command, Sen. Richard C. Shelby (Ala.), Congressman Robert "Bud" Cramer, Jr., (Ala.), and Dr. Ernst Stuhlinger (original Von Braun team member and family representative of Dr. Wehrner Von Braun). (at right) Lt. Gen. Cosumano talks with Sen. Shelby shortly after the ceremony. (photos by Marco Morales)

Commander's Notes

Defining the Army's role in Missile Defense

Lieutenant General
Joseph M. Cosumano, Jr.

Recently, the Administration showed its commitment to missile defense with a substantial proposed increase in funding. Although the details of the overall architecture are still to be determined, there are two things this new plan emphasizes.

First, since one country's theater missile defense is another's national missile defense, we need not make these distinctions any more. Rather, we are better off referring to all tactical and strategic defenses simply as missile defense.

Second, there is no single system that will protect deployed warfighters, our allies and coalition partners, and our citizens.

That said, a multi-layered architecture to counter threats in all phases of their flight: boost, mid-course and terminal makes sense, considering the difficulty in intercepting missiles and the proliferation of varying missile threats.

To that end, all developing land-, sea-, air- and space-based systems are being examined for potential use in this layered approach. There are merits to each system under consideration, and it is likely that numerous options will be leveraged to create a truly effective missile defense.

I feel confident the Army will continue to contribute significantly with any emerging missile-defense architecture. The land-based missile defense system, for which the Army is the lead Service, will likely become the ground-based portion of the mid-course segment. It has successfully intercepted target ICBMs twice in four attempts, including the recent Integrated Flight Test-6.

SMDC can be proud it has played a major role in the development of this hit-to-kill, non-nuclear system.

The Exoatmospheric Kill Vehicle and the Ground Based Radar both originated in SMDC's technology base at Huntsville, Ala.

The Army also is responsible for developing the site-based battle management system, wherever it will be deployed.

In addition, SMDC develops the targets used in the integrated flight tests and operates the Ronald Reagan Ballistic Missile Defense Test Site at the U.S. Army Kwajalein Atoll in the Marshall Islands where the missile-defense interceptors are launched for flight tests.

Finally, the entire SMDC team led by the NMD TRADOC System Manager is working hard to prepare for deployment of a ground-based system, should a decision be made to do so.

The Army also plays a critical tactical role in the emerging Patriot Advanced Capability-3 (PAC-3) missile defense system. In several months, it will become the first hit-to-kill system to be fielded. To date, it has been a spectacular success, succeeding in intercepting eight targets in nine attempts. The PAC-3 missile will also be employed in the developing corps-level maneuverable system to be used by American, German and Italian troops, the Medium Extended Air Defense System (MEADS).

In recognition of the progress made in these two systems, PAC-3 and MEADS will be transitioned back to the Army for final development and fielding.

The Army will also have a key role in the terminal phase of the emerging system with the Theater High Altitude Area Defense system (THAAD), currently scheduled to begin fielding in 2007, but which could possibly be fielded in 2005 with increased funding. THAAD, which achieved intercepts in its last two tests, will be able to intercept incoming missiles in and outside the atmosphere, giving it great potential flexibility as an effective terminal phase component.

For THAAD, PAC-3 and MEADS, SMDC will continue to intensively support the Program Executive Office for Air and Missile Defense (PEO-AMD), who has direct acquisition management responsibility for these systems.

In addition, on Oct. 1 the Army's cruise missile defense initiative, the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System, will transfer from SMDC to PEO-AMD. This is another example of SMDC's technology base producing an innovative missile defense solution that is then transferred to the PEO-AMD for formal acquisition, testing and ultimate fielding.

For a layered missile defense system to be effective against the potential myriad threats of the future, commanders must eventually have a Single Integrated Air Picture (SIAP) to track missile threats throughout all phases of their flight. SMDC is working closely with the SIAP Systems Engineer Task Force to develop such a system.

Achieving SIAP is but one level of integration that must be achieved for these many promising tactical and strategic systems to be melded into an effective defense. Integration must occur in all aspects across the four pillars of missile defense: attack operations against enemy missile launchers and associated command and control systems; active defense in intercepting launched missiles; passive defense in defending troops and assets against the effects of incoming missiles; and battle management, command and control to lash it all together. Only a fully integrated missile defense will give commanders the ability to use all available "layers" of missile defense effectively.

But one thing is sure. The Army will always continue to be the leader in the nation's missile defense program. As the only service that has successfully accomplished destruction of an inbound enemy missile in actual combat operations, the Army will always be the cornerstone of the joint missile defense community of the future!

Secure the High Ground!

Commentary

Defending Liberty... Why I serve

by Capt. Clemens S. Kruse

(Army News Service, July 2, 2001)—I serve because a royal concept of mercantilism digressed into taxation without representation.

I serve because a common farmer, a colonial militia officer, a decent, ordinary man faced with extraordinary circumstances risked his life and livelihood when he entered a basement chamber in Philadelphia in the fall of 1774 to join the Continental Congress and became the father of our country.

I serve because a first lieutenant brought me coffee at 2 a.m. while I was on guard duty and asked me to talk through my concerns about accepting my nomination to a service academy.

I serve because of the chills I felt during *Reveille* as a Boy Scout at Lake Arrowhead, as a basic trainee at Fort Benning, and as a new cadet at West Point.

I serve because of the chills I feel each day I have the opportunity to honor my nation's colors at *Retreat*.

I serve because of seven articles and 27 amendments that serve as a 225-year-old experiment in government that King George wrote off as a doomed system—that is today emulated by every country introducing free trade.

I serve because I know my leaders will never ask me to march into our legislative branch to establish new law, as per Oliver Cromwell's example.

I serve because my country's tremendous wealth of resources and creativity is balanced by philanthropic gestures at home and abroad.

I serve to equally protect the idealisms of both The Honorable Tom Daschle and Rush Limbaugh; both Billy Graham and Larry Flynt; both Bill Gates and John Doe; both Al Gore and Charlton Heston.

I serve to strengthen George Orwell's statement "We sleep safe in our beds because rough men stand ready in the night to visit violence on those who would do us harm."

I serve because one million lawyers working today constantly question and strengthen the limits of our law—when our law becomes unquestionable, I will have cause for concern.

I serve because Khomeini, Qaddafi, Hitler, Noriega, Hussein, Aidid, and Milosevic are seldom satisfied without introducing their tyranny and imperialism.

I serve because I want my children to describe their father's job as defending their freedom.

I serve because the American public has high expectations of protection and sanctity.

I serve because somebody has to, and I feel I can do it better than most.

(Editor's note: Kruse, is a company commander at McDonald Army Community Hospital, Fort Eustis, Va.)

BMDO considers RTS for THAAD

by Peter Rejcek
Kwajalein Atoll

The Ronald Reagan Ballistic Missile Defense Test Site (RTS) could be the launching pad for the final series of tests on the nation's Theater High Altitude Area Defense (THAAD) missile defense program.

In mid-July, a group of 11 people, mostly with the Ballistic Missile Defense Organization (BMDO), toured Kwajalein, Roi-Namur and Meck to assess the range. BMDO oversees America's missile defense programs.

The Reagan Test Site is in competition with the Pacific Missile Range Facility (PMRF) at Barking Sands in Hawaii for BMDO's business, which could mean hundreds of millions of dollars in direct benefits for the chosen range. And while RTS appears to have the technical and geographical edge in terms of test space, there are concerns over housing, program scheduling conflicts and other logistics issues, according to BMDO evaluators.

"This is a comprehensive study," said Kenneth Rackers, BMDO deputy director for the TMD program support team. "We know this facility has world-class assets."

Like the highly publicized ground-based NMD, THAAD is designed to intercept missiles at long range and high altitude, as well as in short- and medium-range scenarios. It employs the same "hit-to-kill" theory, as well. The system, unlike NMD, is mobile and all of the components can be transported by a C-141 airplane. Range testing is scheduled to begin in 2006.

While RTS had been the "baseline" range for testing, a study was ordered by Air Force Lt. Gen. Ronald Kadish, BMDO director, to determine which facility would be best suited for THAAD, said Rackers. Competition had included eight test ranges, he said, adding that a final decision is due in September.

Col. Curtis L. Wrenn Jr., USAKA commander, said the program is an important one for RTS, which brings with it $10 million to $11 million in new construction alone.

"This would be the second largest program at Kwajalein," Wrenn said. NMD, at an estimated $100 million per Integrated Flight Test, is the largest.

The THAAD system consists of four principal segments: Truck-mounted launchers, interceptors, the THAAD radar system and the THAAD battle management/command, control, communications and intelligence system. System development began in 1992 and is expected to produce combat-ready missiles by 2007, with a battery fielded in 2008. The entire system should be deployed by 2013, Rackers said.

Since 1995, the system has undergone 11 tests — Program Definition and Risk Reduction flight tests — at White Sands Missile Range to integrate its various components. Following six misses, the last two flight tests resulted in intercepts, propelling the program into its next phase, Engineering and Manufacturing Development. Flight tests will start at White Sands sometime in 2004-2005, but will eventually move to RTS or PMRF.

Tests at either range would follow a "very ambitious" schedule, with launches taking place at a pace of about one every six weeks, according to Debbie Giordano, BMDO project integrator for ranges and instrumentation. That kind of schedule means an increase in TDY traffic, with an operation surge of up to 120 people, as well as 25 to 50 permanent residents, she said.

Proponents of THAAD say it offers U.S. forces an early opportunity to knock down incoming missiles far enough away so that debris from weapons of mass destruction will not harm soldiers on the ground. Second, the system allows the United States enough time to launch a second interceptor from THAAD or another missile defense system if the first interceptor misses.

THAAD Launch IFT-10, June 10, 1999

PAC-3 intercept a partial success

HUNTSVILLE, Ala. (Army News Service, July 17, 2001)—The Ballistic Missile Defense Organization and the Army conducted a test of the Patriot Advanced Capability-3 (PAC-3) missile at White Sands Missile Range, N.M., July 9.

The PAC-3 missile successfully intercepted a jet aircraft, officials said, but missed a ballistic missile target. Officials said the intercept of the jet aircraft was actually more difficult, because it was emitting radar-jamming signals.

The test's objective, officials said, was to simultaneously engage both a theater ballistic missile and a remotely piloted jet aircraft with two PAC-3 missiles. The theater ballistic missile engagement was at short-range and medium altitude, and the aircraft engagement was a long-range, low-altitude mission.

"Today's test was more stressing than all previous tests," said Col. Tom Newberry, Lower Tier Air and Missile Defense project manager. "The [PAC-3] missiles were dropped, vibrated and heated to represent severe handling during 30 years in stockpile. For test purposes today, only one PAC-3 missile was fired at the ballistic missile target. In actual combat, two PAC-3 missiles may be fired at these targets to ensure their destruction. Extensive post-mission analysis will be conducted to determine if further modifications to the PAC-3 system are required prior to full-rate production."

The PAC-3 missile is a high velocity, hit-to-kill missile and is the next generation Patriot missile being developed to provide increased defense capability against advanced tactical ballistic missiles, cruise missiles, and hostile aircraft, officials said. Unlike earlier Patriot missile explosive warheads, the PAC-3 missile literally collides with its target in mid-air at extremely high speed, destroying the target and neutralizing its payload.

The PAC-3 missile successfully completed nine flight tests prior to the July 9 test. The first two PAC-3 developmental test missions did not involve targets but were structured to verify critical systems and missile performance prior to conducting target intercept flight tests, officials said.

A seeker characterization flight mission was conducted March 15, 1999, to test a PAC-3 missile with a seeker. Although not a primary objective, an intercept of the target was achieved. On Sept. 16, 1999, a second intercept test was successful. DT-5, conducted Feb. 5, 2000, was a successful intercept of a Hera ballistic missile target. DT-6, conducted Oct. 14, 2000, was a successful intercept of a Storm target by a PAC-3 missile with a simultaneous engagement of an MQM-107 by a PAC-2 missile. DT-7, conducted July 22, 2000, was a successful intercept of an MQM-107 drone representing a cruise missile. Another MQM-107 was intercepted July 28, 2000 during a test not included in the developmental test program.

DT-8, was also the most complex, officials said. It involved a simultaneous engagement of a Hera ballistic missile target using two PAC-3 missiles and a Patriot missile configured as a target by a PAC-2 interceptor. There were five missiles (two targets and three interceptors) in the air at one time and both targets were destroyed.

(Editor's note: Information taken from a BMDO news release.)

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Volume 8, Number 5

Exoatmospheric Kill Vehicle pulverizes target in IFT-6

by Jim Bennett and Jonathan Pierce
Kwajalein Atoll and Huntsville, Ala.

The missile defense community scored a hit July 14th when an exoatmospheric interceptor proved the "hit-to-kill" technology by destroying an ICBM reentry target over the Pacific Ocean.

The U.S. Army Space and Missile Defense Command (SMDC) played key roles in the successful missile defense test conducted by the Ballistic Missile Defense Organization (BMDO).

The Ballistic Missile Targets Joint Project Office provided the modified Minuteman II ICBM, reentry target, and decoy that was launched from Vandenberg AFB, Calif. Sensors at SMDC's Ronald Reagan Ballistic Missile Defense Test Site at Kwajalein Atoll (RTS) tracked the target and the interceptor was launched from the RTS.

Air Force Lt. Gen. Ronald Kadish, director of the BMDO, said, "The early indication we have is everything worked." He noted, however, that there was a tremendous amount of data to analyze, and that some sub-systems may not have functioned precisely as planned even though the test was successful.

He also said that the frequency of tests will increase, including as many as six in the next 18 months.

Jerry Cornell, the Boeing site manager, said the stepped-up testing schedule will not require more personnel living on Kwajalein, but will result in more numerous visits by the 315 or so TDY personnel who attended Sunday's launch.

Interest in the test was high with 38 video teleconferencing centers across the United States showcasing the event for military, government and media. More than 10 centers in the Washington D.C. area, alone, featured video from the launches and control rooms.

An Early Start

Mission day opened with an early morning boat ride from Kwajalein to Meck. More than 200 staff, visitors and locals, crowded on the catamaran *Jelang-K* in the predawn around 6 a.m. As the boat passed Little Bustard, the sun rose over the ocean and a rainbow shone over Carlson Island, across the lagoon. It was a good omen, as a rainbow had lit up Meck prior to the successful IFT-3 mission in October 1999.

Dressed in matching shirts, various groups gathered on the upper deck and in the two large cabins. Battle Management Command, Control and Communications team members dressed down in blue aloha shirts. Raytheon EKV and Boeing mission personnel wore golf shirts. Lockheed Martin staff sported baseball jerseys.

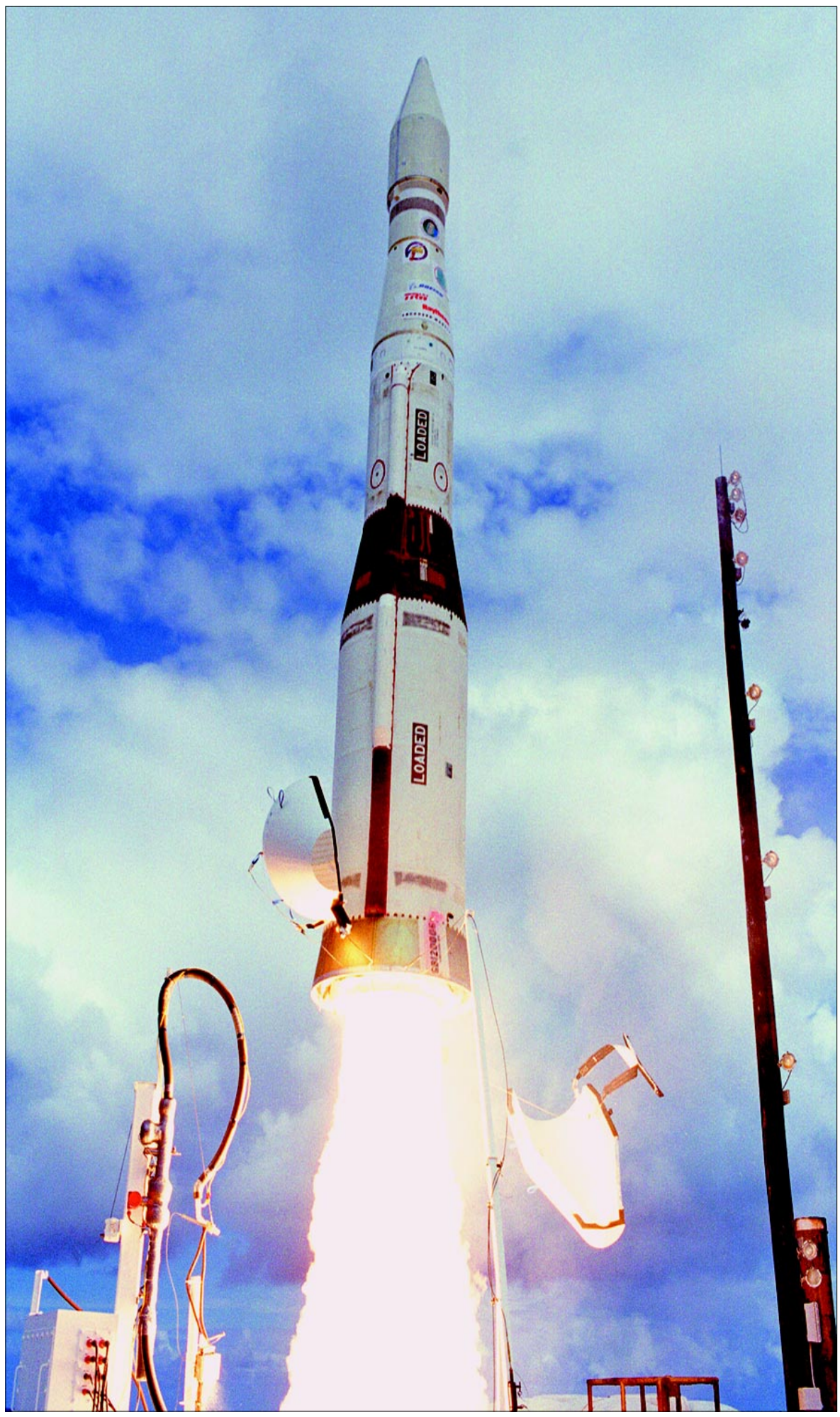
"Everybody has their thing," said Fred Lackey. Lackey has worked with numerous missions. He currently serves as a public affairs specialist for the NMD program.

"You won't see red, though," he said.

One group had worn red T-shirts during IFT-5, defying conventional superstition. For this mission, four of them had placed those red shirts below the interceptor in an attempt to burn them.

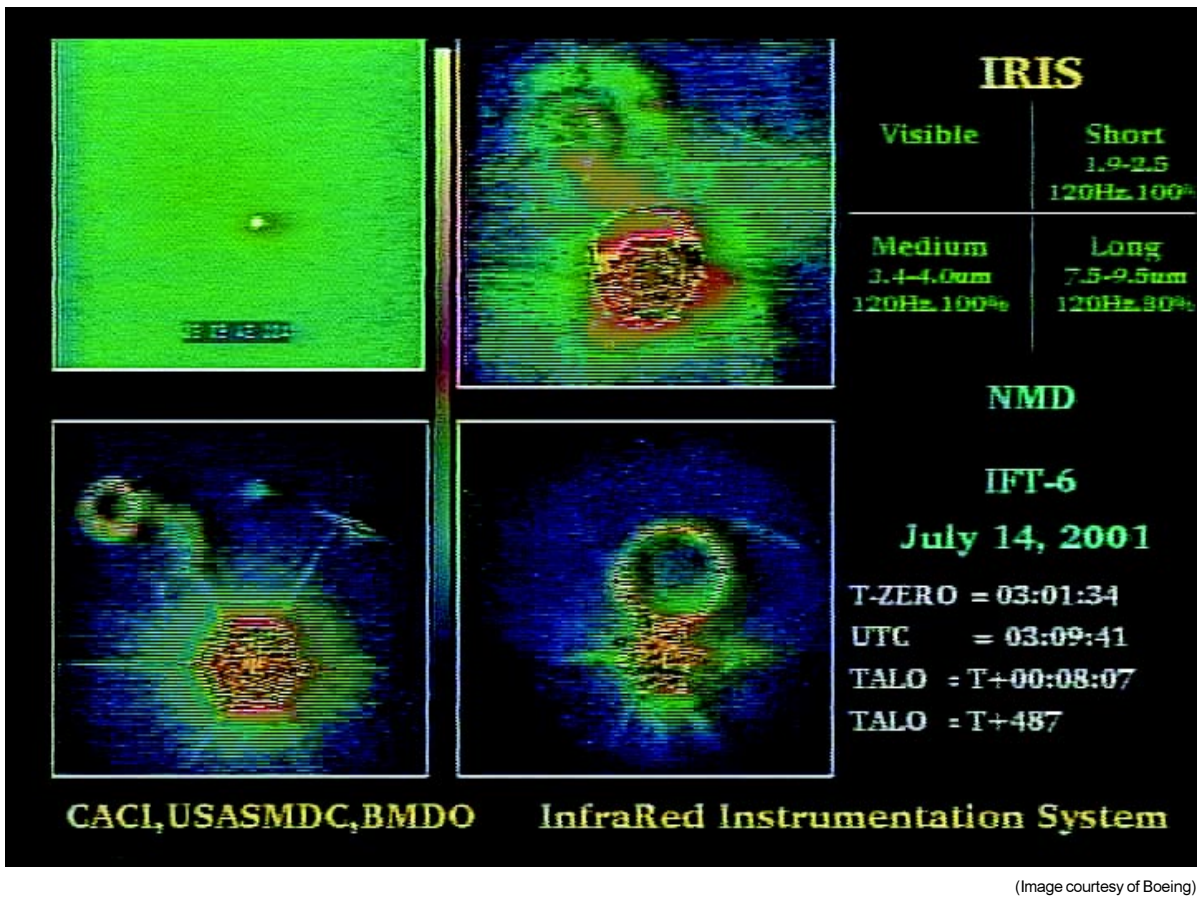
The teams seemed in good spirits Sunday morning [it was Sunday on Kwajalein but Saturday in the States] with quiet jokes and

(Photo at right) From left, Boeing executive Jim Evatt, Maj. Gen. Willie B. Nance Jr., program executive officer and system program director, National Missile Defense, BMDO, and Brig. Gen. John M. Urias, deputy commanding general for Acquisition, USASMDC, discuss mission issues before Integrated Flight Test-6 which included an ICBM test target from Vandenberg AFB and an exoatmospheric interceptor missile from the Reagan Test Site at Kwajalein Atoll.



(Photo courtesy of Boeing)

The ground-based 120-pound exoatmospheric interceptor, launched atop a missile from Meck Island, Kwajalein Atoll, found its target 144 miles into outer space, at 8:09 p.m. PDT, on July 15, and pulverized it in an exploding flash of light. The target missile, from the USASMDC's Ballistic Missile Targets Joint Project Office, was launched about 7:40 p.m. from Vandenberg Air Force Base, Calif.



(Image at left) An infrared instrumentation system at the mission control center is used to view the actual hit-to-kill impact during the test. (above) Bradley Graham interviews Maj. Gen. Willie B. Nance Jr., before Sunday's launch.

(Image courtesy of Boeing)

conversations passed about the boat. Some wondered out loud what protests might accompany the mission. But no one seemed unsure of the mission.

"There was a lot of confidence," said Mission Director Kenny Ivey. "We were *going* to have a success."

And yet, underneath all the confidence, Ivey said the team recognized the need to make an intercept after two failed attempts. The last successful hit had come in October 1999 during IFT-3. The last test, IFT-5, was in July 2000.

"There was more tension, more stress [than IFT-5]," Ivey said. "There was a lot of external pressure for the program. The program needed this success. And there was internal pressure for ourselves. This is what we live for."

Despite the pressure, preparations for IFT-6 seemed to go more smoothly than the past two missions, according to John Fratangelo, chief scientist for the independent assessment team.

"We didn't have the issues [on IFT-6]," Fratangelo said. "On the last two, we had something right down to the last day."

Fratangelo has worked on missile programs for more than 30 years. He spent 13 of those years on Kwajalein. He returned to the island for IFT-6. His job is to think of things that others might have forgotten, to consider possibilities others have not.

"'What did I forget to think about?' That's the stuff that keeps you up at night," he said.

On Sunday at noon, however, with only hours to go, he remained cool and calm, visiting with his co-workers, but still not eating on launch day, a habit he developed decades ago in the missile program.

"You have the feeling that you've done everything you can do, that you've paid attention to the things you need to," he said.

And Fratangelo, like many, dismisses much of the criticism stemming from the first five tests of a 20-plus test program.

"We've never had a perfect program," he said. "If you could guarantee success, take away the money for the program. Deploy it. There's no need to fly."

Fly Baby Fly

Shortly after lunch, for those who ate, the control room filled to capacity. At the center table, facing a large video screen, sat Maj. Gen. Willie Nance, NMD program manager, flanked by Brig. Gen. John M. Urias, SMDC deputy commanding general for Acquisition, and Jim Evatt, executive vice president and general manager of Boeing missile defense systems.

All sat and whispered as radio traffic came over the intercom.

"This is a status check."

"All is green, no exceptions."

At T-7 minutes, 1:58 p.m., reports came in of two Zodiacs in the boat exclusion zone at Vandenberg Air Force Base. U.S. Coast Guardsmen picked them up, but the mission would briefly stop. At 2:15 p.m., the clock resumed at T-25 minutes.

At 2:40 p.m., the screen displayed an open field at Vandenberg. When the countdown reached 0, a blast filled the screen and a missile shot from the underground silo.

A chorus in the room rang out, "All right!" and the clock for the interceptor continued its countdown.

Throughout the mission building on Meck, groups of support people, with no buttons to push, sat in various rooms around televisions watching. A graphic display showed the trajectory of the target. All systems reported again, "green."

Around 3 p.m., the countdown fell to the final seconds for the ground-based interceptor launch. As it shot into the heavens, the windowless rooms shuddered slightly, and all could hear the muffled roar of the launch. Again, some low, quiet cheers accompanied the launch.

The video displayed the missile in flight so clearly one could read the decals on the side. As the booster separated, the groups cheered again.

The displays returned to a map showing green and red lines approaching each other—one the target, the other the interceptor. Moments before the scheduled intercept, the screen changed to a black and white video feed.

A little white dot known to be the interceptor seemed to hang in space until the countdown to intercept reached zero at 3:09:42. A pause followed, and a bright flash filled the screen. The audience erupted in cheers.

Post-Op

Though filled with excitement, team members still had to complete some final kill assessments, and many reports would have to be filed and briefings given.

The first, called a "Hot Wash," united the control room teams for a quick overview of the mission. Ivey reported with a smile on his face, "Everything was nominal."

"It went extremely well," Ivey said later. "It couldn't have gone better."

Ivey will PCS from Kwajalein this week. Of his departure and the mission he said, "I went out with a bang."

The range collected large amounts of data, and the GBR assigned and discriminated the target as expected, he added.

Reporting for the BMC3 sensor, which collects the mid-flight data and directs the kill vehicle, Jim Estes simply said, "We had a good mission."

Cornell presented the American flag that flew over Meck to Nance, saying, "Sir, we celebrated the Fourth of July as a team, watching the fireworks. Today, we celebrated again, watching the fireworks of the thunder in the exo," Cornell said, referring to a representative theme given to the mission.

"Though we've had some setbacks over the last year, we've learned a lot, too," Nance replied. "It has been a long year and a lot of work by everyone here. You can be proud of your commitment. You are the world's best at doing this."

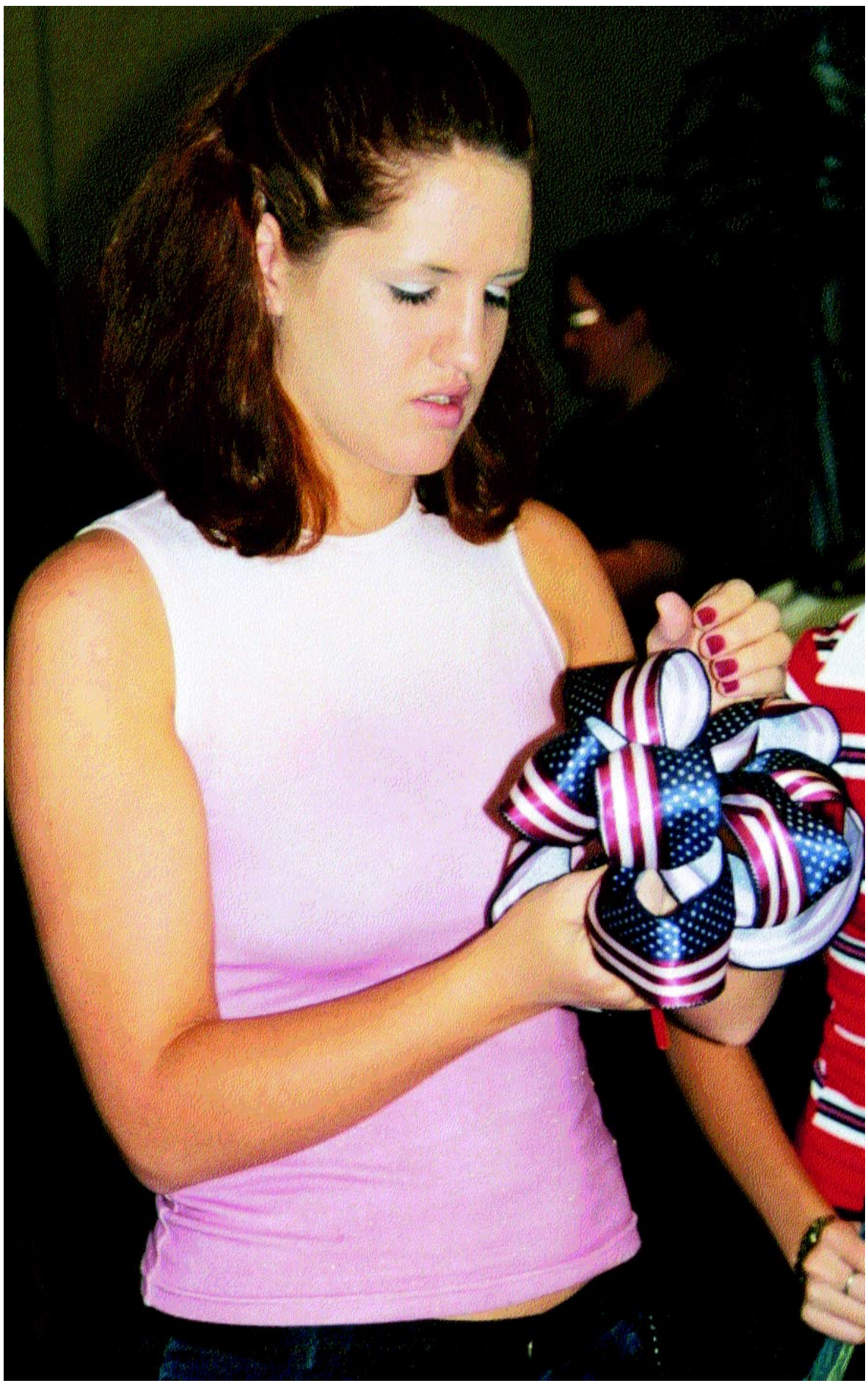
Urias agreed, "This is a big step for SMDC and the NMD team."

Speaking to all the people who worked behind the scenes to make this launch successful, Urias said. "I can't say enough about the professionalism and teamwork that each of the members of your team displayed in support of IFT-6. NMD's success is partially yours, and each of you should be proud of your contribution to the greater mission."

'... It has been a long year and a lot of work by everyone here. You can be proud of your commitment. You are the world's best at doing this ... '

-- Maj. Gen. Willie B. Nance, Jr.

Army Family



(Photos by Jonathan Pierce)

(Above) Stacy Jones, a youth delegate to the SMDC AFAP Conference works on a bow for the wreath the youth would lay at the Tomb of the Unknowns in Arlington Cemetery. (Above right) Megan Bruce, one of the youth delegates attaches her "dogtag" to the wreath. Each of the twelve youth found a way to personalize the wreath to represent both themselves and their home stations. Prior to laying the wreath, the youth were able to spend a half hour visiting with tomb guards in the guardroom.

AFAP (cont. from page 1)

at Arlington to consider more than 40 issues of concern to other members of the SMDC family. The issues and delegates were divided into four groups: Entitlements, Civilian Personnel, Medical and Dental, and Youth. Each workgroup also had a support team to facilitate discussion and record their decisions.

Chally Ballard, a member of the youth workgroup, said that being on the workgroup wasn't easy.

"It was challenging," she said. "You think that you're just going to get a free ride here, but you work so hard to try and write the issues right. This is a lot harder than I thought it would be."

Angela Watkins agreed.

"Just like adults, teens move and we have a lot of issues. Writing issues is easy. Discussing them was hard. You could feel the tension. It was hard work, but everybody maintained their cool," Watkins said.

"I guess that we did pretty well," Watkins said. "Two of our three issues were selected in the top five of all the issues for the conference."

When asked what she would say to young adults coming as future delegates, Watkins said, "take this very seriously. Be ready to work really hard. The work we do is not just national, it's international, it affects Army youth worldwide."

Master Sgt. Pete Roman, from ASPO, served on the Entitlements workgroup. He was impressed with how his workgroup functioned. "Everyone got their chance to express their opinion and respected everyone's opinion. I feel we met the intent of the conference. I think that through the AFAP forum we have the means down at the unit level to surface issues to the command and to DA. It gives us the voice we need to express our concerns directly.

"The other good thing is we can track the resolutions over time. That's very good. You can see whether it was found to be undoable, and the rationale for that, or you can follow the issue as it moves forward to completion.

Serving as the transcriber on the Medical/Dental board was fun and frightening for Delores Eppes of the Arlington DCSSPA office.

"Trying to stay up with the discussion, and they're all expecting you to get everything right. It's pressure. But it was a great group. The delegates worked well together brainstorming and sharing personal experiences. They were very considerate of the issues and trying to understand them," she said.

Overall the workgroups chose to recommend 16 issues of the more than 40 presented for consideration by the command. The top five issues included: (1) Timely Scheduling of Medical Appointments, (2) Divorced Spouses Retirement Entitlement, (3) Anonymous Hotline for Army Youth, (4) Army Online Site for Scholarships, and (5) Inadequate Accommodations After PCS to CONUS Locations.

Youth lay Wreath at the Tomb of the Unknowns

One of the highlights of the conference was the opportunity few adults or children have in a lifetime. The youth group spent several hours on July 12, working with George Goetzke, director of Arts and Crafts at the Walter Reed Medical Center, making a wreath to lay at the Tomb of the Unknown Soldiers in Arlington Cemetery. The youth visited the Tomb guardroom where they were briefed and had an opportunity to ask questions about experiences the guards have had.

Then at 6:05 p.m. the sergeant of the guard led the youth delegation in laying their wreath.

"Making the wreath was a real team building event—it helped us grow as a group," Watkins said. "Laying the wreath at the Tomb was an honor, a big honor.

"When taps was played...wow! You had to hold your emotions in because of the seriousness. I thought about the soldiers who lost their lives. It was really moving," she said.

Action Program

(Above) With the Tomb of the Unknown Soldiers and their wreath in the background, members of the SMDC Family Action Plan Conference pose for a group photo. (Far left) (l to r) LaJeannia Lacey, Angel Coic, and Elizabeth Hurt sing a humorous melody honoring Portia Davidson, her staff, and the AFAP program, during closing ceremonies of the conference. (Center right) The wreath the youth delegates created to lay at the Tomb of the Unknowns. (Near right) The wreath stands in tribute before the Tomb of the Unknowns.

AFAP: A change for the best

A common bond among everyone who works with the U.S. Army—soldiers, civilians, military and civilian family members—is the desire to improve the quality of the experience.

Most of us are patriotic, dedicated to our Nation and the Army that protects it.

But many in the Army family want their experience to "Be All It Can Be."

For all of you who, like me, have said, "If I were in charge I'd …[fill in the blank], there is a way to achieve change."

From July 11-13, I was a part of change, institutionalized in a way that I hadn't recognized in 27 years in the Army.

I had an issue. I wanted change. A panel of my peers considered my proposal, and other change ideas. Some proposals were adopted (as was mine) and some weren't.

The accepted proposals were briefed to the commanding general who will forward them to a similar forum of soldiers, civilians, and family members who will gather at the Department of the Army-level from all the major commands. There, the Army leadership will accept what the DA panels recommend to them. And, they'll do their best to achieve change—sometimes changing regulations, and sometimes public law.

Since its inception nearly 18 years ago, the Army Family Action Plan (AFAP) has initiated change resulting in 62 pieces of legislation, 128 changes in military policy and regulations, and improvements to 127 programs or services.

Examples of some of the improvements to the quality of Army life that have been influenced by the AFAP include: increasing the Servicemember's Group Life Insurance from $50,000 to $200,000; an increase in Basic Allowance for Housing by 11 percent with elimination of out-of-pocket costs by 2005, and the initiation of a military savings plan to begin in October.

Of 493 DA-level issues 74 are being actively pursued and 330 have been completed. Only 84 issues were found to be unattainable. Many more issues, more local in nature, have been considered at installation and major command levels and been implemented there.

So if you believe a change will improve the quality of Army life, thereby improving the ability of the SMDC and the Army to defend the Nation, contact Ms. Portia Davidson, SMDC AFAP coordinator in Arlington, at:

portia.Davidson @smdc.army.mil.

Angela Watkins and Heather Cornell present the recommendations of the youth delegates to the assembled conference and Lt. Gen. Joseph M. Cosumano, Jr., the SMDC commanding general. The assembled delegates recognized the hard work of the youth delegation by voting two of the three youth recommendations in the top five recommendations among the 16 presented.

Results of the conference can be found on the SMDC Commandnet at the following url: http://www.smdc.army.mil/FamilyPrograms/Index.html

ARSPACE orients SPACECOM/Fort Carson

COLORADO SPRINGS, Colo.—The U.S. Army Space Command (ARSPACE) may be a terrestrial jump into the future of military operations when put up against the rest of the military. To many service members, ARSPACE may conjure images from "Star Trek" to "Starship Troopers." Although ARSPACE may one day be a command element for military forces on other planets and in other galaxies, today's missions consist of providing missile-launch detection, space-based imagery, and satellite communications for ground forces worldwide.

On the morning of July 10, Lt. Gen. Edward G. Anderson III, deputy commander-in-chief and chief of staff, U.S. Space Command, along with Maj. Gen. Edward Soriano, commanding general, 7th Infantry Division and Fort Carson, and 32 members from the USSPACECOM staff had a rare opportunity to receive hands-on briefs of the equipment ARSPACE soldiers use to assist today's warfighter in global contingencies.

The occasion was the 7th Infantry Division Army Orientation Day at Fort Carson, Colo. The ARSPACE portion of the day's events took place at the Close Combat Tactical Trainer (CCTT) building on post. Following a briefing at the post headquarters, the group arrived at the CCTT where they were divided into six-man groups to facilitate the space availability in each of the displays.

Personnel were guided to three equipment displays in the CCTT compound. The displays consisted of a Joint Tactical Ground Station, an Army Space Support Teams exhibit, and the Mobile Processing Exploitation and Dissemination unit.

During each of the demonstrations, the USSPACECOM staff was given the opportunity to see the products and capabilities of each system. As the products were introduced, their importance to today's warfighter was increasingly clarified. According to officials participating in the ARSPACE demonstrations, positive feedback after touring the displays was impressive.

(photo by DJ Montoya)

Capt. Charles D. Nesloney (far left), from U.S. Army Space Command G-3 Operations and Training Division, briefs Jake Henry (second from left), director of Programs and Resources for NORAD and U.S. Space Command; Brig. Gen. Simon P. Worden (center), vice director of Operations, USSPACECOM; and Lt. Gen. Edward G. Anderson III (right), deputy commander-in-chief and chief of staff, USSPACECOM, on the ARSPACE displays they are about to tour as part of the 7th Infantry Division Army Orientation Day at Fort Carson.

(photo by DJ Montoya)

Maj. Jay Driscoll (left), Theater Missile Warning Company commander, 1st Space Battalion and Col. David Ifflander (right), director of ARSPACE G3 Operations, greet Fort Carson commander, Maj. Gen. Edward Soriano (center) as he completes a tour of an ARSPACE Joint Tactical Ground Station shelter during the day long festivities of 7th Infantry Division Army Orientation Day at Fort Carson.

The JTAGS and ARSST are components of the 1st Space Battalion. JTAGS, which provides theater missile warning, and the ARSST are involved in virtually every exercise in the U.S. European Command, Central Command and Pacific Command. JTAGS units are the only deployed/deployable systems providing direct downlink, in-theater early warning of ballistic missile launches.

They provide continuous in-theater processing and dissemination of tactical ballistic missile cueing, alerting and early warning in support of the Theater Event System and the theater commander's mission.

The ARSST provides a corps commander and his staff space products, services, and advice designed to enhance the corps' ability to achieve land force dominance. To accomplish this, the team obtains, processes, and delivers space-based products to assist the staff in assessing the operational impact of allied space-based resources, as well as those belonging to an adversary.

ARSST provides, but is not limited to satellite data, global positioning system expertise, solar activity and effects on communications, and satellite based imagery.

The MoPED, a component of the ARSPACE Battle Lab, is able to assist in targeting and satellite imagery. As this system matures, its applications will also be able to assist the ground force component commander.

ARSPACE is critical to today's warfighter. Being able to provide early warning of missile launches, near-time satellite imagery, GPS data, and satellite communications information, the ground force commanders not only have the ability to adjust their battle plans, but plan for operations that will cause the least amount of harm, with a maximum amount of success.

... The ARSST provides a corps commander and his staff space products, services, and advice designed to enhance the corps' ability to achieve land force dominance ...

SMDC gives 659 pints, exceeds 2001 goal

Story & photos by Becky Proaps
Huntsville, Ala.

Space and Missile Defense Command (SMDC) employees in Huntsville received an award from the Red Cross regional office in Birmingham, Ala., July 20, for being one of the top ten donor organizations in Alabama. The Huntsville employees set a new annual record for collecting blood–659 pints for this year (the Red Cross ends its year on June 30). Every year for the past several years, SMDC has surpassed its goal. In 1998, 415 pints were collected; 518 were collected in 1999 and this year the goal was 600 pints and that was beaten by 59 pints.

Mr. Mark Lumer, SMDC's Principal Assistant Responsible for Contracting, said that the Huntsville employees have been very supportive of the blood drives and he recognized Mr. Al Longhi and Lt. Col. Ed Martin for their efforts in leading the volunteer program. "They really do an extraordinary job managing the monthly collections. My hat is off to them for their great humanitarian efforts."

But, even though 659 pints is a great number, more donors are needed. Recently, the Red Cross added several new tests and restrictions [DoD's newly announced restrictions are within the Red Cross restrictions] to the screening process. In the process they lost a number of donors. Blood isn't accepted from individuals who have spent six months or more in the United Kingdom between 1980 and 1996. The current guideline was implemented in 1999 by all blood centers in the United States based on the mad cow disease epidemic. In addition, although the SMDC population is basically in excellent health, there are times when an individual is turned down because of low iron or other health-related factors.

The process of giving blood is easy and nearly painless. In Huntsville, individuals can check the local commandnet page for specific dates. Dates are on Fridays and times are from 8 a.m. to 12:30 p.m. Thursday dates are sometimes added so that those individuals who work the alternate work schedule aren't missed if they want to donate.

An appointment sign-up sheet is posted one week prior to the blood drives on the Red Cross Bulletin Board between Halls D and C outside the Contracts Office.

Donors come at the time they choose, complete some administrative details giving their name, date of birth, and social security number. Donors answer several health-related questions about their past and present health and lifestyle. A mini-physical examination follows. This mini-exam includes checking the donor's temperature, blood pressure and pulse, and a drop of blood is taken to ensure the donor has enough red blood cells to donate safely. This is one physical that doesn't ask about weight. It usually takes about 10 to 15 minutes to give a pint of blood. The whole process usually takes about 30 to 45 minutes. Federal employees are granted four hours of recovery time on the day they actually give blood, if approved by their supervisors.

The Red Cross has commended SMDC for its high donation goals on several occasions. SMDC is usually able to gather between 60 to 70 units of blood each day the Red Cross collects.

That amount coincides with the number of units Huntsville Hospital uses on a daily basis. Surgery for a person involved in an automobile accident requires 4 to 40 units of blood; an adult needing prostate cancer surgery needs two to four units of blood; and a liver transplant requires six to 10 units of blood. These are just three surgeries. Multiply these by dozens of surgeries in thousands of hospitals and the number of units of blood needed across the country on a daily basis is staggering. Modern medicine has made complex and life-saving surgeries possible. However, without a safe and plentiful supply of blood, no one could benefit from these advances.

Lumer appreciates the employees who have donated. "Congratulations to all who were able to give last year—your donations truly provided the gift of life to countless patients. We need your generous support to continue our legacy of generosity for such a worthy cause," he said.

Besides, at what other time can you drink soft drinks and eat cookies and not feel guilty.

Shirley Childers, an employee with the Contracting and Acquisition Management Office, takes the experience in stride. She has donated blood for 10 years.

... We need your generous support to continue our legacy of generosity for such a worthy cause ...

-- Mark Lumer

Daphne Crutcher, a Red Cross nurse, asks John Haskell of the Lower Tier Project Office, some health-related questions before taking his blood pressure and getting a drop of blood for analysis.

Daphne Crutcher, Red Cross nurse, makes sure all is well with Gayle Pridmore, an SMDC employee from the Resource Management Office.

Kathy Grotto (left), from the Weapons Directorate, hands Yvonne Quantock, the Red Cross volunteer, the questionnaire that starts the blood donation process. This is Grotto's 33rd time giving blood. Quantock has been a Red Cross volunteer for 31 years.

11th National Media Update a success for SMDC, news media

(photo by Jonathan Pierce)

Mr. Gabor Miklos (center, pointing) representing the "*Nepszabadsag*"—a newspaper published in Hungary, asks an exhibits specialist about some of the information on the exhibit panels in one of the breaks during the National Media Update. Participating exhibitors included the Marshall Space Flight Center, Boeing, the Aviation and Missile Command, the Army Test and Evaluation Command, and SMDC exhibits.

The 11th annual National Media Update conducted July 16-18 was another success story for the U.S. Army Space and Missile Defense Command (SMDC). Thirty-four journalists representing such publications as the *New York Times*, the *Washington Post*, the *Los Angeles Times*, the *Wall Street Journal* and *Newsweek* magazine, attended the high-level presentations at the Advanced Research Center in Huntsville.

Four of the 38 journalists were from the local and regional area including the *Birmingham News*, the *Huntsville Times* and *WAAY TV*. Twelve journalists represented foreign press organizations.

The event was kicked off by Lt. Gen. Joseph M. Cosumano, Jr., commanding general, SMDC and CG, U.S. Army Space Command. Cosumano presented the press a special video-taped message by Secretary of Defense Donald H. Rumsfeld who personally endorsed the IFT-6 and future missile defense programs.

The list of guest speakers for this two-and-a-half day event included Col. Ronald Haeckel, J-5, vice director, Plans, U.S. Space Command; Col. Donald Langridge, senior Army National Reconnaissance Office and chief, Army Element, NRO; Col. Mike Wolfert, J-5, U.S. Air Force Space Command; Mr. Rob Snyder, executive director, Ballistic Missile Defense Organization; Capt. Leonard Capello, Office of the Chief of Naval Operations for Missile Defense and Surface Warfare; Maj. Gen. Larry Dodgen, director, Joint Theater Air and Missile Defense Organization; Col. James Forrest, deputy program director, Airborne Laser Program; Col. Neil McCasland, director, Space-Based Laser Program; and Lt. Gen. Johnny M. Riggs, director, Task Force Objective Force, U.S. Army.

The presentations ranged from the CINCSPACE's view of requirements, Army Space and Tactical Exploitation of the National Capabilities Program (TENCAP), Operations, Space-based reconnaissance programs, missile defense and development programs for our future warfighters, the theater missile defense and single integrated air picture (SIAP) programs, laser and directed energy programs, and the Army's Objective Force. As of July 27, a total 19 stories had been published nationally and in trade journals in relation to this event.

In a survey taken by 23 journalists, all indicated that they got the information they wanted from the National Media Update.

ARSPACE employee honored for community service

By DJ Montoya
SMDC-ARSPACE

Holiday portrait of the Crow family (left to right): Foster child Nikki Mapes; husband Kent; daughter Clarissa; Gayle; and son Erin.

Most persons expect to be commended for doing good work on the job but few ever are recognized for what they do at home. One U.S. Army Space Command employee was the recipient of such an honor. Col. William Partridge, commander of Army Space Forces, presented Gayle Crow, a transportation management specialist with the Supply and Transportation Division, Logistics with an ARSPACE recognition award for being a woman of vision and courage during a Women's History Recognition ceremony in April. The Equal Employment Opportunities (EEO) Office conducted this event as part of the Army-wide Women's Day celebration.

"It was funny because in the ceremony I commented 'Ooh, I would have really liked to have gotten this for being the best employee of all time,'" said Crow, "but I'll take it for foster care." Crow holds the distinction of being the longest working civilian at ARSPACE. She started in November 1987.

But, what many don't know is that Crow, and her husband Kent, have provided foster care for children and adults in the local Colorado Springs community since 1990.

"It started with children," she said. "Over a 10-year period we have fostered 22 children. A lot of them we had anywhere from a year to five years each. And then two years ago we switched to doing disabled adult daycare."

Their journey into foster care for children began when their son Erin was 15 years old. According to Crow, he had a friend in junior high school who came from a very broken family. Both of his parents were drug abusers.

"He showed up at our door one evening," said Crow. "He was the same age as our son. The boy's stepfather had beaten him, and in order to help he asked that we call the sheriff, which we did. But there was no place in the community to put him."

She pointed out that the authorities had no homes for him to go to or be placed in temporarily.

"We asked if we could keep him." And they did. He was in the Crows' care for three months when a friend of theirs informed them that they needed to be licensed to be covered legally in case anything were to happen to him.

"We went through the process of the home study, and all the paperwork to become licensed as foster parents," said Crow.

And so their association with foster care began with children ranging from three months to 17 years of age. These children came from broken or abusive homes and were awaiting adoption or court determination.

See **'employee,'** next page

NCO, Soldier of the Year named

Conference updates senior sergeants

The senior noncommissioned officers of the U.S. Army Space and Missile Defense (SMDC) and Army Space (ARSPACE) commands gathered June 25-28 to select the SMDC NCO and Soldier of the Year and to be briefed on issues concerning the command.

Lieutenant General Joseph M. Cosumano, Jr., commanding general of SMDC and ARSPACE spoke to the assembled sergeants on several occasions.

Recognizing the essential role sergeants play in America's Army, Cosumano said, "We can never forget to remember to ensure the quality and the maintenance of the NCO Corps."

"As I look at your schedule, I walk away with a renewed sense of respect and responsibility. Our task today is to get you the resources, the dollars, and the time to provide for the future of our Army," he said.

Speaking to the soldiers who participated in the NCO and Soldier of the Year competition he said, "The competition this week has absolutely no losers, you are all winners. The future of our Army is in good hands."

The commands' top NCO, Command Sgt. Maj. Wilbur B. Adams was pleased with the results of the conference.

"We met the commander's intent to inform the senior NCOs about all the command's organizations and their tasks and efforts. We also brought in people from Department of the Army to brief on the Army Transformation and a number of personnel, medical, and professional development issues," he said.

"It provided a vehicle for the new commanding general to see all his senior NCOs in one forum. I feel good about who we [the senior NCOs] are, and I feel good about the command," said Adams.

As a result of the conference, Adams believes the senior NCOs are more knowledgeable, more committed and their esprit de corps has been enhanced.

Back to the Past

The senior NCOs and participants in the NCO/Soldier of the Year competition took an afternoon trip to Gettysburg, Pa., to visit the National Battlefield.

The tour with Anthony M. Nicastro, a licensed battlefield guide, was a memorable lesson in battlefield tactics and the use of terrain.

NCO and Soldier of the Year

Staff Sergeant Devon J. Roy, The SMDC NCO of the Year, is from the 15th AD, JTAGS-Europe. He represented SMDC's European region.

Specialist Sherman Johnson, the SMDC Soldier of the Year, is from Company C, 1st Satellite Control Battalion. He also represented the European region of SMDC.

After the announcement of who had been selected, Ward and Johnson delivered the oral presentations they had made to the selection board the day before.

Roy delivered a masterful discussion about professional development in the U.S. Army from the early days of Gen. George Washington's Continental Army to his own experiences with leadership development.

Johnson's commentary on the Chief of Staff's decision to make the Black Beret a symbol of the Army Transformation exhibited his potential for leadership development.

(Photo by Jonathan W. Pierce)

Members of the SMDC NCO Conference stand on Little Round Top overlooking the Wheat Field and Seminary Ridge in the distance as they tour the Gettysburg National Battlefield.

(Photo by Jonathan W. Pierce)

Staff Sergeant Roy makes an impassioned presentation on professional development and leadership after being named SMDC's NCO of the Year.

'employee,' (continued from previous page)

Despite their good intentions, fostering did not come without a price according to Crow. "It was very hard. And after 10 years, I think my husband and I have had enough court appearances and struggling with the system. You can only have your heart ripped out so many times."

"When our last foster daughter graduated from high school and was out of the system at 18 years of age we decided to switch to disabled adult daycare instead."

Looking back on the experiences they had, Crow said, "When we did child foster care we always got the very hard cases."

"But that seemed to be where my husband and I did our best work for some reason. The children who came to us were from very difficult backgrounds."

All the children who lived with the Crows had some form of emotional problem. They ranged from non-attachment disorders, pyromania, and seizures, to self, sexual, and substance abuse.

She stated that with fostering you don't have the respect you gain from your own children.

"Your own children grow up with you as the parent, and they respect you. When a foster child comes into your home they don't care who you are. So you have to work really hard to earn their respect."

Crow said you learn different ways of disciplining and even different ways of loving them.

But Crow stressed that there were rewards for all the hard work they put into being foster care providers.

"It has been rewarding for my husband and me," said Crow.

"There have been a lot of heartbreaks, a lot of disappointments, but overall we are still in contact with all of our foster kids. They call us occasionally, and they even come by whenever they can."

According to Crow, "they always come back to us to say, which is really rewarding, 'Thank you so much for caring'."

"They'll even come back to talk to us if they have a problem, and they want to see what we think. To me that's a big reward."

Now that they do adult care Crow commented, "It is a little less stressful, and you don't have a lot of court appearances."

"But you do have a lot of paperwork to do especially if the adult is on any kind of medication." She added that they had to go to school to be certified to give medicine.

And how does she separate her work at ARSPACE from her personal life?

"It is a real juggling act," said Crow. "Luckily for me, Kent, who is retired, does it full time. He does most of the work, and I think sometimes I keep working here (ARSPACE) just because it gives me a break."

One of the main things that has made their venture into foster parenting worthwhile has been their six-year-old daughter Clarissa.

"Clarissa is an adopted child," said Crow. "We've had her since she was two. This is a really strange story because she was not a foster child."

According to Crow, their first foster child had a sister who gave birth to Clarissa when she was 14.

"She knew us from fostering. And shortly after giving birth she became addicted to methamphetamines. We got a frantic call from her one evening when she was in a rehab center in Denver stating, 'I can't take care of a baby. Can you take her?' The result being Clarissa was literally dropped on our doorstep and we've had her ever since. But she is the joy of our home and a wonderful child."

Foster care aside, Crow provides outstanding support for ARSPACE such as shipment of equipment around the world for exercises, deployments, and training.

She is also the contract representative for Carlson Wagonlit and provides Federal Express support. She was recently promoted to GS-11 — this time for all her hard work at ARSPACE.

Directed energy programs chief sheds 'light' on laser developments

by Marco Morales
Huntsville, Ala.

Certain technology development is moving at the speed of light at the U.S. Army Space and Missile Defense Command.

The recent successes in the Tactical High Energy Laser (THEL) program, currently in the developmental, testing and evaluation (DT&E) phase, have paved the way for its follow-on program—the Mobile THEL (MTHEL).

The initial objective for the THEL demonstrator, once all of the DT&E had been accomplished, was that it would have been delivered to the Government of Israel to help protect its northern borders from Katyusha rockets launched by terrorists.

Israel, however, has decided to continue developing the THEL into its next phase in a combined Advanced Concept Technology Development program with the U.S. Army.

"Right now, the current THEL sits on a concrete pad," said Richard Bradshaw, director, Directed Energy Technology Program Office, Space and Missile Defense Technical Center. "It can be transported only by shipping it in containers mounted on several tractor-trailers."

"We've initiated an MTHEL study which involves 'shrinking' the THEL demonstrator from its current size to a factor of five and putting it on a mobile platform," Bradshaw said. "The idea is so that troops in a theater environment can move it around on a large truck."

Bradshaw said the program has congressional support.

The THEL program has had a great deal of success. To date, a total of 23 Katyusha rockets have been shot down in both single-rocket shootdown and multiple-rocket shootdown tests conducted last summer through early spring this year at White Sands Missile Range, N.M.

"Everyone who has seen what the THEL can do has been impressed with it. Again, it's a demonstrator. It's not everything we want but it's a nice step," Bradshaw said.

Bradshaw's responsibilities include other directed energy initiatives such as the Solid State Laser program and he talked about the program objective memorandum (POM).

"In this program, after the mini-POM this year, we should be back up to about $96 million in the FY03-07 POM for our technology program. That basically will get us a 100-kilowatt solid state laser in the lab," he said. "Just recently this year, we tested a 10-kilowatt laser which as of today is the most powerful solid state laser in the world."

Lasers of the future are projected to have more power.

"Right now I feel very comfortable that we'll be able to get to the 100-kilowatt range with the solid state heat capacity laser," Bradshaw said.

But Bradshaw said the solid state laser program has obstacles.

"The problem is that flash-lamps are extremely inefficient. You get maybe one percent laser energy and the rest of it is just waste heat. So, we're dumping that kind of heat into the same disk," Bradshaw said. "When we go to the diode pump we expect to get a factor of 10 improved efficiency. Which means that essentially you've got the same number of disks in it except that it is pumped with diodes."

Bradshaw added the Air Force is harnessing fiber laser technology which also has its challenges.

... Hauling around a bunch of expensive missiles in the battlefield is counterproductive because once you launch them, you've exhausted your defensive capability ...

"The fiber laser is being pursued by the Air Force and we're monitoring that program," he said. "The problem with fibers is that you're basically having to bring together the output of those fibers and match them all up so that you get one coherent laser beam and that's a challenge. No one has achieved in that type of device the comparable power we have in heat capacity lasers," Bradshaw said.

Bradshaw said the use of more powerful lasers will depend on mission requirements.

"The 100-kilowatt laser is the type of power level we will need to develop an effective defensive weapon in the directed energy arena. We may need to go to a higher kilowatt level than that. It depends on the target. Different targets have different hardness levels," he said.

"Because it's a heat capacity laser we have to cool it. We have to make sure that we can roll this thing up to the operational timelines that we're interested in. So, it's a demonstration of the power at this level in the lab and there are still some systems issues that we'd have to work out as we try to integrate into an actual weapon," he said.

The Advanced Tactical Laser is one of several directed energy programs being developed by SMDC.

Bradshaw said that waste heat remains another challenge in harnessing the right technology in directed energy.

"On any of these types of lasers you've got a certain percentage of power that you're converting to lasing power and then you have a big chunk of energy you have to dump as waste heat," Bradshaw said.

"On electrically generated lasers waste heat is always a problem in removing the heat from the process. There are technology solutions and whether we build them or not is in the program's objective. In some cases we haven't built these solutions so we engineer them to show that it can be achieved," he said.

"The biggest challenge today is getting to demonstrate the types of power—in the 100 kilowatt range, for example—with solid state lasers that nobody else has been able to do," Bradshaw said, adding, "Once we get to that level we then look at what deficiencies are associated with that development. And when we get to testing a laser that puts out high levels of energy, is the laser going to operate at the beam quality and timeframe that we need?

"Of course it doesn't do us any good to build a laser that's going to be used for welding or other uses close up. It has to be projected down range, it has to hold up, and it has to be a good quality beam," he said.

Bradshaw explained how the laser weapon developed from the THEL will benefit future systems.

"The pointer-tracker is like the barrel of a gun and the laser is like the bullet. All of the technology of aiming and putting the beam on target, making sure we're shooting at the right target, came from tests conducted with the THEL program. So, we don't have to re-invent the wheel in developing a solid state laser system."

"It's exciting because one of the problems we're always working toward in the Army is developing future combat systems and one of the main drivers in this development is to reduce the logistics tail that a new system requires," Bradshaw said.

"The nice thing about a solid state laser is that you essentially regenerate your 'bullets' in the field. The warfighter will have to haul some additional diesel fuel because what you're doing is using the diesel to recharge the battery to generate the electricity needed for the laser," he said.

"From the perspective that on a battlefield, I'm firing photons at an enemy target, using lasers makes a lot of sense. Hauling around a bunch of expensive missiles in the battlefield is counterproductive because once you launch them, you've exhausted your defensive capability," Bradshaw said, adding, "The other advantage is that you can engage enemy targets at the speed of light. Some targets that are soft can be disabled in a very short period of time. Others which may be of harder substance can take longer. But a laser allows the warfighter to very quickly engage the target."

This is a conceptual image of what a tactical ground vehicle would look like using a solid-state laser capability.