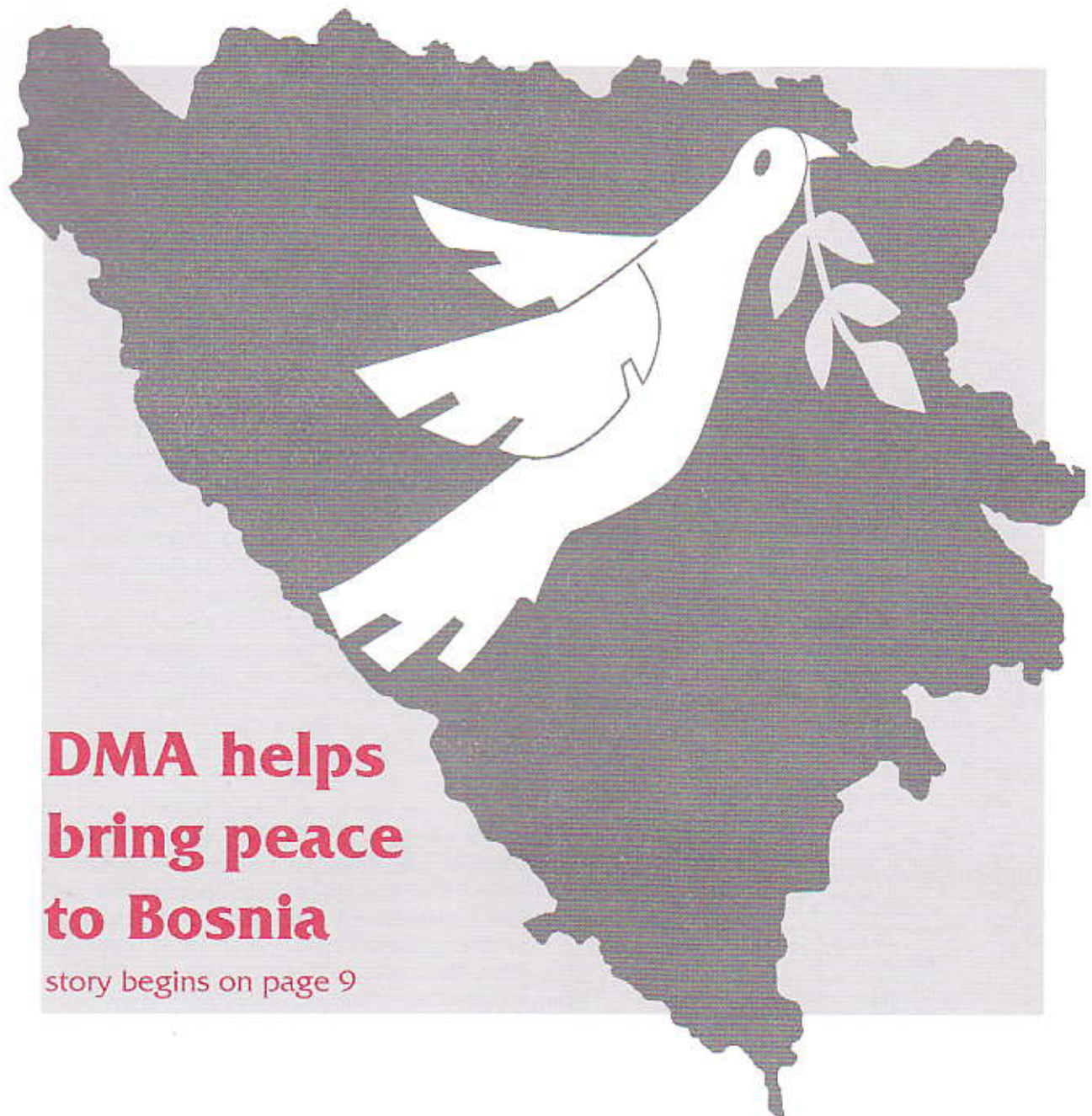


DEFENSE MAPPING AGENCY

LINK

December 18, 1995



**DMA helps
bring peace
to Bosnia**

story begins on page 9

December 18, 1995

NIMA questions and answers	6
ACE is on the way	8
New technology brought to Dayton	9
Production sites set stage for mapping support to peace talks	17

Cover

The ascending and highly-stylized bird of peace was designed by Valorie Tufano and Curtis Alley, illustrators at the 88th Communications Squadron, Wright-Patterson Air Force Base. The bird became a type of logo for the Proximity Peace Talks at Wright-Patterson, representing the hope of bringing peace to a war-torn former Yugoslavia. Many iterations of the design were prepared and multiple changes ensued before final printing, due mostly to the sensitivity of depicting a non-offensive design.

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NIMA proposal goes to Congress

The Secretary of Defense, Director of Central Intelligence and Chairman of the Joint Chiefs of Staff have sent to congressional leaders and appropriate committees a joint letter agreeing in concept to establishing a National Imagery and Mapping Agency. The NIMA as proposed will include all of the Defense Mapping Agency, according to officials.

The NIMA initiative would consolidate imagery and mapping resources and management into a single agency within the Department of Defense. This would improve the overall effectiveness and efficiency of imagery intelligence and mapping support to both national and military customers.

NIMA will be formed by consolidating DMA, the Central Imagery Office, CIA's National Photographic Interpretation Center, all imagery support resources of DIA, and resources of the Defense Airborne Reconnaissance Program and National Reconnaissance Program associated with imagery exploitation and dissemination.

"The organization, as originally planned, will be approximately 9,000 people [with] 7,500 from DMA and the others from the other agencies," said Air Force Maj. Gen. Philip W. Nuber, DMA director. General Nuber discussed NIMA with DMA employees during a series of town hall meetings.

NIMA will be a combat support agency of DoD. The agency would have program and budget authorities as well as research, development, acquisition, exploitation and production responsibilities for imagery and mapping. Specific details of the proposal will be worked out in close consultation with Congress.

The target date for stand-up of NIMA is Oct. 1, 1996.

It is proposed that NIMA be headed by a three-star general, or flag officer, with two deputies drawn from the national intelligence and mapping communities. Navy Rear Adm. Joseph J. Dantone Jr., currently deputy director for Military Support of the National Reconnaissance Office, has been named as the director of the NIMA Implementation Team. Leo Hazlewood, currently deputy director for administration of the Central Intelligence Agency, and Dr. Annette Krygiel, director of the Central Imagery Office, have been selected as deputy directors.

continued on page 22

BITS AND BYTES

Air Force Maj. Gen. Philip Nuber

As the year comes to a close and we begin preparing for the holiday season, I'd like to pause for a moment and reflect on how far we have come, how much the DMA team has accomplished, and to look at what the year ahead will bring.

First, I want to congratulate you all for your gifted contributions to the Nation's security in 1995. Once again, the Defense Mapping Agency showed itself to be a class act, infused with a "Can Do" spirit at every level and tireless in its dedication to getting the job done. Your contributions have reaffirmed DMA's standing as the premier mapping, charting, and geodetic organization in the world. The 12 preceding months brought myriad challenges to our agency, culminating last month in the historic role played by DMA during the Bosnia Peace Talks in Dayton, Ohio, and several prestigious recognitions as well.

Despite the naturally distressing and disorienting turn of events surrounding the requirement to furlough some of our employees, the DMA team maintained its mission-oriented dedication in support of Dayton and other requirements. All this serves to underscore what I have been saying here and elsewhere – DMA succeeds because the people in DMA are winners.

I want to say a personal and heartfelt "THANK YOU" for that dedication and hard work.

The end of 1995 also brought the announcement that DMA will become part of the National Imagery and Mapping Agency. As I said in my last column and at recent town halls, we bring many strengths to the new organization, foremost among them a sharp customer focus. We should never lose that focus.

There is sure to be a certain sadness in DMA's fading from the scene after 24 years of extraordinary service, but the change also brings a pioneering sense of new frontiers waiting to be conquered. I know you will join me in welcoming our new colleagues, and that you will make NIMA into as great a success story as you have made the history-making Defense Mapping Agency.

We can have the sure knowledge that the efforts of the whole DMA team helped to give the people of Bosnia a chance for a peaceful holiday – the first time in years. And so I wish each of you and your families a peaceful, safe and joyous season. ■



NIMA Implementation Team



Navy Rear Adm. Joseph J. Dantone, Jr.

Rear Adm. Joseph J. Dantone, Jr. is the deputy director for Military Support at the National Reconnaissance Office; deputy director Operations, National System Support, Joint Staff; and deputy director Defense Support Project Office, Office of the Assistant Secretary of the Air Force (Space).

Born in Baltimore, he graduated from the U.S. Naval Academy in 1964 and was designated a Naval Aviator in September 1965.

He holds master of science degrees in aeronautical engineering and material management.

After a career as a fighter squadron pilot, Dantone assumed assignments that led to commanding officer of the Precommissioning Unit Abraham Lincoln (CVN 72) and subsequently, the USS Dwight D. Eisenhower (CVN 69). Most recently, from April 1992 to March 1994, he commanded Carrier Group Three.

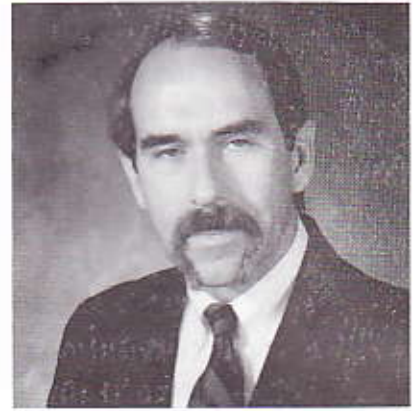


Dr. Annette J. Krygiel

Dr. Annette J. Krygiel was appointed director of the Central Imagery Office in September 1994.

A native of St. Louis, she graduated from St. Louis University with a bachelor of science degree in mathematics. She holds a master of science and doctorate degrees in computer science.

Krygiel served at DMA from 1963 until July 1994, rising to component director of the former Office of Telecommunications Services and simultaneously as deputy director for Information Systems at DMA Headquarters; deputy director of the Modernization Development Group at the then DMA Systems Center and finally to chief scientist where she served until her appointment at the CIO.



Leo Hazlewood

Leo Hazlewood has served as deputy director for Administration at the Central Intelligence Agency since July.

He was born in Dallas, and received his Bachelor of Arts degree in government and philosophy from Georgetown University. He holds Master of Arts and doctorate degrees in political science.

After serving on university faculties, and as a senior research associate with CACI, Inc., Hazlewood joined CIA's Directorate of Intelligence in August 1977 as an econometrician and rose to Comptroller. He was appointed Director of the National Photographic Interpretation Center in 1991. In August 1993, he was named CIA's Executive Director, a post he held until May 1995.

NIMA to draw from five other resources

The Central Intelligence Agency, headquartered about eight miles from downtown Washington, was established in 1947. The Director is John M. Deutch.

The mission is to support the president, the National Security Council, and all who make and execute U.S. national security policy by:

- Providing accurate, evidence-based, comprehensive and timely foreign

intelligence related to national security; and

- Conducting counterintelligence activities, special activities and other functions related to foreign intelligence and national security as directed by the president.

The CIA is organized into four major components called directorates that together carry out the "intelligence process"—the cycle of collecting, analyzing and disseminating intelligence.

Central Intelligence Agency

One of these directorates is the National Photographic Interpretation Center. It is under the deputy director for Science and Technology, which collects and processes information gathered by technical collection systems.

The Central Imagery Office, located in Vienna, Va., was established in 1992, under dual charters from the director of Central Intelligence and the Secretary of Defense. The director of CIO is Dr. Annette J. Krygiel.

The mission is to ensure responsive imagery support to the Intelligence Community, Department of Defense, National Security Council and other U.S. Government departments and agencies.

As a combat support agency, CIO is also responsible for ensuring timely imagery support to military operations during peace, crisis and war.

Since its creation, CIO has promoted improved interaction and a new relationship between imagery producers and users through an integrated U.S. Imagery System. This system emphasizes full integration of imagery capabilities,

Central Imagery Office

including national, theater, tactical and civil imaging resources. It addresses the full imagery cycle — tasking, collection, processing, exploitation, production and delivery.

The Defense Intelligence Agency, established in 1961, is situated in offices in Washington, Virginia, Maryland and Alabama and in extensive locations throughout the world. The DIA director is Air Force Lt. Gen. Kenneth A. Minihan.

DIA's mission is to satisfy the full range of foreign military and military-related intelligence requirements of DIA customers in support of: military

operations in peacetime, crisis, contingency, and combat; weapons systems acquisition and planning; and defense policy making.

DIA is a combat support agency and the senior military intelligence component of the U.S. Intelligence Community. Accomplishing its mission involves support to a wide range of intelligence customers that include national-level defense policy and decision makers, the Services,

Defense Intelligence Agency

operating forces, and a variety of special interest customers.

Most of DIA's imagery support resources are under their National Military Intelligence Production Center.

The National Reconnaissance Office, moving into its new headquarters in Centerville, Va. in January, is the national program to meet the U.S. government needs through spaceborne reconnaissance. An agency of the Department of Defense, the existence of the NRO was declassified by the deputy secretary of Defense in September 1992. The director of NRO, who is appointed by the

president as assistant secretary of the Air Force for Space, is Jeffrey K. Harris.

The mission is to ensure that the U.S. has the technology and spaceborne assets needed to acquire intelligence worldwide. It is accomplished through research, development, acquisition and operation of the nation's intelligence satellites.

The NRO's assets collect intelligence to support such functions as indications

National Reconnaissance Office

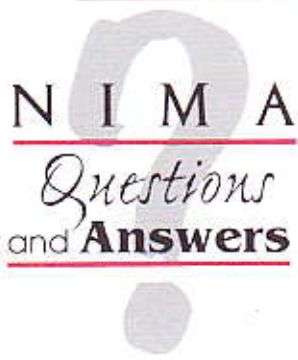
and warning, monitoring of arms control agreements, military operations and exercises and monitoring of natural disasters and other environmental issues.

The Defense Airborne Reconnaissance Office, located in the Pentagon, was established in November 1993 by the deputy secretary of Defense to be the primary office, within the DoD, responsible for the development and acquisition of all joint Service and defense-wide manned and unmanned aerial reconnaissance capabilities. This includes sensors, data links, data relays and

ground stations. The director of the DARO, and assistant deputy under secretary of defense (airborne reconnaissance), is Air Force Maj. Gen. Kenneth R. Israel. On April 1, 1994, the DARO outlined its Integrated Airborne Reconnaissance Strategy to Congress. This strategy identified the goal of extended reconnaissance — the ability to supply responsive and sustained

Defense Airborne Reconnaissance Office

intelligence data from anywhere within enemy territory, day or night, regardless of weather, as the needs of the warfighter dictate.



Q. Why is this happening?

A. *The interagency task force that studied the proposed merger since early summer 1995 recommended consolidation for three basic reasons:*

- 1. A focused, streamlined agency could best serve the needs of a growing and increasingly diverse customer base across government.*
- 2. The current dispersion of responsibilities does not allow any one agency to exploit the tremendous potential of enhanced collection systems, digital processing technology and the prospective expansion in commercial imagery.*
- 3. The revolution in information technology makes possible a symbiosis of imagery intelligence and mapping that can best be realized through more consolidated management.*

The future environment for national decision making and military operations will demand comprehensive and precise imagery and geospatial information beyond current capabilities. The new agency will provide coherent management of U.S. imaging and mapping capabilities. One of the main reasons that others wanted DMA included in NIMA is the fact that DMA has earned a reputation for delivering what the warfighters want, and when and where they need it. Planners expect this consolidation to improve the quality of imagery support of all types to all customers.

Q. How will the work force be affected? Do we anticipate a change such as moving some or all operations out of St. Louis, Reston or Bethesda?

A. *No such changes are envisioned as a result of this announcement. However, details on locations for the headquarters as well as other NIMA elements will be worked out by the implementation team.*

Q. Where will these additional employees physically work? Will new offices or work sites be created?

A. *No new construction for NIMA is planned. CIA and DIA imagery analysts will remain in their current locations and be subject to day-to-day tasking of all-source producers in DIA and CIA. Details of support agreements between NIMA and DIA/CIA remain to be worked out during implementation planning. Some elements of affected agencies may move, and there may also be a consolidation of headquarters elements. Details on locations for the headquarters as well as other NIMA elements will be worked out by the implementation team. We expect that most DMA personnel will continue to perform their duties in their present locations.*

Q. How will this decision affect the consolidation of printing and distribution at Arnold, Mo.?

A. *We continue planning for consolidation of those activities at Arnold. The necessary funds are expected to be included in the military construction budget when finally passed.*

Q. Collection for mapping during crises has always been problematic. How will NIMA improve this situation?

A. *One of the stated purposes of NIMA is to improve management and exploitation of imagery assets. Better customer service is anticipated at all levels of command. The consolidation of exploitation responsibilities under NIMA is designed to leverage focused support to a growing customer base.*

Q. As an organization responsible in part to the DCI and aligned with the intelligence community, how will the NIMA avoid adverse impacts to DMA's international program of bilateral agreements with foreign mapping organizations for exchange of GGI&S?

A. *Strategies to mitigate impact on the DMA international program and the extent of integration with other international relationships in the new NIMA will be resolved by the implementation task force.*

Q. What effect will NIMA have on DMA's unionized work force?

A. *DMA will keep the unions informed of developments. Currently the intelligence activities considered for transfer to NIMA are exempt from bargaining. A portion of DMA, because of its program sensitivity, is also exempt. Whether all of NIMA meets the criteria for exemption will depend on how the two missions are blended in the new organization and under which authority the agency is established. CIO and DIA are Title 10 agencies, which are exempt from bargaining, while DMA is a Title 5 agency. Many details remain to be worked out during implementation.*

Q. What provisions have been made to ensure that the customer will continue to get uninterrupted service during this transition?

A. *Uninterrupted service to customers will receive priority attention during implementation. All DMA personnel will remain focused on customer needs in accordance with our Core Values.*

Q. Does this mean reinvention and reengineering were a loss? Will the reengineering effort continue?

A. *DMA's reinvention and reengineering efforts have been recognized, as indicated by receipt of the prestigious Hammer Award. This award recognized DMA for having the right approach to getting closer to our customers and becoming more efficient. We will continue our efforts. As a result of reinvention, DMA has excellent understanding of key processes and is structured to integrate new elements with minimum disruption.*

Q. Will DMA participate on the implementation team?

A. *The implementation team will be composed of representatives from the intelligence, mapping and operational communities. DMA will coordinate all defense mapping issues and provide the logistical, administrative and facility support needed by the implementation team.*

Planning has begun in order to meet the support requirements anticipated. Precise numbers of DMA people required as dedicated members of the team is to be determined. Plans are in progress to possibly house the implementation team in the fourth floor of the building in Reston.

ACE on the way

Plans are underway to implement ACE, the DMA Achievement and Career Excellence System, in January.

ACE is a multi-rater performance appraisal system that provides employees with rating input from peers, customers, supervisors and subordinates. Performance evaluation and feedback will focus on universal "core competencies" that are directly linked to and support DMA core values, such as customer satisfaction.

The "core competencies" replace the critical elements. Raters will provide their anonymous input by rating on a scale of one to seven. They may also provide constructive narrative comments (reported only to the employee being rated) for use in career planning and development. ACE will average the numerical input, dropping the single highest and lowest scores. The annual performance appraisal will be either "Acceptable" or "Unacceptable."

Most employees will complete the rating process via computer terminals located throughout DMA. Alternative methods of input will also be available. Cash awards for strong performance will not be directly linked to the annual performance appraisal and may be given at any time during the year.

Employee information sessions have been scheduled for January, February and March to explain ACE and the new DMA "core competencies."

The new system came about after a number of initiatives.

In 1989 and again in 1993, DMA work force surveys indicated that employees felt DMA's performance appraisal and recognition systems needed fixing — that the systems needed to do a better job of recognizing and encouraging strong performance by being more equitable, accurate and timely.

As a result of this information, a DMA Process Improvement Team was chartered in 1992 to review performance management and recognition in DMA. Two of the team's key recommendations were to develop and implement a multi-rater performance appraisal system; and make performance awards more timely by de-linking them from the annual performance appraisal. In 1993, after much developmental work, DMA conducted an 850 employee test of a multi-rater appraisal system.

"The pilot quickly told us that a multi-rater system will work in DMA only if it is highly automated and very user friendly," said Betty Welch, director of Human Resources. "Employees told us that if we could

simplify the system, peer, customer and subordinate rating input would be very valuable and helpful information."

Following the survey, DMA made fundamental changes in the way it is organized and how work is done. These changes, particularly the greater emphasis on customer satisfaction, teamwork and the widening supervisory span of control, placed new demands on the performance management system.

A reengineering team composed of representatives from the business units was asked to take a fresh look at performance management in DMA and to develop a system that would support DMA's new culture. In doing this, the team listened to employees and solicited comments. The result is ACE. ■

— by Gary Schwalbe, employee relations specialist, HR program execution team

Mappers bring technology to peace talks

by Kathleen Neary

Editors Note: The following articles about mapping support to the peace talks were compiled while on assignment in Dayton, Ohio.

Like never before mapping technology was brought to the negotiating table, playing a pivotal role in the Bosnia Peace Talks in Dayton, Ohio.

The peace talks at Wright-Patterson Air Force Base received DMA's highest priority and culminated with the historic initialing of a peace agreement Nov. 21, ending three weeks of emotionally-driven discussion.

Led to Dayton by DMA Director Maj. Gen. Philip W. Nuber, some 55 mapping support personnel with more than \$ 4 million in high-tech equipment provided round-the-clock mapping support to negotiators.

"It was a unique opportunity to bring together mapping experts from DMA, the Army's Topographic Engineering Center, the 30th Engineer Battalion and contractor support from industry," said General Nuber.

Much of the map work resulted from the shifting of the inter-entity and cease-fire lines. Negotiators wanted to see the changes each time they occurred. Mappers made that happen on screen and on paper, providing a complete end-to-end mapping operation, on site.

In most instances the action began with a line drawn on a map. Mappers would digitize the line and import the vector information into PowerScene™, showing a 3-dimensional portrayal of the terrain to depict where the line apportioned the land.

Mappers would compute the percentages to ensure the integrity of the required 49 and 51 percent. On PowerScene™, the line could be moved to accommodate any change.

For example, if the line cut through a building that was indiscernible on the initial map scale, the line on the screen could be moved to either side of the building. The vector information was placed on an export tape and sent to the Joint Topo Tactical Operations Center for hard copy production. If several copies were required, the information was

pipled to the Remote Replication System support function to help expedite the customer's request. Located in adjoining buildings, specially installed fiber optic cables linked the two support efforts.

"You'd have to call this a dream team of mapping support," said Army Col. Richard Johnson, commander, TEC, Fort Belvoir. "There is no other way [the negotiators] could have been supported short of cooperation between the government and industry."

DMA teamed mapping support from the Washington area, St. Louis, Philadelphia, Norfolk, Va. and the Defense Mapping School with



Navy Lt. Kyle Dedrick, DMS, compares information depicted on a map against notes while working in the JTT at Dayton.

mappers from TEC at Fort Belvoir and the Army Corps of Engineers' 30th Engineer Battalion at Fort Bragg, N.C.

Industry representatives came from Cambridge Research Associates, developers of PowerScene™ under

continued on page 10

December 18, 1995

contract to DMA; 3M, developers of DMA's Remote Replication System; Camber Corporation, supporting the calculations of land percentages using ARC/INFO; and ERDAS, with map graphics packages that helped digitally scale and reproject the various lines and electronically seam map sheets together.

Change was constant in Dayton and officials said flexibility was crucial. No matter how frustrating at times, mapping support kept pace with the numerous changes. In

many carrying beepers or cellular phones issued to them by State Department. Participants recollect many cold walks from building to building in the dead of night. Almost everyone took a turn running between buildings carrying a tape that they thought might be the final line or some piece of information that would help facilitate decisions.

Total mapping support did not end at the close of the formal peace talks, as many mappers worked through the Thanksgiving holiday.

Bosnian, Serbian and European Community delegates were meeting. Additionally, more than 500 maps were prepared as briefing boards, according to Air Force Capt. Wes Baker, a DMS instructor. Throughout the mapping effort, Baker said the support of volunteers from Wright-Patterson was tremendous. As many as 30 volunteers worked with mappers to post maps on conference room walls and build map boards.

Preparing the boards meant trimming and joining the sheets using a spray adhesive to glue the map to a heavy poster board. Baker said often a large group of volunteers from Wright-Patterson and mappers would assemble to prepare map boards for a gathering of delegates. By the end of the evening the air would be heavy with glue, and a substantial film would settle on the carpet, sticking to the soles of shoes.

Many maps, however, became base map sheets for the numerous iterations of the inter-entity line, separating the entities of power, and the cease-fire line. Maps were discussed on three scales – 1:600,000 UNPROFOR Road Map; 1:250,000 Joint Operations Graphic and 1:50,000 Topographic Line Map.



Army Capt. David Dougherty, DMS, digitizes one of the many lines drawn on a paper map to export to the MSIPs.

By the final week of negotiations, they wore the fatigue of more than three weeks of non-stop, customer-driven support.

Maps, Maps and More Maps

In a small chamber of the base's Hope Hotel, DMA officials established a library for the 100,000 maps shipped in from the agency's Distribution Depot in Philadelphia. More than 30,000 maps were distributed for use during negotiations, according to official estimates. As quickly as they were discovered, map changes were documented and archived.

One of the first tasks was to post maps of the entire region on conference room walls where the Croatian,

Teaming Together

One of the first hurdles the mapping support team overcame was matching the personnel strength with workload. Originally a team of about 14 was deployed to Dayton, but the number ballooned to 55 after the full magnitude of the job was realized.

In personnel numbers, the Joint TOPO Tactical Operations Center comprised a greater part of this dream team of mapping support. The JTT, located about half a mile from the delegates' quarters, teamed mapping experts and technicians from DMA, its mapping school, TEC and the 30th Engineer Battalion.

There, each rendering of the line was digitized and, using ARC/INFO and ERDAS mapping software, the line was scaled and reprojected at a

addition, DMA personnel worked with the legal experts to help write the mapping language that was essential to the peace document.

Overall, it was an enormous effort that could have only been accomplished with teamwork, expertise and dedication, General Nuber said.

Support personnel at full-strength averaged a 16- to 18-hour shift per day, seven days a week. Throughout the effort, mappers were literally on call to the customer, with

larger scale. Most of the line drawings were done on a 1:600,000 UNPROFOR road map. A transparent overlay depicting the line was created using the Army's Multispectral Imagery Processor (MSIP) and was married to the base map, a DMA 1:50,000 TLM, then replicated on a bubble jet printer. With numerous changes created by the negotiations, the demand for maps kept the copiers in constant use, with as many as 600 maps produced a day, officials reported.

"The biggest technical challenge was getting products to agree at all scales," said Army Capt. David Dougherty, DMS instructor. That challenge was met by using geographic information systems that exploit and apply concepts like datums and projections, he said.

A week and a half before negotiations ended, operations personnel arrived and assumed the operations functions of the JTT, establishing an operations center next door. There, personnel managed the day-to-day operations functions, enabling technicians to expedite map production. Maps also underwent an extensive quality check by operations personnel and changes were tracked by date and time group. Using a magnifying glass, mappers ensured that the lines matched to adjoining maps. If it passed the sight test, it went into production either at the JTT or the Remote Replication System, depending on how many copies were necessary.

A Big Arrival

The arrival of DMA's Remote Replication System was far from subdued. It reached Dayton late Nov. 11, aboard a C-130 diverted earlier to St. Paul, Minn., where it picked up a crated system destined for DMA's Distribution Depot in Philadelphia. The plane was transporting soldiers from the Azores. They disembarked to make room for the system, which

continued on page 21



- **late 1994** — Effort initiated to re-map Bosnia-Herzegovina from ED 50 to WGS 84 at production centers in Reston, Bethesda, and St. Louis.

- **Last two weeks of October** — last 40 map sheets pulled from DPS production, manually compiled, scanned, digitized and produced to meet urgent need for paper maps and ADRG CD ROMs for planned Peace Talks.

- Production of maps continues in Bethesda, St. Louis begins crisis work on Hungary maps.

- **Oct. 21** — DMA's Dave Rogers and Marianne Kramer conduct sight survey at Wright-Patterson with State Department, OSD and TEC personnel.

- **Oct. 23-29** — Map support personnel begin to arrive to Dayton, and library and distribution personnel set up with 100,000 DMA maps in Hope Hotel. More than 30 Wright-Patterson volunteers helped mappers post maps on conference room walls and build map boards for delegations.

- **Nov. 1** — Proximity Peace Negotiations begin.

- **Nov. 10** — General Nuber and Curt Ward, DMA customer support chief, arrive to Peace Talks. Operations center personnel arrive and assume the operations functions of the JTT, enabling JTT technicians to focus on expediting map production.

- **Nov. 11** — C-130 diverted to St. Paul, Minn. to pick up a DMA Remote Replication System and 3M personnel. Prior to its arrival, Air Force Capt. Wes Baker, DMS, and Rick Dille, cartographer at Bethesda, flew to Pope Air Force Base, N.C. on a C-21 (Air Force version of a Lear jet) to pick up an 8mm tape for the RRS and several copies of a special product from Fort Bragg, N.C. based on the 1:250,000 JOG that were urgently needed back in Dayton. Also, arriving by plane that night was a plotter from the DMS.

- **Nov. 15** — Personnel from EPPE lab in St. Louis join mapping support in Dayton. They were sent to Dayton to provide technical support with the connections from the JTT to the RRS and printing the Super JOGs.

- **Nov. 15 - 19** — DMA helps attorneys prepare language for annex I and II of the peace agreement.

- **Nov. 21** — Peace agreement signed.

- **Nov. 22** — Map room and library dismantle.

- **Nov. 22** — Map production in Dayton begins. Peace accord requires 99 map sheets. Production support from DMA's Bethesda Complex augments Dayton efforts.

- **Thanksgiving weekend** — Four distribution personnel deployed to Dayton to help RRS pack it all up.

- **Nov. 29** — Last of mapping support effort leaves Dayton. Map Publishing Environment ready to print 50,000 copies of new maps with inter-entity and cease fire line.

- **Dec. 5** — Printing at DMA's production center in Bethesda begins.



photo by Kathleen Neary

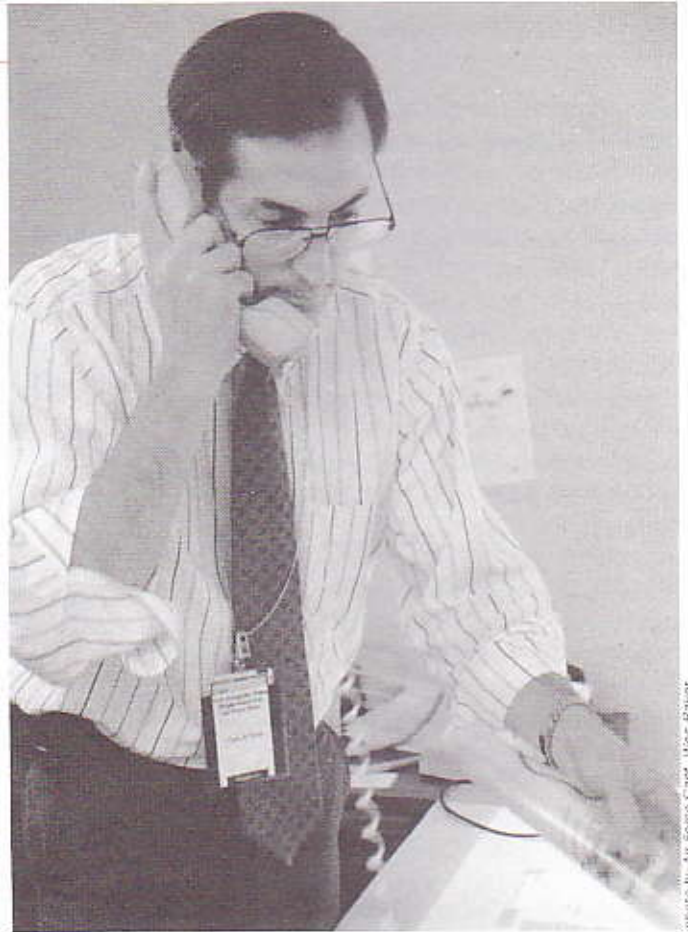


photo by Air Force Capt. Mike Ethier

Mapping support helps bring peace to Bosnia



photo by Air Force Capt. Moss Baker

A contingent of 55 deployed to Dayton to provide mapping support to the Bosnia Peace Talks. Their success was due, in part, to the tremendous support of others from DMA and the many volunteers and support staff from Wright-Patterson Air Force Base. From photo top left, moving clockwise, in the JTT, Stacy Kedigh, 30th Engincer Battalion and Sue Mayo, Topographic Engineering Center, await production of a map overlay. Curt Ward, DMA's Operations Group Customer Support chief, takes a call in the Map Room and verifies the information depicted on the base map. Posting maps on conference room walls and building map boards for the delegates was one of the initial time-consuming tasks that was supported by volunteers from Wright-Patterson. Jim Bellenger, DMA in St. Louis, in the RRS center compares the paper draft map with the map on his computer screen. Marylynn Francisco, DMA librarian, archived and tracked as many map changes as she could find. Vic Kuchar, DMA, shows Wright-Patterson volunteers how to trim a map. Support from Wright-Patterson assisted the mapping effort with the construction of more than 500 map boards for the negotiations.



Photo by Air Force Chart. West Warner



photo by Kathleen Neary



Photo by Kathleen Neary



'Ground zero' technology awes delegates



Delegates from the European Community "fly" over Bosnia terrain, guided by DMA's Dave Rogers. General Nuber looks on.

"Did you see what the mappers have in there?" Secretary of State Warren Christopher was overheard asking Richard Holbrooke, assistant secretary of State and key negotiator for the Proximity Peace Talks at Wright-Patterson Air Force Base in Dayton, Ohio.

"It's truly amazing ... remarkable technology," said Christopher as he and Holbrooke moved their discussion to Holbrooke's suite across the hall.

It was called "The Map Room" or the "Nintendo Room" by members of the media who at that time had only heard of its capabilities. It was ground zero for mapping support personnel, led by DMA Director Air

Force Maj. Gen. Philip W. Nuber to support the peace talks. In that room, DMA had setup one of two prototype PowerScene™ terrain visualization systems the director deployed to the peace talks.

Located in Building 834, one of five two-story brick buildings where the peace delegates were holed up for three weeks, the room quickly became the most frequently visited during the negotiations. It also became a roadstead for delegates agonizing over a line that would bring peace to a war-torn former Yugoslavia.

Using DMA imagery and Digital Terrain Elevation Data, PowerScene™ produces three-dimensional geographical views of a selected region, in real-time.



In the Map Room, Bosnian Foreign Minister Muhamed Sacirbey contemplates the recent line changes depicted on a paper map.

DMA installed the prototype in Aviano, Italy, introducing PowerScene™ to NATO warfighters to prepare them for combat during Operation Deliberate Force. It was the first time the system was used to support combat missions. Ironically, it was this new use of technology that NATO aircrews credited with increasing their bombing precision during air strikes over Bosnian Serb targets. That accuracy hastened an end to the shooting that brought the parties to Dayton.

With the exchange moving from the battlefield to the negotiating room, the map team and cutting-edge technology supported delegates as they partitioned the land of the former Yugoslavia. The negotiators, including the presidents of Croatia, Bosnia and the Serbian Republic, used PowerScene™ to "fly" over the terrain and view the land area at high resolution. Using ARC/INFO, mapping support technicians computed land percentages immediately on a Sun workstation.

Often delegates would draw a line on a 1:600,000 UNPROFOR (United Nations Protective Forces) road map, brought to the peace talks by DMA. Mappers quickly digitized the line and transferred it to PowerScene™ for viewing. The information was raced to another building about half a mile away where mapping support from the Joint Topo Tactical Operations Center or the Remote

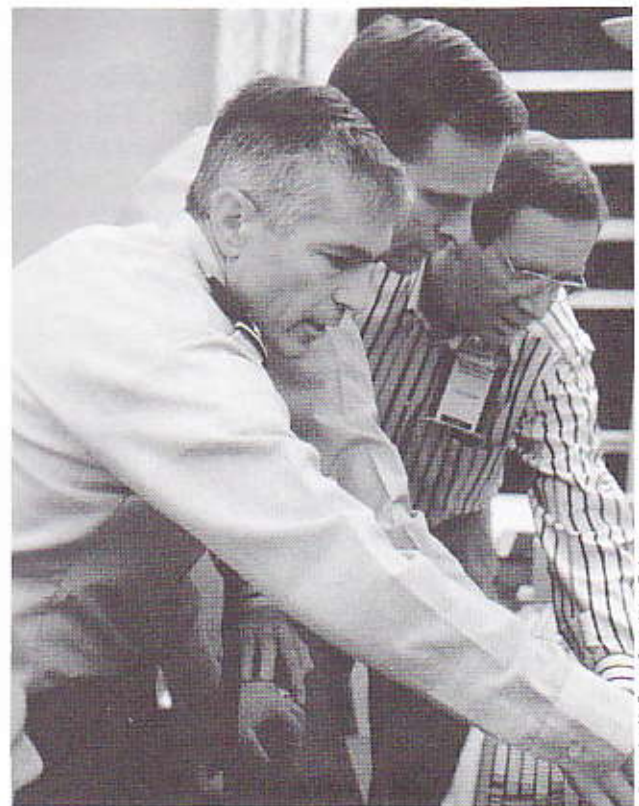
Replication System would transfer the digital imagery to paper.

Throughout the peace talks, the line underwent numerous iterations with mapping support providing the new image on screen and on paper. General Nuber said there were at least 71 changes saved on the system.

At times it became an endless cycle where new lines were drawn ... new terrain flown ... paper maps produced ... lines adjusted ... flown again ... paper maps ... until the peace agreement was initiated. Yet, the finale came that evening as key delegates met for an all-nighter. Mappers used PowerScene™, once more, to tweak the line to completion.

NATO peacekeeping forces deployed to Bosnia will also benefit from PowerScene™. DMA has provided a system and necessary mapping personnel to the European Command. Like the system that aided NATO air crews, it will assist USAREUR land forces, allowing troops to view the terrain well in advance of stepping foot on the soil. ■

—by Kathleen Neary



Maneuvering the joystick, simulating flight over Bosnia, from left are Army Lt. Gen. Wesley K. Clark, senior military official at the negotiations, and mapping support personnel Army Lt. Col. Lloyd Carmack, DMA, and Scott Randall, Cambridge Research Associates.

Time is a luxury

In what might take a week in an average mapping production environment, mappers in Dayton discovered they had hours and, in some cases, minutes to do the job. To succeed, they brought to Dayton an end-to-end production capability that would fascinate peace talk participants and fully support their needs.

"Time is very precious here," said DMA's Dave Rogers, who credits people and perseverance with the success of the mapping support. "Failure is not acceptable. It isn't even defined here," he said. Rogers is a DMA physical scientist in the Enhanced Product Prototyping Lab at Bethesda. That doggedness kept tired mappers in good humor as they confronted numerous changes that put them on a "hamster wheel" of production.

"If you could figure out just some way to get the lines to wiggle around like a screen saver snake," Dave Rogers proposed with humor to a fellow technician, "we could put this whole operation on automatic pilot and take the weekend off."

"You lose all sense of time here," said Marianne Kramer.

In any normal work week Kramer is a DMA liaison to the U.S. Air Force Materiel Command at Wright-Patterson Air Force Base in Dayton, Ohio. She was just a few months into her three-year liaison assignment when Wright-Patterson was chosen as the site for the Bosnia Peace Talks.

Wired to a beeper, cellular phone within arm's reach, Kramer sipped coffee in a deserted Packies, the restaurant frequented by peace talk delegates. As she recounted the events of the past four weeks when DMA-led mapping support descended on Dayton, she pondered if it was a Monday or a Saturday when this or that happened. Suddenly, a smile crept across her face and the weariness faded.

"This has been a great experience," she said, seeming to forget the long work days, fueled on no sleep and vending machine food.

Time was the greatest challenge in Dayton, according to Air Force Col. Dorin Balls, DMA Headquarters.

"The reality of the negotiations was that the quicker mapping support could translate a proposal from one side or the other to a map, the better they could facilitate conversations," he said.

"People worked hours and hours here to make things work," he said. ■

— by Kathleen Neary



Kramer



Rogers



Balls

DMA production sites set stage, augment production for peace effort

From the Secretary of State to the negotiators, there was nothing but praise for the mapping support provided to Dayton, said DMA Director Maj. Gen. Philip W. Nuber.

"What those folks didn't understand was that it wouldn't have worked without the support of everyone at DMA," he said.

"No one could believe that after we closed down the mapping operation at Dayton that DMA production centers were ready to produce 50,000 copies of the map," said the general at recent Town Hall Meetings.

Support to Bosnia had begun in St. Louis, Reston and Bethesda nearly a year before the peace talks were in the forefront. In late 1994, DMA officials had initiated a massive production program to re-map the 1:50,000 TLMs of Bosnia-Herzegovina, converting about 105 map sheets from the geodetically-limited European Datum 50 to the World Geodetic Survey (WGS) 84, according to Harry Crone, production manager, European Command Customer Support Team, Operations Group. As the peace talks advanced, only 40 sheets remained to be re-mapped.

Two weeks before the negotiations, round-the-clock production at DMA kicked in. Crone said sheets still in the Digital Production System were expedited and some pulled off the system and compiled manually. All sheets were replicated in Bethesda to meet the urgent need for maps in Dayton. The map sheets were sent to St. Louis where the hard copy information was transferred to ADRG. Both products were sent directly to Dayton.

Throughout the three weeks of peace talks, replication of maps

continued at DMA's Bethesda site, with personnel working many extra hours, said Crone. On Thanksgiving Day, four color copiers were up and running, copying what had been brought back from Dayton. The effort helped augment the final map production effort worked by the Remote Replication System folks in Dayton, according to Crone.

At the agency's St. Louis facility, 16 mappers produced 18 new ADRG CD ROMs for border generation needed in Dayton. It normally takes about one month to produce one of these products. Working extra hours, this crisis job was turned around in three days, according to Evelyn Sanders, cartographer, Source Management, OG. Also, a DMA technician from St. Louis was sent to Wright-Patterson to help translate the CD ROMs using MUSE software. In the meantime, crisis production in St. Louis had also shifted to an area in Hungary that came about as a result of the peace initiatives.

The production people showed a tremendous amount of flexibility through the entire effort and never lost sight of the mission, according to Crone.

"This is the first major crisis effort in DMA since the reengineering," he said. "Teams and team leaders for each process carried out their part of the production that stretched across department and business unit lines. In all cases the teams were goal-oriented and worked together to satisfy the customer needs."

Crone said that the response time was exceptional and that all goals were met or completed earlier than the required time. He directly attributed that accomplishment to the exceptional attitude and profes-

sionalism of DMA employees and true teamwork.

The Map Publishing Environment at the agency's Bethesda Complex produced the boundary reproduction materials for 54 1:50,000 scale maps. More than 50,000 copies of each of the 54 TLMs – over 2.7 million map sheets – are being printed to support the NATO peacekeeping forces deployed to Bosnia. These maps depict the inter-entity line and the cease-fire line with the two kilometer buffer zone on each side of the lines.

"We don't believe that this will complete the mapping support," Crone said. "There will be future needs to redesignate boundaries as they continue to evolve. There will undoubtedly be future requirements to address for as long as there are troops in Bosnia." ■

—by Kathleen Neary

What's it like to be the DMA Director?

Ask Christina Renschen. She participated in a "shadowing" program and followed Maj. Gen. Philip Nuber throughout his work day for an entire work week. Renschen is a DMA employee participating in the Women's Executive Leadership Program.

"From the first day when we met with Gen. Joseph Redden and the staff at the Joint Warfighting Center to the last moment when I said my good-byes before returning to St. Louis, my days were filled with meetings, long hours, interesting conversations, much laughter and a better appreciation for how our agency is run and by whom," said Renschen. "I realized the extent of our involvement in world situations and the important part we play as an agency in satisfying the requirements of our DoD counterparts and warriors."

"It was a non-stop, fast train, engineered by the man who never tired of bragging about DMA, who listened and who answered," she

said. "Whether it was a call from the Joint Staff or an E-mail from an employee, both were customers and both got answers."

Each WEL Program participant is required to complete at least one all-inclusive, five-day shadowing assignment with a senior federal manager. The purpose of this assignment is to provide participants exposure to managerial excellence and to provide visibility among federal managers and executives. Participants also have an opportunity to view decision-making styles and problem-solving techniques in a real-world situation and gain experience in communicating with executives in one-on-one situations.

"I was treated as a member of the team, not as an outsider looking in. I was introduced to our customers, agency policy makers, and staff members," she said. "In several situations throughout the week I was even confronted with questions that required my answers, serious issues



Renschen

that challenged my position and ability to respond."

The experience was one that Renschen said she would not forget. ■

— by Don Kusturin

Bernie Hines, DMA's Distribution Depot in Philadelphia, and Navy Petty Officer 2nd Class Willie Johnson, DMA Atlantic Office, Norfolk, Va., establish the mapping distribution room in Wright-Patterson Air Force Base's Hope Hotel in Dayton, Ohio. Hines said 100,000 maps were shipped over to support the peace talks.



Photo by Marianne Kramer

Bremser's Santa is back

Charlie Bremser doesn't remember exactly when his first Santa cartoon appeared, but he thinks it was in the mid-1960s.

"Santa had just landed on a roof, and his deer were all tangled up in a TV antenna," he said. "Santa was swinging his bag trying to knock down the antenna and saying, 'Bah, humbug!'"

Outlasting newspapers and organizations, Bremser's Santa appeared every year since then in the *Orienteer*, the newspaper of the former DMA Aerospace Center in St. Louis and its forerunner, the U.S. Air Force Aeronautical Chart and Information Center. The cartoon also appeared last year in the *DMA Link West*.

To Bremser, the idea that Santa might have occasion to say "Bah, humbug!" is only human.

"Any man would have to be a little bit crabby if he had to squeeze down chimneys in his big frame and get all dirty," Bremser opined. "And then there's the hard work of driving his deer around the world in 24 hours and stopping at every house. He's bound to wonder if people really appreciate him!"

Bremser's adoption of the words "Bah, humbug!" started after they appeared on a rubber stamp his nephew, Buzz Krewson, had made as

a joke when he worked for a stationery company.

"I started stamping my Christmas cards with it," Bremser said, "and then I thought of it when I started doing the cartoons."

The son of an artist who ran his own business, Bremser got his first job out of St. Louis' Roosevelt High School drawing for the Chase Bag Co. He quit that job in 1950 to join the Aeronautical Chart Plant as a

Information West. He was in charge of exhibits when he retired in 1986.

While working for the government, Bremser and Krewson ran their own CB (for Charlie and Buzz) Art Studio.

A supermarket chain and a brewery were among their accounts, but even with nine employees the job got to be too much, Bremser said. After 16 years he gave up the business for his government work.

Bremser also worked as a free lance cartoonist for many years, often splitting his commissions with his agent and gag writers who sent him ideas. His cartoons were printed in publications as diverse as *Boys Life* and *Playboy*; most appeared in trade magazines, he said.

Bremser still lives in the



negative engraver because he wanted to pay off a car he bought. "The chart plant paid more money," he explained. "[But] I still wanted to be an artist."

Drafted for duty in Korea, Bremser returned from the war to ACIC and entered night school at Washington University on the GI Bill. Ten years later, he earned a bachelor's of art in art.

Meanwhile, Bremser got a chance to be an artist for the government as an original member of the graphic design office, now Visual

St. Louis area with his wife Doris, a former nightclub pianist. They have two daughters—Nicole, 20, who is studying art and design on the Meramec campus of St. Louis Community College and daughter Rachel, 18, who is a journalism student at the University of Missouri in Columbia. ■

— by Paul Hurlburt

The DMA St. Louis Singers: a tradition for almost 50 years



Photo by Ann Stronach

A typical holiday carolling session at the Arsenal. The group visits most work areas, including the North and South annexes. Laura Thompson (right) conducts; co-director Brad Slavik (left) joins the tenors. The woman next to him signs for hearing-impaired employees.

The St. Louis Aeronautical Chart Plant was only five years old in the fall of 1948 when someone suggested forming a carolling group that Christmas.

The plant was then located at 710 North 12th St. in downtown St. Louis. For their rehearsals the group walked three blocks to Christ Church Cathedral to a rehearsal room.

It was the start of almost 50 years of singing by DMA St. Louis employees, strolling through the halls and work areas at Christmas time, but also serenading at other times of the year at dedications, rallies and prayer breakfasts.

"The success of the carollers is really due to management," observed former cartographer Gene Knight, who directed the group from 1952 until his retirement in 1985.

"They've been so willing to allow the group to do what we've done over the years. When new commanders or directors have arrived, they have told each other, this is a tradition here," Knight said.

The music for the Christmas holidays has been largely traditional, but with special attention to ethnic additions like "Go Tell It on the Mountain," "Mary Had a Baby" and "Calypso Carol."

During his 33 years as the group's director, Knight, an amateur composer, has contributed arrangements of his own for "O Holy Night," "Silver Bells" and "Silent Night." Under his direction, the group recorded in 1971 a stereo album, "Songs of Christmas."

For special occasions, Knight also composed two songs "Mission Aerospace," for the DMA Decentennial of 1982, and "Aerospace Pathways in the Sky," for June's sunset ceremony of the Aerospace Center.

There were fewer than a thousand employees in St. Louis when the group was started. During the Korean conflict and with the continued demands of the Cold War, the number of employees rose steadily in the 1950's.

With each Christmas there were more areas to be visited, including the South Annex at 8900 S. Broadway. In other years the DMA singers shared their music with patients at the local VA hospital, residents of retirement homes and the Aerospace Charting Seniors, a group organized by and for retired DMA employees in the St. Louis area.

"We enjoy spreading the holiday spirit," said Laura Thompson, who succeeded Knight as director. "We think our listeners enjoy it, too," Thompson said.

continued on page 22



The DMA St. Louis Choir, then known as the Aero Chart and Information Center (ACIC) Choir, at the dedication in 1962 of a new downtown St. Louis Federal building.

was flown directly to Wright-Patterson.

Two mappers from DMA's EPPE lab in St. Louis would arrive to Dayton a few days later.

"The Remote Replication System was really designed to do on-demand map printing," said Ralph E. Grant, 3M program manager. The RRS is typically used when a paper product can't be provided from a normal distribution point. It can be used to scan the paper image and produce multiple copies, or it can input CD ROM information electronically and print the map.

In Dayton, the RRS was used to create maps with the DTED data merged with Arc Digitized Raster Graphics (ADRG) information that comprised the three maps. An ERDAS mapping graphics package was used to electronically seam the 1:250,000 map sheets together to create several super Joint Operations Graphics (JOGs). An ERDAS representative joined the team for a couple of days to help refresh the team's skills with the software package.

To increase production, extra components that are not part of the

normal system configuration were added, like a second workstation to the network along with the software that allowed two people to work on the system instead of one.

Grant estimated that somewhere between 1,000 and 1,500 map products were printed on the RRS during the final six days of negotiations.

When the line was finalized, the RRS team was tasked with updating the 1:600,000 road map, producing a final super JOG and then helping the JTT produce the copies of the 1:50,000 TLMs required for the peace accord.

Twenty copies of each 1:50,000 were produced that Thanksgiving weekend. A team of four DMA distribution personnel from Washington were also deployed to Dayton to help the RRS team pack it all up.

In total, the mapping support effort was required to provide more than 20 copies of 99, 1:50,000 and 2, 1:600,000 map sheets of the terrain reflecting the inter-entity and cease-fire lines. Production on those sheets was initiated in Dayton and augmented by production support from mappers in Bethesda. ■

Mappers bring technology to peace talks

continued from page 11

NEWS CLIPS

BIG sponsors Martin Luther King Breakfast

The UJIMA Chapter of Blacks In Government and Human Resources will sponsor a Martin Luther King Commemorative Breakfast Celebration from 8 a.m. - 10 a.m., Jan. 10 in the Erskine Hall Cafeteria. The theme for this year's program is "On the King Holiday, Help Somebody: Every American Can Make A Difference."

Get in the information loop

Do you know the answers to these questions?

• *When is DMA's new performance appraisal system effective?*

• *How do you stop filling out SF-171s and automatically apply for DMA jobs?*

• *Will I really be able to change my benefits at midnight on a DMA ATM?*

• *Who participates in the cooperative problem solving process?*

In January, Human Resources Reengineering Fairs will be conducted. Find out the answers to these questions and more at the fair.

CFC updates

As of Dec. 4, Combined Federal Campaign contributions totaled \$265,080.40 in St. Louis to achieve 102 percent of its goal, and

\$351,874.24 in the Washington area, bringing it to 77 percent of its goal. Contributions are being accepted in both areas until Dec. 31.

Clarification

The Link editorial staff wants to set the record straight. Alexander Graham Bell invented the telephone in 1876.



Hats Off

Mark Munsell, a cartographer in the Engineering and Maintenance Support division of the Acquisition and Technology group in St. Louis, received the Bronze Medal Award from the National Oceanic and Atmospheric Administration. The award is the highest given by NOAA, and the third highest given by the Department of Commerce.

Munsell worked for NOAA for four years before coming to DMA in September, and served as lead



Munsell

developer on a project to automate the map production process of the U. S. Nautical Charting Program and designing, documenting and implementing a cross-platform client-server raster/vector hybrid system known

as the Super Computer Assisted Revisions System.

The system is currently responsible for production of all of NOAA's U.S. nautical charts, as well as revision of existing charts. In a year's time, it has enabled the National Ocean Service, the part of NOAA responsible for domestic nautical and aeronautical charts, to achieve substantial savings, including elimination of a \$900,000 per year negative engraving contract.

Munsell, a native of Waterloo, Ill. is a 1990 graduate of Southeast Missouri State University.

NIMA proposal goes to Congress

continued from page 2

No new construction for a NIMA facility is planned. The location of NIMA headquarters is to be determined.

Commenting on DMA's role in the new agency, General Nuber said, "The Defense Mapping Agency historically over the years has had the customer as number one. DMA has always understood what their

mission was, which was to deliver a map, or geospatial information to the customer."

He said the customers have come to trust the agency with delivering an acceptable product to the right place at the right time. ■

The DMA St. Louis Singers: a tradition for almost 50 years

continued from page 20

Added co-director Brad Slavik, "We're proud of our volunteer choir; when we sing, everybody is listening to the others. I think we work well together."

While the singing is fun, it can also be taxing to cover all of the choir's bases. During recent seasons, for example, the singers have performed nearly continuously for six or seven hours a day, and are on

their feet all the time. "Not even opera companies sing for that long a stretch," Knight observed.

The group looks forward to another active holiday season this year. Currently it is looking for another accompanist to replace Evelyn Dixon, who retired in September. ■



Promotions

Adedokun, Paulette L.
Andringa, Julie C.
Aromando, Joseph Jr.
Atridge, Mary T.
Ayala, Jesus S.
Billman, Thomas A., Jr.
Bloomfield, Terri K.
Bradenberg, Michael
Briscoe, Irvin Lee
Burchette, Edward N.
Butts, Donalaine L.
Cline, Michael W.
Cole, Bernie D.
Collins, Michael J.
Conroy, Thomas W.
Dehart, Dorothea B.
Deming, Robert P.
Denkenberger, Ralph S.
Devlin, Thomas M.
Dimascio, William H.
Drew, James P.
Durr, Ella S.
Edwards, Donna J.
Farley, Angela D.
Friel, Kathleen M.
Gouffard, Roger A., Jr.
Gorski, Joseph M.
Grasso, Linda J.
Groothuis, John
Hand, Donna R.
Heard, Virtie M.
Howard, Leon J., III
Hudgens, Betty J.
Jackson, Deborah A.
Johnson, Robert E.
Jones, Racita
Jordan, James L.
Kieswetter, Michael G.
Knox, Michael K.
Kolb, Michael K.
Lawson, Charles D.
Leaver, Joan M.
Leblanc, Lori D.
Lemon, Tia D.
Lockhart, Rose Y.
Markowitz, Rachel N.
Magkowskyj, Melissa A.
Mccauley, John J.
Mccord, Sheila K.
Meckel, Karen F.
Mills, Gary J.
Mobley, Clayton W.
Money, Michael E.
Mountcastle, Cameron
Muney, Charles S.
Nelson, David M.
Puge, Dennis W.
Pojndexter, Robert F.
Precht, Robert J.
Reddon, Ronald Wayne
Reith, Ernest
Ritter, Barbara R.
Ross, Allen D.
Saffel, Joedy T.
Sandor, Vincent
Schreiner, Daniel J.
Scott, Christine A.
Sorrrells, Denver W.
Springer, Gregory P.
Stephan, Thomas R.
Stizza, David J.
Studds, Robert B.
Tankersley, Carol J.
Tate, Linda R.
Tripp, Keith D.
Vandiver, Edgar B., IV
Walker, Laura M.
West, Araminta D.
Wilhelm, Robert H.
Williams, Latanya Y.

Wuestkamp, C. J.
Yemet, Michael A.

Performance Award

Aglio, Mark A.
Akers, Richard
Alcott, David Richard
Alvarez, Raoul
Amorati, Joseph G.
Amspaugh, James
Andersen, Kenneth H.
Anderson, Karen J.
Anderson, Todd R.
Appel, Jean K.
Arensberg, John F.
Arnold, Gregory C.
Ayres, James E.
Baker, Jane E.
Baker, Paul E.
Barbis, Elio M.
Barsh, Beverly J.
Beck, Richard A.
Behnke, Jeffrey J.
Beldon, Patricia A.
Bentrop, Robert B.
Berg, Richard A.
Best, Neil P.
Biggar, Patrick T.
Bild, Shirley M.
Booltz, Mark E.
Bryd, Gloria P.
Brannon, Nancy M.
Bratten, Jacqueline E.
Broadwater, James S.
Brown, Margaret L.
Bruce, Wayne C.
Brucker, Armand P.
Bukoski, John W.
Bundy, James E.
Burse, Juanita
Camarda, Thomas P.
Cathell, Vance J.
Chandlee, James B.
Christensen, Craig O.
Clark, Donna E.
Clem, Connie L.
Coffelt, Desmond W., Jr.
Coleman, Stuart H.
Collins, Daniel L.
Cooke, Robert D.
Cooper, Sidney D.
Corner, Terry
Covey, Lynne A.
Cracker, William F.
Crawford, Tina
Croissant, Kenneth L.
Croisethere, William R.
Crone, Harry C.
Crump, Jerry M.
Culver, John E., Jr.
Cumbow, Jack A.
Cuming, Donald R.
Cuppan, Christopher D.
Damker, Betty M.
Dane, Samuel F.
Danford, Edwin O.
Danko, David M.
Darago, Christine M.R.
Darling, Neil A.
David, Larry W.
Davis, Anita L.
De Angelo, Joseph M.
Delaney, Martin M.
Derow, David C.
Desch, Charles V.
Dewitt, Sharon A.
Dexter, Ronald L.
Dilling, Thomas W.
Dohmann, Herman A.

Donnellon, Debora J.
Donovan, Patrick Douglas
Driver, Beth Hessel
Drucker, Marilyn
Drum, Dennis E.
Dunbar, Gerald H.
Dunlap, Robert Lee
Dunn, Penny D.
Eblan, Angela M.
Edwards, Julian D., Jr.
Eller, John A.
Elphinstone, Gerald M.
Elsa, Gary A.
Esfandiary, Mary S.
Etheridge, Peggy A.
Evans, Gail Penn
Evans, John W.
Fellers, Jack W.
Feltz, Gary P.
Ferrari Gordon C.
Fico, Frank J.
Fies, Thomas B.
Flynn, Randall E.
Foeller, Roy J., Jr.
Forster, Thomas E.
Fountain, Michael K.
Fox, Jeffery D.
Frazier, Lavada M.
Freeman, Blair Q.
Gadbois, Glenville Richard
Garcia, Mary K.
Gargac, Donald L.
Garland, Earl R.
Garrison, Dorothy R.
Gates, John O.
Gillihan, Rosetta W.
Gilman, Kathryn G Otto
Goff, Charles W.
Gonchar, Donald J.
Gonchar, Susan A.
Goodman, Carl W.
Graham, John J.
Gray, Thomas E.
Graenewald, Maria M.
Hacker, Gary A.
Haddick, John R.
Hagberg, Viola W.
Hall, Steven C.
Hall, Susan Wacker
Hamann, Lon R.
Hamel, Antoinette R.
Hane, Edward P., Jr.
Hanna, Mark D.
Hare, James Jr.
Harper, Melvin R.
Harris, Charles Nelson
Harris, Michael J.
Harrison, John R.
Haskett, Susankelly S.
Hatfield, Cathy D.
Hawk, Gretchen A.
Hawk, James R.
Heaton, Vanna Weir
Heigert, Richard A.
Hendrix, Victoria
Henley, William Lee, Jr.
Herron, Floyd Dale
Higgins, George E.
Higgins, John T.
Hilberg, Eric P.
Hilliary, Ruth E.
Hobaugh, Susan
Hochstetter, David L.
Holt, Marshall W.
Hosey, Matthew O.
Howard, Elizabeth H.
Huddleston, David W.
Hudson, Patricia A.

Hughes, Charles F., Jr.
Hughes, William T.
Hugyez, Kathryn R.
Hutchings, James P.
Hwang, Phillip Q.
Hynes, Rosanna T.
Ignatz, Judith B.
Jacober, Robert P., Jr.
Jacobs, Charles W.
Jacobs, David J.
Jagim, Gina H.
James, Elizabeth B.
Jamison, Timothy J.
Jedliska, Brenda L.
Johnston, J. Ford, Jr.
Jones, David T.
Jones, Devolia V.
Jungman, Lawrence J.
Kasab, James H.
Kennedy, Mark R.
Kerns, David E.
Ketta, Harry C., III
Klaner, Mary Ann
Klopfenstein, Frieda M.
Kolo, Bernard J.
Kotsiras, Bessie
Krawowski, John S.
Krause, Pamela H.
Kreiss, Thomas N., Jr.
Krueger, Peter G.
Kuchar, Victor Dean
Kuennen, George G.
Kumar, Muneendra
Kuwamura, Frank K., Jr.
Lanier, John L., Jr.
Larson, Albert B., Jr.
Lauer, Bernard J.
Laurine, Robert H., Jr.
Lawless, Edwin C.
Lawson, Loyce F.
League, Alfred W.
Leathem, Wendy L.
Leifer, Ira
Lenschert, Zygmund, Jr.
Lenczowski, Jerome J.
Leonard, Edwin
Leroy, Caroline F.
Leshar, David C.
Lewis, Dale A.
Lewis, Robert V.
Ljebisch, John E.
Ligon, Loretta M.
Lindeman, James M.
Linsinger, Richard L., Jr.
Lobdell, Pamela M.
Lofton, Michelle A.
Loudon, Deborah L.
Love, Billy J.
Low, Janet L.
Lozupone, Christina M.
MacDonald, William B.
Magee, Ronald L.
Mahaney, Larry J.
Mahlon, James W.
Mallery, Linda L.
Marotta, Joseph B.
Marth, Richard S.
Martin, Arlene T.
Martin, Linda M.
Martin, Paulette F.
Martino, Richard A.
May, Timothy J.
Mcconnell, Phil, Jr.
McCrimmon, Mejver R.
McGlynn, Dona L.
Meadows, Kelia S.
Meehan, Terence S.
Mellen, Gerrit.

Mich, Paul F.
Michaels, Anthony J.
Miller, John P.
Moham, James G.
Monroe, Charles R.
Moran, Joanne B.
Morris, Carleida.
Mosley, Louventa C.
Motsko, Dennis J.
Mueller, Eleanor Marie
Muench, Paul Edward
Mulawa, Luanne I.
Mull, R Gordon
Myles Bruce S.
Negron Manuel E.
Newcomer James A. Jr.
Nickless Joan N.
Noll Edward Leroy
Norquist Dana L.
Obrien Liam P.
Pals Paul F.
Patton James R.
Pearl John M.
Pelletiere George A.
Perko Margery L.
Piller Charles E.
Pittman Gerald F. Jr.
Polk Jennifer J.
Potamos Christ F.
Pryor William W.
Prystal Mary K.
Queen Robbin D.
Rader Pamela D.
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