

# A Memorable Journey

24 Years of the Defense Mapping Agency





## From the DMA Director

What an important time in the life of the Defense Mapping Agency to stop, look back, reflect, and remember with pride the people and events that form the history of DMA. I look at this as a moment to celebrate the people who are and were DMA, because they made the events happen.

I encouraged the Agency to write a history for two very simple, straightforward reasons: (1) we must never forget what we have accomplished and (2) we can use this reflective knowledge to chart a better course into the future. I have always believed that an organization can learn if all the people in it know the history.

One of my most enjoyable days as the Director was spent listening to stories about the "good old days" told by longtime DMA employees. This day highlighted the importance of formally capturing the DMA history, using as sources the people who were there.

As we enjoy this time, we need to consider what we have learned, how change has occurred many times, what you do each day to better serve our customers, and to take special pride in what you have contributed personally. Celebrate how you made the Defense Mapping Agency's history a proud one and one that everyone can use as a guide for a better tomorrow.

Doug Smith, Deputy Director, has written an article for this publication on the changes we see ahead and how you can make more award-winning history. Use those thoughts to light the way for the next century and all the changes it will bring.

Congratulations on an outstanding 24 years of success!

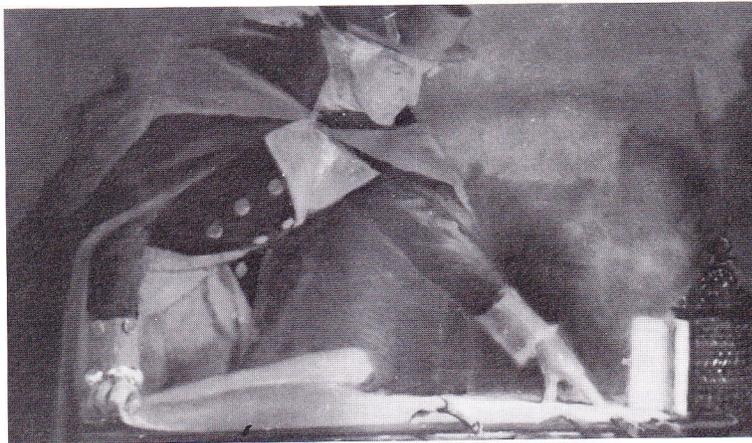
Philip W. Nuber  
Major General, USAF  
Director, Defense Mapping Agency

## U.S. Military Mapping before DMA (1776-1972)

**D**MA was formally established on Jan. 1, 1972, as a separate Department of Defense entity centralizing mapping, charting and geodesy resources. After six months of transition, DMA officially opened its doors in July of that year.

Military map making in this country began much earlier. George Washington, himself a surveyor, mapped the Shenandoah Valley where he made his home more than a score of years before assuming command of the Continental Army.

Later, as a military leader, he recognized the vital importance of accurate maps to successful combat strategy. It was Washing-



*Washington Studying the Plans of Battle, by John Ward Dunsmore (Fraunces Tavern Museum, New York City)*

ton who hired Scotsman Robert Erskine to survey roads, sketch the countryside and manage the fledgling mapping units that provided the nation's first full-time cartographic support.

This group was demobilized after the war; but the Louisiana Purchase and the War of 1812 saw a resurgence of military map making. In 1818 the War Department added a topographical unit. In 1830 U.S. Navy established the first Chart Depot in a rented house on G Street in the new capital. Five years later a lithographic press was installed, and in 1837 the first engraved nautical charts were issued.

By 1838, Congress had established the Topographical Engineers as a separate corps, naming Col. John J. Abert as its commander.

In 1842, Congress authorized and appropriated funds for a "U.S. Navy Observatory and Hydrographic Office," and in 1847 Lieutenant Matthew Maury ("Founder of Oceanographic Science") issued a "Wind and Current Chart of the North Atlantic."

During the Civil War, hot-air balloons and sketch artists created prospectives showing disposition of troops. In 1863, responsibility for military mapping was handed to the Corps of Engineers. Two years later, the first topographic company was formed at Jefferson Barracks, Mo. Shortly afterward it was moved to Washington Barracks, now Ft. McNair, Washington, D.C.

In 1869 the first "Notice to Mariners" was issued, and in 1871 the first photolithography was performed with equipment at the Hydrographic Office.

In 1889 a proposal to standardize geographic names resulted in the creation of the U.S. Board of Geographic Names.

In 1909 the Army's Central Map Reproduction Plant was established at Ft. McNair, and only eight years later, anticipating the mapping needs of World War I, the reproduction plant was reorganized and expanded by Captain Charles Ruth. Nine million maps were produced during the conflict.

In 1918 a School of Surveying, Reproduction and Ranging, forerunner of the Defense Mapping School, was established at Camp A.A. Humphreys, now Ft. Belvoir. It was redesignated the Army Map Service and moved to its present location at Bethesda, Md., in 1942.

Meantime, during the early part of the twentieth century, there was increasing use of maps by military aviators. The Hydrographic Office was responsible for producing the first aviation charts used by World War I fliers. By 1925 the office had an aeronautical section, and in 1928 the Army Air Corps established a Map Unit. In 1941 the Map Unit had a strength of 20 officers and civilians.

Then at the outbreak of World War II, events changed rapidly. In January 1942, the Chart Unit was moved from downtown Washington to Bolling Field and redesignated as the Map-Chart Division. By March its strength had increased to 184. The following year the name changed again, to Aeronautical Chart Division; and on June 15, 1943, the Aeronautical Chart Plant, which would later become the Defense Mapping Agency Aerospace Center, was activated in St. Louis.

During World War II, military mapping facilities were pushed to the limit to keep the armed forces supplied. An increasing number of women were recruited at the production centers in St. Louis and in the Washington area, replacing men called to active duty.

After the war came inevitable cutbacks in production and in new hiring, but with the beginning of the Cold War and the urgent need to support strategic air and missile defense systems, hiring resumed. In 1947 the Central Intelligence Agency was established, beginning a relationship between national mapping and intelligence organizations that continues today.

In the same year, the U. S. Air Force was established as a separate service arm. Its Aeronautical Chart Service was assigned to the new Strategic Air Command. Two years later, in 1947, Air Force Colonel Paul Schauer, new head of the ACS in Washington, formed a committee to find a new site for the St. Louis Aeronautical Chart Plant.

In 1950 the Korean conflict began. As it escalated, demands for topographic maps and nautical and aeronautical maps and charts increased greatly.

In 1952 the St. Louis Arsenal was selected as the new site for the ACP. In August of that year ACS, now the Aeronautical Chart and Information Service, moved from Washington to St. Louis, and ACP was renamed the Air Force Aeronautical Chart and Information Center.

Significant events of the 1950's and 1960's included the beginning of lunar and

space charting activities (1959); processing of the first U-2 reconnaissance photographs; and retrieving and processing the first imagery from the first successful Discoverer/Corona mission (1960). At about this time the St. Louis production center made radical changes to move mapping, charting and geodetic production from the cartographic aid/cartographer journeyman to the level of physical scientist/geodesist, to support a more precise World Geodetic System and to provide targeting support for new weapons like the ICBM. In 1961 the Defense Intelligence Agency was established. In 1962 the Navy's Hydrographic Office became the U.S. Naval Oceanographic Office. In 1968 the Army Map Service became part of the U.S. Army Topographic Command.

Then, in 1970, came a recommendation from the President's Blue Ribbon Committee to



*Mapping the moon was a major DMA project of the 1950's. At the Bethesda center, Tom Bonner completes a sculpted lunar globe.*

consolidate all military MC&G activities into one agency. The following year President Nixon issued a directive to accomplish the task

And in 1972, after almost two centuries of U.S. military map making, DMA was born. 🇺🇸

1972

Army's Topographic Command, the nautical charting part of the Navy's Oceanographic Office, the Air Force Aeronautical Chart and Information Center and the Mapping and Charting section of Defense Intelligence Agency are combined to form the new DMA (July).

## Dick Beck

Dick Beck remembers that the early days of DMA required a lot of reorganizing. In 1972 he was a cartographer at the Topographic Center. "In those days we were still learning to convert contours to profiles and employing computers with no great storage capacity."

Some years later, after the start-up of SPOEM, he was assigned to one of the intelligence agencies. His job was to coordinate the handoff of imagery acquired for DMA.

Now a member of the Planning and Analysis staff at headquarters, Beck remembers the first attempts to deal with the new imagery captured by cameras on the Corona missions and others that followed. The intelligence people who did these

things had their own objectives in mind, he remembers, and mapping considerations weren't their top priority. But concessions were made, and as the Cold War continued this new imagery was crucial to the production of maps and targeting information

"We were pioneers," Beck recalls, with a smile. ➤



Dick Beck



1972—A site visit to the Bethesda Topographic Center by a team from the newly-created DMA headquarters and the St. Louis Aerospace Center. From left, Rear Admiral Carnahan, DMA deputy director, Plans and Requirements; DMA Director Maj. Gen. Howard Penney; Deputy Director Maj. Gen. James Watkins; Lawrence Ayers and William Riordan. Riordan, AC's first technical director, was succeeded by Ayers in 1974. The unidentified man at right was explaining a digitizing application of the Calmagraphic system. Photo courtesy Jeannie Dugo.

## William Mahoney

Dr. William Mahoney calls the creation of DMA "the final legacy of Corona." As ACIC's Director of Science and Technology during the 1960's, Dr. Mahoney was a driving force for reshaping the interpretation and exploitation of imagery acquired from airborne and spaceborne cameras.

The Corona missions, like the earlier U-2 flights, were the U.S. strategic response to the perceived

"missile gap" with Russia. The objective was to know precisely what missiles the Russians possessed and where they were located. But by the mid-1960's it was obvious that the new satellite imagery had far broader potential for both military and civilian mapping.

It was also obvious that the training and instrumentation necessary for interpretation and exploitation, developed independently by the separate mapping centers of the Army, Navy and Air Force, would be expensive, time-consuming and duplicative. ➤

## Robert Short

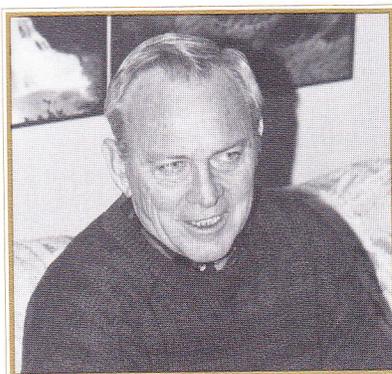
In August 1972, Army Major General Howard Penney identified DMA Support for the Lance Missile System as "the most critical project DMA would ever be assigned." General Penney said the project would give the new agency an opportunity to demonstrate its responsiveness to the needs of the commands, if the support was provided on time, and with zero defects.

The task was assigned to the Department of Geodesy, DMA Topographic Center. Robert Short, a cartographer at the center, was program manager.

Working with U.S. Army Engineers Topographic Lab, the department designed and built a "photo-locator" database that was later renamed the "Deployable Point Positioning Data Base," or DPPDB.

This product was conceived as a combined set of analog hardcopy imagery and digital parameter data, Short remembers. Together with the Analytical Photogrammetric Positioning System (APPS) software, it provided precise targeting support for the Lance Missile.

At the time the military planners were urgently seeking more funding for Lance missile, Short recalls, but



Robert Short

were met with Congressional skepticism, about whether they had the targeting systems to support it.

Within the one year allocated for the project, the imagery was collected, the requirements were defined, analytical triangulation was accomplished, finished product design and packaging issues were resolved, user instructions were drafted, a master copy of the product was verified, and ten copies were replicated and shipped to the customer. "The APPS and its DPPDB support were the only material equipment items in the Lance Missile Deployment Program that arrived in theater on schedule," says Short. With their delivery, he feels, "the DMA reputation for responsiveness was established." 🐾

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*Using a T-2 Theodolite, Rudy Salvermoser, chief of the White Sands surveyors of DMA's Geodetic Survey Squadron, checks an azimuth of a Pershing mission in launch position. The photo was taken at White Sands Missile Range, where Salvermoser was chief of the Army's and later DMA's Topo Comm Surveyors. With him is Ted Martinez, surveyor party chief for the Pershing Project at Black Mesa, Utah.*  
 Photo courtesy Werner Koslowski.

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## George Shalhoob

**I**t was the early seventies, soon after the agency was begun. The word came out from Washington that DMA would have its own seal, and there would be a contest for the best slogan to go with it.

"I had some ideas. I had taken Latin in high school, and there was a

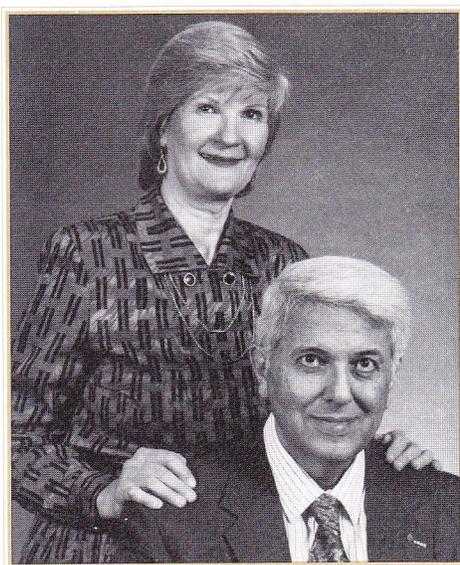
Latin motto, "Pro bono patria," that appealed to me. The contest judges apparently liked it, too, but preferred the English translation, "For the good of the country."

"I have the plaque that General Penney [DMA's first director] presented to me. I'm quite proud of it." 🍷

## Rosalie Shalhoob

**I** remember returning to the Arsenal site in 1985. I had worked here for five years in the sixties, when it was called ACIC, then quit to have a family of five children [and, currently, six grandchildren]. What a change! The open space on the upper floors of Building 36 was now offices. And so many more people!" She remembers, in her earlier tenure, working two summers with Dr. Annette Krygiel, then a student at St. Louis University. "Annette would come on the bus from the Public Library, with grocery bags full of books. She read them all, and next time we saw her there would be more bags full of books." 🍷

George Shalhoob and his wife Rosalie. George retired in 1987. Rosalie works in the St. Louis Reference Library.

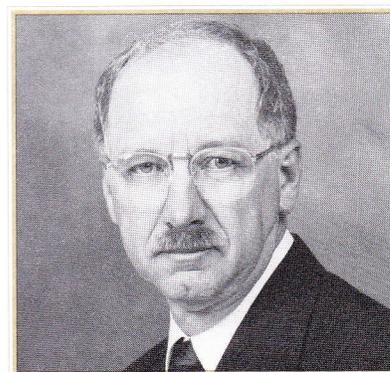


## Earl Phillips

**I**n 1972 Earl Phillips was sent to Vietnam to support the system developed for deployable targeting.

"I'd never been out of the country before, well, never out of Missouri, Illinois and Indiana; never been on a commercial airliner. I was going to a war zone. And I was leaving my wife with two small children."

For a total of seven months Phillips was part of a team that made the Deployable Digital Point Positioning Data Base do its stuff, arming Air Force pilots with the targeting information they needed for pinpoint assaults. "I remember doing all the target coordinates for the raid on Hanoi of Christmas 1973. We'd had the information ready for two



Earl Phillips

weeks."

He recalls the great success of that raid, due to the extreme accuracy of the point positioning, and gives a lot of credit to DMA support back in the States. "Lon Smith did all the photogrammetry," he says, "and, of course, we all learned that art from Dr. [William] Mahoney." 🍷

1973  
DMA support of the Space Program continues with products to support SKYLAB and the joint Apollo-Soyez mission (July).

## Larry Mahaney

When DMA was formed, Larry was a one-person office graphics department, responsible for all of the new agency's needs for briefing slides, displays, handouts and brochures, and even the kind of organization charts called a "wire diagram." Those were pre-computer days, he recalls. All the straight lines and boxes were done with a thin plastic tape called ChartPak. He remembers doing the very first DMA organization chart.

He described DMA headquarters in Building 56 on the Naval Observatory grounds as "a great place to work." He remembers working weekends. "Being sort of a one-man band, it was hard to keep up with the work." But he also remembers having fun playing tennis on the Observatory grounds on the same court used by the Vice President.



Larry Mahaney

And he recalls the raccoons. "It was terrible. We were never sure how they got in. One Sunday I was getting a sandwich from our vending machine. The machine misfired, and kept delivering more sandwiches. I had put three or four on the top, for safe keeping, when I felt a tug on my pants leg. There was a raccoon, trying to use ME as a way to get to those sandwiches!"

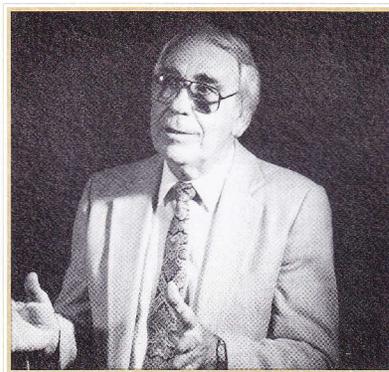
1975

Conflict in Vietnam requires production of more than 300 million topo maps and charts. Teams from St. Louis are sent to theater to support first deployable digitally-based MC&G product (PPDB).

## Willard Tucker

No one in St. Louis, in Vertical Obstruction, will forget Willard Tucker. Anyone who puts in close to 40 years, as Willard did at DMA, should be remembered. The wonderful thing about Willard is that he liked all of his people and had high aspirations for all of them. And he was a very personable man. In the old days, if someone had a birthday or retired, a luncheon or a gathering was put on in the branch. Everyone was acquainted with everyone else through the birthday parties, and Christmas luncheons were always great eating. People would donate their best recipes. Willard really liked these luncheons. Of course, other people did, too. You really got acquainted with everyone in the groups which worked together to produce the best product.

People worked as a team back then, but it was more on a branch level. People had a real sense of



Willard Tucker

belonging to a certain area at the time. One section of our branch was located in the vault area on the third floor. Light tables were all over. The Zoom 500 was the latest and greatest in scanning equipment. They had a Zoom 240 and people said it was the "station wagon," whereas the Zoom 500 was the Cadillac. Either way, it sure beat manual.

Ah, "those were the days, my friend; we thought they'd never end!" —Sharon Hawk



Mike Hayden, a co-worker with Walter Spita in a gravity project in Italy in 1977-78, takes a measurement near the Leaning Tower of Pisa.

## ‘We map, chart and geodesize the world’

The Defense Mapping Agency has participated in many geodetic and gravimetric surveys in many parts of the world. For example, in the 1970's DMA had a cooperative gravity project with the Greek Army Map Service. Gravity points were measured throughout the country to detect gravity anomalies there. Some measurements were made at historic sites such as the Parthenon on the Acropolis in Athens. Others were measured in remote areas where

access was obtained using locally rented animals and boats. Another example is the gravity project in Italy during the late 1970's, in cooperation with the Istituto Geografico Militar. In areas without accurate elevations the Ground Elevation Meter (a specially adapted truck) was used to measure the elevations. On one occasion this instrument paused near the Tower of Pisa where Galileo performed gravity experiments centuries before. —Walter Spita

## Bob Hall

In 1972, after DMA was established, we continued to support Southeast Asia operations. We had people in theater providing precise positions and data by deployable point positioning data bases. We provided dimensional charts and maps and special data, and we were just beginning to get involved in digital data to support aircraft simulators, to support many weapons systems, and to support the cruise missile technology that was evolving. So it's fair to say that 1972 was the beginning of the evolution to precise coordinates, precise accuracies and on-site use of digital information.

Of my 36 years with the Defense Mapping Agency and its predecessors, about 17 years were in the Requirements area in St. Louis and Washington. I made over 500 trips to



Bob Hall

the customers to tell them what we could do, what we had, and also to find out what they needed. These visits took a tremendous amount of time, effort and commitment; however, it was a rewarding and productive opportunity, and I am very appreciative for DMA giving me the opportunity.

## First AA meeting at Bethesda

In November 1976, the first Alcoholics Anonymous (AA) meeting was held at DMAHTC and still continues. As the HTC Employee Assistance Program Officer and Counselor, I helped one AA member to sponsor this group. Their twentieth year anniversary will be celebrated during November of this year.

DMA was one of the first federal agencies in this area to sanction the AA program. It is estimated that

more than 400 DMA employees have used the 12-step program during this time frame. Colonel William Cordova, USA, was the first HTC Director to provide the AA group with a constructed meeting place that they used for more than 16 years. Colonel Peter G. O'Neill, USA, was the HTC Director who in 1986 authorized the tenth anniversary celebration of AA at HTC. —Paul Durkin

## First digital graphic display and validation system developed

In 1979 Dr. Richard Berg, Gerald W. Johnston and William James, all of DMAAC in St. Louis, built and wrote the software for the first graphic on-line, digital display and validation system within DMA called the Image Manipulation Station (IMS). This system provided the first real-time graphic display of digital terrain elevation data for validation and modification of the data prior to distribution to the customer. The IMS system was built entirely by these DMA employees and was used extensively by HTC and AC for

DTED verification. The system was exhibited at several ASP conventions and was the topic for Dr. Armando Mancini's presentations to technical seminars in Santiago, Chili; Tokyo and other places. Through technological advancements, the system was finally replaced by DMA in 1991. Tom Coghlan was one of the first students to be taught the programming practices and principles of the IMS in 1979-80, along with several other people at HTC. William James and I provided the training. —Jerry Johnston

1978

The Hydrographic Center is merged with the Topographic Center.

Office of Distribution Services established (September)

1979

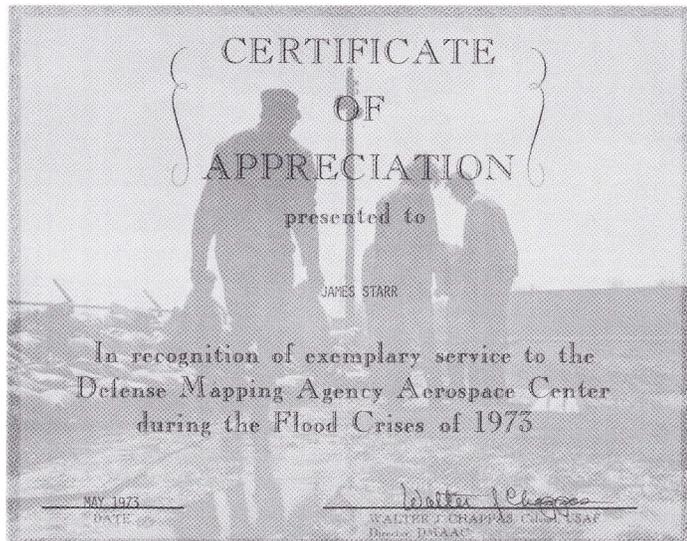
First simulation product, the Digital Land Mass Simulation (DLMS) system is introduced (February).

1979

Development begins on the requirements and design for Mark 85, forerunner of DMA's Digital Production System.



Before the St. Louis Flood of '93 came the Flood of '73. DMA workers who successfully held back that flood received certificates from AC Commander Col. Walter Chappas. Certificate courtesy James Starr.



## Barbara Bailey

**I** was the agency's interpreter for the hearing impaired," says Barbara Bailey, with some pride, "long before we had in-house interpreting services. It was one of my jobs, at one time; it was written into my position description."



*Barbara Bailey in 1975 with David French, then working for Channel 9 (CBS) in Washington. He is now with CNN.*

At the start, Barbara was signing for three people in her department. But word spread, and soon she was doing signing for the employee events at this Bethesda location. She remembers accompanying two employees with hearing disabilities to a 1974 DoD Award Ceremony at the Pentagon, and to a luncheon,

following the ceremony, at Ft. McNair. "One of the two could read lips but did not read sign language; the other could NOT read lips but COULD read signs. I remember



*Barbara Bailey today*

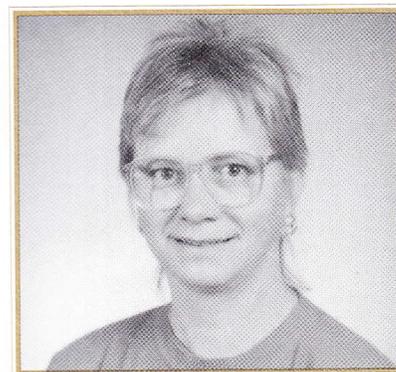
sitting between them at lunch, constantly turning from one to the other and relaying what they were saying."

Later, Barbara went with another Bethesda employee to the base commander with a list of what was needed to establish a formal sign language interpreter program. The program was approved, and HTC got its first part-time, dedicated interpreter. ➤

## Susan Crouch

**S**usan Crouch, one of DMA's hearing-impaired employees, contributes this memory:

I had been trying to think back as far as 16 years (I came here in January 1980), which is quite a feat for me! Helen Johnson was in charge of the handicapped program then, and she hired interpreters from an outside agency for the few meetings we had. While I was working in the personnel office, Ms. Johnson occasionally asked for my help in "interpreting." (Perhaps this is not the right word to use here - I merely read lips the best I could and passed on what information I understood). I remember Richard Sleeper who came into the Employee Assistance Office as an interpreter and as a counselor for other employees. He was not certified, but it was a good start on the road to getting a certified interpreter. Jill Dvorchak later came on board as an interpreter/EEO



*Susan Crouch*

counselor, and then Angela Blaylock took her place.

In the early days we had interpreters for limited things such as CPR, First Aid Training, fire extinguisher training and such. Today we have interpreters for just about everything, which sure is a far cry from what it was when I came in 1980. Oh, we have come a long way, baby, but it looks like we finally are getting there! ➤

## Paulette Gosden

Paulette Gosden thinks she was one of the first women in DMA to break the “glass ceiling” that kept women from becoming cartographers. Back in the sixties, when she was completing her education in St. Louis, women were employed as cartographic technicians, a much lower paid job. With the help of a personnel advisor, and working as a summer employee, Paulette managed to qualify herself for the carto series. It wasn’t easy, even after the appointment came. “For a woman to work in the special cleared area known as ‘behind the wall’ on shift work required a buddy system of two women,” she explains.

Gosden remembers the changes produced by the EEO initiative. Now the push was to get more women educated and trained to qualify for the quantum leap into the cartographer series. “Slowly but surely, over time, this initiative succeeded,” she says. “DMA has always been very good to me. Who knew that such an opportunity,



Paulette Gosden

offered to me one summer by Personnel, would turn out to be the start of a wonderful and prosperous career for me in my past 23 years with DMA. I congratulate those past pioneers who had such vision and forethought.”



“Breaking the Glass Ceiling,” a panel discussion at the Aerospace Center, was one of many DMA programs of the seventies, eighties and early nineties focusing on the professional status and potential of women. Photo courtesy Margy Spezia.

## Barbara Ivery

Barb Ivery, DMA’s first female African American to be selected for the Senior Executive Service, gives Bill Brown and others a lot of credit for mentoring her. Of her selection she says, “It’s a really humbling experience to be the first of anything. I’m very proud of that. But it’s a real challenge, and it is quite a responsibility in that I owe it to not only myself to do well, but to the African-American community.” But she also recalls with amusement a long-ago briefing for Mr. Brown. “I sort of pride myself as being organized and prepared. And I recall having to give a presentation, had finished it, and thought I had done a pretty good job. I asked if there were any questions, and Bill Brown was very clear, as he always is, and he



Barbara Ivery

said, ‘Yes, you may start by throwing that in the trash.’ And I commented, taking a risk, by saying, ‘Well, I don’t want to throw it in the trash. I’d like one more opportunity to get this right.’ And being fair, he did allow me one more opportunity. And I would just add, we got it right and got the closure of it.”

1979-81  
 During this period, DMA becomes actively involved in developing priorities and planning for the Cruise Missile.

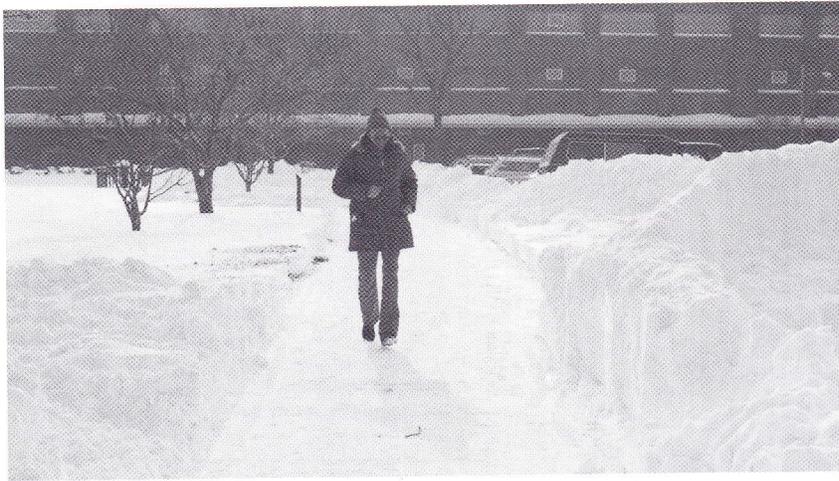
## Rosa Campbell

1982-83

Blizzard conditions affect work at St. Louis ('82) and Bethesda ('83)

1984

Mark 85 deliveries and testing begin. Mark 90 initiated.



What was termed the "worst snow storm to hit St. Louis since 1913" forced the Aerospace Center to close and stranded scores of employees at their work locations during the weekend of Jan. 30-31, 1982. This photo was taken after about 14 inches of snow were plowed from the walkway to Building 36. Photo by Frank Aufmuth

Rosa Campbell remembers the Great Bethesda Blizzard of 1983. Like the one in St. Louis in '82, it came down during the day shift. By 7 a.m. it was clear that there would be a significant accumulation, and at 11 a.m. a snow emergency was declared, and all but essential employees were sent home. Easier said than done! Rosa Campbell, of the Human Resources group at Bethesda, remembers waiting long hours, along with most of the other employees, to be rescued. "The cafeteria was closed, and by nightfall, some of us were getting pretty hungry. The guards helped out a lot.



Rosa Campbell

One of them made it across the road to the Safeway store and came back with some things. Somebody else found a deck of cards."

The guards themselves had long hours. Because of the heavy snow blanket, similar to the one which fell in early January of this year, the second shift was also snowbound and failed to appear. As a result, the 10 guards on duty worked through the night and the following day, a total of 32 hours, without relief. Three worked another night and another day, a total of 56 hours. And one guard, Officer Gary Morrison, is said to have worked for 88 continuous hours.

Fortunately for Rosa, she didn't have to stick around that long. About 11 that night, a family member with a four-wheel drive managed to make it to the center, and by about 1 a.m. Rosa was home.

Fortunately for everybody except the guards and the other "essentials," the next day was a Saturday. 🐾

## Laura Thompson remembers the DMA St. Louis Choir

The DMA St. Louis Choir, led for many years by Gene Knight and for the last 10 years by me, has performed at Christmas and on many other occasions for all our St. Louis employees. Each year we start with a bang, singing for our most enthusiastic fans, the retirees of the Aerospace Charting Seniors. Then we carol in all the halls and work areas of the St. Louis production

center. We've also sung at prayer breakfasts, changes of command and USO events. We use interpreters, not only for the sake of hearing-impaired employees, but because they add such visual beauty to each melody sung.

Singing for our veterans at the VA Hospital and at Ex-POW Recognition Day has been extremely rewarding. I remember one year, caroling at

the VA hospital, when our commander, Col. Robert Lemon, joined us as we performed in the different wards. When those men in wheel-chairs and on gurneys saw an acting colonel visit them, many attempted to salute. To see their faces, knowing that they hadn't been forgotten, moved many of us to tears.

Another highlight was during Operation Desert Storm. Many workers we visited were exhausted from laboring around the clock for months. We brought Christmas snacks to help cheer them up.

To our fans, our hearty singers, signers and to my assistant Brad Slavik, thanks! It's been a great decade, and I hope the choir continues as long as maps are made.

—Laura J. Thompson, director, DMA St. Louis Choir 🍷



The DMA St. Louis choir in 1986. Laura Thompson is at the center of the first row.

## Bob Edwards

Bob Edwards came to work at the St. Louis center in 1968. His memories of DMA are vivid. He was part of a group that did triangulations on Nistri TA-3 comparators familiarly known as "green monsters." He remembers surviving the RIF and the promotion freeze of 1971, the standup of DMA in '72, and the new, finer requirements of photogrammetry that followed in the middle and late seventies. "In 1977 and '78 we had to re-do the entire Carto School training. Jack Panula developed a new five-week photogrammetry course." His favorite year of the 24? "Nineteen eighty-two. It was the year I was promoted into the section of the Plans and Requirements directorate that dealt with advanced weapons. We were involved with some really interesting



Bob Edwards

projects, supporting the Trident and Peacekeeper and the conventional version of the Cruise Missile. I also got my master's that year, after 10 years of evening classes, and was selected as one of DMA's outstanding employees." 🍷

1986

The DMA Geodetic Library collects the five millionth Gravity Point Anomaly; satellite imagery first used to study gravity effects on the surface of the ocean.

## Cartographers old(er) and new

Throughout the 24 years of DMA, classes of new cartographers have continued to graduate and swell the ranks of DMA's production centers. In the left photo below,

taken Jan. 22, 1973, are 25 new St. Louis cartographers, believed to be the first class taught after DMA was formed. The other photo at right is of 1996's first class in St. Louis. ➤



## Offset photographers, then and now

Thomas O. Murray, Jr., at the Bethesda center, has provided photos of what his group of offset photographers looked like in 1973 (below left) and the same group in

1990. Of the original group, only Murray and two others are still there. He challenges the reader to pick them out. ➤



## Paul Kelbaugh

Paul Kelbaugh remembers that when he was hired by DMA in 1981 there were only four attorneys; two at headquarters, one each at Bethesda and St. Louis. He was hired to assist Bill Smith in St. Louis.

Chatting recently with his friend Dave Black, Paul remembers a funny

story from the early 1980's.

"I hadn't been there very long, and I was counting on people like Dave to give me a lot of information on what was really happening there. There was a litigation matter; we had to remove an individual who started coming to work wearing aluminum foil over his head. When I interviewed him he said the reason he was wearing the aluminum foil on his head was because, in case I didn't

know it, we were doing mind control experiments at the Aerospace Center. I thought that was humorous. And then several weeks later we had another incident. This time we got a call from Secret Service, saying we understand you have another employee at the Aerospace Center wearing aluminum foil on his head. So we had two employees in a matter of weeks who were wearing aluminum foil to avoid these mind control experiments.

"I picked up the phone, and I called our general counsel, Ed Obloy. I said, I haven't been here very long, and I know I'm not let in on a lot of things in the security clearance world, but are we doing mind control experiments? And there was this

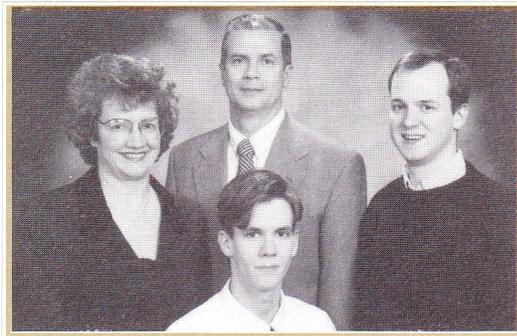


Paul Kelbaugh

silence on the other end of the phone, like, why did we ever hire this guy in the first place? He assured me we were not doing any mind control experiments."

## Dennis Drum

My most emotional memory involves an Open House at DMAAC in 1986. My mother and two sisters came from my home town, Cape Girardeau, Mo., for the day and they, my wife and two sons took all the tours. It was a nice relaxing day, and I was proud of my contributions to and association with DMA. I was enjoying showing off, to



Dennis Drum and his family

the extent I could, what we work with and produce. My mother was also enjoying it, seeing where her son worked and being impressed with all the sophisticated equipment... career and a world that had little to do with her life's experience. We parted that evening with the pleasure of a shared experience. Five nights later, my wife Mary called me in Washington, D. C., where I was TDY, to tell me that my mother had suffered an aneurysm late that afternoon and was in a coma. I hurried home, but she never regained consciousness. So, the Open House was the last thing I shared with her. I'll always be grateful to DMA for the opportunity and the organizers for their work. The Open House gave us a meaningful reason to be together. Thank you, DMA.

## DMA Leadership

### Directors

LTG  
Howard W. Penney, USA  
1972-74

VADM  
Shannon D. Cramer, Jr., USN  
1974-77

Lt. Gen.  
Abner B. Martin, USAF  
1977-79

Maj. Gen.  
William L. Nicholson III, USAF  
1979-81

MG  
Richard M. Wells, USA  
1981-83

RADM  
E. A. Wilkinson, USN  
1983-85

### Deputy Directors Management & Technology

Thomas C. Finnie, 1972-74

Charles H. Andregg, 1974-79

William T. Riordan, 1979-79

Owen W. Williams, 1979-82

Lawrence F. Ayers, 1982-87

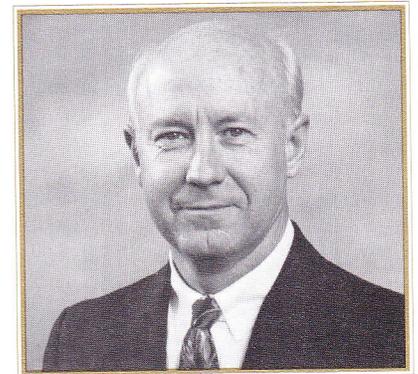
Family Days at the Aerospace Center, 1986 (right) and at HTC 1992 (below)



## Doug Smith

Soon after my coming to DMA in the mid-80's the then Deputy Director Larry Ayers retired. The retirement event was to be golf and horse racing in Charles Town, W.Va. Larry's executive officer, Jim Hey, needed one more to make even foursomes and he wanted me to attend. I told him that I had played only once, 20 years ago, and declined. He assured me that he had clubs I could borrow and that it wouldn't matter since Larry couldn't play either.

Eager to make a good impression, I agreed. Upon arriving at the course it was clear that Larry's tendency to dig up the turf was somewhat exaggerated. He was, in fact, hitting practice balls and actually making contact. I was impressed. Before I could make a hasty retreat, Red Gilliam swooped by in a golf cart to say we had been paired up for the day. Well, Red takes his golfing more seriously than



Doug Smith

most. I was in deep trouble. On the first tee, my third swing finally made contact. Red did not find it necessary to move the cart. My second shot was not much better. It was a very long day. I dug up half of West Virginia before the 18th hole mercifully appeared. Red spent most of his day in the cart. I didn't get many golf invitations after that, but I did give Larry a retirement gift that no one else could have. I made his golf score look really good." 🍷

## Sandy Lawson

During the 1972-1996 time frame I spent eight years working in the Executive Office of HTC as secretary to the first technical director (Valentine P. Bauer) as well as the next two technical directors to follow him (Dewey Pegler and Ken Daugherty). I witnessed the merger of the

Hydrographic and Topographic Centers to form HTC, the transfer of field offices from a Department of Field Offices to the Director. During the 1980's I transitioned into the admin field at DMA headquarters. I returned to HTC in 1990 as a Public Affairs Specialist coordinating the non-VIP tours. In the 1990-1996 time frame we have hosted tours for about



Sandy Lawson

4,000 individuals at HTC. The FY 91 totals were low because of Desert Storm. Tour members have varied from college students to flag officers to Congressional groups. We even had General Colin Powell come for a tour and to thank the employees for

their participation and support of Desert Storm. We have lost people during tours and bent the rules to accommodate foreign guests' requests to smoke.

I also remember the HTC Christmas parties with bands comprised of HTC employees playing on every floor, and the hallway beautification program and the new atrium in Erskine Hall. With the completion of these, the buildings have become nicer places to work, less like a production plant. 🐾



*New color and lower ceilings greatly improved the appearance of corridors in Erskine Hall, thanks to a 1991-92 facelift.*

## Roberta Munske

One particular incident that I remember is when Art Emory and I went to Morocco to negotiate our first agreement with the Moroccans. Art and I were going as equal partners in this negotiation. He was the technical side, I was the negotiator. And as we got onto the plane to go over, we had these big tubes of maps, and Art says to me, "I'll carry them onto the plane, Roberta, but in Morocco you have to carry them off and walk four paces behind me." We got the biggest kick out of that. And in fact, we had a wonderfully successful mission. Within a few days we had a signed agreement approved by the King of Morocco. So, I guess whatever we did it worked out right.

One of the wonderful things about DMA has been the sense of family that we have. Through the downsizing and cuts and reorganizations, we do seem to care about our people and take care of our people to the best of our ability. It's a special family place for me



Roberta Munske

because my father, Colonel Charles Ratchford, was here with the Defense Intelligence Agency, as head of Transportation Intelligence, back in the early days, and actually did the ground breaking for Roberdeau Hall. So, it's interesting for me to see that, here, all these years later, DMA is evolving into this new agency that again picks up very close cousins, since some parts of DIA have been close to us before. 🐾

## DMA Joint Meritorious Unit Awards

DMA  
June 1, 1982 - June 1, 1984

DMAAC  
August 2, 1990 - March 12, 1991

DMAHTC  
August 2, 1990 - March 12, 1991

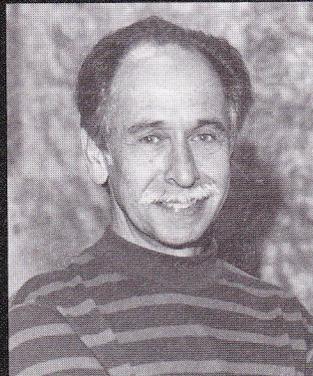
DMACSC  
August 2, 1990 - March 12, 1991

## Other Awards to DMA

Hammer Award  
1995

Finalist for the  
President's Award for Quality  
1996

# A Celebration

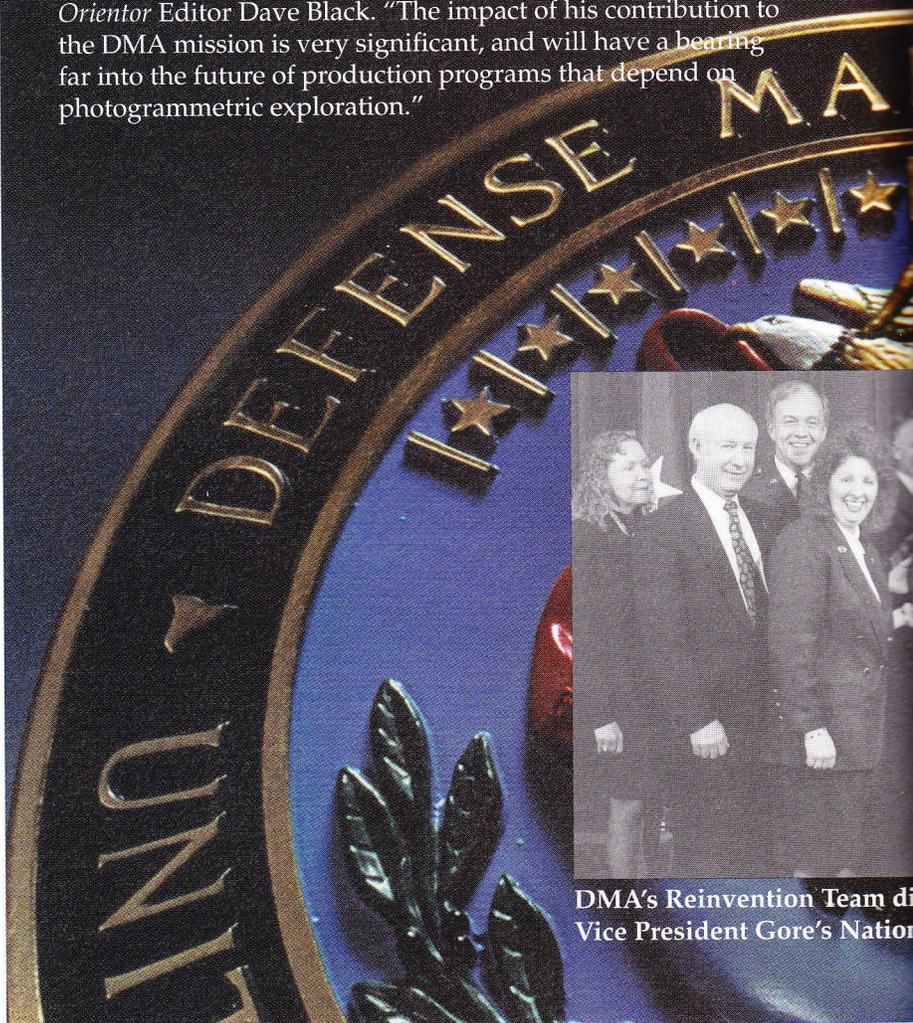


Gene Gamble

## First Benjamin Lane Award

In May 1980, Eugene V. Gamble, Jr., of the Aerospace Center's Geopositional Department was presented with DMA's first Benjamin B. Lane Award for Technological Achievement. Gene was recognized for his knowledge and use of analytical photogrammetry applied to photographic source

materials. "Gamble has become the foremost recognized expert in the detailed internal workings of the computer program used in camera calibration," said the article by *Orienteer* Editor Dave Black. "The impact of his contribution to the DMA mission is very significant, and will have a bearing far into the future of production programs that depend on photogrammetric exploration."



DMA's Reinvention Team  
Vice President Gore's Nation

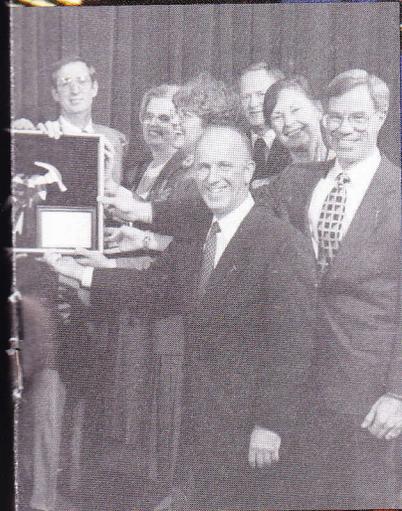
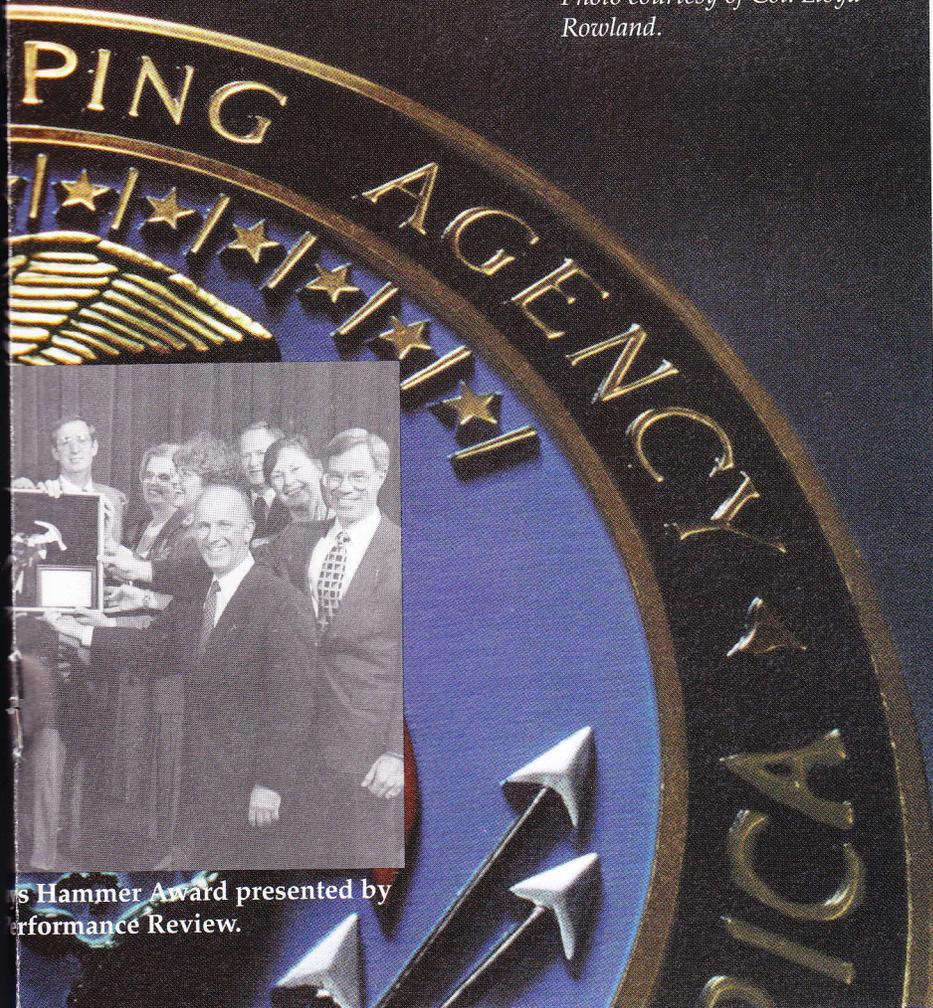
# DMA Awards



Col. Lloyd Rowland, USAF, was the first recipient of the Ray Barrowman Memorial Award for Customer Service. The award was presented in July 1994, by Robert Hall (left), then in charge of DMA's Plans and Requirements directorate. The award included a plaque for Col. Rowland and another for the Barrowman family. Mrs. Barrowman (left) accepted the award along with her daughter, and mother.

*Photo courtesy of Col. Lloyd Rowland.*

Ray Barrowman Award



Hammer Award presented by Performance Review.

## Presidential Rank Awards

1980

John R. Vaughn – Meritorious Rank

1981

Owen W. Williams – Meritorious Rank

1983

Lawrence F. Ayers – Distinguished Rank

1985

Allen E. Anderson – Meritorious Rank

Penman R. Gilliam – Meritorious Rank

1986

Lawrence F. Ayers – Meritorious Rank

1987

Penman R. Gilliam – Distinguished Rank

Dr. Kenneth I. Daugherty – Meritorious Rank

1988

Charles D. Hall – Meritorious Rank

John R. Vaughn – Meritorious Rank

1989

Curt Dierdorff – Meritorious Rank

1990

Dr. Annette Krygiel – Meritorious Rank

Mordecai Labovitz – Meritorious Rank

Edward Obloy – Meritorious Rank

1991

William N. Hogan – Meritorious Rank

James R. Skidmore – Meritorious Rank

Lon M. Smith – Meritorious Rank

1992

William N. Hogan – Distinguished Rank

William J. Brown – Meritorious Rank

Penman R. Gilliam – Meritorious Rank

1993

Earl W. Phillips – Meritorious Rank

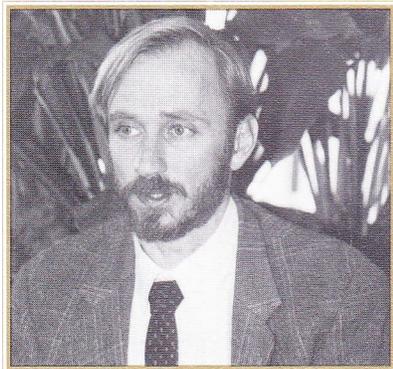
1994

W. Douglas Smith – Meritorious Rank

Dr. Kenneth I. Daugherty – Meritorious Rank

Curtis L. Dierdorff – Distinguished Rank

## Memories about the opening of Reston Center



*Keith Thackrey*



*Keston Williams*

The establishment of DMA's third production center was a "once-in-a-lifetime" experience for the cadre of about 25 who accomplished the feat. That's the consensus of "plank holders" who carried out the awesome assignment of establishing and opening the Reston Center on Sunrise Valley Drive in Reston, Va., in 1987 and 1988. Never before had the participants known such responsibility, empowerment, challenge or camaraderie, all agreed.

Looking back, they feel gratified to have been there...

Keith Thackrey and Keston Williams were cartographers at the Hydrographic/Topographic Center in Bethesda, Md., in 1987 when they received a letter, signed by the director, instructing them to report to a certain room.

When we got there," Thackrey recalled, "we were told, 'You are being considered to go off and work on something else. You will have 24 hours to decide whether you want the job. There's something new coming to DMA, and that's about all we can tell you.'

"As Keston and I walked off, we asked each other, 'What was that?'" Thackrey said. "We didn't learn

much more in our interviews, but we decided to do it."

Reporting for duty at an office building in Tysons Corner, they were taken in a van with some others to another site for security processing.

"At this meeting, it became clear that we had acquired a lot of responsibility," Williams said.

"They piled a lot more onto us than you would think could be piled on," agreed Thackrey.

"This was not going to be a routine job as we had known it," Williams continued. "We were expected to be committed to this operation, and we were on for the duration. But we still didn't know we were going to be starting up a production center!"

That question was resolved in another van ride to Reston, where security chief Mark Navarrette pointed to a pit and told the group they would have a new production center operating there in a year.

"Our mouths were open. It was quite a surprise," said Williams.

While everyone in the group scrambled to make the new center a reality, Thackrey and Williams credited Granville Peterson and John Bukoski for the center's prompt opening in February 1988. "They were phenomenal in putting together the new building, working from blueprints," said Thackrey.

But the responsibility did not end there...

"We were a small group, not highly graded, and we were driving the train for DPS," said Navarrette. As the first center to install the Digital Production System, Reston became the model for the other centers.

"We were empowered before people started talking about empowerment," said Navarrette, a CIA employee before assuming responsi-



*Reston plank holders*

*continued on next page*

bility for Reston security.

"We had to do some selling (when confronted by skeptical DMA employees)," Thackrey said. "Occasionally we had to get the backing of upper management, but nobody blocked our way."

"The day we arrived, there were about 20 of us on this huge parking lot," Navarrette continued. "The building echoed. There were no coffee pots; only a couple of bathrooms worked, but we didn't have time to be concerned. Somebody said, 'Hey, we've got a delivery, so off we went to the loading dock.' It was always like that. No time to pause," Navarrette said. "But when you start from scratch and you see the building finished and the (DPS) segments come in with no real delays, there's a lot of satisfaction in it."

Thackrey and Williams were DPS segment managers in Reston, while Bob McKeown, another cartographer from HTC, was an integration manager, responsible for all aspects of segment site preparation.

"I came from the technical arena and knew little about the politics of opening a building," McKeown chuckled. "During construction, we had to maintain the anonymity of DMA.

"One day I was given a briefcase of letters and told to catch a cab and deliver them to Capitol Hill. It was the announcement of Reston Center's opening. Rushing around in an unfamiliar environment was a unique experience. Bob Thibodeaux and I went to buildings scattered over several city blocks. Everything was choreographed, so we had no time to spare."

Again stepping out of his accustomed role, McKeown took part in setting up RC's new state-of-the-art auditorium.

"I didn't know about media presentations, but I learned," McKeown said.

"At the other centers, you could task someone, but here you had to research it yourself," added Williams.

"You just rolled up your sleeves and went to work," McKeown said.

"I was involved in logistics and facilities, and we all had budgets and were responsible for hiring and recruiting.

"We ventured into areas we had never been," McKeown said. "It was fun.

Camaraderie was an intangible byproduct of the Reston experience.

"It was a strange environment for awhile till we became close friends," said Williams.

The "barriers" between people came down because "we relied on each other to get things done," said McKeown.

"We knew we were all in this together," added Navarrette, "and seeing the end result built a lot of pride in the facility. When somebody spilled coffee, the cleaning people were summoned right away."

"When people left, they broke down in tears, we were so close," said Thackrey.

"We'd all been through so much together," said Williams.

"You couldn't just walk away from it," Thackrey said. "It was like leaving your family."

Carol Oliver, who remains as a security specialist at Reston, remembered wearing a hard hat while walking through the building under construction. Later, she "rode shotgun" with the guards when classified safes were moved from Tysons Corner into the new building.

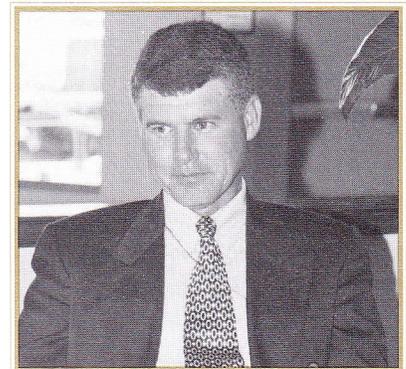
She had previously worked in DMA's Office of Telecommunications Services under Dr. Annette Krygiel.

"I conducted the security interviews for the first group of cartographers hired at Reston," she said. "I submitted all the forms for their clearances. They came from all over the country, from big cities and small towns. They were a very diverse group, but mostly young. I used to call them 'my babies.' I've followed their careers at DMA, and they've told me about events in their lives. Some have moved into management positions. It was a nice experience bringing them on board." 🐾

— Paul Hurlburt



Mark Navarrette



Bob McKeown



Carol Oliver

## Sharon Sigler remembers...

1990-91

DMA's three production centers achieve new levels of peak performance during Operation Desert Storm.

1991

Initial Operating Capability (IOC) of DPS achieved at Reston Center.

I moved from St. Louis to be part of the Reston team - it's kind of dramatic to move from one city to another, to bring your whole family and your kids and to have that feeling of uprooting family. But when I walked in the door (in Bethesda — before we moved into Reston Center), it was like old home week.

I remember two years ago when we had a thousand people at Reston. You'd never believe there were only 38 when the building opened. My group was Configuration Management. There were three of us in the office. We had to go visit the fifth



Sharon Sigler

floor where everybody else was, just to see if there was somebody else around in the building because there wasn't anything else on the second, third or fourth floor. 🍷

## Barbara Rauch remembers...

On the second floor we had SA/S [the Source Acquisition Segment of DPS], but that was the only thing we had. I remember that we moved on a weekend and on Monday we didn't have coffee pots. We took care of that and then we delivered the Source Acquisition equipment into the building.

There were a lot of people that I had worked with already, that were either in HTC or had moved already from St. Louis. So there was this contingent of folks that came in; it was like being home. It was really easy to get started and some of the team was already there, but we were small and we were covering so much and had to do so much, and we had



Barbara Rauch

such small staffs; the Facilities people, the Security, the Logistics, the Comptroller, the Human Resources, all them had little or very limited staff. And so unless we all pulled together we were never going to get that facility off the ground. So we did pull together. 🍷

## Field Offices remembered

I don't have specific contributions, but I would like to remind you to include (or at least mention) our former Field Offices. They contributed greatly to DMA's success.  
—Irene Brodley

Providence, 1951-1987  
Kansas City, 1951-1989  
San Antonio, 1942-1991  
Louisville, 1951-1994

The Providence Office of the Army Map Service opened July 1, 1951. It was one of four Field Offices opened that year because of space limitations at the Base Plant and the intensely competitive postwar labor market in the Washington area at that time. Over the next 36 years, until its official closure on July 1, 1987, the Providence Office expanded from its original cadre of seven supervisors and 200 employees to a peak of 302 personnel in 1955. Through downsizing and retirements over the years, the office had fewer than 200 employees when it closed in 1987. —Tony Nofi

## Memory of Providence

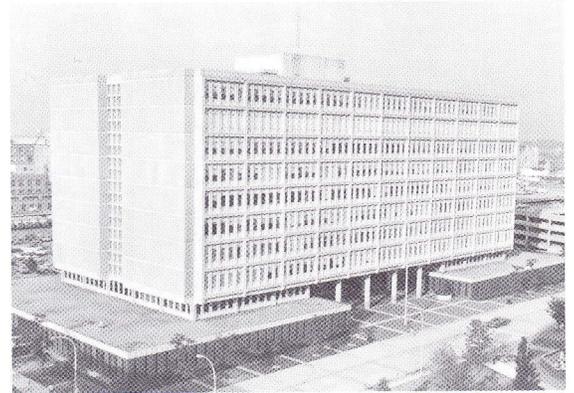
The Louisville Office, like the one in Kansas City, came into existence during the Army Map Service expansion during the Korean War. The 1972 establishment of the Defense Mapping Agency resulted in Louisville becoming known as the DMA Topographic Center, and later DMAHTC, Louisville Office.

During the 1970's and '80's the Louisville Office mission expanded to include several digital systems and products, including installation of 42 Feature Extraction System (FE/S) workstations as part of the Mark 85 production system. The teamwork and cooperation inherent in Louisville Office personnel resulted in years of effective operations and use of resources. A motto adopted by the office was, "When you gotta get it

done fast and right, Louisville can do it!" This was especially noteworthy during crisis situations, including the Korean and Vietnam conflicts. During the Persian Gulf crisis, the Louisville Office work force worked seven days a week for months to fulfill the mapping needs of the military.

After providing 43 years of dedicated service the Louisville Office closed on Sept. 30, 1994. The Office tradition continues, as over 100 former employees are now with DMA in Washington and St. Louis. —Jim Akers

## Louisville Office remembered



DMA's Louisville Field Office, one of four remote field offices operated until their closure in the last decade. Louisville was the last to close, in 1994. Photo courtesy James Akers

There were two openings and closings of the San Antonio Office. Army Map Service opened an office in San Antonio, June 1, 1942 in the facilities of the Tobin Aerial Mapping Company. It was closed in late 1945 as a part of the postwar cutbacks.

The 4th Army Engineer Map Plant at Ft. Sam Houston (inside San Antonio) was transferred to the Army Map Service Dec. 6, 1951. It was closed in 1991. I have a booklet that I had prepared when I was Director there in 1976 for the 25th anniversary of the office. —Don Clements

## San Antonio remembered

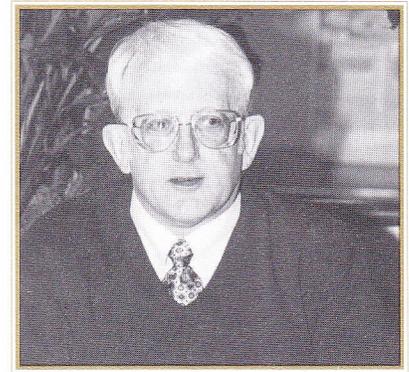
## The Great Kansas City Tug of War



*The Kansas City team in action.*

With the increased efforts to develop team concepts in DMA at present, I am reminded of several notable examples of teamwork which occurred at the Kansas City Field Office.

In the mid-1980s, the Kansas City Field Office personnel decided they wanted to participate in the local Kansas City Corporate Challenge, which took place over a two- to three- week period in July of each year. The Office raised their own money for the entry fee and competed against some of America's corporate giants in all sorts of sporting events, including softball, volleyball, horseshoes, table



*Richard Hallowell*

tennis, swimming, baseball throws, track and field events. I participated in the tug-of-war event where the KCFO team earned silver medals. And we had to do it by losing the first match, and then winning all the way through the loser's bracket, and finally competing in a two-out-of-three final against HBO Television. The team consisted of people from all levels. The weigh-in before the competition was quite amusing, the team members having to meet very early in the morning on Saturday at the Shawnee Mission Post Office where we were weighed as a team on the truck weighing scale. All team members were then banded with hospital-type wrist bands to assure no substitutions were made before the competition started later that day.



*The silver medal winners: Front row—Hallowell, Marva Harper, Joyce Allen (now Forbes), John Childers; back row—Kevin Schwab, Dave Engebretzen, Chuck Sellmeyer, Mike Brown, Megan Gould, Susan Ziegler, Bill Gresham.*

We were really proud of those medals, and wore them around the office for several days after the competition. Many of the team members are still DMA employees today. —Richard Hallowell

*(Hallowell worked at the Aerospace Center and in the Kansas City Field Office for more than 24 years, separated from DMA in 1989 when the KCFO closed, and was rehired in Reston, Va., in February 1995.)*

## IAGS Remembered

In 1946 President Harry Truman directed the War Department to establish an agency to promote cartographic studies in Latin America. To achieve this directive, the Inter American Geodetic Survey (IAGS) was founded, headquartered in the Canal Zone and under the direction of the Army Corps of Engineers. IAGS became part of DMA at its inception in 1972. The unit was moved from the Canal Zone to Ft. Sam Houston, Texas, in 1981.

In its 43 years of existence, IAGS encouraged and coordinated cartographic studies and related projects throughout Central and South America, and graduated more than 5,000 individuals from its Cartographic School. IAGS was dis-established in 1989; its function became a DMA staff element. 🏠

On Sept. 18, 1978, the separate distribution elements within DMA were consolidated into a new Office of Distribution Services. Nineteen years later, in 1987, the name was changed to DMA Combat Support Center.

For all of DMA's 24 years the agency's storage and distribution facilities have been the direct link between our products and our customers. The men and women of this part of the DMA organization are particularly proud of their record of providing our many customers with the right products, in the right place and on time.

During most of its years as ODS and CSC, the storage and distribution function was directed by a staff in the Ruth Building at Bethesda, directing operations in Norfolk, Tampa, San Diego, Hawaii and Panama; and overseas operations in England, Germany, Italy and Japan.

At the time DMA was established, the Navy's Oceanographic Office maintained depots in Philadelphia and Clearfield, Utah. For more than 20 years these were DMA's primary storage depots. Clearfield was closed in September 1992, and operations were consolidated in Philadelphia. ➤

## DMA Office of Distribution Services (ODS) and the Combat Support Center (CSC)



In the mid-1980's the senior staff of DMA's Office of Distribution Services posed in front of the Ruth Building with key headquarters representatives. First row, in Navy whites: Navy Capt. Channing Zucker, ODS Director; Navy Rear Adm. E.A. Wilkinson, DMA Director.

## The Clearfield Depot

In 1952 the Hydrographic Office made a decision, based on a task force recommendation, to open an additional distribution point at

Clearfield, Utah. Clearfield was selected because of its "ideal transportation facilities, ample storage and almost ideal climatic conditions." When organized, the depot had 176 employees. Clearfield became part of DMA at its inception, and continued to serve the needs of DMA customers until it closed in

## The Philadelphia Depot

The Philadelphia Depot, like Clearfield, was originally established in 1941 as a naval supply depot. It was commissioned in July 1972, as the DMA Distribution Center, and for the next 20 years it

served as the primary stocking point for all DMA products on the East Coast.

"They split the world at the Mississippi River," says Ed Hamil, a veteran of the Philadelphia operation. "Every product destined for the Atlantic and Europe went through here; products to support activities in the Far East and Asia moved through Clearfield." In 1978 it became part of ODS, and later, of CSC.



Awards were given to employees of the Philadelphia Depot in 1995 for their Korea product.

1992. Dan Weaver, a longtime depot director (1974-84), commented at the closing, "I have always felt that there was a special esprit des corps here...It is hoped that the employees will meet the challenges of their new employment with the same spirit of dedication and total cooperation." ➤

Located in Northeastern Philadelphia, the Depot is now the backbone of DMA's fulfillment organization, with an inventory of more than 150 million maps, charts and digital products ready to support military actions. Whether responding to routine requests or to crises in the Persian Gulf, Africa or Bosnia, these DMA workers continue their long and rich tradition. — Wells Huff

1987

Systems Center established  
(January)  
Office of Distribution Services  
becomes Combat Support Center  
(April)  
Reston Center established  
(October)

1988

Mark 90 design development  
complete.

1989

Installation and testing of Mark  
90 systems begin.

## Kate Smith

During the 1970's and 1980's DMA continued to get the right people in the right jobs. One of the individuals selected for key assignments was Kathleen (Kate) Smith, who had worked at the Aerospace Center during the late 60's and, more recently, at HTC. "One of the results of Vietnam was a large hiring surge," Smith recalls. "To accommodate the great influx of new cartographers, the Carto School nearly quadrupled classes. I was a new cartographer and barely out of the school myself when I was drafted to go back and teach the dreaded Geodesy Course. I was VERY young and there was only one other woman on the teaching staff. It was always interesting to see my students' reactions when they discovered that I was not really the school's secretary."

She returned to the Aerospace Center in June 1988 as Chief of Data Services. "There was great spirit of



Kate Smith

openness in the St. Louis work force," Smith recalls. What seemed to her to be the important priorities? "We were getting ready to get into Mark 90. It required some big shifts of people and organizational structure. And before long we were facing Desert Storm."

By then Smith, who had become chief of Digital Products, remembers being "so proud of the people of DP, and those throughout the production centers. You couldn't tell them it couldn't be done." 🍌

## Andrew Jackson

Andrew Jackson, who was working in Scientific Data Department's St. Louis production support office at the time, observed that the real unsung DMA heroes of Operation Desert Storm were the people not working on Desert Storm, who picked up the slack so that other production wouldn't suffer. Chairman of the Joint Chiefs of Staff,



Andrew Jackson

General Colin Powell, commended the agency for its outstanding success in meeting tough deadlines. And Lt. Gen. Charles Horner, who commanded the U.S. 9th Air Force during the action, told DMA employees assembled on the Arsenal parade ground in July of 1991, "We put heavy demands on you ... and you never failed us." 🍌

After thanking St. Louis DMA employees, Lt. Gen. Charles Horner, commander of allied air forces during Operation Desert Storm, holds high a framed presentation from AC Director Col. Marcus J. Boyle.



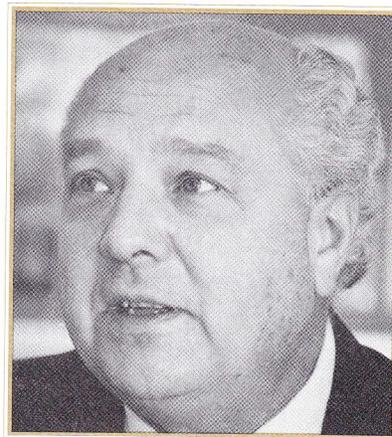


Gen. Colin Powell at Bethesda to thank DMA employees for their support during the Persian Gulf War.

## Otto Stoessel

One active contributor to change at AC was Otto Stoessel. Stoessel's long career in the graphic arts business produced a variety of technical innovations in cartographic reproduction, but as a department head he instituted more innovative hiring practices, opening up certain training positions for employees working elsewhere at the Aerospace Center who might want to transfer into graphic arts. Even before the days of upward mobility, "upward opportunity" was introduced. Stoessel also chaired a committee that produced another innovation, the compressed work schedule, implemented in 1988.

"Desert Storm was really the



Otto Stoessel

culmination of a lot of things for me. I was happy to see the effect of what we did." Between running AC's own printing plant at peak production "and keeping the printers busy in the St. Louis area," Stoessel feels his last year was "a very interesting conclusion." He retired in April of '91. 🐾

## Paul Sweeney

Paul Sweeney's years with DMA included work in the contracts branch of Graphic Arts at Bethesda, some years with Manpower Management ("You weren't the most popular people in the world because you're always looking over the managers' shoulders") and as chief of the Techniques Office of Graphic Arts, where he was involved with research and development of a number of engineering applications. When the Techniques Offices were consolidated into Systems Center, he decided to retire, but then was persuaded to come back.



Paul Sweeney

"I came back part-time and pretty quickly thereafter, DMA was approached by the people involved, DEA and others involved in drug  
*continued on page 28*

1992

Technical Services Center absorbed by Reston Center.

Central Imagery Office established.

Existence of the National Reconnaissance Office, created earlier to meet government needs for spaceborne reconnaissance imagery, is declassified (September).

interdiction and they wanted some mapping of South America. And the only way to get it on time with their time schedule was with image-based mapping using Landsat. That was something I'd been very much involved in and really promoting for years. I then was thinking about retiring again and along came Desert Shield. It turned out there were large areas of the desert where there were no conventional maps so once again we went to image-based mapping in the desert

areas until there could be conventional mapping. Then along came Desert Storm and we did some more image-base mapping — Kuwait especially. We had a contractor who in a very short period of time used Spot photography, the French equivalent of Landsat, that covered the whole country very quickly for us. After the contract was over, I decided finally—two and a half years later—to retire for good. It was very enjoyable. I was doing things that I was very interested in.

## Ken Daugherty

Dr. Kenneth Daugherty worked in the St. Louis center during the late fifties and early sixties, then left government work for teaching and further study at the University of Hawaii and at Uppsala University in Sweden. He came back to military mapping in 1974, two years after DMA was formed, and rose to become the agency's first chief scientist (1991) and its second civilian deputy director (1993).

Revisiting St. Louis in the fall of that year, he recalled the days when he made frequent trips and visits

trying to drum up support for the

commitment to develop a better targeting system.

"At the time I returned, the original WGS [the World Geodetic System developed

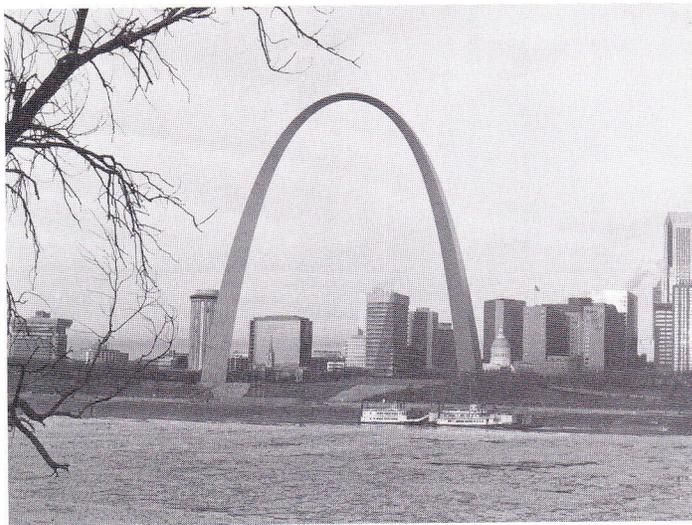


Ken Daugherty

in the 1960's] was still the standard, and the best we could do was a one-mile CEP (Circular Error Position). "In other words, if 100 missiles were fired, 50 would hit inside the one-mile circle. Then WGS'76 was released, with the one-tenth mile CEP.

"The important thing was not so much in improved strike potential, but in counter-strike. We never had the big cluster missile systems the Russians had; so ours had to be right on the mark.

"We used the Gateway Arch to illustrate the potential improvement to influential visitors," Daugherty recalled, "while driving them down from from the airport. The Arch is 660 feet high, one-tenth of a nautical mile. I would simply point to it and say, 'With the new system, half the missiles would make it through there!'"

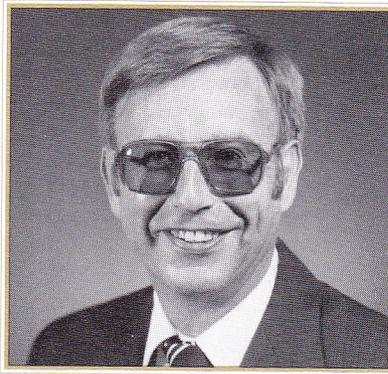


The Gateway Arch in St. Louis

## Jim Skidmore

James R. Skidmore was technical director of the Aerospace Center from August 1987 to August 1992. When he joined DMA in 1980, Skidmore says he thought he would be in research and development. "I interviewed for three different jobs, and at that time Mr. Williams called me and asked me, would I take one of the jobs in the production arena; I said, sure, if that's what you would like me to do. So I was happy to do it, and I'm glad that I did, looking back." When he came to DMA, Skidmore says it was the quality of the people working here that impressed him most. "You get work done, when you are a manager, through people. And, fortunately, being assigned to production, was a great opportunity to be in a leadership position."

Skidmore looks on DPS as "a great accomplishment within DMA," but adds, "When I left there were a



*Jim Skidmore*

lot of things to be done ... We needed to get out of being so fixed and firm in terms of the things that could go into DPS, and move into a broader and more flexible type of production capability. People talk about it coming in and being a turnkey system. It will never happen that way. It's only ... through people's talents, through their continual driving [and] developing the system, that it will become an actual, valuable production system." 🐾

## Cecilia Love

"I've been with DMA for all of the 24 years, and it's been a good place to be. There aren't too many places where you can get on-the-job training. I started as a clerk-typist, became a keypunch operator, then an aero information clerk, then a computer assistant, and now a computer operator. And I've a chance to go back to school, while working, to improve myself." Love was also part of the special clean-up operation at the South Annex, after the flood of '93. "It was hard work," she remembers, "but we saved a lot of things." 🐾



*Cecilia Love*



Non-stop sand bagging at DMA's South Annex in St. Louis (above) was heroic, but in the end, the river had its way (below).



## Pat Mohr

"I have a vivid memory of a Friday afternoon in July 1993, after I had spent three days at 8900 boxing up computer tapes because the flood waters were rising. About 3 p.m., when we were nearly finished, my supervisor was beeped. Since we no longer had any working telephones, he had to take a walk to get to a phone and call 2nd Street. When he came back, he said that we were to stop what we were doing and evacuate the area immediately. I told him that I was going to walk down the hall to go to the ladies room before we left. As I took my walk, I thought about how I had started to



Pat Mohr

work at 8900 right out of high school, and here I was a grandmother, still here, and wondering if, after all this time, this would be my last walk down this hall. I thought, the water must really be coming up quickly now, for them to beep us and tell us to evacuate the building immediately. But for some reason I wasn't terribly fearful." 🍷

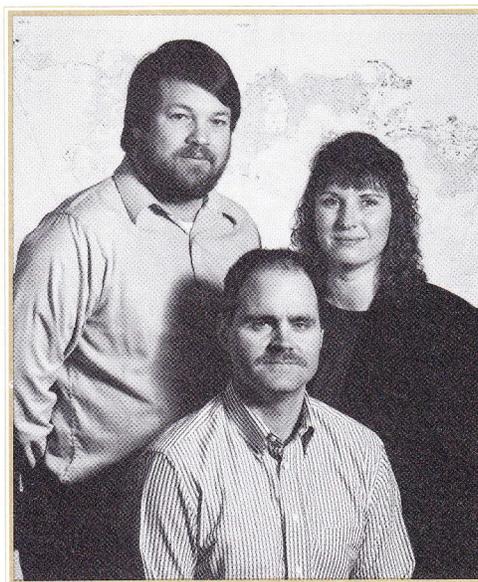
## Stu Oldham

My favorite memory of DMA is the teamwork exhibited by those of us who battled the Great Flood of '93 at the South Annex.

Working two 12-hour shifts in hot weather, Facilities Engineering personnel and DMA sandbaggers built a mammoth four-and-a-half-foot tall plywood wall over a quarter of a mile in length. This extension to the existing concrete flood wall held out the rising River des Peres for almost three weeks.

Losing the battle to the flood was very difficult to accept, but I will always remember the friendships I made and the feelings of teamwork and camaraderie I felt during July of 1993. 🍷

St. Louis cartographers Bobbie Glass, Joyce Forbes and Stu Oldham.



## Jackie Bratten

Recalling the DMA products quickly produced to support humanitarian relief in Rwanda, Jackie Bratten says, "We had followed the Rwanda story on the news, and we felt sorry for all the people who were dying of cholera. We wanted to do something to help. Then we got a call from headquarters to produce the [Landsat] Image Maps. They were desperately needed, because no large-scale maps existed over the area that would show the military where the lines of communication existed. They told us our maps would be "show stoppers," meaning there would be no show until they arrived.

Nine LIMs were produced in late July 1994, with a turnaround time of as little as four days. "We were extremely proud of the way the Map Publishing people and the filmwriter people pulled together to make this happen. I won't forget it." 🐾



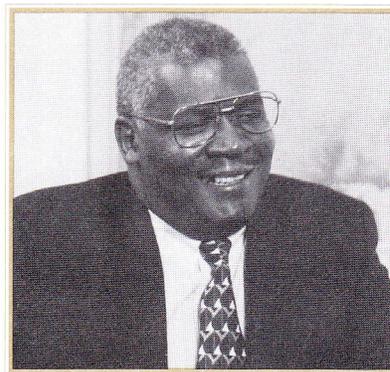
Jackie Bratten



*Crisis-produced maps of Rwanda and Zaire guided the humanitarian effort there, as other DMA products did earlier in Somalia.*

## Bill Brown

I think in the mapping field, what has set us apart has been the ingenuity of our people. There have always been a number of smart people working for DMA, and a leadership group that permitted smart employees to try new things. I happened to come along at a time when there was a major transformation, when automation was recognized and accepted in DMA as the wave of the future. I can remember back in the mid '70's we talked about digital data and getting involved in digital representations and simulations of our products; and here we are 20 years later and it's really the life and the mode of the organization. I think if we had waited, say, until the mid '80's to get involved in that, we probably would not be an organization that's now looking into a long-term future.



Bill Brown

Without a doubt, my favorite job was the job that I went to Washington for in 1987 - to be the Deputy Director of Programs Production and Operations at the Hydro-Topo Center. That was also the most difficult job that I had in my career with DMA. Every day there were numerous new challenges and it also gave us an opportunity to see results of the work that we went through. I

1993

Decision made to consolidate DMA printing and distribution in new facility in St. Louis area.

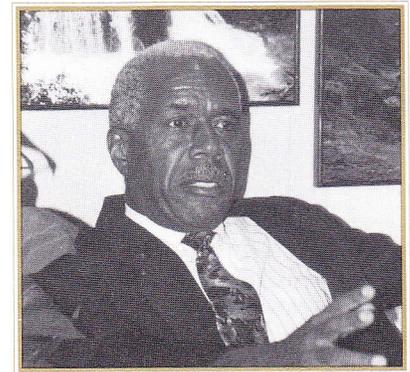
Defense Airborne Reconnaissance Office established (November).

had an excellent staff up there. We got to know and work with each other very well. And I happened to be in that job during the Desert Shield-Desert Storm period, which

was also a super opportunity for all of us who were involved in the agency to make a real contribution. So, there was always action in that job. 🍌

### Paul Peeler

Another person who has eye-witnessed the agency's 24 years is Paul Peeler, who eventually became the last director of both Reston Center and HTC. Recalling the decision to form DMA in 1972, he says, "I think, without a doubt, it has turned out to be the best decision that could have been made at the time, because, although there was an awful lot of pride exhibited by the Aerospace Center and the Topographic Center, the resulting savings, not just in manpower and dollars, but in response time, I think has just been far more than anyone expected it to be. We became very, very efficient and reduced the numbers of personnel involved. I believe when DMA started we probably had 12,000 employees and then very quickly it dropped to 9,000. Those are parallel to the operations that we see going on right now. I was in charge of the field offices for a number of years and not long after that they disappeared. Then I was named the director of Telecommunications Services Center, and it was dis-



Paul Peeler

established, then Reston Center and finally HTC. And having been a part of those organizations, I just sort of find it leaves a void because everyone associates with the names of the various organizations. So I leave each of those jobs with mixed emotions. But I think that if we are true to the goal of one organization, then I think it's imperative that we not have internal organizations that develop really strong identities. The important things are the work we do, and the pride we take in doing it. It's very important to emphasize that." 🍌

### Jay Harden and Doug Nolte

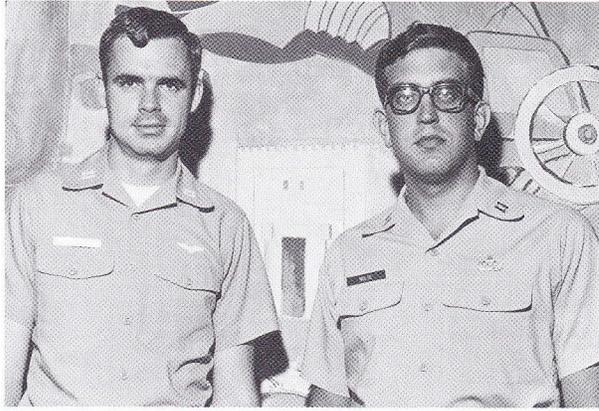
Twenty-five years ago, Jay Harden and Doug Nolte were attending a carto class for military officers. Harden believes it was the very last USAF Cartographic Officer Course held at the Aeronautical Chart and Information Center. Only two officers graduated in June of 1971: Capt. Douglas R. Nolte, USAF, and Capt. John H. Harden, Jr., USAF. Both left the Air Force and went to work for DMA. And they are still there, working in the Acquisition and

Technology business unit. Nolte works in St. Louis; Harden is the DMA liaison assigned to NAVAIR in Crystal City, Va., just outside Washington.

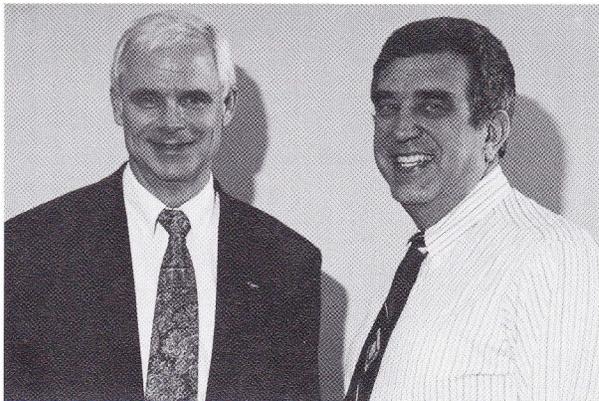
"Doug had the highest academic average in the class," says Harden. "However, I like to tell the truth this way when he's within earshot: I graduated second academically and Doug was, well, next to last." He adds, "We have often talked of advertising, Air Force wide, a 25th

class reunion in 1996 then later reporting an astounding 100 percent participation."

While on active duty, Nolte worked in the directorate of Plans and Production. "I was longing to get into the production end of the business at DMA. When I resigned my commission in 1974, I was rewarded with a position in what was then called the Analytical Division; however, to get there I had to go back to Carto School for a refresher. As far as I know, I am one of the very few who went through the school twice. I like to tell people I wasn't sharp enough at the job and needed to be re-trained. ➤



Jay Harden and Doug Nolte in September 1970 (above) and today.



## David Black

Dave Black retired last June, after 27 years with ACIC and DMA, serving as Public Affairs chief in St. Louis and later as head of Public Affairs and Command Information in Washington. Chatting recently with his friend Paul Kelbaugh, he recalled many of the highlights of DMA's memorable journey, and the names of many of the individuals who made them possible. Some were our leaders; others simply did what had to be done to get the job done.

"But the work force throughout DMA has always been the catalyst that really made things work. Whatever challenge was put in front of them, they took that challenge and made it work. They made Mark 85 work, they made Mark 90 work; we went through what I call the reorganization era of the late '80's and the early '90's. I don't know how many



Dave Black

reorganizations, realignments DMA has gone through, and now, shortly, it will be going through another. The work force has been shaken at times, wondering what was going on, but they've always stayed there and always done what they're supposed to do. Earlier we were talking about SPOEM and later Systems Center and how Mark 85 and 90 were being developed while at the same time DMA had to continue to produce

1995

DPS (Mark 90) in full production.

DMA Reinvention process begins (February).

Old DMA organization disbanded; new organization established (July).

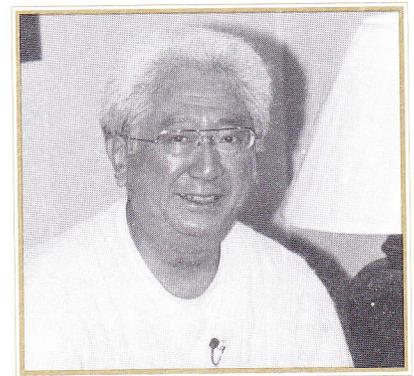
Carl Bildt, European Union negotiator, and Dave Rogers, a member of DMA's Acquisition and Technology Group, were part of the team working non-stop at Wright-Patterson AFB last fall to support Bosnian peace negotiations.



under the old system and how they integrated those two. There were difficulties in doing that, but, the work force kept doing it and they kept producing and DMA never missed a beat." 🐾

## Ray Honda

Ray Honda, the subject of a LINK profile in May 1994, retired last year after almost 40 years in government mapping work with the Army Map Service and DMA. Recently interviewed, he observed, "Now that I've retired I reflect on how things have changed since I started working. In the old days, maps were drawn by hand and now all of a sudden everything is computerized. Even in the last office where I worked [Graphics] we used to have artists who actually drew things, and they had light tables and all the accessories that were necessary for things manually done. Now it's all computerized, and yet they produce the end results just as well and with just as much quality, and in much



Ray Honda

shorter time.

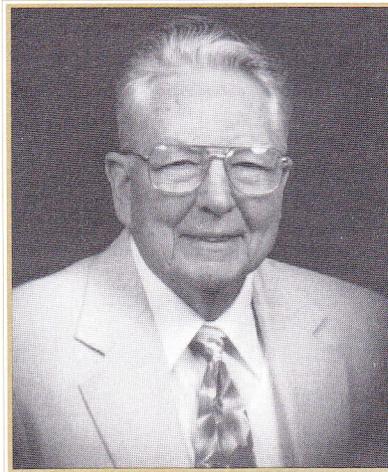
"In retirement I look back again and I see that I got the satisfaction of producing and helping produce quality work and I have a warm spot in my heart for DMA. Although I'm retired, I still feel that I'm a part of the organization." 🐾

Air Force Capt. Scott O'Grady, shown with President Bill Clinton at a ceremony at the Pentagon June 14, 1995, publicly gave DMA and its mapping information credit for his evasion and escape from potentially hostile surroundings after his aircraft went down in Bosnia-Herzegovina. On a DMA-produced Escape and Evasion Chart presented to Gen. Nuber, O'Grady wrote: "To Defense Mapping Agency. Thank You - God Bless. Scott O'Grady." Department of Defense photo.



## Val Bauer

**D**MA today is in the same business as we had in 1972, except that the rules and requirements have been updated by technology, needing different types and forms of data in more rapid response times. I am interested in watching the state-of-the-art change. —Val Bauer, *Technical Director of the Hydrographic Center in 1972 and first Technical Director of the merged HTC.*



Val Bauer, first technical director at HTC

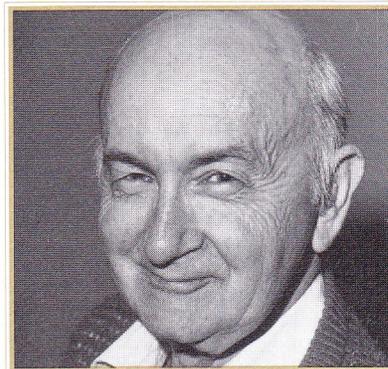
## Bill Mantinband

**W**hen I came here in the 1960's one of the first memorable items I picked up was the Cartographer's Creed: Whether Responsibility Be Great or Small, the Excellence With Which We Perform Our Work Shall Erase Even the Shadow of a Doubt From the Mind of Our Beneficiary.

Like everyone I've seen continuous changes. It proves the maxim that the only thing permanent IS change. Two developments have been started that both DMA and its employees benefit from. The first I saw locally, and then it was stressed in General Nuber's "Bits and Bytes" column: The Open Door Policy. He said that HIS customers were "everyone in DMA."

Second, the sanctioning of Toastmasters International Clubs and speechcraft classes as part of on-the-job training. How many position descriptions are there that don't have communication as one of their requirements? And how many DMA careers have been helped by these activities?

I believe the Cartographer's Creed continues to help us serve our "beneficiaries" with excellent products and superior communication. 🍷



Bill Mantinband, a St. Louis cartographer, has a long career as a Toastmaster and speechcraft proponent.



## DMA Leadership

### Directors

Maj. Gen.  
Robert A. Rosenberg, USAF  
1985-87

Maj. Gen.  
Robert F. Durkin, USAF  
1987-89

Maj. Gen.  
William K. James, USAF  
1989-91

Maj. Gen.  
Raymund E. O'Mara, USAF  
1991-94

Maj. Gen.  
Philip W. Nuber, USAF  
1994-96

### Deputy Director Management & Technology

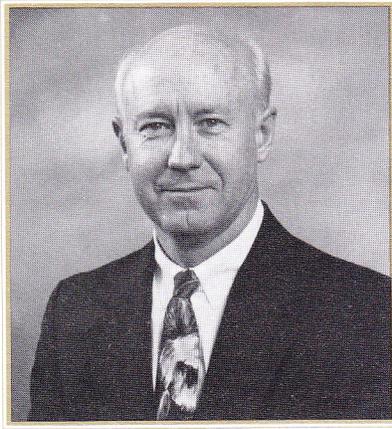
Penman R. Gilliam, 1987-91

Deputy Directors  
Penman R. Gilliam  
1991-93

Dr. Kenneth I. Daugherty  
1993-95

W. Douglas Smith  
1995-96

DMA's Director, Air Force Maj. Gen. Philip W. Nuber, tries his hand with a PowerScene™ "fly over." DMA imagery and attribute data on this system aided the Bosnian peace-keeping effort. Acquisition and Technology Group employee Steve Hux looks on.



## A Memorable Journey

24 Years of the Defense Mapping Agency

### From the Deputy Director

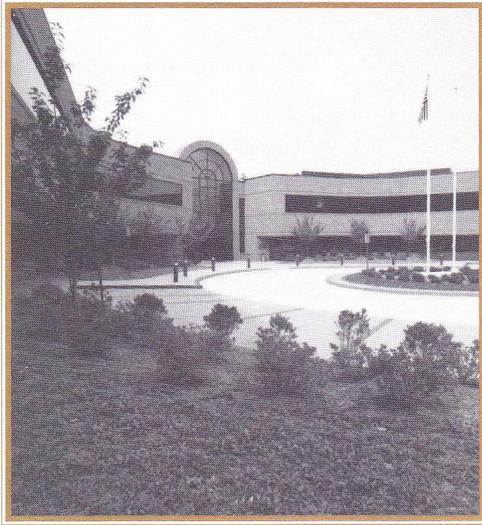
Twenty Four Years of service to the nation! That represents countless hours of work, difficult hurdles overcome, battles fought and won. Some blood, some tears, and a lot of sweat. We have established friendships, learned to respect the talents of the many people who have come before us, and admired the talents and ideas that have brought us the improved systems and processes of today.

Consolidations and facility closures were accomplished over the years with great effort, always trying to take care of the people affected, and those actions have made us leaner and more efficient. New systems have been planned, designed, developed and maintained through tremendous effort and creativity, but we are now the recognized leaders in the mapping and charting world. Two years and the involvement of the whole Agency were needed for the DMA Reinvention, but already we are seen as the leader among Defense Agencies in customer focus and responsiveness to operational needs. Hundreds of innovations, reorganizations and improvements have created a climate of change, but have also brought our management and infrastructure support systems to be among the best in all of government. All of these advances were built on a series of previous changes and improvements all the way back to 1972. Now we hold the torch, looking to light our way in an uncertain future.

That uncertain future is filled with opportunity. The years ahead will find us exploiting a wide range of types and sources of imagery. They will give us systems that can be easily modified to incorporate new technology and commercial capabilities. That new technology will make us faster, more capable and more closely connected to customers than we can currently imagine. New capabilities in areas such as battlefield visualization will make customers even more reliant on the information and services we provide. New partnerships with commercial producers and with imagery and intelligence activities currently being performed by CIO, NPIC, DIA, DDPO and the NRO will broaden our perspective of the total customer need and introduce us to new customers. Reorganization may change our name, but it can also bring new authorities and give us an opportunity to eliminate barriers. We can improve service by incorporating best practices of other organizations — finding ways to make it better for our people and better for our customers.

With fond memories of the past and pride in prior accomplishments, we now commit ourselves to creating an even brighter future. There are difficult challenges ahead. We must work together, give our best to the task ahead, and maintain our focus on the needs of our customers. And thus, when it comes our turn to pass the torch, we will be able to point with pride to an Agency where excellence is the norm — and know we helped make it that way.

W. Douglas Smith  
Deputy Director  
Defense Mapping Agency



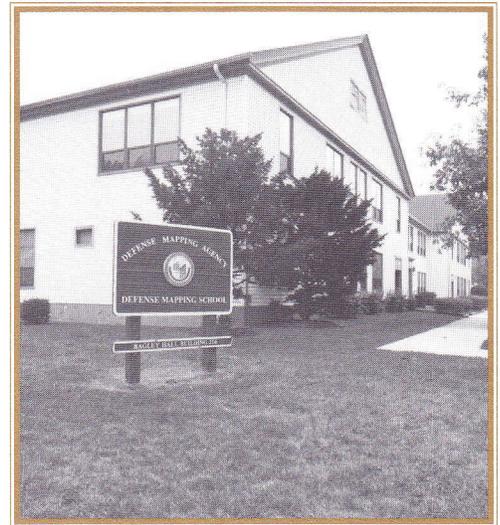
DMA Headquarters



Erskine Hall - Bethesda



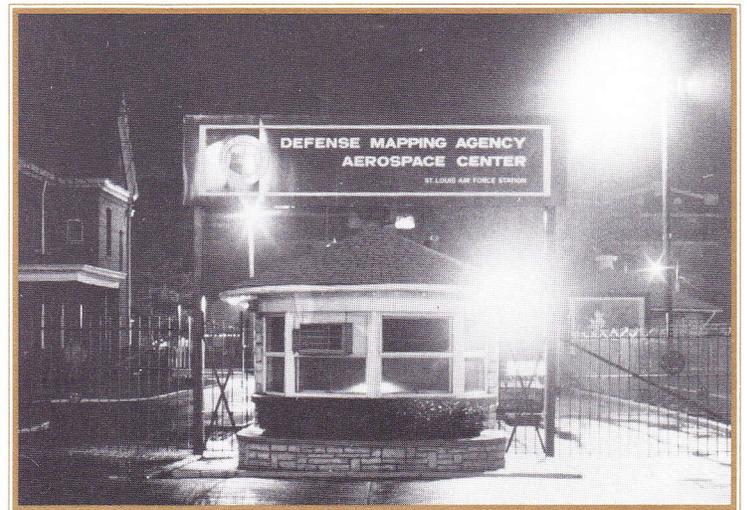
Ruth Building - Bethesda



Defense Mapping School



Reston



Main gate, St. Louis - 1979  
(Photo by Frank Aufmuth)

# A Memorable Journey

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24 Years of the Defense Mapping Agency

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