

NGA PATHFINDER

Magazine of the National Geospatial-Intelligence Agency

Vol. 12, No. 1 Winter 2014



WWII 'Mapping Maidens'
chart course for today's mapmakers

2018 Future State Vision

**NGA participates in mission
to recover missing WWII
service members**

We Can Do It!

The way ahead

LOOKING BACK ON 2013, IT WAS indeed a busy year. Our agency, the Department of Defense and the Intelligence Community faced many challenges – from sequestration and budget cuts to natural disasters and manmade crises – and in every instance, the men and women of the National Geospatial-Intelligence Agency stepped up to the plate big league style and, with professional aplomb, delivered on our obligations to the nation and the world.

I am proud of the commitment to excellence you demonstrated throughout the year. The members of NGA's workforce are the reason the agency was successful in 2013 and the reason it enjoys the outstanding reputation it does.

Your contributions were again numerous and varied in their range and scope. You trekked across Arctic ice to help the Coast Guard find missing World War II service members. And when disaster struck at home and abroad, you were there to provide first responders and aid organizations with the critical information they needed to help save lives and restore order.

On the academic front, you pushed the limits of our corporate knowledge and took us toward future capabilities that will solidify NGA's status as the premier provider of geospatial intelligence. Through cooperative agreements, like those with Penn State University and the University of Tennessee highlighted in this issue of Pathfinder, you explored ways



to improve on our already world-class capabilities.

That progress and forward-leaning approach is critical to our future success. In fact, this issue of Pathfinder contains a glimpse at the NGA of the future. The NGA Future State Vision describes where the agency will be in 2018 when we have met the objectives laid out in the NGA Strategy. It is exciting. It is ambitious. It is the future of NGA.

I encourage you to read it. I also encourage you to read my article in the Association of Former Intelligence Officers journal, The Intelligencer, to see my thoughts on activity based intelligence. Each of these will serve as a foundation to build upon as we go into the next year and become even better at what we do – Know the Earth, Show the way and Understand the World.

I hope you enjoy this issue of **PATHFINDER!**

Letitia A. Long

Letitia A. Long
Director

The Pathfinder promotes awareness and understanding of geospatial intelligence, and is published by National Geospatial-Intelligence Agency's (NGA) Office of Corporate Communications (OCC).

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Approved for Public Release, 14-093.



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On the cover: The "We Can Do It" poster created by J. Howard Miller, an artist employed by the Westinghouse Company, became a symbol of the nation's call for women to join the workforce during World War II. Image courtesy of the National Archives and Records Administration.

NGA Salute:

By Kris Mackey, Office of Corporate Communications

U.S. AIR FORCE MAJ. MARK KLEEMAN

Photo by Kevin Clark, Office of Corporate Communications



U.S. AIR FORCE MAJ. MARK KLEEMAN WORKS in the National Geospatial-Intelligence Agency's Information Technology Services directorate. He determines what computer hardware is needed for the many NGA systems to operate effectively, and looks for ways to save the agency money in the process. "The job allows me to see how different systems interoperate and hear

how each one plays an important part in NGA's mission," said Kleeman. "This is a great job if you want to really know how NGA delivers its product to the warfighter."

Kleeman was recently recognized for saving the agency nearly half a million dollars while serving as the engineering lead for a multimillion dollar project.

"Kleeman has been a huge asset in his role as the (the directorate's) senior military representative," said Scott D'Agostin, his civilian office director. "He gives 100 percent and willingly takes on challenging assignments, focuses on self-improvement, and provides valuable contributions to the job while being a role model to fellow military – and civilian – personnel."

Kleeman also sponsors and aids in the in-processing of new Air Force officers into NGA.

"Coming into a new job and moving to a new area can be tough," said Kleeman. "You have to adjust to the job, find a home and schools for your kids, and make new friends. As a sponsor, I help in any way possible to make the transition easier."

Kleeman has a master's degree in computer engineering from the Air Force Institute of Technology, where he is also enrolled in a doctorate program he hopes to complete in the next six months.

"My parents instilled in me a strong work ethic and taught me the importance of working," he said. "My wife has supported me and my family through many moves around the country. My kids always find a way to put a smile on my face after a rough day at work. Without my family's support, I doubt I would be where I am today."

Kleeman's assignment at NGA ends in 2015, he said. He is proud of the work he does at NGA.

"Making sure our customer is happy is our primary concern, and I know we can find ways to reduce costs without sacrificing performance," he said. "Even when my knowledge is limited, there are so many smart people at NGA that, as a team, we can accomplish almost anything. I have been very fortunate to be surrounded by people who have incredible passion for their job." ✨

FLOOD OF '93 CHANGES FACE OF NGA WEST

By Jessica Daues, Office of Corporate Communications

THOSE DRIVING ALONG THE RIVER CITY CASINO BOULEVARD IN ST. Louis County pass over the National Geospatial-Intelligence Agency's past. The road runs over what was Building 4 of the South Annex of the Defense Mapping Agency Aerospace Center, an NGA predecessor organization where about 1,000 employees worked in professions ranging from geodesy to acquisitions.

That is, until the summer of 1993, when despite the mammoth efforts of DMA employees, the facility was destroyed by a record level of floodwater.

Three to 10 feet of water soaked the buildings, destroying equipment, documents and furniture. By fall, the water had receded, leaving behind mud, mold and the remains of fish, snakes and other water creatures. DMA never fully moved back into the facility. Employees were shuffled to other locations throughout St. Louis until a replacement location was identified, funded and built.

In 1998, employees moved into a new, state-of-the-art facility in Arnold, Mo.

The summer of 2013 marked the 20th anniversary of the flood that remains the most costly and devastating flood in modern U.S. history, according to the National Oceanographic and Atmospheric Administration. ✨



A 1993 NASA satellite image shows flooding at the confluence of the Mississippi and Missouri rivers and their tributaries near St. Louis. The Mississippi River reached a crest of 49.58 feet at St. Louis, its highest in recorded history, according to NOAA.



A 2002 Landsat image of the area shows how the river normally looks.



John Szajgin, a contractor with the National Geospatial-Intelligence Agency's InnoVision directorate, and U.S. Air Force Maj. Andy Lundin, use a Light Detecting and Ranging, or LiDAR, scanner to create a three dimensional image of graves at the University of Tennessee's Forensic Anthropology Center. NGA and UT scientists are using LiDAR and other instruments to create a verifiable method for remotely detecting mass graves. Photo by Amy Smotherman Burgess, courtesy of Knoxville News Sentinel

NGA, University of Tennessee partner in study of mass graves

By Jason Moll, Office of Corporate Communications

SCIENTISTS FROM THE NATIONAL GEOSPATIAL-INTELLIGENCE Agency and the University of Tennessee are combining resources to improve remote identification of mass graves during conflicts and humanitarian crises.

The cooperative research and development agreement, or CRADA, pairs UT's expertise in human decomposition with NGA's proficiency in remote sensing, said Whitney Nelson, a project scientist with the agency's InnoVision directorate.

Apart from having observers on the ground, there is no verifiable method for remotely identifying a grave once it has been covered, said Nelson.

"We're hoping to create an entire methodology for identifying these graves from a distance," said Nelson.

Creating a verifiable method for remotely detecting mass graves could improve the accuracy of geospatial reporting during a humanitarian crisis and negate the need to put observers in harm's way, said Nelson.

Faculty and staff from UT's department of anthropology buried 10 bodies across three graves in February and left another grave empty as a control, said Katie Corcoran, a doctoral student in the department of anthropology who works on the project. All of the bodies were donated for scientific research.

Scientists will monitor the graves for three years looking for detectable signatures, said Nelson. In the first year, scientists used various instruments to detect changes in the earth, variations in temperature, and the presence of gasses or residues, said Nelson.

"Initially, the biggest signature is the disturbed earth – and that's readily seen from panchromatic imagery," said Nelson. "As time moves on, it starts to get hotter inside the grave as the body breaks down. This process is well understood when it's a single person. What we really want to know is what it looks like when you have multiple bodies in a single grave."

Creating a verifiable method for remotely detecting mass graves could improve the accuracy of geospatial reporting during a humanitarian crisis and negate the need to put observers in harm's way.

—Whitney Nelson

"So far, we have collected only ground-based data, said Nelson. If we determine there are unique observables, we hope to begin collecting data from (other) platforms."

Researchers have so far received a significant amount of data, which they are analyzing, said Corcoran. Initial results appear to show higher temperatures in and around the graves at certain times of day.

But the research is more complicated than simply taking measurements, said Corcoran.

Continued on page 6

“**THERE** is a lot of activity that happens underground and in graves,” said Corcoran. “But it all depends on the (composition of the bodies), the soil, the temperature, and how moist it is.”

The department has enlisted the help of multiple departments at the university, and at Oak Ridge National Laboratory to account for these variables, said Nelson. ORNL is supporting the processing of data on its high performance computing systems.

“There is a team from the UT Institute of Agriculture that does soil chemistry work,” said Nelson. “There’s a team from the biology department that is looking to see if there is any (chemical) difference in the vegetation over the graves, as opposed to where there is nothing. And, there are also people looking at microbes and what kinds of gases or volatile organic compounds are being released. So, what the (department is doing) is one small part of a much larger project.”

Partnering with NGA has provided the department of anthropology with instruments and access to data, said Corcoran.

“NGA is providing a tremendous opportunity for data collection,” said Corcoran. “Now we have the

ability to access data that are not very easy to get a hold of in any other context. In a broad sense, our access to data will help us understand what sensors will be better than others.”

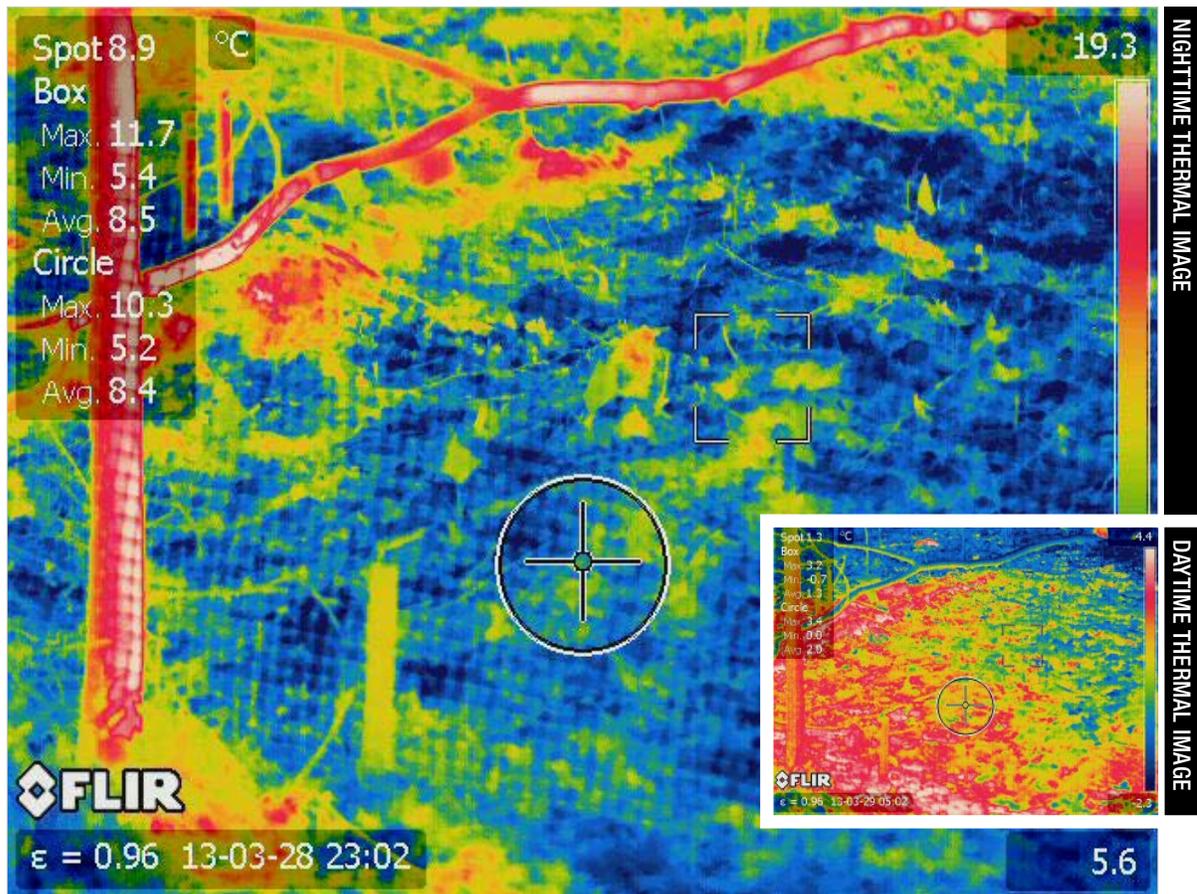
Scientists will monitor the graves to see how they change over time, said Nelson. NGA scientists hope to partner with the department as they create mass graves in different parts of the country to see if the observables are affected by different soil types and climate regimes.

The department of anthropology hopes to develop an entire course dedicated to the study of mass graves once their research is complete, said Corcoran.

Ultimately, the most important part of their research is that it helps people, said Corcoran.

“Hundreds of thousands, if not millions, of people remain missing from conflict,” said Corcoran. “There are a lot of people who would like to find them. Whether it’s for bringing criminals to justice, or finding and identifying the victims so they can be repatriated back to families, there are a lot of very good reasons for doing this work.”

Nighttime and daytime (inset) thermal images of a grave containing six cadavers show a measurable difference in surface temperatures between the two times. Scientists from the University of Tennessee’s anthropology department and NGA’s InnoVision directorate are trying to determine if the difference can be attributed to subsurface temperature increases caused by body decomposition. NGA photos.



New senior enlisted advisor returns to GEOINT roots

By Nancy McGillicuddy, Office of Corporate Communications

Photo by Kevin Clark, Office of Communications

AS THE NATIONAL GEOSPATIAL- Intelligence Agency's senior enlisted advisor, U.S. Air Force Chief Master Sgt. Rachel Zeigler serves as Director Letitia A. Long's eyes and ears on all military matters, from the training to the health, morale and welfare of the agency's service personnel.

But, the 24-year veteran did not always picture herself in the military, she said.

"I did not see myself joining the service at all," she said. "But, I got to a point in my life where I wanted a job where I could use my brain."

She decided to follow her father's footsteps into the Air Force, said Zeigler, who hails from Brookfield, N.H.

"Once I made that decision – I was going to go all the way," she said. "Chief was always a goal for me."

Zeigler came to NGA from Scott Air Force Base in September and is slated to serve as the senior enlisted advisor for three years, she said. She is responsible for providing counsel and professional development guidance for enlisted, officers and the civilians.

"Chief Zeigler brings a wealth of leadership experience to NGA that will benefit our military and civilians," said NGA Director Letitia A. Long.

While many military members are used to working in a joint environment, one of the challenges younger service members may face at NGA is working in an environment that is mainly civilian, said Zeigler.

"It's not a traditional military structure," said Zeigler. "I think just navigating the agency can be a challenge."

Her areas of responsibility include NGA's military intern program and GEOINT certification.

Once established, the military intern program will bring junior noncommissioned officers and commissioned officers to NGA for three years, said Zeigler. Participants will have an opportunity to work in multiple key components and take classes in the NGA College.

"They will walk away after three years very 'NGA smart' on the products (the agency) can provide, (and can) then take that information back out to the services," said Zeigler.

The intern program should be up and running by the summer of 2014, said Zeigler.

GEOINT certification applies to military and civilians, and is part of a Department of Defense initiative, said Zeigler. As part of the workforce objective in NGA's strategy, certification will help standardize training and ensure GEOINT practitioners perform at specific proficiency levels by demonstrating common competencies.

"Regardless of the agency you work in, if you are a GEOINT analyst there is common foundational knowledge you (must) have," said Zeigler.

Returning to the GEOINT world is something she enjoys about her new position, said Zeigler, who began her career in strategic and imagery intelligence.

"The other part I enjoy is being able to talk to the enlisted folks and having the opportunity to mentor and teach," she said.

She encourages the men and women she mentors to perform to the very best of their abilities regardless of the position, said Zeigler.

"I know a lot of folks think they need a set path to be successful," she said. "But, it's not so much about the duty position or the location, it's what you do with the job." ✨



NGA GEOINT critical during disaster relief efforts in Philippines

By Jason Moll, Office of Corporate Communications

THE NATIONAL GEOSPATIAL-INTELLIGENCE Agency's critical role in humanitarian assistance and disaster relief was again at the forefront of recovery efforts in the Philippines following Super Typhoon Haiyan.

When the typhoon reached the Philippines Nov. 8, NGA was ready with geospatial information to help assess damage and prioritize recovery efforts in support of Operation Damayan.

"Initially, the situation was bleak," said Nathaniel Wolpert, a geospatial intelligence analyst with NGA's Integrated Work Group-Readiness, Response and Recovery, or IWG-R3. "Communications were down. Power

was also down in just about every region that was hit. You had no power, no supplies and no cell phone coverage. There was also no safe water and nowhere to go. It was pretty bad."

As the extent of the damage became more evident in the days following the storm, the demand by foreign and domestic partners for NGA products and services grew, prompting the agency to create a cross-functional focus cell to provide specialized assistance, said Wolpert.

As it did for the first time following 2012's Hurricane Sandy in the U.S., NGA analysts provided geospatial products and data to federal partners

through an online disaster event page and responded to requests for information from customers in the field, said Wolpert. International partners and non-governmental organizations accessed NGA products through the All Partners Access Network.

NGA also assisted the U.S. Agency for International Development and the Department of State through U.S. Pacific Command. PACOM, meanwhile, supported a joint task force of U.S. Marines and sailors and equipment, said Jeff Redinger, lead for IWG-R3 partnerships and outreach.

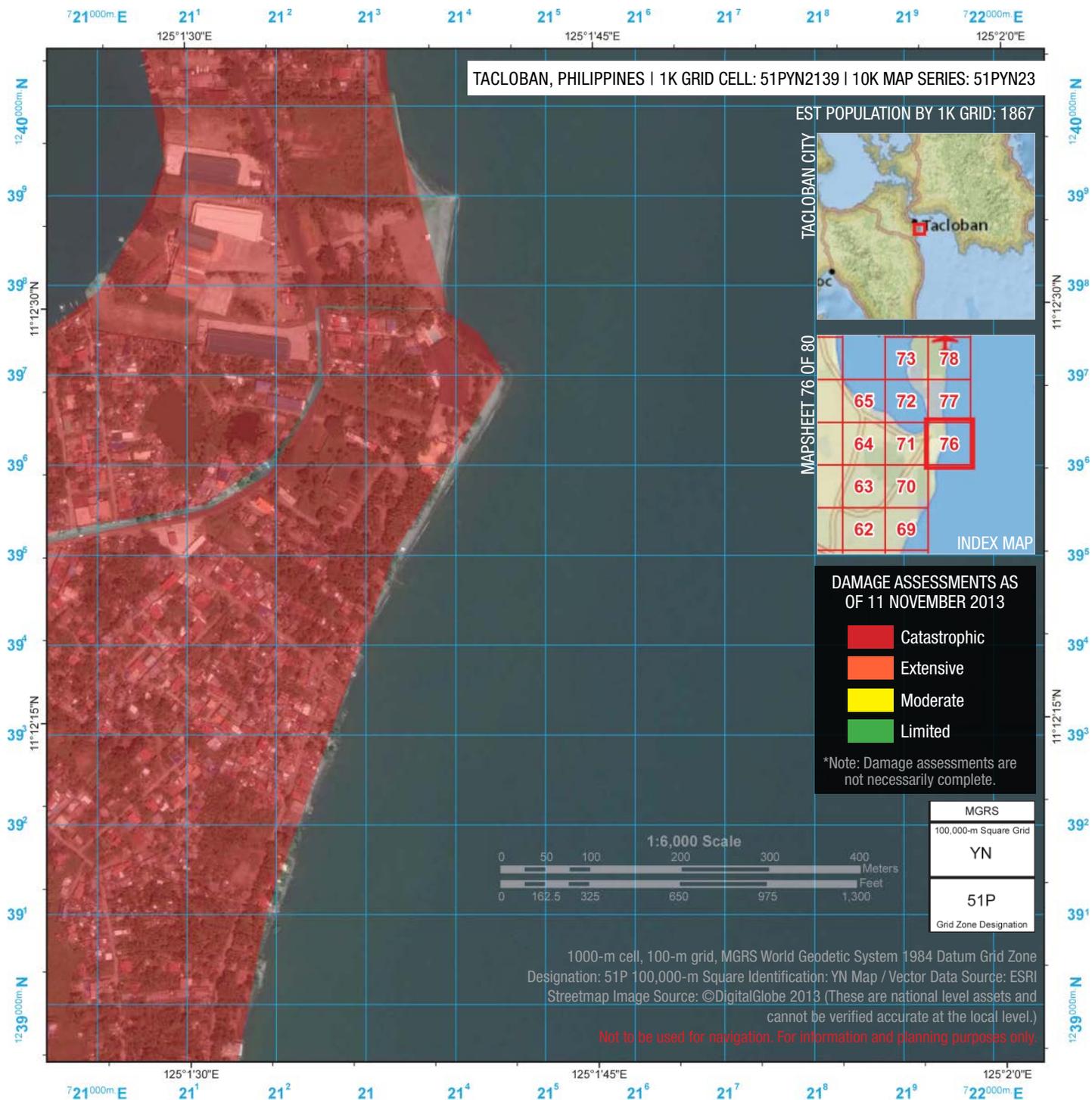
"The data NGA provided to our geographic information experts allowed us to rapidly identify areas that were hardest-hit by the storm," said Aimee Lauer, a response manager for the USAID Response Management Team for Typhoon Haiyan/Yolanda. "In the early days of the response effort, this information was invaluable."

Continued use of NGA's GEOINT is ongoing in the recovery effort, said Redinger. The agency's analysts are available for specialized analysis and to monitor the progress of fresh water supplies, sanitation, hospitals and power restoration. ✨



Philippine citizens gather around a MH60S Seahawk helicopter as it delivers relief supplies during Operation Damayan. Photo by U.S. Navy Petty Officer 3rd Class Peter Burghart.

NGA's IWG-R3 used commercial imagery provided by DigitalGlobe to create an atlas in for U.S. Pacific Command's search and rescue operations. The image on Page 8 shows the coastal area of Tacloban City after the typhoon. The image on Page 9 shows the same area before the storm with a red overlay indicating catastrophic damage across the entire area.



NGA HELPS U.S. NAVY SAFELY NAVIGATE TYPHOON-RAVAGED WATERS

AMONG THE NATIONAL Geospatial-Intelligence Agency's core missions is its role in helping ensure U.S. and allied ships can safely navigate the world's oceans. NGA's Maritime Intelligence Cell, or MIC, is vital to that effort, and following Typhoon Haiyan, it helped USS Mustin navigate to Ormoc Bay in the Philippines's Tacloban Province.

NGA received the ship's request Nov. 12 and spent

three days helping the Arleigh Burke class guided missile destroyer safely navigate the Philippine waters, said Michael Harrison, chief of the Maritime Intelligence Branch.

The Mustin is part of the USS George Washington Carrier Strike Group assigned to the U.S. Pacific Command.

"The crew was concerned about hazards that could impact the ship," said Harrison. "So, they requested transit

assistance by pointing out those things presenting a navigation hazard."

Relying on imagery and sensor data, analysts helped the Mustin avoid oil spills, swamped boats and small debris, said Harrison.

"Among their concerns, Mustin was anxious to avoid petroleum or other chemicals that could be drawn in through intakes designed for cooling and making potable water,"

said Harrison. "Of course, they also wanted to avoid debris that might damage screws and the rudder."

In a Nov. 15 email, the Mustin thanked NGA analysts for their assistance.

"We made it to our (operational area), and we're working the plans to start providing aid," wrote Chief Petty Officer J.C. Rickard. "We couldn't have done it without your assistance and hard work."

MISSTING

NGA PARTICIPATES IN MISSION TO RECOVER WWII SERVICE MEMBERS

NGA Office of Corporate Communications

THE NATIONAL GEOSPATIAL-INTELLIGENCE

Agency plans to continue in 2014 as part of a historic U.S. Coast Guard mission to recover three World War II-era U.S. service members entombed in 40 feet of Greenland ice.

The search for Coast Guardsmen Lt. John Pritchard and Petty Officer First Class Benjamin Bottoms, and Army Cpl. Loren Howarth, who have been missing since their plane crashed in November 1942, falls under the auspices of the Joint Prisoner of War/Missing in Action Accounting Command, and includes NGA, NASA and the Naval Research Laboratory. Pritchard and Bottoms are the only remaining MIAs in the Coast Guard according to the service.

The men's disappearance involves three downed aircraft, according to USCG historical reports. First, a U.S. Army cargo plane made an emergency landing Nov. 5, 1942, on an ice cap in Southeast Greenland. Its crew survived and needed to be rescued. A second plane, a modified B-17 bomber, crashed during the search and rescue mission. Several of its crew members were injured, but all survived.

Then, on Nov. 28, a Grumman Duck amphibious biplane, piloted by Pritchard, left USCG Cutter Northland to rescue men from the B-17, according to records. Pritchard and his radio operator, Bottoms, evacuated two men from the site and returned to the crash the next day and retrieved Howarth. Despite weather warnings from Northland, the three took off in the Duck toward the ship.

They didn't make it. The last radio communication from them came nine minutes after takeoff, requesting directions back to the ship.

Several days later, another plane located the Duck and reported it badly wrecked with no signs of life. Since there had been no communication from the first plane's crew for 30 days, the Coast Guard decided to focus its efforts on the B-17 crew. The remaining survivors were rescued in March 1943.

The Coast Guard could not recover the Duck or its crew, but the 1942 report was detailed enough to allow researchers, including NGA, to begin recovery operations again – nearly seven decades later.

Known as "Duck Hunt," there have been four recovery missions since 2010, each yielding incremental success, said Cmdr. Brian Glander, chief of the U.S. Coast Guard Office of Aviation Forces.

The latest recovery team worked from June to September 2013, until weather conditions became too harsh, said Glander. NGA's support allowed researchers to get closer to the crash site.

NGA's involvement included its Department of Homeland Security NGA Support Team, the 3D model shop, and elements of Analysis and Source directorates, said Wayne Stephenson, the agency's Coast Guard liaison. The NST coordinated NGA's efforts, introducing airborne ground penetrating radar imagery surveys from NASA and the Naval Research Laboratory, and providing

analytic support from the Army Corps of Engineers cold weather lab.

The model shop produced 3D models of the crash site and the aircraft, said Stephenson. The Analysis directorate analyzed historic imagery and current data, conducted surveys and deployed an imagery scientist for the 2012 mission. Source provided imagery and foundation data and collection support, and deployed geodetic surveyor Ben Fuchs on the 2013 mission.

"Surveying on the ice cap is like nothing I have ever experienced in my 18 years as a field surveyor," said Fuchs, who works for NGA in St. Louis. "The hardest issue to overcome is the lack of landmarks. Basic orientation is nearly impossible without today's surveying technologies."

Fuchs marked the location of the crash with a 50-by-50 meter grid and oriented the excavation site to use the natural slope of the landscape, minimizing the time and effort used during excavation, he said.

The team used the grid to do radar surveys of the site, said Fuchs, who used the survey data to produce a current topographic map of the proposed evacuation site. He and other team members created an excavation plan indicating the snow and ice to be removed.

"The team assembled to recover the Duck in 2013 was like a modern day 'A-Team,'" said Fuchs. "What a pleasure it was to be a part of such a meaningful mission." ✨

TIMELINE FOR THE INITIAL HUNT FOR THE GRUMMAN DUCK

Nov. 5, 1942

A U.S. Army C-53 Skytrooper cargo plane makes an emergency landing on an ice cap in southeast Greenland. All five service members aboard survive initially, but are never recovered.

Nov. 9, 1942

A B-17 bomber, modified for search and rescue and designated PN9E, crashes during an attempt to locate the downed C-53. All nine aboard survive.



B-17 crew. Back row: William O'Hara, navigator, Armand Monteverde, pilot, and Harry Spencer, co-pilot; front row: Alexander Tucciarone, assistant engineer, Loren Howarth, radio operator and Paul Spina, engineer. Photo courtesy of Peter Tucciarone and family.

Nov. 28, 1942

A Grumman Duck from USCG cutter Northland, piloted by Lt. Pritchard, rescues two members of the B-17 crew.



A Grumman Duck piloted by Lt. John Pritchard taxis away from USCG cutter Northland. Pritchard and his radio operator, Petty Officer 1st Class Benjamin Bottoms, flew to the Koge Bay glacier and retrieved two of the nine crewmen from the B-17 crash. U.S. Coast Guard photo, courtesy of Charles Dorian.

WHO THEY WERE: THE MEN OF THE GRUMMAN DUCK

Compiled from U.S. Coast Guard News



Coast Guard Lt. John A. Pritchard Jr.

Pritchard was born on Jan. 12, 1914, in Redfield, S.D. He graduated high school in Beverly Hills, Calif., and served an enlistment in the U.S. Navy. In 1938, he graduated the U.S. Coast Guard Academy, received his commission and became an aviator. His sister, Nancy Pritchard Morgan Krause, was in college when her brother went missing. Krause described her brother as confident, self-assured, gentle and caring, according to Mitchell Zuckoff's book, *Frozen in Time*. The pilot was 28 when he died.



Coast Guard Petty Officer 1st Class Benjamin Bottoms

Benjamin Autrell Bottoms grew up in Marietta, Ga. While assigned to the Coast Guard air station at Salem, Mass., he met his wife, Olga. In 1942, Bottoms was assigned to Coast Guard cutter Northland as the radio operator of the J2F-4 Grumman amphibious plane, known as the Duck. Bottoms was 29 when his plane disappeared. He was survived by his wife and a stepson.



Army Cpl. Loren Howarth

Loren Howarth was born in 1919 and hailed from Wausaukee, Wis. He enlisted in the Army in 1942 after attending La Crosse Teachers College. He was a radio operator on the B-17 bomber that crashed in Greenland Nov. 9, 1942. Rescued by Pritchard and Bottoms, he was aboard the Grumman Duck when it disappeared. His obituary in the Wausaukee newspaper read, "The sadness and sacrifice of war has fallen on a mother who now must carry Wausaukee's first gold star ... Taps for Corporal Loren Howarth, a fine boy and a hero." Howarth was 23 when he disappeared.

U.S. COAST GUARD PHOTO

U.S. COAST GUARD PHOTO

U.S. ARMY PHOTO

A forensic anthropologist from the Joint POW/MIA Accounting Command checks the placement of bore hole markers at the excavation site near Koge Bay, Greenland, Aug. 13. The team used a subsurface camera to look inside the holes for evidence of the crew of the Grumman Duck aircraft that reportedly crashed there in 1942. Photo by U.S. Coast Guard Petty Officer 2nd Class Jetta H. Disco. Read more: www.dvidshub.net

Nov. 29, 1942 Pritchard and Bottoms return to the site of the downed B-17 to rescue more men. Despite weather concerns and warnings from USCG cutter Northland, the two left the glacier with Army Cpl. Loren E. Howarth. The plane never made it to the Northland.

Dec. 5, 1942 After 30 days with no communication from the C-53 crew, rescue and recovery efforts for the cargo plane are halted. The five men were never located.

Dec. 7, 1942 A B-17 bomber piloted by Capt. Kenneth Turner locates the Grumman Duck and reports, "Grumman located. No sign of life. Badly wrecked."

March 1943 The final survivors of PN9E are rescued.

August 2013 Efforts to recover Pritchard, Bottoms and Howarth continue.

From surveys to satellites, NGA's history on display in St. Louis

Story and photos by Kevin Clark, Office of Corporate Communications

FROM CONTINENTAL SURVEYORS AND MAPMAKERS to modern-day GEOINT analysts, more than two centuries of hard work and traditions of the National Geospatial-Intelligence Agency and its predecessor agencies are on display at the NGA Museum in St. Louis.

Originally constructed in 1906 as part of the U.S. Army's St. Louis Arsenal, the building that houses the museum was used as the post commander's quarters before taking on a variety of other purposes throughout the following century, according to the NGA's history department.

Director of National Intelligence James Clapper opened the building as a museum Oct. 15, 2005, while serving as NGA's director, and since then, more than 500 visitors pass through its walls annually.

The museum is open weekdays from 10 a.m. to 2 p.m., Central time. School groups and other public visits can be coordinated with the museum manager at 314-676-3246. ✨



This pocket stereoscope and its carrying case were made by Abrams Instrument Corp. Stereoscope variations are still essential tools in imagery analysis, allowing the viewer to see the image in three dimensions.



Imagery analysts used camera sets, such as this set by Leica, for close proximity work and training exercises.



Last calibrated in 1981, this Vietnam-era altimeter made by Wallace & Tiernan was used by the U.S. Army.



Found during an excavation in 1986, this pick axe head dates to the late 19th or early 20th century.





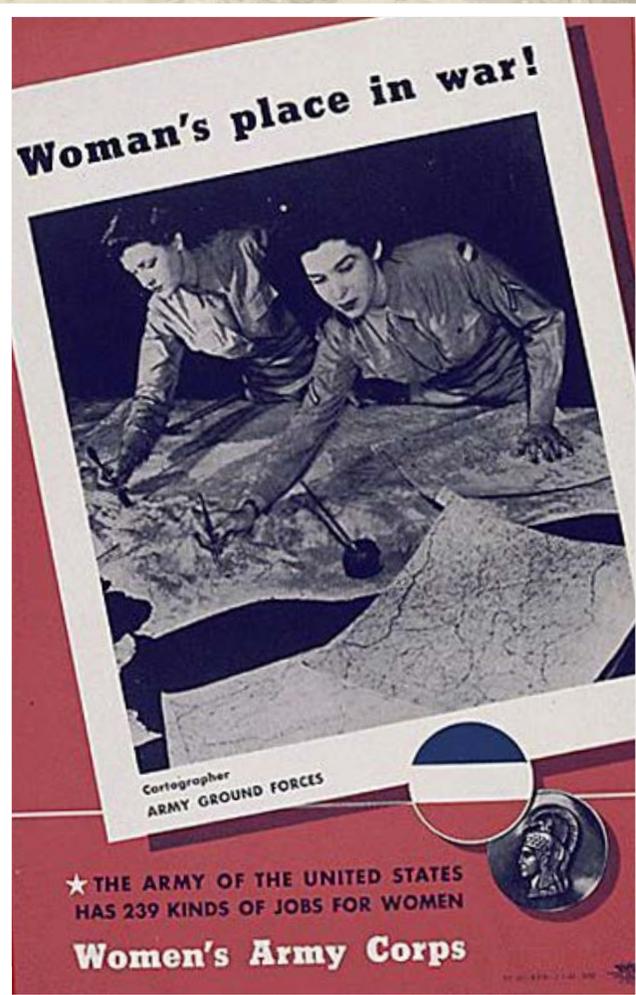
Wartime Women's Mapmakers

By Al Anderson, National Geospatial-Intelligence Alumni Association

AS THE DEMAND FOR ITS PRODUCTS ESCALATED EARLY in World War II, the Army Map Service, a heritage organization of the National Geospatial-Intelligence Agency, was losing much of its largely male workforce to the armed forces.

A solution to the urgent need for replacements emerged when the University of Chicago's Geography Department developed a course in military map making and began offering it to women's colleges in the East and Midwest.

Continued on page 16



“I (helped) develop various maps for the Battle of the Bulge and initiatives in and around Fiume, Italy,”

—Bea McPherson

SELECTED schools taught the 60-hour course, which was first offered in 1942. In its inaugural year, 200 women completed the course, said Bea McPherson, who participated in the program. As the program expanded to more colleges, the Army Map Service provided a four-week course that gave recruits further training. AMS leaders began assigning women graduates to various operations, depending on their aptitudes and interests.

“The editor of the magazine, AMS Reference Point, soon coined the name ‘Military Mapping Maidens’ for (us),” said McPherson. “They called us the 3M’s, (and) we thought it was appropriate and rather cute.”

McPherson joined AMS in 1943 after graduating from Ohio’s Kent State University, she said. She was assigned as a drafter and worked in Montgomery County, Md., at the Charles Ruth Building on MacArthur Boulevard. Because of the secret work done there, the building was camouflaged and isolated from other buildings there.

The 3M’s charted strategic locations, churches, schools, land contours, bodies of water and roads. They used foreign maps, aerial photos and other information to create the maps. Some were printed on silk and carried by troops as handkerchiefs and survival tools.

“I (helped) develop various maps for the Battle of the Bulge and initiatives in and around Fiume, Italy,” she said.

She traveled on orders to New York to deliver maps and to Ohio to recruit women from Kent State



Bea McPherson meets with Director Letitia Long during a visit to NGA headquarters in Springfield, Va. Photo by Kevin Clark, Office of Corporate Communications



Bea McPherson briefs a map in 1943 during her time as a military cartographer. Photo courtesy of Bea McPherson

to work at AMS, she said. She received \$6 a day for travel expenses.

The men at AMS treated the women with respect and as part of the team, said McPherson.

“The male employees knew that we answered Uncle Sam’s call to help fill war vacancies,” she said. “There were only two male drafting employees in the project drafting department. We all got along and they did social things with us. Some of the 3M’s dated male employees, and a few of my friends married them and were very happy.”

McPherson and the other 3M’s found time for softball, canoeing,

horseback riding and Saturday afternoon tea dances, she said. They worked well together, though they came from various backgrounds and parts of the country.

“We were there for one common purpose – to make maps for our country’s war effort,” said McPherson, who resigned from AMS shortly after the war ended.

McPherson donated her AMS papers to Kent State University. They are available at <http://www.library.kent.edu/page/16427>. ✨



Continued on page 18

Mapping demand, pioneering spirit remain high among today's cartographers

By Glenn Holloway, Office of Corporate Communications
Photos by Kevin Clark, Office of Corporate Communications

"HARRY TRUMAN, DORIS DAY, RED CHINA, JOHNNIE RAY ... moonshot, Woodstock, Watergate, punk rock," as the Billy Joel song says, a lot has happened over the years in American culture. Among them is the national attitude toward women in the workplace.

When the call went out for women to become military cartographers during World War II – to fill the void left by male cartographers deployed to the various theaters around the globe – women like Bea McPherson responded in astounding numbers.

About 350,000 women joined the armed forces between 1942 and 1945, and the percentage of women making up the workforce in the aviation industry exploded from about 1 percent pre-war to 65 percent by war's end, according to the History Channel's website.

the end product was negatives for printing," said McDermott, who has a Bachelor of Science in meteorology and entered the federal hiring pool with hopes of working at the National Oceanographic and Atmospheric Administration.

In her time as a cartographer with the National Geospatial-Intelligence Agency and its predecessor agencies, maps have migrated from silk prints to personalized on-demand maps viewable on smartphone and computer screens, said McDermott, a New Jersey native who now lives in Maryland.

And they continue to evolve and improve.

Mapmaking technology changes to keep up with map users. Today's digital maps allow end-users to motor through life following directions from a handheld device with GPS or a map, said

McDermott. Digital technology has made the mapmaking process faster and more consistent.

"I doubt very many people use paper maps to figure out how to get somewhere," said McDermott. "Most people have GPS, type in their destination and look to their device to tell them the directions. If you're not using GPS, you probably use your computer or smart phone to look at a map."

NGA's "Map of the World" is a good example of that, she said. Instead of cartographers updating multiple charts and maps, the Map of the World allows for updates in a "one-feature, one-time" production environment. Through on-demand access to foundation geospatial data, users can record observations of any given object in the data. The Map of the World will streamline updates to charts and

increase the safety of navigation in the air and at sea.

The map does more than change the product, it changes how cartographers and other users of geospatial intelligence must think about "our content, customers, technology and acquisitions strategy – the entire system surrounding foundation GEOINT," said NGA Director Letitia A. Long, in a message to the workforce in April 2013.

Though a lot had changed between the time of the "Mapping Maidens" and when McDermott first made a map, much remained similar, said McDermott. She and World War II military cartographers, like Bea McPherson, shared a common workspace and common tools.

"I worked in the Ruth Building for several years and remember seeing photos of the building



Nancy McDermott and Bea McPherson discuss all the changes in map making since World War II as McDermott demonstrates the process of revising a modern map.

After the war, however, many women found themselves unemployed as men re-entered the workforce.

Some women, though, weren't content with being relegated to their "normal" domestic roles.

Those women, like many of the "Military Mapping Maidens," a phrase coined for the women who entered military cartography during the war, continued to serve in the military and other federal agencies after the war. They pushed the limits of the accepted norms of the day, and their efforts paved the way for future generations of women in federal service – women like Nancy McDermott, a 28-year veteran cartographer.

"When I first started in Louisville in 1985, we used manual methods to produce our maps and

camouflaged, said McDermott. “I also saw photos of cartographers of that era at work on light tables. My job is mainly quality control, and although I use a computer for my work, I also use a light table when I review maps. It is (still) the best method to get a good look at the finished product.”

The agency’s efforts to make geospatial data available to the users in whatever form they need also remains strong, said McDermott.

“There will always be the need for good data, whether (for) a database in support of digital (products) or traditional paper maps,” said McDermott. “Cartographers possess the knowledge needed to provide the data and to transform that data into usable maps.”

She and McPherson also share a fondness and pride for the time spent as cartographers. A moment that stands out for McDermott came on the heels of a different war, she said.

“After Desert Storm, Saddam Hussein attacked the Kurds in Northern Iraq,” said McDermott. “President (George H. W.) Bush initiated Operation Provide Comfort to shield the Kurds from further attack and to deliver humanitarian supplies. The military requested terrain analysis products over the area, and I was on the team that produced the hand-drafted overlays in six days. As soon as the overlays were completed, they were delivered to the military. We knew our work was important and was going to be used right away. That felt good.”

That feeling continues today, she said.

“I am proud to work in support of the military and to provide a service that is still needed,” said McDermott. ✨

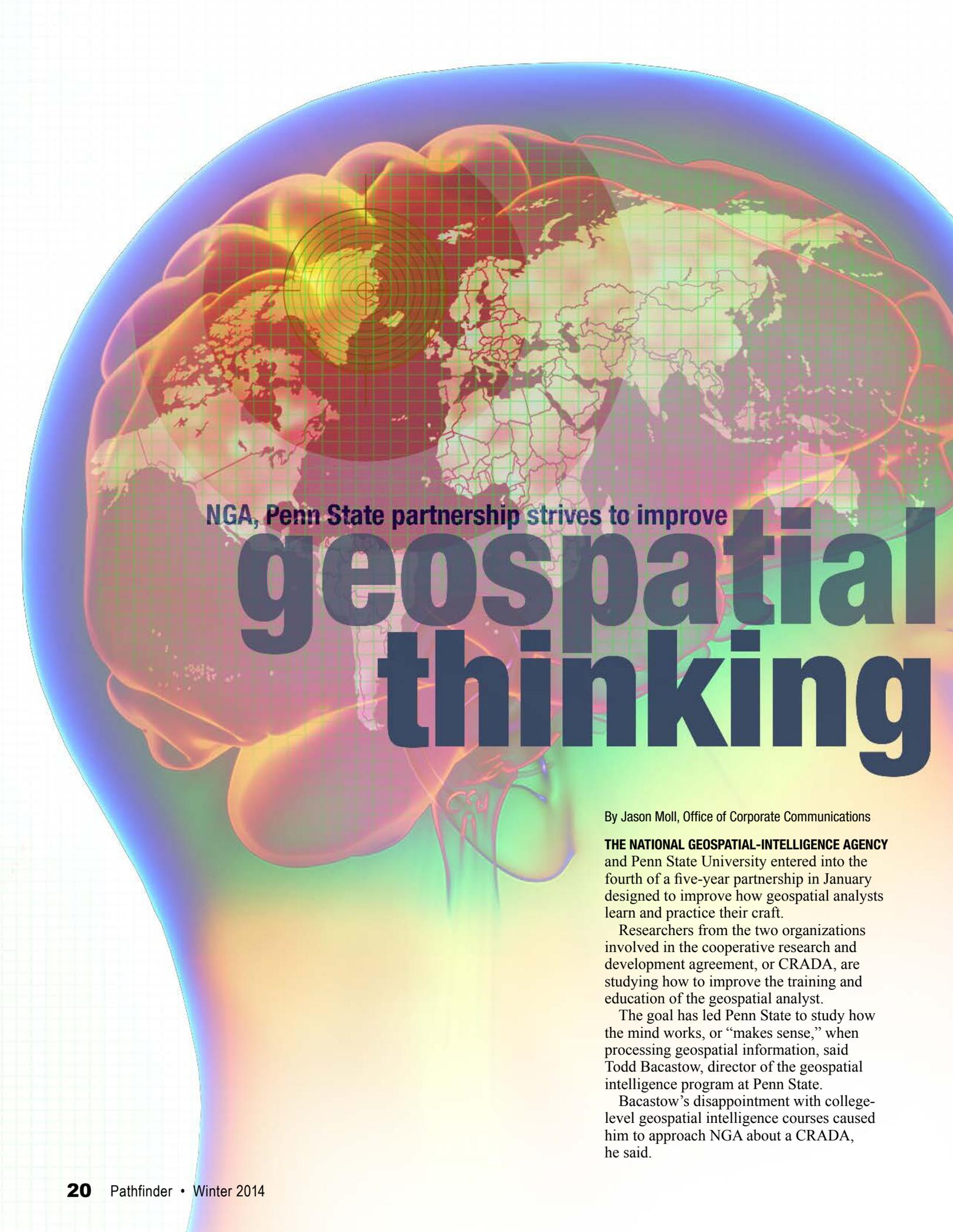


Nancy McDermott performs a quality control check on a map using a light table.

“I worked in the Ruth Building for several years and remember seeing photos of the building camouflaged ... I also saw photos of cartographers of that era at work on light tables.”

—Nancy McDermott





NGA, Penn State partnership strives to improve

geospatial thinking

By Jason Moll, Office of Corporate Communications

THE NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY and Penn State University entered into the fourth of a five-year partnership in January designed to improve how geospatial analysts learn and practice their craft.

Researchers from the two organizations involved in the cooperative research and development agreement, or CRADA, are studying how to improve the training and education of the geospatial analyst.

The goal has led Penn State to study how the mind works, or “makes sense,” when processing geospatial information, said Todd Bacastow, director of the geospatial intelligence program at Penn State.

Bacastow’s disappointment with college-level geospatial intelligence courses caused him to approach NGA about a CRADA, he said.

“We were interested, because whatever makes Penn State’s program better is likely to make (NGA’s) program better,”

–Kristen Anderson

“I realized that universities were teaching people how to do analysis the way we teach someone to use geospatial software,” said Bacastow. “We never considered what it takes to make someone a good geospatial intelligence analyst.”

The academic outreach team at NGA’s National Geospatial-Intelligence College, or NGC, also saw an opportunity to enhance course design, said Kristin Anderson, academic outreach program manager at NGC. The industry outreach division of NGA’s InnoVision directorate is partnering with NGC to manage the CRADA.

“We were interested, because whatever makes Penn State’s program better is likely to make our program better,” said Anderson.

CRADA partnerships do not involve monetary exchanges, which also benefits NGA during the currently austere fiscal times, said Anderson.

The CRADA gave Bacastow an opportunity to sit with NGA geospatial analysts for several days in January 2013 to understand how analysts think on the job, he said. Bacastow made a note of everything analysts did when they worked alone and in a group. One of the first things he realized is that analysts do their jobs without fully understanding the thought processes that drove them to their conclusions.

“When we asked people about their work, most of our conversations revolved around what they did and not what they thought about,” said Bacastow. “The metacognitive aspect, or how they think about their thinking, is a missing component, even though it’s sorely needed.”

Bacastow and his colleagues came to appreciate that spatial analysis is “sense making,” or the process by which humans are able to develop explanations from data that are sparse, noisy and uncertain, he said. This is a core ability of geospatial analysts.

“The analytic process starts with discovering and builds to describing, explaining, interpreting and anticipating geospatial phenomena,” said Bacastow.

“But, not every analyst will be called upon to work at all levels, nor will the analyst be able to perform skillfully at a level without preparation. The question is how do we

train and educate analysts to incorporate the appropriate aspects of sense making into this hierarchy of analysis when they’re solving problems?”

Individual experience dictates how analysts navigate the sense-making process, said Bacastow. Experience is so important that clinical education should be seen as a key part of “tradescraft,” since hands-on experience is also required if one is to become an expert craftsman.

“Experience is one of the key factors that separates the very best analysts from their peers,” said Bacastow. “Since you can’t go to a reference guide and learn how to do analysis well, a lot of what you learn must be based on your experience,” said Bacastow.

Disciplines that require hands-on learning, like the study of medicine, may have the best models for teaching geospatial analysis, said Bacastow.

“Medicine uses clinical education, where you’re actually learning on the job while performing under the guidance of a trained and skilled clinical educator who helps you learn the craft,” said Bacastow. “You really wouldn’t want someone to operate on you unless they’ve actually done it successfully before – perhaps many times before – under the guidance of an expert practitioner. The same should be true for geospatial analysis.”

Instructional designers at NGC are also interested in how clinical education might be applied to training at NGA, said Anderson.

Bacastow and his Penn State colleagues are also researching different educational aids to help the learner, he said.

“We’re looking at applications, such as mind exercises, that help the learner identify the key spatial elements of a problem, the analyst’s spatial biases, and then place these into a sense-making paradigm,” said Bacastow.

While it is too early to tell how the CRADA’s findings will affect NGC’s programs, “anything is on the table,” said Arthur Cobb, a project scientist with NGA’s InnoVision directorate.

“Whatever works and helps us produce the best analysis, I’m sure would be implemented,” said Cobb. For more information on NGA CRADAs, contact crada@nga.mil. ✨

‘Liked’

Social media integral to agency communications

By Regina Galvin, Office of Corporate Communications

IN THE “OLD DAYS,” COMMUNICATION BETWEEN government agencies and the public was primarily one way – public affairs professionals disseminated information, and the public received it.

The old days are gone.

Today, via social media platforms like Facebook and Twitter, agencies, including the National Geospatial-Intelligence Agency, actively engage their stakeholders and the general public. Comments, “likes,” “dislikes” and “shares” are now part of the social media dialog agencies have with the public.

In fact, nearly every U.S. federal agency and all of the U.S. armed forces have embraced at least one social technology platform, according to HootSuite, a social media management site.

As of May 2013, 72 percent of online adults were social networking site users – up from 8 percent in 2005, according to the Pew Research Center, a Washington, D.C., think tank. And in a 2010 study, Pew found that 30 percent of online adults used some sort of social platform to learn about government activities.

More and more, communicators at government agencies know that to reach the public, they must use the media the public uses. And there lies the dilemma for the agencies comprising the U.S. intelligence community.

Within the IC, security considerations are heightened, and social media activity varies from agency to agency. However, the Office of the Director of National Intelligence is on social media’s cutting edge with a presence on Facebook, Twitter, Flickr, YouTube and Tumblr.

“Over the last year, we’ve adopted new procedures that make social media an implicit and vital part of every major ODNI external communications effort,” said Shawn Turner, ODNI’s public affairs director. “Social media engagement is no longer a special case for ODNI – it’s standard operating procedure.”

NGA has an active social media presence on Facebook, Twitter and YouTube and has established a more limited presence for possible future development on other sites, like Google Plus. Similarly, the Defense Intelligence Agency actively uses Facebook, Twitter, YouTube and Instagram. The National Security Agency has focused their social media efforts on a recruiting Twitter account and Facebook page and a page for their National Cryptologic Museum, according to its public affairs office.

The use of social media by individual employees within the IC varies as much as the agencies, themselves. Zina Henshaw, for example, is an NGA employee who has never visited the NGA Facebook site.

“I don’t like Facebook or Twitter,” said Henshaw. “I was in the Navy for 21 years doing cryptology. You just didn’t talk about things.”

But more and more people in the intelligence community are using social media, including NGA Chief Operating Officer Ellen McCarthy.

“The U.S. government is committed to operational transparency, and the long-standing Department of Defense policy is to make accurate and timely information available to the public,” said McCarthy. “Social media is a very effective tool for meeting these obligations.

Equally important, social media allows NGA and the public to engage in a two-way conversation, which promotes accountability and allows us to receive feedback.”

As NGA and the IC grow their social media presence, the balance comes in deciding what to post and what to protect, said Christine Phillips, NGA’s chief of News and Information within the Office of Corporate Communications. She and her team manage NGA’s various social media sites with help from others within OCC.

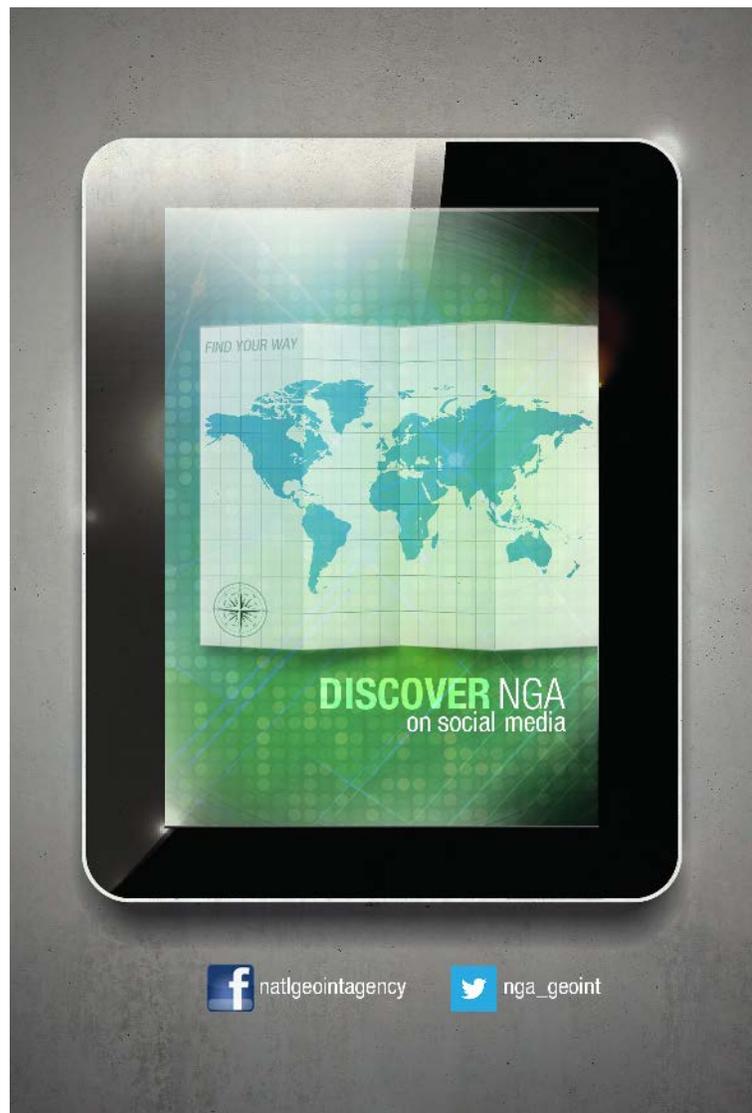
“We work closely with others around the agency to find ways to highlight the important work NGA does, without giving our adversaries information they can use,” said Phillips. “There will always be a security concern, and we take that very seriously. But we must communicate with the taxpayers who pay our salaries and fund our programs if we want them to understand what we do and why it matters, and social media is increasingly where they go for information.”

Security concerns should be important to any social media user, and operational concerns are added factors for government employees, said Air Force Capt. Shawn West, NGA cyber defense watch officer.

“It’s not wrong to use social media sites,” said West. “Users just need to be cognizant of the things they post, links they click and files they download.”

Users should carefully consider their privacy settings and check them frequently to ensure the site has not made changes that caused them to change, said Phillips. They should also consider how information they post could be used to cause harm and avoid posting too much information. For example, it’s a bad idea to post detailed vacation plans, as doing so informs would-be intruders that your home will be unattended.

“Post the vacation photos after you get home,” said Phillips.✱



"It's not wrong to use social media sites, users just need to be cognizant of the things they post, links they click and files they download."

—U.S. Air Force Capt. Shawn West

GEOINTERESTING



NEAR CHULUMANI, BOLIVIA
You might want to skip that taxi ride. A new, interactive map by the Pulitzer Center uses its extensive network of journalists around the world to report on traffic fatalities and abysmal road safety, primarily in developing nations. The “Roads Kill” map aims to increase awareness of the problem, which was recently ranked by the World Health Organization as the fifth leading cause of death worldwide. Map data includes fatalities per capita, law enforcement, modes of transportation and more. The number one road to avoid? Bolivian death trap Yungas Road, also known as the Road of Fate.



WWW.ROADSKILLMAP.COM

WASHINGTON, D.C.
Smokey Bear would approve! In a move expected to benefit both firefighters and travelers, the U.S. Forest Service has made a variety of digital maps available to iOS and Android users. The interactive app will allow users add photos and data, plot place marks, measure distances and more. Users can download detailed maps prior to visiting areas without Internet accessibility, including vast swaths of U.S. forest and extensive wetlands. While the Forest Service will still produce paper maps, nearly 700 maps will be available digitally beginning in March 2014.



WWW.FS.FED.US

MILKY WAY
Explore the galaxy – no rocket ship needed. Home to some 400 billion stars, the Milky Way is now open for tours to armchair astronauts via the Google Chrome project “100,000 Stars.” The experiment combines data from multiple sources, including NASA and the European Space Agency, to plot the location of stars closest to our home planet. The 60 most prominent stars are interactive, allowing the user to click for a digital rendition and more information about each.

WWW.WORKSHOP.CHROMEEXPERIMENTS.COM



PINE ISLAND GLACIER, ANTARCTICA
“It’s not you, it’s me.” Iceberg breaks up with Pine Island Glacier after a major crack formed in the Antarctic ice sheet in 2011. Named B-31, the Singapore-sized iceberg broke away from the glacier in late 2013 and is currently drifting toward open ocean. NASA captured before-and-after imagery, with the fissure formation and eventual breakage clearly visible. Scientists say events such as this are not unexpected and usually occur every five to six years.
Photo: NASA



WWW.EARTH OBSERVATORY.NASA.GOV



WWW.SENSEFLY.COM

MATTERHORN, SWISS-ITALIAN BORDER, EUROPE

Mt. Everest enviously awaits its turn for the 3-D treatment. A team of senseFly engineers and partners coordinated the flight of multiple eBee minidrones around the Matterhorn, sometimes called “the most beautiful mountain” in the Pennine Alps. The project included 11 flights that captured nearly 2200 images. The stunning result is a high-definition 3-D “point cloud,” an animated model incorporating nearly 300 million data points at an average resolution of 20 centimeters.



OSLO, NORWAY

A retired Norwegian history teacher, long fascinated by rumored Nazi tunnels beneath Oslo’s West End, is raising money for a geo-radar project to explore a subterranean bunker. Built by German occupiers in 1941, it was subsequently controlled by the Norwegian military until the early 2000s, when it was turned into a memorial museum.



WWW.THELOCAL.NO



WWW.NLA.GOV.AU

CANBERRA, AUSTRALIA

Mt. Everest enviously awaits Even with a map, it’s still possible to lose yourself in wonder. A partnership between Esri Australia and the National Library of Australia combines ancient and rare maps with cutting-edge technology to create a fascinating exhibit of cartographic history. “Mapping Our World” uses a series of interactive, GIS-based apps to provide layers of contemporary context to historical maps. Visitors can take the trip from New Holland to Australia, track and display real-time air traffic patterns, and explore the famous Frau Mauro map.



2018 | FUTURE STATE VISION

NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

THE NGA FUTURE STATE VISION DESCRIBES

where NGA will be in 2018 based on the mission, vision and objectives identified in the NGA Strategy. It is aligned with DOD and DNI priorities described in the national security, military, and intelligence strategies and in “DOD Priorities for the 21st Century.” Specifically, the FSV describes how NGA will create new analytic value and enhance customer service. It emphasizes partnerships with international, commercial, IC, DOD, and academic institutions, and focuses our analysis on unique and essential content creation.

By 2018, NGA has transformed from a producer of predominantly static products to a provider of dynamic GEOINT content, analysis and services. We deliver our analytic judgments, foundation data, and suite of GEOINT services to our customers and partners. We leverage our NSG, international, academic and industry partnerships to fulfill requirements against those issues where these partners bring capabilities and insight, while we focus

our tradecraft, tools, processes and sources to solve complex problems and provide anticipatory intelligence. Our unique contributions sustain our position as the indispensable GEOINT provider.

By 2018, NGA has enabled multi-INT integration for the IC. We provide the foundation upon which NGA, along with our partners, layers and synthesizes intelligence information. This foundation is the basis for a common, integrated intelligence picture.

Our workforce has enabled this transformation. We recruit, train and retain a diverse and agile workforce. We develop critical skillsets, such as big data analytics, visualization and advanced sensor phenomenology. Our analysts are world-class experts in geomatics, global GEOINT content, intelligence issues and emerging technologies. They are part of a career service with multiple levels of expertise, certifications and career paths. Our workforce uses cutting-edge technology that underpins our content and service offerings.

The Future State Vision describes the NGA of 2018. It does not replace the NGA Strategy. Rather, it more fully describes the deeper analytic value and enhanced customer service we will provide through the implementation of our Strategy.

—Letitia A. Long

WE PROVIDE GEOINT WHEREVER AND WHENEVER IT IS NEEDED

By 2018, NGA provides dynamic GEOINT analysis content and services that are accessible anytime, anywhere. Any customer – whether policymaker or warfighter, homeland security operator or first responder, ally or coalition member – can easily discover and access what we offer through various stationary and mobile devices and security domains. To ensure timely and relevant access to GEOINT, we maintain close relationships with our customers and employ business analytics to enhance the GEOINT consumer experience, usage and usefulness of our content. Most customers increasingly rely on self- and assisted-service options, with full-service support available to those who need it. We provide powerful self-service capabilities that make it easy for customers to find and use our GEOINT as well as access our experts' knowledge. We provide customers with a sophisticated array of intuitive self-help support tools, tutorials and resources. When a GEOINT-related issue arises that our customers cannot resolve alone, we quickly and effectively teach customers how to answer their questions and when necessary, connect the customer to a professional with deeper expertise. To meet more challenging and time-sensitive mission needs, we continue to embed our workforce with our customers – whether at their headquarters or in expeditionary locations.

OUR MAP OF THE WORLD ENABLES INTEGRATED INTELLIGENCE

Our seamless, dynamic Map of the World enables users to visualize and access integrated intelligence content fixed to accurate and authoritative geographic features on the Earth. The MoW provides a unified, online, geospatial, temporal and relational view of the world through the integration of our foundation GEOINT and navigation datasets, our features, our imagery and our intelligence. The MoW is the foundation for the IC's object-based production environment. It provides the geospatial bedrock for all intelligence, information and knowledge to be anchored, integrated, presented and accessed. It enables multi-INT integration by allowing analysts from across the intelligence community to start from a common frame of reference, bringing together multiple sources of information on one object. It is available through multiple security domains, on multiple devices, and it can be customized by the user as needed. It displays not only NGA-generated data, but also data generated by our partners, and the origin of all data is easily accessible.

WE CONTINUE TO ADVANCE OUR ANALYTIC TRADECRAFT

Our analytic insights fuel the MoW. We continue to evolve our analytic tradecraft through the implementation of advanced analytic techniques and processes that are applied to the full spectrum of GEOINT. Our resulting analysis is structured, metadata-tagged and accessible. To leverage and navigate new large-volume data sources, we employ big data solutions, so analysts spend less time navigating data stores and more time generating knowledge and creating analytic judgments. We manage active partnerships to synchronize requirements and resources and unity actions that allow NGA to focus our finite resources and capabilities on the most important intelligence problems.

OUR WORKFORCE DRIVES CHANGE

Our workforce is agile and adaptive, aggressively driving change to increase the value of GEOINT to our customers. Our workforce is shaped by the skills, capabilities and knowledge that we require to produce the best GEOINT possible. We have retrained employees with lower-demand skills and prioritized the hiring of higher-demand skillsets to include data science, visualization and phenomenology experts. Our GEOINT analysts are certified to ensure the work they perform is commensurate with specific proficiency levels gained through demonstrated knowledge and common competencies. All NGA employees have a career advancement path. They fully understand the opportunities afforded to them within NGA, and through career broadening joint duty assignments. We reward our highest performers through a rank-in-person promotion system, which judges performance against corporate criteria.

WE MEET THE CHALLENGES OF AN INCREASINGLY COMPLEX WORLD

In 2018, our primary purpose and function continues to be as a cornerstone in providing strategic warning, situational awareness, military operational planning, combat support and foundational GEOINT. We build upon these to deliver context and insight, enabling multi-INT integration. The demand for GEOINT knowledge, information and data continues to grow, and it is our responsibility to meet this demand when and where it is needed. By realizing this vision, we will propel our nation ahead of our adversaries by ensuring that we can see what they cannot, know

 what we should not, and act first. Read more about NGA's Future State Vision at www.nga.mil/mediaroom/ 

EQUAL OPPORTUNITY IN THE WORKPLACE IS A WAY OF

life for Monica Boney. She is a disabled Army veteran, who was injured while on active duty, she's a community volunteer and a consultant in the Diversity Outreach and Training Center at the National Geospatial-Intelligence Agency's Office of Diversity Management and Equal Employment Opportunity. She serves as a trainer, adviser and EEO specialist, and recently received a Department of Defense "Achievement Award for Individuals with Disabilities."

It is not always evident when someone has a disability, which is why I love to train and educate people on perception versus reality," said Boney.

As a master trainer, Boney identifies and addresses employment barriers, shares insights and supports the agency's core mission as a combat support agency and member of the Intelligence Community.

"You must have an inclusive environment to meet the mission," said Boney. "My job at NGA is to encourage an inclusive work environment and enhance employment for individuals of all backgrounds and disabilities."

Boney served in the Army for 20 years and retired as a sergeant major. She has a master's degree in human resource management from Webster University in St. Louis. During her time in the Army and at NGA, she has taken advantage of completing numerous senior service schools, and in 2012, she deployed to Bagram, Afghanistan, as a logistics supervisor, overseeing the movement of IC personnel and equipment in, out and through the country.

"Being a mediator, trainer and counselor, I was able to help (people) work effectively together," said Boney.

Learn how you can be a part of NGA by visiting our website or following us on Facebook and Twitter.



Photo by Dick Fomer, Office of Corporate Communications



I
am **INGA**

National Geospatial-Intelligence Agency

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