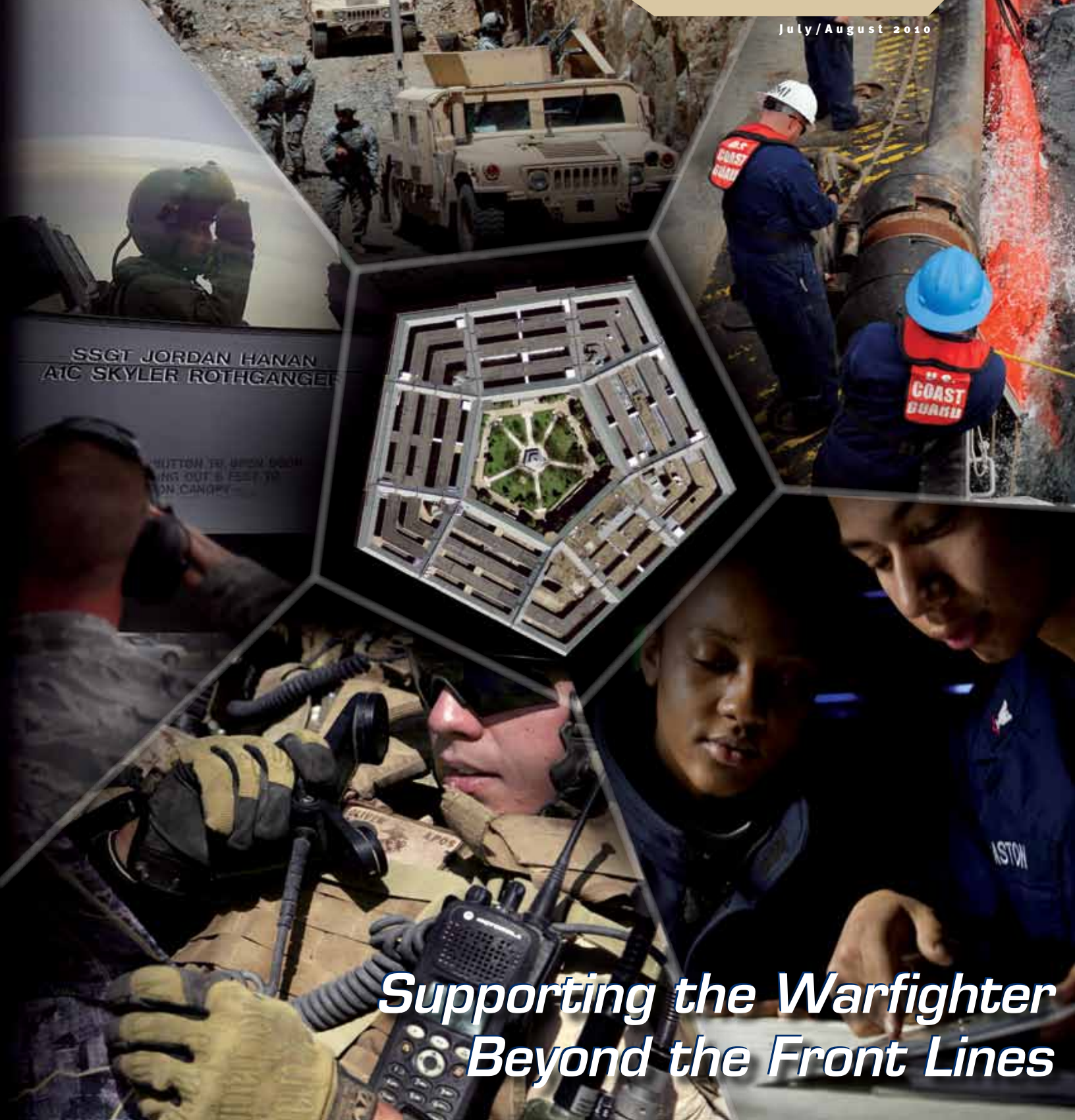


PATHFINDER

THE GEOSPATIAL INTELLIGENCE MAGAZINE

SERVING THE FRONT LINE

July/August 2010



SSGT JORDAN HANAN
A1C SKYLER ROTHGANGEL

INSTRUCTION TO OPEN DOOR
BY PULLING OUT 6 FEET TO
ON CANOPY

*Supporting the Warfighter
Beyond the Front Lines*



ON MY MIND

Supporting the Warfighter in the Battlespace and Beyond

One of NGA's principal missions is to provide geospatial intelligence to the members of this nation's armed services—the men and women who protect the United States and its interests—and our international military allies who join the fight.

NGA's maps, charts, aeronautical navigation products, force-protection graphics and other resources enable a diverse military mission set, and we take pride in that. But we bring something more to our servicemembers. NGA officers deploy forward, in theater and at crisis locations, where they participate fully in the daily ops tempo. At any given time, NGA has more than 200 volunteer forward-based deployers engaged in military support activities.

Supporting Combat Forces and the Combatant Commands

In Iraq we support security operations and assist local authorities as they work to build strong institutions that will sustain the country as the international presence winds down.

In Afghanistan, NGA delivers actionable GEOINT to U.S. and coalition troops in the NATO-led International Security Assistance Force. We are also helping the Afghan government build its own GEOINT capacity. Equally important, we support the international multidisciplinary military teams now applying their collective expertise to create long-term strategies to promote stability and development.

In addition, NGA Support Team personnel assigned to the Combatant Commands provide on-site analysis and resources to servicemembers to help them meet the GEOINT mission requirements of their respective areas of responsibility.

Supporting Military Humanitarian Missions

Humanitarian assistance and disaster relief operations are increasingly part of the mission of our armed services. Our warfighters rely on NGA and the power of GEOINT as they battle to save lives and alleviate suffering.

Earlier this year, Haiti was struck by a magnitude-7 earthquake. When the Southern Command mobilized to coordinate rescue and relief operations, NGA was there. Our deployed personnel supported not only SOUTHCOM, but also the work of Joint Task Force-Haiti, the U.S. Navy, the U.S. Marine Expeditionary Force, elements of the U.S. Army's 82nd Airborne Division, the Coast Guard and the entire multi-agency and international effort.

The April 2010 explosion of the Deepwater Horizon drilling rig killed 11 workers and released an ongoing oil spill that continues to endanger the Mississippi Delta and surrounding Gulf Coast states. The U.S. Coast Guard was the military service called upon to coordinate the national response to the crisis. NGA's officers, working in our Domestic Mobile Integrated Geospatial-Intelligence System vehicle, provided the geospatial imagery, analysis and data necessary for the development of a common operating picture—key to a unified effort.

When members of our armed services are planning and executing a mission, whether for combat operations, building host nation capacity or humanitarian assistance and disaster relief, NGA is there—with expert capability, both on site and through 24x7 reachback, laying the essential GEOINT foundation for mission success.

ROBERT B. MURRETT
Vice Admiral, USN
Director

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PATHFINDER

Published by the National Geospatial-Intelligence Agency
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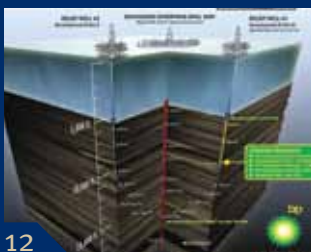
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ON THE COVER

The National Geospatial-Intelligence Agency is both a member of the Intelligence Community and a Department of Defense Combat Support Agency. As part of the DoD, one of NGA's main responsibilities is providing geospatial intelligence to America's armed services. Supporting these mission partners takes many forms, including providing personnel, products, services and technical solutions to fully integrate GEOINT into their internal processes. From imagery and maps used by soldiers and Marines in Afghanistan to geospatial data for the U.S. Coast Guard to help contain the oil spill in the Gulf of Mexico, NGA supports America's warfighters. *GeoEye satellite image used on the cover.*



NGA Responds to Oil Spill

- » National Geospatial-Intelligence Agency personnel in St. Louis, Mo., Washington D.C., and other locations around the nation are providing geospatial intelligence support to the Deepwater Horizon Response Effort.

Ongoing GEOINT support to the crisis is accounting for the location and status of deployed booms, the location oil near land and the overall extent of the oil spill.

NGA products include graphics of major infrastructure, environmentally sensitive regions along the Gulf coast, operational planning map atlases and notices to maritime and air navigation safety. For more about the NGA response to the oil spill, see the story [NGA Supports Gulf of Mexico Remediation Efforts](#) on page 12.

DOD photo



➤ JARIC 50th Anniversary Celebration

NGA Director Vice Adm. Robert B. Murrett was the guest of honor for the 70th Anniversary of the United Kingdom's Joint Air Reconnaissance Intelligence Center July 1. JARIC, the United Kingdom's National Imagery Exploitation Centre is part of the UK Ministry of Defence.

JARIC is part of MOD's Intelligence Collection Group and provides advanced imagery intelligence to the armed forces and other intelligence partners through the exploitation of satellite imaging systems, airborne and ground-base collection systems.

DOD photo



➤ GIMS

The National Geospatial-Intelligence Agency has just completed the successful rollout of the GEOINT Information Management System. GIMS brings together disparate tools and systems to centralize the management of tasking and collection for government and commercial sources.

GIMS replaces the Requirements Management System and the Production Management Alternate Architecture and enables NGA officers and our mission partners to more efficiently and effectively capture, save, and share collection strategies, perform research, order imagery, and automate many other collection management functions.

Thinkstock photo



➤ NGA Previews the ADAPX Pen

At the recent USGIF Tech Days event NGA exhibited the ADAPX pen, a technology developed through In-Q-Tel. In-Q-Tel is an NGA partnership with CIA to seek new solutions from nontraditional providers of technology—venture capital, start-up companies, academia and industry.

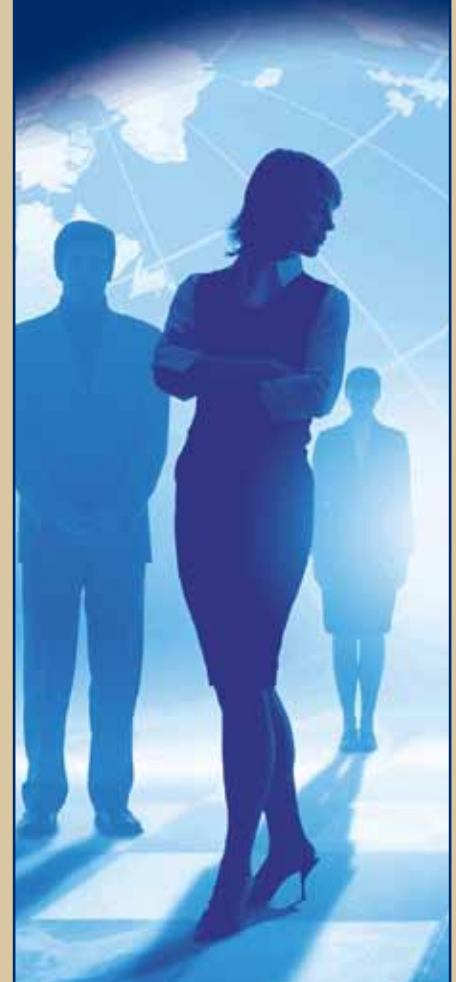
This digital pen allows the average, nonmapmaker user to mark up maps, imagery and notebooks, then upload the markings into ArcGIS, Microsoft One Note or Excel. The hardcopy map contains digital ink that reacts to the pen.

A user can update the map using the pen, with what appears on the ground. He or she can then download the pen's information via a holster and upload the information to a digital map on a computer. The new information appears in a separate layer on the map, which can be converted to a TerraGo GeoPDF for easy portability.

Photo courtesy of ADAPX

➤ NGA Participates in GEOINT Community Career Fair

NGA recruiters participated in the U.S. Geospatial Intelligence Foundation's career fair on July 15 in Reston, Va. The free event was open to everyone in the GEOINT business, from new graduates to former military and civilian professionals with program manager, engineering, programming and analysis experience. Career fairs help NGA with staffing challenges, such as hiring for skills with new technologies and imagery, as well as for backgrounds in the sciences, analysis, and supporting technical areas. NGA is also hiring based on expected attrition due to the aging of the work force and the move to the new facility in Springfield, Va. For more information about NGA careers, go to www.nga.mil and click the "Recruiting Events" banner.





Q&A with NGA Director Vice Adm. Robert B. Murrett, U.S. Navy, May 28, 2010

BY SUSAN H. MEISNER

As Vice Adm. Robert B. Murrett, U.S. Navy, prepares to conclude his tour as NGA director, he spent a few minutes sharing some his thoughts about the agency.

Q: What do you view as the most significant NGA achievement of the past few years?

A: It is continuing the trend General Clapper started of engaging across the Intelligence Community, the Department of Defense, with other partners and the outward focus that this great organization has always had. We have made such a difference in so many different mission sets by embedding ourselves with mission partners. We've taken responsibility for the geospatial mission set across the government and with our allies.

This is also part of Intelligence Community reform. Consistent with recommendations from the 9/11 Commission, the WMD Commission, the Intelligence Reform and Terrorism Prevention Act and other primary guidance, we are looking outward to be as collaborative as we can with our mission partners. The geospatial mission lends itself to interagency cooperation because it provides that foundational baseline that everybody needs regardless of their mission. And I think we're leaning forward very effectively.

Q: What are the benefits of NGA's deployer program and having employees externally assigned with our mission partners?

A: The most important benefit is the fact that they have a stake in the outcome of any specific mission tasking, whether it's military or civilian, domestic or overseas. NGA has moved away from what some folks describe as the transactional model. That is, most of the time we don't [just] produce geospatial intelligence, give it to somebody else, and let them figure out how to use it or not.



We have more than 2,000 of our folks at more than 200 locations around the world that are embedded in teams, full parts of the decision making apparatus in many settings. They are able to provide the geospatial support that is required even before the end users have to ask for it. Having full responsibility for the outcome puts more pressure on our people, but also makes them far, far more effective.

Q: What do you see as the agency's greatest strength?

A: The greatest strength is its people. There is no question. There is always a danger of losing sight of that because of the resource implications for a lot of our systems, our technology, our collection platforms or our architecture. Notwithstanding that, it's the people at NGA that represent our competitive edge in Washington and in St. Louis and at the other locations around the world.

Person after person tells me how great this NST chief is, how great this group of deployers was, how terrific this group of NGA people is embedded with their headquarters. It's all of the members of this great agency and across the National System for Geospatial Intelligence, young and old, from so many different backgrounds and a lot of different specialties who enable the broad mission set that NGA has.

Q: Which NGA contributions were the most momentous or groundbreaking?



A: I think we have done everything we possibly could in terms of kinetic operations and supporting our uniformed men and women who are going into harm's way. We'll never be able to calculate or know how many lives we've saved because of the work that we have done to support our military personnel, but I'm convinced it's a significant number. We ought to be very proud of the work that our deployers in particular have done, and also all of the others that have supported them.

At the same time, we have considerable challenges, as reflected in wildfires, natural disasters, the oil spill now in the Gulf, and the progress that this organization has made since Hurricane Katrina hit the Gulf area some years ago, at supporting domestic events. I think we have balanced those diverse mission sets effectively as an organization and across the NSG.

Q: Has technology changed the GEOINT tradecraft?

A: The big thing here is the way that we have harnessed technology so effectively. Our InnoVision, Acquisition and Enterprise Directorates and others have done a terrific job in advancing the technology, and it has had a dramatic effect on how we do business. We reach out and touch hundreds of different places around the world with thousands of workstations in ways that have accelerated dramatically just in the past several years. The ways we have leveraged IT, whether it's in reduced cost of data storage, processing algorithms or the collection sensors that we have, have changed the way we do business.

Q: How do you see NGA moving ahead in the next five to ten years?

A: I see us continuing to build on the best practices that we have today. Looking forward, I think we'll be able to harness two things in particular—one, the experience that our people are continuing to garner while externally assigned or deployed. The second is the shift into the NGA Campus East and the continued improvements to our facilities in Missouri. Those two important centers of gravity will achieve ongoing organizational efficiencies. I

think it's going to be a bigger deal than folks appreciate at this point.

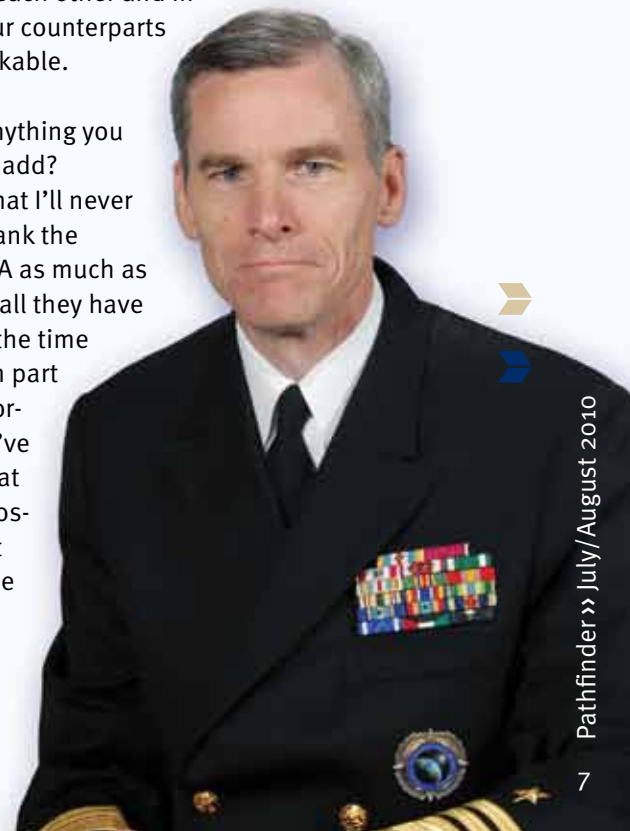
Q: Are there any other insights from your time as Director of NGA you would like to share?

A: There are so many things that I could talk about. I think one of the biggest challenges that we all have is balancing our mission sets, to look after the things that we absolutely have to do today. And of course the warfighter has been at the top of that list along with things like proliferation, development of WMD around the world, and destabilization in East Asia and some other parts of the world. So that's a big challenge, which I think all of us have had to grapple with over the past four to five years.

The second observation I would make is to emphasize the value of the people, the leadership, and the working environment that we have here at NGA, which is absolutely spectacular and something that we should never take for granted. The way that NGA excels at our mission set and the way our people treat each other and interact with our counterparts is truly remarkable.

Q: Is there anything you would like to add?

A: Yes, just that I'll never be able to thank the people at NGA as much as I'd like to for all they have done during the time that I've been part of this great organization. I've tried to do that as well as I possibly can, but it will never be sufficient. **P**





Innovative Graphical Display Improves Naval Forces Operations

BY LEE C., CARLA R., AND NORMAN S.

A National Geospatial-Intelligence Agency innovation, the Graphical Exploitation and Reporting Tool, or GERT, has begun providing direct geospatial intelligence support to the commander of the U.S. Pacific Command for critical naval operations onboard an aircraft carrier, a command ship and an amphibious assault ship. GERT produces the next generation of GEOINT exploitation products in the form of


GraphPlots—graphical depictions of what GEOINT analysts see on imagery.

“GERT provides a graphical representation of our first-phase imagery analysis, which will make reporting easier to an audience who may or may not be imagery experts with a trained eye,” said an imagery analyst during the recent installation on the USS George Washington. This same message is heard from operational users and senior leadership throughout the Pacific theater as well. In lieu of imagery, the visual format makes GEOINT easy to understand and convenient for tactical users relying on low-bandwidth communications.



Sailors man the rails aboard the aircraft carrier USS George Washington (CVN 73) as the ship pulls into port.

DOD photo



GERT is also extremely beneficial to the operations of forward-deployed naval forces, or FDNF, the post-Cold War strategic concept of projecting naval power to influence events in the littoral regions of the world.

According to an imagery analyst onboard an aircraft carrier, “GERT will provide more streamlined and rapid reporting.” GERT has already increased the efficiency of imagery-based reporting by 50 to 60 percent. Onboard command ships and assault vessels, GERT allows a limited GEOINT analyst work force to do more with less.

The commander of the U.S. Pacific Fleet offered high praise, stating that “the GERT software used by FDNF to produce GraphPlots is a key component of GEOINT FDNF intelligence force success. GERT allows for rapid analysis and dissemination of first phase imagery using the GraphPlot format required by PACOM’s JIOC [Joint Intelligence Operations Center].”

During a recent installation, one imagery analyst stated, “GERT is by far the most user-friendly and capable tool for an imagery analyst. It gives the warfighter on the frontlines the same capabilities to pass information as quickly and effectively as the warfighter in shore Intel centers.”

The shipboard GERT–GraphPlot production capability introduces enhanced intelligence collaboration, while at the same time satisfying an agreement between the JIOC and PACOM’s Seventh Fleet to establish a production

partnership under the NGA-sponsored Unified GEOINT Operations program. Under this program, specific Seventh Fleet vessels have accepted the responsibility for first phase GEOINT naval target exploitation supporting two major PACOM operations plans, a task previously assigned to the JIOC. This capability allows PACOM to leverage shipboard intelligence expertise and frees up JIOC analytical manpower for other critical tasks.

The Seventh Fleet identified geospatial reporting as critical to their mission, researched tools capable of providing GEOINT and determined NGA’s GERT application was the best option.

The Naval Network Warfare Command, which operates the U.S. Navy’s information operations network, has stated a requirement that the GERT–GraphPlot GEOINT production capability be installed and available across the entire Seventh Fleet at the earliest opportunity.

NGA’s effort with its military partners has resulted in an increase in overall production and connectivity for the FDNF. With the standup of GERT, GEOINT products validated by shipboard intelligence units can now be automatically disseminated into proprietary intelligence systems that support visualization of the battlefield.

The widespread use of GERT within the Navy and PACOM, the U.S. European Command and the U.S. Africa Command are major steps toward implementing GERT as the common exploitation reporting tool for delivery of first-phase GEOINT to users of intelligence products. Its expanding use will only increase the Intelligence Community’s situational awareness and its ability to respond as intelligence indicates. **P**

Exercises Develop Military Readiness

BY MARSHALL HUDSON

The National Geospatial-Intelligence Agency regularly participates in exercises throughout the United States and across the world to promote Unified GEOINT Operations and federated production with its mission partners.

Coordinated by the Exercise Division of the agency's Military Readiness Directorate, the training helps NGA and other members of the National System for Geospatial Intelligence to rehearse working together in emergency situations.

A recent example of that training was NGA's support of Key Resolve, an exercise in the Republic of Korea during March 2010. Key Resolve is one of four exercises conducted annually by U.S. Forces Korea and South Korean forces to exercise, evaluate and improve crisis action measures and procedures for the defense of that nation.

The NGA participants, in conjunction with the NGA Support Team for USFK, supported and worked with Korean and U.S. forces during the training.

NGA's Key Resolve exercise lead said that the NGA participants were able to engage with their Republic of Korea counterparts to improve understanding of how GEOINT can shape the common operating picture of the battlespace and that the NGA analysts made a significant contribution that will last well beyond the exercise.

"The allied forces now better understand how NGA's GEOINT Summaries are available for fusion with other intelligence disciplines. This product, produced by NGA geospatial analysts, has become a signature product in the USFK theater," said the NGA exercise lead.

The exercises are both a way to train NGA employees for crisis support operations and a way to help other organizations learn from NGA employees.

"NGA sending an analyst with North Korea ground order of battle experience was ideal," said

Chief Warrant Officer 3 Demoria Tucker, imagery intelligence officer-in-charge of the 501st Military Intelligence Brigade's GEOINT Cell. "Our soldiers gained a wealth of knowledge by working with the NGA analysts during the training," she said.

During the exercise, NGA analysts working with the Eighth U.S. Army GEOINT Cell identified several inconsistencies in the Eighth Army's data, and with the aid of NGA's Deployable Interoperable Node for GIAT Operations, they were able to correct them.

NGA analysts participate in similar exercises with combatant commands, the military services and national agencies to prepare to support military components worldwide. NGA also supports the training of every major command deploying for operation Iraqi Freedom or Enduring Freedom at their mission rehearsal exercises.

NGA supports mission rehearsal exercises, as well as the mission readiness exercises conducted for brigade level units, to familiarize the analysts with the systems they will use, the mission and the people they will work with.

Replicating the capabilities in a training environment that analysts have overseas, such as the NGA deployable workstations and NGA deployable communications suites, helps them prepare to work on systems that are different from what they usually use and on accounts that may be new to them. It also introduces agency mission partners to NGA tradecraft and capabilities.

"Integrating NGA capabilities into their tactics, techniques and procedures in a non-hostile environment before their upcoming deployment makes us better able to help produce actionable intelligence," said the NGA lead for rehearsal and readiness exercises.

"Educating our mission partners about what we bring to the table and allowing them to incorporate NGA into their battle rhythm is really important," he said.

The key to this engagement is the use of NGA Volunteer Deployment Team personnel at the exercises. Having team members train with the units they will deploy with helps the supported units discover capabilities they didn't know about and

meet the people who will be going with them.

“The realization that NGA is part of their team goes a long way with our mission partners. The military units love that we support this training,” said the rehearsal and readiness exercise lead. **P**



U.S. Army Lt. Col. John E. Rhodes, right, commander, of the United Nations Command Security Battalion-Joint Security Area, and his Deputy, Lt. Col. Jung Hae-In, from the Republic of Korea (ROK) army, discuss an exercise, 2009.
DOD photo





NGA Supports Gulf of Mexico Oil Spill Remediation Efforts

BY KATHERINE S. WHITAKER

The National Geospatial-Intelligence

Agency is actively providing intelligence analysis and geospatial intelligence products to the U.S. Coast Guard, the lead federal agency in the response to the Gulf of Mexico oil spill, the worst disaster of its kind in U.S. history.

Containment efforts and planning to minimize the damage have been on-going since the rig sank April 22. An estimated 35,000 to 60,000 barrels of oil per day have escaped from the damaged wellhead, which is located more than 4,000 feet underwater.

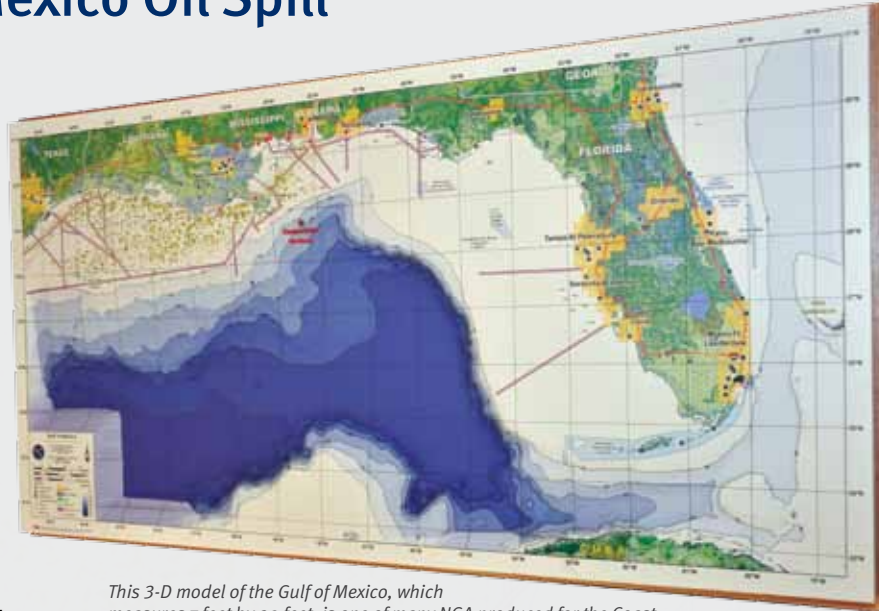
“NGA’s support is critical. We are providing essential data that the USCG depends on,” said NGA employee Army Maj. Sam Hagadorn.

NGA’s support to the oil spill remediation efforts includes providing analysis, unclassified commercial satellite imagery and geospatial products of the Mississippi Delta and surrounding Gulf Coast areas. The products include three-dimensional models of major infrastructure along the Gulf Coast, operational planning map atlases and graphics depicting the extent of the oil spill. These products greatly assist the Coast Guard in leveraging every available resource to respond to the Gulf oil spill.

An NGA Crisis Action Team was stood up soon after the April 21 explosion of the Deepwater Horizon that rig killed 11 workers onboard. The CAT, composed of volunteers from several branches throughout the agency, has been working around the clock ever since.

“We are providing reachback support for the team members on the ground. We help to extract the location of the booms using commercial airborne and other sources of imagery, locate gaps and areas in need of repair as well as plan future boom placement,” said Hagadorn.

The National Incident Commander, Adm. Thad Allen, USCG (ret.), requested a model from NGA’s 3D Model Production Facility in order to obtain



This 3-D model of the Gulf of Mexico, which measures 7 feet by 20 feet, is one of many NGA produced for the Coast Guard.

DOD photo

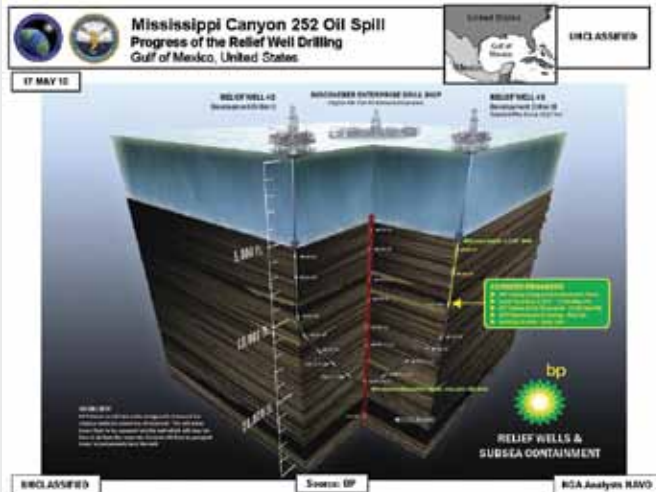
situational awareness of the affected areas. Models of ships and aircraft were also developed to be used with NGA’s 7 feet by 20 feet hydrographic and topographic model of the Gulf of Mexico and surrounding areas.

“These two elements make it possible to easily see how resources are allocated and moving around in support of the oil spill,” said the program manager of NGA’s 3-D Model Production Facility.

The model “dramatizes the depth of water that we’re working with here,” said Hagadorn.

The Coast Guard also requested a Domestic Mobile Integrated Geospatial-Intelligence System to provide assistance with the disaster. DMIGS is a self-contained vehicle, custom built on a fire truck chassis that allows NGA analysts to drive to a crisis location and provide on-the-spot geospatial intelligence analysis and products.

The DMIGS has been operating at full capacity producing GEOINT that facilitates Coast Guard efforts to identify oil-stricken locations in the area so the National Guard can efficiently place booms, devices that confine oil off the water, in areas where they predict the oil will flow. They can also ascertain the origin of displaced booms.



NGA product showing the relief wells being dug by British Petroleum.

DOD photo

“The DMIGS has been providing the common operational picture on a daily basis to ensure that all components are on the same page. With the data provided by DMIGS, we can see imagery for a given day, see where booms are placed and where there might be holes. We can see the environments impacted by the oil and also project where the oil is headed and plan accordingly,” said Hagadorn.

DMIGS II will continue to be present at the Gulf Coast oil spill and rotate analysts every two weeks while the Coast Guard needs its assistance.

Operating throughout the Gulf of Mexico, Deepwater Horizon, a fifth-generation deep-water rig leased by British Petroleum, had been drilling 45 nautical miles southeast of Venice, La., since January. P



This operational planning atlas uses maps and current commercial imagery to show the U.S. coastline of the Gulf of Mexico in detail.

NGA product



Domestic Mobile Integrated Geospatial-Intelligence System.

DOD photo



The Foundation of Warfighter Support

BY JOEL I.

When boots are going to hit the ground in

a combat situation, one of the first pieces of information soldiers look for is quality maps and geospatial information for the area of interest. The map of choice for most tactical operations and preparation of the battlefield is the Topographic Line Map.

NGA's Foundation Based Operations Group is charged with producing and maintaining the data to make those maps, as well as the hardcopy finishing required to get printed maps into the hands of the warfighter.

TLMs portray the greatest detail of topographic and cultural information. Relief is shown by contours and spot elevations and is a true representation of terrain detail. Features are plotted to correct orientation and true location. The map depicts the level of detail required for infantry and reconnaissance units to navigate in various terrain environments.

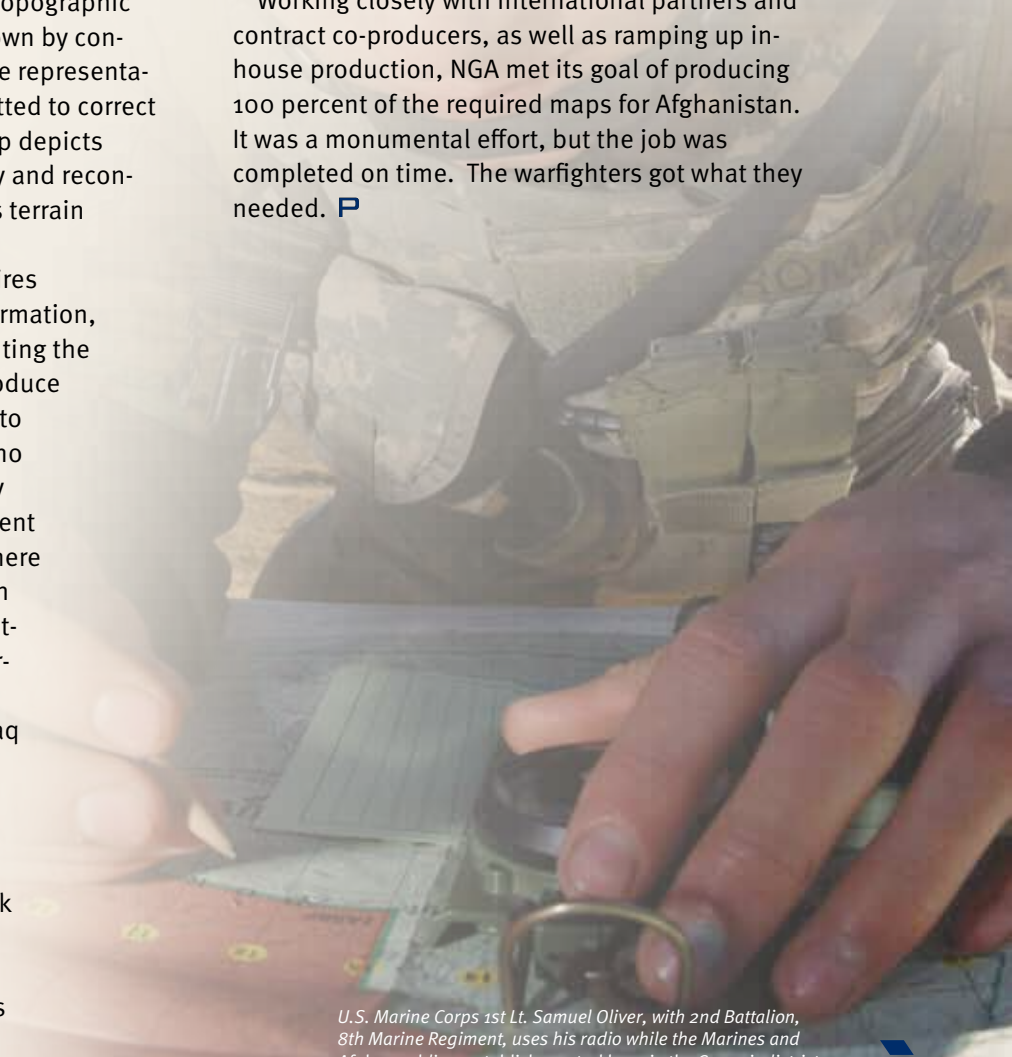
Producing a map from scratch requires gathering sources, extracting the information, compiling the map, finishing and printing the final product. It can take a year to produce one map. But what if there is no data to make the map? Or there is data, but no time to compile and print it to military specifications? During Operation Urgent Fury, the 1983 invasion of Granada, there were no TLMs available. The operation was planned and executed using whatever was available, including commercially purchased tourist maps.

Twenty years later for the wars in Iraq and Afghanistan, the need for quality maps and data rose exponentially while the timeframe in which they were needed was dramatically reduced. NGA had to completely rethink how to produce a large volume of maps in the shortest time possible.

Enter the Derived Graphic. DG maps were conceived as TLM-like products

that could be rapidly produced and delivered to the warfighter. The key to the DG is using existing data, updating it as needed and producing a map that may not meet 100 percent military specifications, but gets the warfighter a map that meets the mission. To obtain that data, NGA relied on relationships with international co-production partners. NGA is the lead agency in an international coalition called the Multi-national Geospatial Co-production Program. Using data and production from the MGCP, the agency began a program to produce MGCP Derived Graphics, known as MDGs.

Working closely with international partners and contract co-producers, as well as ramping up in-house production, NGA met its goal of producing 100 percent of the required maps for Afghanistan. It was a monumental effort, but the job was completed on time. The warfighters got what they needed. **P**



U.S. Marine Corps 1st Lt. Samuel Oliver, with 2nd Battalion, 8th Marine Regiment, uses his radio while the Marines and Afghan soldiers establish a patrol base in the Garmsir district of Helmand province, Afghanistan, Oct. 9, 2009.
DOD photo



PARTNERSHIPS

A Long Flight Home

BY CHRISTOPHER HAVERN

Last year, National Geospatial-Intelligence Agency staff began working with the U.S. Coast Guard to help three brave servicemen return home after many years away.

It was Nov. 29, 1942, when Lt. John A. Pritchard, USCG, accompanied by his radioman, Petty Officer 1st Class Benjamin A. Bottoms, piloted his amphibious bi-plane, a Grumman J2F-4 Duck, back toward the USCG Cutter *Northland*, anchored in Comanche Bay on the southeastern coast of Greenland. Engaged in a rescue mission, the pair landed on the ice pack in the vicinity of a crashed B-17F Flying Fortress that had gone down on Nov. 9, 1942, while searching for another missing plane.

Pritchard picked up Cpl. Loren Howarth, U.S.

Army Air Forces, a member of the B-17's crew, and attempted to return to the *Northland* as bad weather approached. Minutes after takeoff, the aircraft radioed the ship requesting a line of bearing. The bi-plane, however, never made it back to Comanche Bay. Five volunteers under Ensign Richard L. Fuller, USCG, went ashore to locate the aircraft, but to no avail.

On Dec. 6, 1942, USAAF search teams flew over the wreckage of Pritchard's aircraft

and reported a position six to eight miles from where it was originally believed to have gone down. A Navy PBV Catalina and an Army ground party ultimately rescued the remaining B-17 crewmen, but the J2F-4 could not be found. The Coast Guard posted Pritchard, Bottoms and Howarth as missing in action effective Nov. 29, 1942, and declared them dead on Nov. 30, 1943. For their actions in the attempt to rescue the B-17 crew, Pritchard and Bottoms posthumously received the Distinguished Flying Cross.

For more than six decades, this remained the historical narrative for Pritchard and his compatriots. In 2008, however, Cmdr. Joe Deer and Master Chief Petty Officer

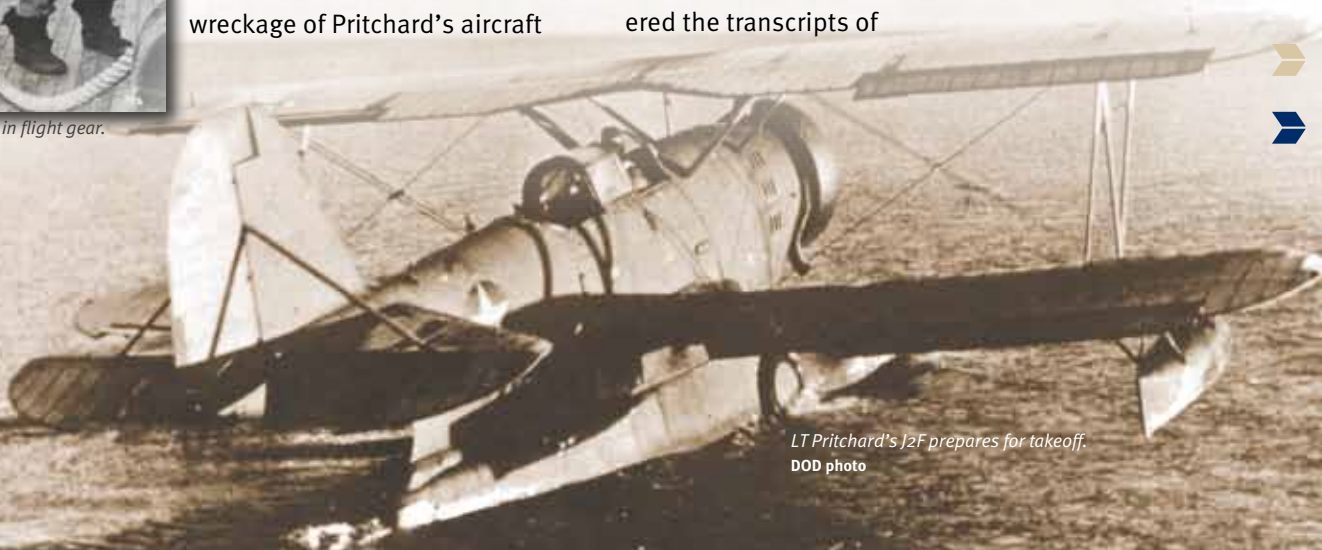
John Long of the Coast Guard's Office of Aviation Forces began researching in the USCG Historian's Office and the National Archives regarding Pritchard's fateful flight. In addition, Dr. William Thiesen, USCG LANTAREA Historian, conducted research at the archives at Maxwell Air Force Base, Ala., and uncovered the transcripts of



DOD photo
LT John A. Pritchard (left) in flight gear.



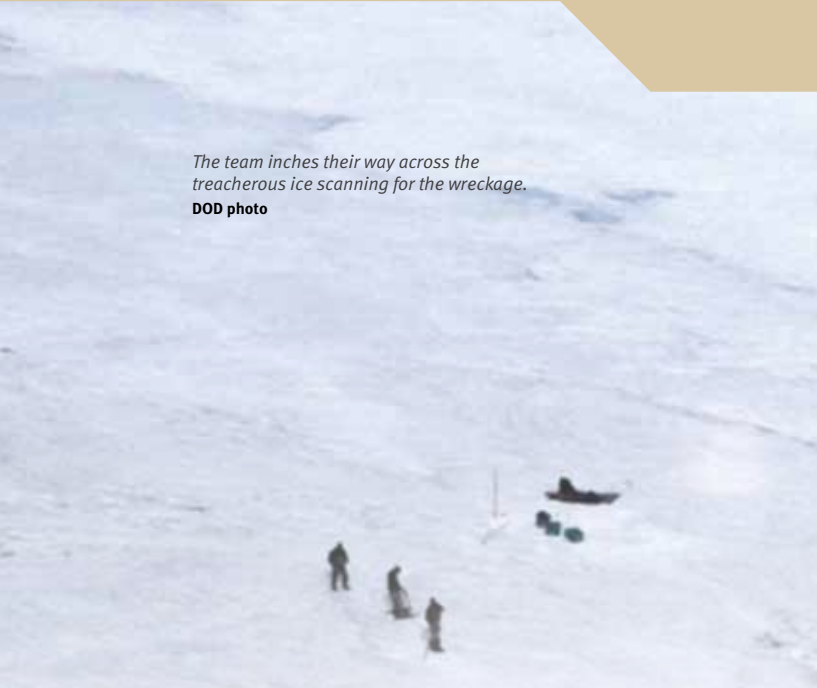
DOD photo
Radioman First Class, Benjamin A. Bottoms



LT Pritchard's J2F prepares for takeoff.
DOD photo



The team inches their way across the treacherous ice scanning for the wreckage.
DOD photo



the message traffic discussing Pritchard's Duck and USCGC *Northland*. Coast Guard retirees Harry Trice and Captain Don Taub also assisted with the research. What began as a modest research project has grown into a collective effort of multiple federal agencies and private interests. The accrual of participants in this joint operation also produced a marked upgrade in the operation's goal. Those involved now hope to excavate in order to recover the remains and return them for a proper burial in the United States.

With the findings from their initial documentary research, Deer and Long mapped out a search area with the assistance of Wayne Stephenson, the NGA Liaison with the Coast Guard. Stephenson had NGA create a three-dimensional map of the terrain along and adjacent to Pritchard's flight path. Other NGA contributions included the analysis of historic imagery dating back to 1942, the acquisition and analysis of current NGA and commercial imagery and data, and the construction of a model Grumman J2F-4 Duck.

In August 2008, Deer and Long organized an overflight of the search area by an HC-130J from Coast Guard Air Station Elizabeth City, N.C. This was followed by a November 2008 flight by a Navy P-3C Orion. While on a return flight from a reconnaissance mission over Iraq to its base at Naval Air Station Patuxent River, Md., the aircraft was diverted to fly over the crash site and collect data with its sensors. Subsequent analysis by the Essex Corporation, a subcontractor for Northrop-Grumman, located an anomaly in the ice pack within

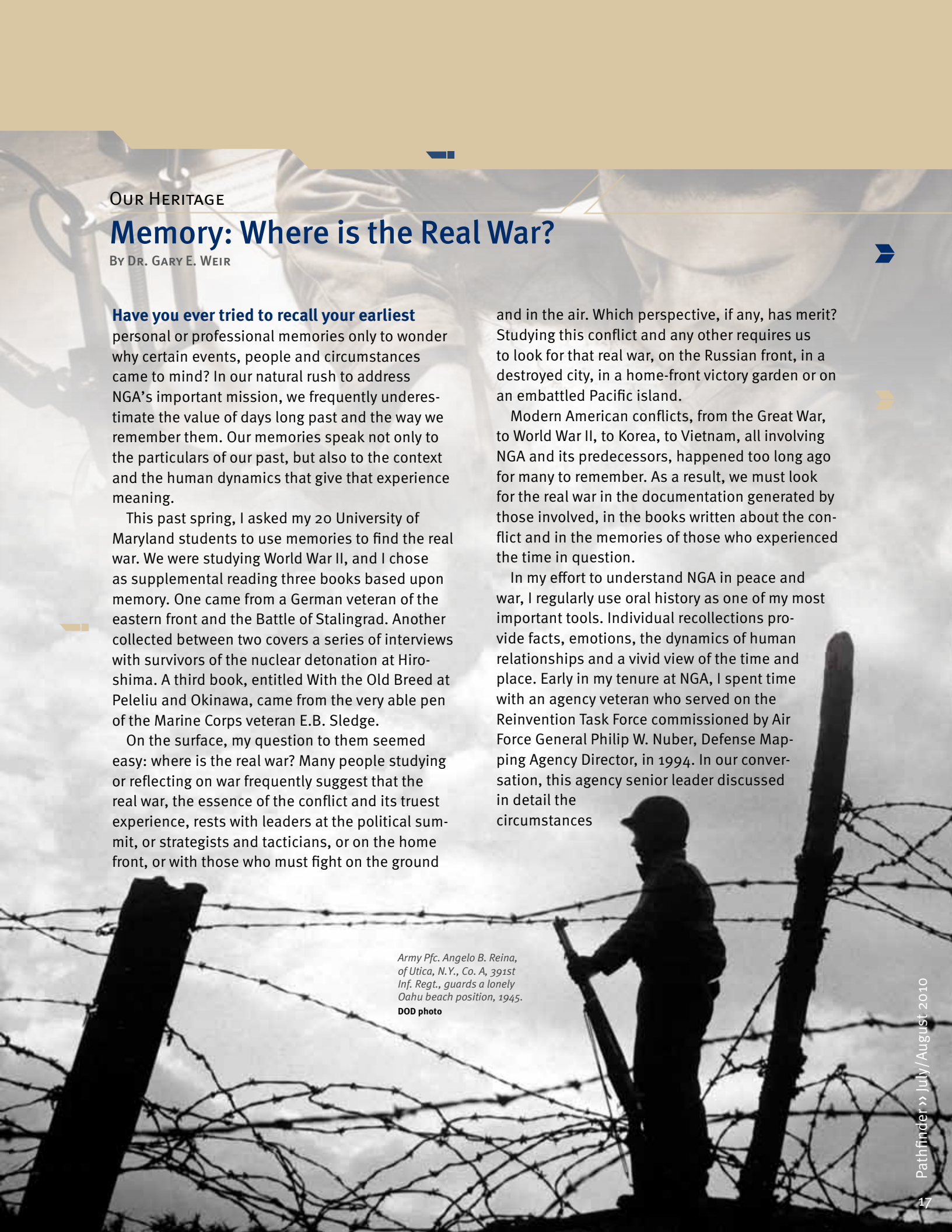
the search area that may be Pritchard's Duck. In order to assess the situation further, a ground team would have to conduct an on-site survey. As such an operation was beyond USCG capability, the renowned aviation archeologist Gary Larkins received a contract to assemble a team to examine the anomaly.

The ground team, consisting of Larkins, his assistant Rafid Tuma, geophysicist Matt Benson who operated the ground penetrating radar, a geodetic surveyor from NGA and Public Affairs Specialist, 2nd Class Daniel Bender, USCG, deployed in September 2009. The team, on board an HC-130 out of Elizabeth City, flew to Kulusuk, Greenland. From there they flew by helicopter to the staging site at Tasiilaq, Greenland. Chartered helicopters took the team to the survey area.

For their work, the team carried two key pieces of equipment. The first was the NGA-provided advanced GPS collection system. The second was a rifle as protection from polar bears known to transit the area. While the NGA surveyor used the GPS to emplace rock ridge survey markers and collect data to be used to establish search grids, accurate to within 1 centimeter, Larkins, Benson and Tuma traversed the ice, almost inch by inch, with ground radar. This guaranteed accurate data collection and, more importantly, ensured that the team did not break through thin surface ice into a crevasse. Over five days, two on the ice, the team collected and analyzed data, taking the analysis further upon their return to the United States.

The results of the team were conclusive enough to warrant a return to the site this summer with the Joint POW/MIA Accounting Command accompanying them. Headquartered in Honolulu, JPAC works to achieve the fullest possible accounting of all Americans missing as a result of the nation's wars. The JPAC team will conduct further GPR readings along with a survey to determine the safety of the site and its potential for excavation operations. That effort, if deemed feasible, will probably take place during the summer of 2011. Perhaps then, after almost seven decades under Greenland's ice, these brave and selfless Americans will finally come home. **P**

Christopher Havern works in the Office of the Historian, U.S. Coast Guard.



OUR HERITAGE

Memory: Where is the Real War?

BY DR. GARY E. WEIR

Have you ever tried to recall your earliest personal or professional memories only to wonder why certain events, people and circumstances came to mind? In our natural rush to address NGA's important mission, we frequently underestimate the value of days long past and the way we remember them. Our memories speak not only to the particulars of our past, but also to the context and the human dynamics that give that experience meaning.

This past spring, I asked my 20 University of Maryland students to use memories to find the real war. We were studying World War II, and I chose as supplemental reading three books based upon memory. One came from a German veteran of the eastern front and the Battle of Stalingrad. Another collected between two covers a series of interviews with survivors of the nuclear detonation at Hiroshima. A third book, entitled *With the Old Breed at Peleliu and Okinawa*, came from the very able pen of the Marine Corps veteran E.B. Sledge.

On the surface, my question to them seemed easy: where is the real war? Many people studying or reflecting on war frequently suggest that the real war, the essence of the conflict and its truest experience, rests with leaders at the political summit, or strategists and tacticians, or on the home front, or with those who must fight on the ground

and in the air. Which perspective, if any, has merit? Studying this conflict and any other requires us to look for that real war, on the Russian front, in a destroyed city, in a home-front victory garden or on an embattled Pacific island.

Modern American conflicts, from the Great War, to World War II, to Korea, to Vietnam, all involving NGA and its predecessors, happened too long ago for many to remember. As a result, we must look for the real war in the documentation generated by those involved, in the books written about the conflict and in the memories of those who experienced the time in question.

In my effort to understand NGA in peace and war, I regularly use oral history as one of my most important tools. Individual recollections provide facts, emotions, the dynamics of human relationships and a vivid view of the time and place. Early in my tenure at NGA, I spent time with an agency veteran who served on the Reinvention Task Force commissioned by Air Force General Philip W. Nuber, Defense Mapping Agency Director, in 1994. In our conversation, this agency senior leader discussed in detail the circumstances

Army Pfc. Angelo B. Reina, of Utica, N.Y., Co. A, 391st Inf. Regt., guards a lonely Oahu beach position, 1945.
DOD photo



surrounding the effort to dismantle the geographic and tradecraft stovepipes then plaguing DMA. Not only did Nuber commit himself personally to implement the task force recommendations, but this interviewee helped the general lead the reinvented DMA into the Dayton Peace Talks in 1995. When I asked him to recall his on-site judgment of how the new DMA performed as the talks progressed, he recalled thinking, “My God, it works!” This oral history placed me in a position to witness vicariously one of the most significant first steps toward GEOINT and its role in arresting conflict.

In another NGA oral history, one of our veteran analysts brought me back with him via memory to Vietnam and his experience as an enlisted photo interpreter with the Air Force. In those days, he did not have permission to analyze the photographs before him. He could only “read” them and report on their contents. His determination to remove those frustrating boundaries eventually brought him to the National Photographic Interpretation Center, an NGA predecessor. Many of our senior analysts walked that same road.

In a recent discussion among those in the Intelligence Community’s Oral History Association, we wondered if a series of oral histories with some remaining World War II veterans across the Intelligence Community might permit us to understand better the shared

origins of our agencies and predecessors. We shall continue that conversation because of the creative ways in which many in the federal government have used oral histories to discover a past that speaks fluently to our present. In a lessons-learned study I am currently preparing for NGA and the Director of National Intelligence, a half-hour documentary film on the evolution of a significant technology, complete with video oral history clips, will accompany my history of the technology’s evolution into an NGA analytical tool supporting the current war effort. The immediacy of oral history testimony and its synergy with other sources brings our history alive, puts us in the picture and makes historical analysis more potent.

In my class, the students discovered that the real war emerges only when many perspectives, including memory, combine to permit a deeper and broader understanding. One of those students, who needed some extra time on his paper, serves on board an aircraft carrier in the Indian Ocean. His reflections on the real war spilled over into the e-mail he sent with his essay attached. He spoke about injuries, casualties, families, commitment, an often ill-defined enemy, changing attitudes in the region and a desire to serve, but a strong attachment to home. His exploration of the real World War II did not waste any time in informing his present. When you take time to reflect on your personal past and your time at NGA, cherish those early memories. They hold more answers than you might think. P

Dr. Gary E. Weir is the NGA historian. He is also a professor of History at the University of Maryland University College in College Park.

Army T/3 James Ellis, Ehrenfeld, Pa., laying out the photographs to check their sequence, 1943.
DOD photo



NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

GEOINT

IT MAKES THE DIFFERENCE



An NGA product showing Rutgers University Sea Glider operations in the Gulf of Mexico. Many data sets that are not collected by NGA sensors can be made more understandable when presented as a geospatial product.

NGA Chart



DOD photo

Underwater cameras at the Unified Area Command capture a pollution containment chamber being lowered into the Gulf of Mexico in an attempt to contain the oil spill. NGA personnel have been embedded at the Unified Area Command, Incident Command Posts and Air Coordination Center providing GEOINT support.

DEEPWATER HORIZON DISASTER

NGA - Leveraging GEOINT to support environmental assessments and oil spill remediation efforts in the Gulf of Mexico.



National Incident Commander, Adm. Thad Allen, USCG (ret.), briefs Secretary of the Navy the Honorable Ray Mabus during a tour of the Unified Area Command Center. NGA provided 3-D models of the Gulf to the Coast Guard.

WWW.NGA.MIL



Photo courtesy NASA

NGA Core Values

Excellence - Be first rate in all that you do.

Accountability - Answer for your conduct, even when no one is looking.

Respect - Leverage diversity and creativity to perform as one NGA team.

Teamwork - Work together to achieve a common goal.

Honesty - Be truthful at all times.

Know the EARTH...Show the Way

