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Description of document: National Geospatial-Intelligence Agency (NGA)
Memoranda re: January 2013 review of Coastal Digital
Nautical Charts, 2013

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Source of document: National Geospatial-Intelligence Agency
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[Online FOIA Request Form](#)

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NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

7500 GEOINT Drive
Springfield, Virginia 22150

MAY 23 2013

NGA-20130106F

RE: Freedom of Information Request Number 20130106F

This letter is in response to your Freedom of Information Act (FOIA) request **#20130106F** submitted to the National Geospatial-Intelligence Agency (NGA) via electronic mail on January 30, 2013. In your request, you sought the following:

1. A copy of the recent NGA report on the January 2013 review of Coastal Digital Nautical Charts;
2. A copy of any January 2013 reports or memos on the results of the review;
3. A copy of the January 2013 memos at NGA on incorrect geographical rectification of satellite imagery used to build the coastal DNC charts;
4. A copy of any correspondence sent in January 2013 to the Department of the Navy concerning the chart errors.

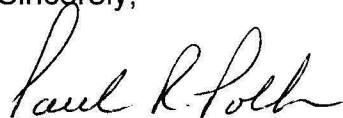
Enclosed are three documents responsive to your request:

- A memorandum from the Director of NGA to the Chief of Naval Operations dated January 18, 2013 is released to you in part. Information is withheld under FOIA Exemption (b)(5), which allows for the withholding of privileged material not normally available to the public. Additionally, information within the memorandum is withheld under FOIA Exemption (b)(6). The (b)(6) Exemption protects from release information that constitutes a clearly unwarranted invasion of personal privacy.
- A memo from the Director of NGA to the Chief of Naval Operations dated 22 January 2013 is released to you in full. This is the NGA report on the incident.
- A copy of the Q&A response prepared by NGA's Office of Corporate Communications for distribution to the media is released to you in full.

- The correspondence from the Chief of Naval Operations to the Director of NGA, in response to her memorandum of January 22, 2013, was provided to you by the Department of the Navy via e-mail dated March 28, 2013.

Should you wish to appeal our partial withholding of information in the January 18, 2013 memorandum, you may do so by writing to the National Geospatial-Intelligence Agency. Your letter of appeal should be post-marked no later than 60 calendar days from the date of this letter. Please enclose a copy of this letter with the appeal, and in your letter, state your reasons for seeking reconsideration. Your appeal should be mailed to the National Geospatial-Intelligence Agency, Freedom of Information Requester Service Center, Mail Stop S01-EGM, 7500 GEOINT Drive, Springfield, Virginia 22150.

Sincerely,

A handwritten signature in black ink, appearing to read "Paul R. Polk". The signature is fluid and cursive, with the first name "Paul" being more prominent than the last name "Polk".

PAUL R. POLK
Office of Corporate Communications
Public Release Officer and FOIA Initial
Denial Authority



UNCLASSIFIED//FOUO

NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

7500 GEOINT Drive
Springfield, Virginia 22160

18 January 2013

MEMORANDUM FOR CHIEF OF NAVAL OPERATIONS

SUBJECT: (U//FOUO) USS Guardian

1. (U//FOUO) As you know, the USS Guardian ran aground 16 January 2013, on the Tubbataha Reef in the Sulu Sea. We understand that the Guardian is certified for electronic navigation using NGA-supplied Digital Nautical Charts (DNCs). Although our General DNC holdings are consistent with our hardcopy charts and displays the reef in the correct location, our Coastal DNC was incorrect. Upon initial review, we determined that the reef was displayed in the Coastal DNC approximately eight nautical miles east-southeast of its actual location. At this stage of our review, we determined the cause of this discrepancy was inaccurate source data.
2. (U//FOUO) NGA's World-Wide Navigational Warning Service promulgated a navigational warning on 17 January to the Fleet of this Coastal DNC error. This warning informs the Fleet not to use this area of the Coastal DNC until NGA issues a correction for the area bounded by the warning message which will be accomplished by 30 January 2013.
3. (U//FOUO) Maintaining the currency and accuracy of the DNC involves continual maintenance, using sources such as national and commercial imagery, surveys, data from international partners, and reports from the Fleet. This error existed in one library of the 3,600 which comprise the DNC. We have reviewed this entire library of approximately 100K square nautical miles and found no additional errors.
4. (U//FOUO) In this case, the positional data associated with the (b)(5) image of the Tubbataha Reef and consequently its position in the Coastal DNC was incorrect. (b)(5) is a commercially acquired source of information primarily used in portions of the world where limited information exists. Our process is to verify the data against other sources. The error was not discovered through the normal process; part of our review is to determine why this occurred.
5. (U//FOUO) As a first step in verifying the integrity of the DNC, as a whole, NGA is conducting a comprehensive review of all (b)(5) source data. We have multiple work shifts dedicated to this process and expect to finish by 1200 EDT Tuesday, 22 January 2013. As we continue our review, we will immediately report to the Fleet any issues affecting safety of navigation via NGA's 24/7 World-Wide Navigational Warning Service.
6. (U) The point of contact for this action is (b)(6) USN, (b)(6) (b)(6) or (b)(6)

V/R

Letitia A. Long
Letitia A. Long
Director

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NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

7500 GEOINT Drive
Springfield, Virginia 22160

U-2013-0132

22 January 2013

MEMORANDUM FOR *Sir* CHIEF OF NAVAL OPERATIONS

SUBJECT: (U//~~FOUO~~) USS GUARDIAN

1. (U//~~FOUO~~) The National Geospatial-Intelligence Agency (NGA) has completed the review of the Digital Nautical Chart (DNC), and I now can confirm that the error in the placement of the Tubbataha Reef is an exception, not a systemic problem.
2. (U//~~FOUO~~) We determined the primary issue in the misplacement of the Tubbataha Reef was inaccurate LANDSAT- based commercial imagery, and therefore we examined every situation where it was used. Consequently, NGA reviewed DNC charts that cover more than 116 million square nautical miles of ocean. In all of the DNC holdings, we identified only one issue of magnitude similar to the misplacement of the Tubbataha Reef. This error, which appeared on both the paper chart and the DNC, rotated the placement of the southern coast of Chile *toward* the sea; at its widest, the discrepancy was 7,000 meters. In accordance with standard procedures, NGA warned mariners to "navigate with caution" in this area when the error was discovered on 20 January 2013.
3. (U//~~FOUO~~) NGA identified every instance where LANDSAT- derived imagery was used in the DNC, and then validated the accuracy of that data. Twenty-five chart areas -- less than one percent of the total DNC holdings -- included inaccuracies that required additional scrutiny. Two of those -- the Tubbataha Reef and the Chilean coast -- required immediate action. The Tubbataha Reef chart correction will be completed and to the fleet by tomorrow, 23 January. The correction to the Chilean charts will be worked with the highest priority. The remaining issues are all within accepted chart specifications and will be corrected via normal update cycles.
4. (U//~~FOUO~~) My confidence remains high for the DNC holdings that do not use imagery as a source, as these holdings are drawn from multiple corroborated sources such as hydrographic surveys, sounding track lines, US and foreign paper and electronic nautical charts, and mariner discrepancy reporting.
5. (U//~~FOUO~~) While we were evaluating the DNC, we also looked at what might have caused the error in the placement of the Tubbataha Reef. We know that the error was caused by a combination of factors. In 2008, in response to customer requests to eliminate "phantom islands" on the DNCs, NGA used LANDSAT- derived imagery to update a database sparse region of the world. One of these images included incorrect information about the location of the Tubbataha Reef, and the "update" caused it to be incorrectly placed in the DNC. In 2011, NGA obtained survey data that corrected this

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U-2012-0132

SUBJECT: (U//~~FOUO~~) USS GUARDIAN

positioning. Due to a failure to follow procedure, this correction was made in the general DNC but not the coastal DNC.

6. (U//~~FOUO~~) Although no navigational aid is flawless, based on the review described above, I am confident that the DNC is safe for use and navigation. In addition, NGA's safety of navigation products meet the International Hydrographic Organization (IHO) standards. As part of our way forward, we will further review our procedures to ensure that our products and services continue to be safe and accurate. We are assembling a team of charting experts from across the maritime community to assist, and I would welcome the support of the Navigator of the Navy, and any other experts you recommend.

V/c



Letitia A. Long
Director

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Could you please provide an overview of the data that NGA provides to the Navy?

I believe you're asking about data that supports safety of navigation, correct? If I'm wrong about that, and you're asking about NGA support to the Navy overall, I can get you a basic answer right away, but for specifics, I will have to do some research.

NGA provides a number of products and services to the Navy to enable them to navigate safely. These include:

- Hardcopy navigation charts such as Standard Nautical Charts, Operational Area Charts, Bathymetric Navigation Planning Charts, Combat and Littoral Planning Charts and Hull Integrity Test Site Charts.
- Digital products, such as the Digital Nautical Chart (DNC) and Tactical Ocean Data.
- Navigational Publications, such as Sailing Directions, Fleet Guides, List of Lights, the World Port Index and Bowditch.
- *Notice to Mariners*, which publishes corrections to the paper charts via website and email to subscribers.
- Anti-Shipping Activity (ASAM), Mobile Offshore Drilling Unit (MODU) databases, which track piracy and mobile drilling platforms.
- A 24/7 Maritime Watch, which monitors maritime conditions and issues warnings about navigational hazards to the Navy and civilian mariners via broadcast messages and a website. These include military events, such as missile launches and gunfire exercises; tsunami warnings; notices of abandoned ships; and other hazards.
- Customized support to contingencies, special operations, force protection, humanitarian relief in situations like the Haiti earthquake, etc.

How often is that data refreshed?

We are continuously updating the information we maintain and distribute. The ocean is a constantly changing environment, and very little of it is surveyed to modern hydrographic international standards. We receive new and updated information in the form of satellite imagery, hydrographic surveys, reports from ships at sea, international partners and a number of other sources literally every day. All of that information is validated and incorporated into our products, which are updated with varying frequency.

Specifically, the Maritime Watch issues warnings as soon as information is received – we issue more than 6,000 every year; *Notice to Mariners* is issued weekly for unclassified hardcopy charts and monthly for the classified hardcopy charts; the DNC is updated every 28 days through a software patch; a CD is sent out quarterly to update publications as needed; and we issue new editions of paper charts as needed.

RE the USS Guardian, what did NGA's initial review entail? What are we learning?- What is the fallout from the findings thus far? If there is indeed erroneous data, how is that going to be fixed?

Our review quickly determined that the primary issue in the misplacement of the Tubbataha Reef on the Coastal Digital Nautical Chart was related to LANDSAT-based commercial imagery. Therefore, from January 17 through the morning of January 22, we examined and validated the accuracy of every situation in the Digital Nautical Chart where that type of data was used.

In total, NGA reviewed DNC charts that cover more than 116 million square nautical miles of ocean. In that review, we identified only one issue of magnitude similar to the misplacement of the Tubbataha Reef. This error, which appeared on both the paper chart and the Digital Nautical Chart, rotated the placement of the southern coast of Chile *toward* the sea; at its widest, the discrepancy was 7,000 meters. In accordance with our standard procedures, NGA warned mariners to “navigate with caution” in this area when the error was discovered on January 20.

A total of 25 chart areas – less than one percent of the total DNC holdings -- included inaccuracies that required additional scrutiny. Only two of those – the Tubbataha Reef and the Chilean coast – were cause for concern.

The Tubbataha Reef chart correction has been completed and the patch is available for download now. The correction to the Chilean charts is being worked with the highest priority. The remaining issues do not pose risks to navigation and will be corrected via normal update cycles.

Ultimately, we found that the error related to the Tubbataha Reef was caused by a combination of factors.

Prior to 2008, the charts in use included a number of “phantom islands” – the charts indicated islands that did not exist. In response to customer requests to address that problem, NGA used LANDSAT-derived imagery to update the charts. One of these images included incorrect information about the location of the section of ocean that includes the Tubbataha Reef. As a result, the reef was incorrectly placed in the DNC. That was the first factor.

The second was simply human error. In 2011, NGA obtained survey data that corrected this positioning. Due to a failure to follow established procedure, this correction was made in one portion of the DNC, but not in another.

A single source of data is never ideal, and we use multiple sources to validate information wherever possible. As mentioned earlier, we continuously receive new and better information, from a number of sources. As more information is available from more parts of the world, we will have fewer regions where only one source of information exists. That will decrease the risk of errors like this one.

In addition, we are going to further review our production processes – including everything from procedures to training -- to determine whether they could be improved. We are assembling a team of experts from across the maritime community to assist.

Will the review be expanded to include other facets of data that might be provided to Navy ships?

A very tiny portion of the Digital Nautical Chart is derived from the same type of source data that was at the core of this issue, and it has been carefully reviewed. The remainder of the DNC holdings are drawn from multiple corroborated sources such as hydrographic surveys, information from ships at sea, and U.S. and international nautical charts, to name just a few. As a result, we are confident in the integrity of that data.

That said, we are assembling a team of experts from inside and outside the agency to review our processes and procedures, and will implement improvements where we find opportunities. Safety of navigation is a critical mission – we take very seriously our responsibility to provide the tools that help protect the lives and livelihoods of the seagoing men and women who use our products, and the safety and stability of the ocean environment.

Any other comments/statements about the issue and/or the Guardian review?

First, it's important to note that NGA's safety of navigation products meet the International Hydrographic Organization (IHO) and the International Maritime Organization standards. In addition, our production processes meet several external standards for process and quality control, including ISO9001 Quality Management System.

Bottom line is that based on a careful review, we can now confirm that the error in the placement of the Tubbataha Reef in the Digital Nautical Chart was an exception, not a systemic problem. And while no navigational aid is flawless, NGA is confident that the Digital Nautical Chart is safe for use in navigation.



DEPARTMENT OF THE NAVY

OFFICE OF THE CHIEF OF NAVAL OPERATIONS

2000 NAVY PENTAGON

WASHINGTON, DC 20350-2000

5720

Ser DNS-36WJR/13U105428

March 28, 2013

Sent via email

You submitted a Freedom of Information Act (FOIA) request to the National Geospatial-Intelligence Agency (NGA) January 30, 2013. While processing your request, the NGA located one document which they referred to this office for release determination. Your request was received in this office March 25, 2013 and assigned case number **DON2013F031041**.

We have determined that the document - a January 30, 2013 "Memorandum for Director, National Geospatial Intelligence Agency" from the Chief of Naval Operations (CNO) - can be released in full. We have attached it with this letter.

Questions regarding the action this office has taken during the processing of your request may be directed to our FOIA service center at (202) 685-0412.

Sincerely,

A handwritten signature in blue ink, reading "M. P. Shaw", is positioned above the typed name.

M. Phyllis Shaw

Senior PA/FOIA Program Analyst
Team Chief & DON FOIA Requester
Service Center
OPNAV/SECNAV Privacy/Freedom of
Information Policy Office



DEPARTMENT OF THE NAVY
CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON DC 20350-1000

January 30, 2013

MEMORANDUM FOR DIRECTOR, NATIONAL GEOSPATIAL INTELLIGENCE
AGENCY

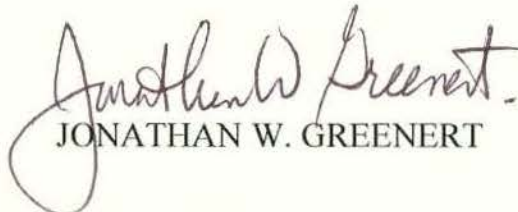
SUBJECT: USS GUARDIAN (MCM 5) Grounding

In response to your memorandum of January 22, 2013, I appreciate your efforts to ensure the chart errors discovered in conjunction with the grounding of USS GUARDIAN are relatively isolated, thus enabling our Fleet to confidently continue using Digital Nautical Charts (DNC). While no chart should be considered flawless, I am committed to working with you and your agency in the days ahead to ensure the charts we use, and their underlying data sources, have the utmost accuracy and precision.

To this end, I suggest the review team you are constructing include representatives with significant operational navigation experience and subject matter expertise from agencies and components to include United States Navy, United States Coast Guard, and the National Oceanic and Atmospheric Administration (NOAA). I would also suggest that the findings of this review be reported out to senior leadership of these organizations and USD(I) in addition to yourself.

There are several active and retired Navy Flag officers who I suggest are well-suited to lead the review; I will be happy to inquire as to their availability. I have asked Rear Admiral Jon White (the Navigator of the Navy) to develop a short list of candidates for you to consider. He will work with your staff to propose additional review team members. I have also asked him to identify specific areas within the nautical chart production and quality-assurance processes that the review should consider.

I consider this matter to be of critical importance, and I look forward to working with you to ensure our Fleet is served with the best navigation products possible. Safe and effective navigation remains a fundamental capability that underlies every mission of our Navy.


JONATHAN W. GREENERT