

MANAGEMENT OF SOFT-COPY MAPPING PRODUCTS IN THE NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

INSPECTION REPORT



**NATIONAL
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National Archives and Records Administration
Office of the Chief Records Officer
Policy Analysis and Enforcement Division
Records Management Oversight Section
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EXECUTIVE SUMMARY

In 2012, the National Archives and Records Administration (NARA) inspected elements of the records management program at the National Geospatial-Intelligence Agency (NGA). NARA conducted this effort under the authority granted it by 44 U.S.C. 2904(c)(7) and 2906 to inspect records management programs and practices of Federal agencies. The inspection focused on NGA's management of soft copy mapping products, particularly their efficient and timely transfer to the National Archives. NARA evaluated NGA's management of hard copy mapping products under a separate, earlier inspection and subsequent report in Fiscal Year 2011, known as the NGA Inspection (Phase I).¹

Both phases of this inspection were prompted by concerns that NARA has not received regular transfers of maps and charts from NGA since the inception, in 1996, of its predecessor, the National Imagery and Mapping Agency (NIMA). According to NGA's records control schedule, a record copy of each published mapping product and of each special mapping product should be transferred to the National Archives as a permanent record. Additionally, NGA had low scores on their 2009, 2010, and 2011 NARA-mandated Records Management Self-Assessment (RMSA) reports, which considered records management practices agency wide.²

This NGA Inspection Phase II involved visits to or briefings from approximately 20 separate NGA offices, in four different locations (Springfield, Virginia; Arnold, Missouri; St. Louis, Missouri; and Mineral Wells, Texas). As in the first NGA inspection, NARA reviewed recordkeeping practices in representative offices of the two NGA directorates primarily responsible for the development of mapping products: the Source Operations and Management Directorate (S) and the Analysis Directorate (A)³. However, as this second inspection focused on electronic records, NARA also spent considerable time meeting with various representatives from NGA's Office of Chief Information Officer (OCIO) and the IT Services Directorate (T)⁴.

¹ Management of Hard Copy Mapping Products in the National Geospatial-Intelligence Agency Inspection Report, June 2011, National Archives and Records Administration, <http://www.archives.gov/records-mgmt/pdf/nga-inspection.pdf>

² Records Management Self Assessment Reports 2009-2011, National Archives and Records Administration, <http://www.archives.gov/records-mgmt/resources/self-assessment.html>. NGA scores: 2009 – 42 out of 100, 2010 – 60 out of 100, and 2011 – 54 out of 100

³ NGA re-organized the Analysis and Production Directorate (P) on Oct 1, 2012, to become the Analysis Directorate (A).

⁴ On Feb 4, 2012, NGA re-organized the Acquisition and Enterprise Operations Directorates, selected functions within the Office of the Chief Information Officer, and the Mission Systems Transition organization into a new IT Services Directorate (T).

NARA received full cooperation from all representatives of the NGA program offices as well as the staff from the Records Management Division (SISM), which is currently located in the Office of Security (SIS).

While the inspection uncovered deficiencies in NGA's records management processes, NGA does have several elements of an effective program and has made further improvements in the course of responding to NGA Inspection (Phase I). Furthermore, the program offices clearly are concerned about the records they create and need for current business, and they take great care in the day-to-day management of their data. It is the long-term preservation of this data that is of greatest concern.

The NGA records management program, however, does have shortcomings that need to be addressed. Its records management practices do not meet, in several cases, statutory and regulatory requirements. Although SISM develops policy and issues guidance, it does not ensure proper implementation, monitor performance, or enforce compliance. This has led, in particular, to poor implementation of NGA records schedules covering geospatial publications and special products.

NARA makes eight recommendations for remedial action in this report that are described in detail in Section II and listed in Appendix C. To avoid duplication, we have made an effort not to reiterate the general records management findings and recommendations from NGA Inspection (Phase I) covering hard copy mapping records even when we identified the same issues present in the management of electronic soft copy maps. To avoid confusion, we have numbered the recommendations in the two inspection reports consecutively. As there were 19 recommendations in the earlier, hard copy inspection report, recommendations in this report begin with the number 20.

To ensure completion of the recommendations, as part of the inspection process, NGA will be required to develop a Plan of Corrective Action (PoCA) that specifies how the agency will address each report recommendation, including a timeline for completion of the corrective actions for each recommendation. NARA will analyze the proposed remedial actions and work with NGA to ensure the adequacy of the PoCA. Upon approval of the PoCA, NARA looks forward to continuing a cooperative relationship with NGA and assisting with the implementation of the PoCA.

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**NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY
MANAGEMENT OF SOFT COPY MAPPING PRODUCTS**

INSPECTION REPORT

INTRODUCTION

BACKGROUND

The National Geospatial-Intelligence Agency (NGA) is a major Combat Support Agency (CSA) of the Department of Defense (DoD) and a member of the Intelligence Community (IC). In 2003, the National Defense Authorization Act for Fiscal Year 2004 established NGA, and it assumed the functions of its predecessor agency, the National Imagery and Mapping Agency (NIMA). NGA's mission is to provide timely, relevant and accurate geospatial intelligence in support of national security. NGA mapping functions are critical to carrying out military actions, disaster mitigation efforts, and other significant activities of the Federal government.

INSPECTION OBJECTIVE AND INTRODUCTION

In the summer and fall of 2012, the National Archives and Records Administration (NARA) conducted an inspection of the National Geospatial-Intelligence Agency's processes for managing soft copy mapping products, particularly their efficient and timely transfer of permanent mapping records to the National Archives. This inspection is the second phase of a planned two-phase inspection. NGA Inspection Phase I covered NGA's management of the same records in paper format.⁵ All inspections of this nature are carried out under NARA's authority to inspect the records management practices of Federal agencies in order to make recommendations for improvement (44 U.S.C. sections 2905(c)(7) and 2906). This NGA inspection Phase II focused on NGA's management of soft copy mapping products scheduled as permanent under NGA File Series 801-10 (Geospatial Publication Record Set) and 801-11

⁵ Management of Hard Copy Mapping Products in the National Geospatial-Intelligence Agency Inspection Report, June 2011, National Archives and Records Administration, <http://www.archives.gov/records-mgmt/pdf/nga-inspection.pdf>

(Special Projects and Non-Standard Products). Published products scheduled under 801-10 are widely available to other Federal entities through a subscription service operated by the Defense Logistics Agency (DLA). Non-standard products are available only directly through NGA.

During the course of the inspection, NARA visited or had briefings from approximately 20 NGA offices in four different locations: NGA Campus East (NCE) in Springfield, Virginia; NGA Campus West (NCW) facilities in Arnold, Missouri and St. Louis, Missouri; and the storage depot in Mineral Wells, Texas. The NARA team also collected many supporting documents from NGA and held several teleconferences and follow-up meetings with NGA records management staff. The Agency Records Officer (ARO) was not actively engaged in the inspection. These duties and responsibilities were delegated to the Chief of the Records Management Division (SISM), which is currently located in the Office of Security (SIS). SISM staff members were forthcoming throughout the process and provided excellent support and access to relevant information and agency staff. In this report, NARA presents its finding from the inspection, positive and negative, and recommendations for developing corrective actions to address areas of concern.

SCOPE AND PURPOSE

The scope of this inspection was limited to NGA's management of electronic (digital) copies of their mapping products, specifically those scheduled under NGA File Series 801-10 and 801-11. NARA did not seek to review the effectiveness and compliance of NGA's overall records management program; however, the inspection team made some general observations and we have included them in this report.

NARA chose to inspect NGA because of the importance of the agency's permanent records and because of concerns that NGA's permanent map products are not being transferred to the National Archives as appropriate. Although NGA records schedules mandate the transfer of a record copy of each edition of each map or chart to the National Archives upon publication, NARA has not received regular transfers of maps and charts since the creation in 1996 of NGA's predecessor, NIMA. In addition, NGA has weak scores on its NARA-mandated Records Management Self-Assessment (RMSA) reports from 2009-2011, which considers records management practices throughout an agency.⁶

⁶ Records Management Self Assessment Reports 2009-2011, National Archives and Records Administration, <http://www.archives.gov/records-mgmt/resources/self-assessment.html>. NGA scores: 2009 – 42 out of 100, 2010 – 60 out of 100, and 2011 – 54 out of 100

METHODOLOGY

To meet the objective of assessing whether NGA is appropriately maintaining, preserving, and transferring when appropriate its electronic mapping products, we examined NGA's activities in these areas in light of applicable records management sections of the Code of Federal Regulations (CFR). We paid particular attention to the regulations pertaining to electronic records management (36 CFR 1236). To ensure that our inquiries into NGA's records management practices were systematic and grounded in regulation, the NARA inspection team relied on an internally produced set of records management questions that correlate directly to the CFR. These standardized questions are a sub-set of NARA's Office of Records Management Oversight's "Compliance Guidance Documents" and can be found in appendix E of this report.

Over the course of this inspection, NARA met with the records management staff from SISIM a number of times to discuss the topics examined here. The inspection team also met with staff from approximately 20 other NGA offices. At these meetings, the team was briefed on various aspects of the production, maintenance, and preservation of electronic mapping products and was given ample opportunity to ask questions. Often these briefings covered multiple projects, processes, and/or products. As in the NGA Inspection Phase I, NARA reviewed recordkeeping practices in representative offices of the two NGA directorates primarily responsible for the development of mapping products: the Source Operations and Management Directorate (S) and the Analysis Directorate (A)⁷. However, as this second inspection focused on electronic records, NARA also spent considerable time meeting with various representatives from NGA's Office of Chief Information Officer (OCIO) and the IT Services Directorate (T)⁸. A complete list of the offices that the inspection team met with can be found in appendix D.

As part of the pre-inspection process, NARA asked NGA to provide documentation for various elements of its records management practices and procedures, including system implementation processes. SISIM and other NGA offices provided the team with a wide variety of documents. Most of the pre-inspection documents were recently created; others were more than a decade old and illustrated efforts to address issues with electronic records management at NGA over time. Many of the documents provided were useful to the inspection team as background information. Others were more central in documenting and supporting the findings and recommendations of

⁷ NGA re-organized the Analysis and Production Directorate (P) on Oct 1, 2012 to become the Analysis Directorate (A).

⁸ On Feb 4, 2012, NGA re-organized the Acquisition and Enterprise Operations Directorates, selected functions within the Office of the Chief Information Officer, and the Mission Systems Transition organization into a new IT Services Directorate (T).

this inspection. A list of the pre-inspection documents that the NARA team considered most relevant for the purposes of this inspection can be found in appendix A.

STRUCTURE OF THE REPORT

The findings and recommendations of this report are broken down into four topical areas: Records Management Program; Records Scheduling; Records Disposition; and Electronic Records Management. Each of these sections is based on a part of 36 CFR Subchapter B, Records Management. The topical areas are organized here in the order that the regulations appear in the CFR. The Records Management Program section is based on Part 1210 - Federal Regulations, General. The Records Scheduling section is based on Part 1225 – Scheduling Records. The Records Disposition section is based on Part 1226 – Implementing Disposition, and, finally, the Electronic Records Management section is based on Part 1236 – Electronic Records Management.

To avoid duplication, we have made an effort not to reiterate the general records management findings and recommendations from the NGA Inspection Phase I even when we identified the same issues present in the management of electronic maps. To avoid confusion, we have numbered the recommendations in the two inspection reports consecutively. As there were 19 recommendations in the earlier, hard copy inspection, recommendations in this inspection report begin with the number 20.

II. FINDINGS AND RECOMMENDATIONS

RECORDS MANAGEMENT PROGRAM

While the focus of this inspection is on mapping products, the NARA team identified a deficiency in NGA's general records management practices in addition to areas covered in the NGA Inspection Phase I.

Finding: NGA's Records Management Program has not been conducting recent, periodic evaluations of records management practices.

Although Federal regulations require that agencies "conduct formal evaluations to measure the effectiveness of records management programs and practices..." (§ 1220.34), SISIM is not currently conducting office-by-office evaluations of records management practices within the directorates primarily responsible for the development of mapping products or NGA as a whole. SISIM staff indicated to the NARA inspection team that at one time they conducted records management office assessments (evaluations) but discontinued the practice due to lack of support and the need to address other pressing priorities. Periodic assessments of how individual programs are interpreting and implementing records management initiatives, policies, and procedures are instrumental in creating a solid, viable records management program. Writing up these assessments provides documentation of how well various offices comply with the Agency's Records Control Schedule (RCS) and other aspects of records management. The results of such assessments provide opportunities to identify areas that need improvement, as well as areas that are working well and could serve as models to other parts of the Agency. In conducting such assessments, SISIM can increase its visibility within NGA, building opportunities for briefings, training, and additional dissemination of records management information. These efforts would in turn ensure better compliance with regulations; improve preservation practices; and make data access more efficient.

Phase I of this inspection included recommendations that NGA establish and train a network of Primary Information Officers (PIOs) and Information Officers (IOs) to work within all S and P Directorate offices to inventory records (including electronic records) and develop Office File Plans (Recommendations 1 and 2). The NARA inspection team notes the progress that SISIM has made in this area, and we believe that once this network of PIOs and IOs is fully in place, SISIM will be in a better position to reinstate the practice of records management evaluations as well as to bolster other aspects of the records management program. In addition, once the PIO network has been established and NGA is conducting periodic evaluations of records management practices within the offices, the agency will be well positioned to make progress towards goals 1 and 2 of the new Office of Management and Budget (OMB) and NARA

directive *Managing Government Records* (M-12-18)⁹ which require agencies to manage all permanent electronic records by 2019, ensure that permanent records are identified for transferred to NARA as required, and schedule all records.

Recommendation 20: NGA's Records Management Program should resume the practice of conducting evaluations to measure the effectiveness of records management business processes and practices within the offices, and to ensure that the offices comply with NARA regulations regarding records management. (§ 1220.34)

RECORDS SCHEDULING

Records scheduling is a critical element of a solid, viable records management program, as it determines the proper retention periods and provides the authority and instructions for disposition.

Finding: NGA creates multiple, permanent, digital-mapping products derived from the same source data, which is likely resulting in the accessioning of duplicative records to NARA.

The Agency should review its Records Control Schedule and specifically the records series covering soft copies of permanent maps and charts. During the inspection, NGA reported that their mapping process is changing from prepackaged geospatial-intelligence data in the form of maps and charts to a process whereby customers create their own product, extracting only the specific data they need. This process may substantially change the content and function of the final version of mapping products and may have an impact on the record copy as currently described in NGA's retention schedule. As NGA moves towards a predominately digital environment where customers create records from the same source data, it is possible that there may be a great deal of duplication of information in what might otherwise appear to be distinct products. Since digital-mapping products are permanent records, NGA and the National Archives may be faced with transferring and accessioning into the National Archives duplicative items derived from the same source data.

While records appraisal is beyond the scope of this inspection, the effectiveness of the current retention schedule is not. We believe, in light of the changing NGA processes, that a review of

⁹ Managing Government Records Directive, Office of Management and Budget and the National Archives and Records Administration, August 24, 2012. <http://www.whitehouse.gov/sites/default/files/omb/memoranda/2012/m-12-18.pdf>

the existing disposition authorities covering file series 801-10 and 801-11 is warranted and that such a review may be required under the Code of Federal Regulations (§ 1225.22) which states: “agencies must submit a new schedule to NARA for electronic versions of previously scheduled records if ... the content and function of the records have changed significantly.” Additionally, such a review would result in NGA making progress towards goals 1.1, 2.2 and 2.5 of the OMB and NARA directive *Managing Government Records* (M-12-18) which requires agencies to manage all permanent records in an electronic format, ensure permanent records are identified for transfer to NARA and that all records are scheduled..

Recommendation 21: NGA’s Records Management Program should review the Records Control Schedule for soft copies of permanent maps and charts covered by NGA file series 801-10 and 801-11 and determine if the file series are out of date and if changes can be made to avoid the designation of duplicative record copies. (§ 1225.22)

RECORDS DISPOSITION

Properly disposing of records, including the destruction of temporary records and the transfer of permanent records to the National Archives, in accordance with approved disposition authorities is an essential element of a good records management program.

Finding: NGA has not been transferring - in accordance with its Records Control Schedule - permanent, soft copy maps and charts to the National Archives.

The inspected A and S offices at NGA create what they call “gold copy” CDs/DVDs of permanent products but do not routinely transfer them to the National Archives. Program offices assumed that records maintained in their ILS Voyager (Integrated Library System) or those sent to DLA for distribution were being transferred to the National Archives, but this is not the case. NGA does not have a routine, efficient, or cost effective procedure to transfer permanent digital records to the National Archives. This is in contravention of the Code of Federal Regulations which states that “all records scheduled as permanent must be transferred to the National Archives of the United States after the period specified on the SF-115.”¹⁰ (§ 1226.22)

The file formats that NGA uses for its electronic mapping products are not an issue with regard to their transfer. Nearly all formats presented to the inspection team met either current or NARA’s proposed revised transfer guidance, with the understanding that all electronic records transfers remain subject to a review of format conformance with non-conforming formats considered on a case-by case basis. The issues holding up transfer of the records to NARA

¹⁰ Standard Form 115: Request for Records Disposition Authority

appear to be those of volume, method of transfer, and Limited Distribution (LIMDIS) restriction. The matter of LIMDIS has already been covered in Phase I of this inspection (Recommendations 16 and 17), so there is no need to reiterate those findings here except to say that whatever is resolved for paper records that are LIMDIS should apply to electronic records as well. The issues of volume and method of transfer need to be worked out between appropriate NARA custodial units and NGA. The current method of using large numbers of CDs/DVDs to conduct the record transfers to NARA is impractical. The NARA inspection team acknowledges the feedback from SISM that the electronic transfer of records to the National Archives is made more difficult by the lack of high-side connectivity between the agencies and the fact that a classified version of NARA's Electronic Records Archives (ERA) has yet to come on line. The inspection team notes, and has discussed with NGA, that some agencies have been effectively using hard drives to transfer large volumes of electronic records to the National Archives. Working out an acceptable means of transferring electronic mapping products will be instrumental in NGA meeting goal 2.2 of OMB and NARA Directive M-12-18 which requires agencies to identify for transfer permanent records to NARA.

Recommendation 22: NGA and appropriate National Archives custodial units should establish a mutually acceptable and sustainable agreement for the periodic transfer of electronic permanent maps and charts covered by NGA file series 801-10 and 801-11. Such an agreement should include specification of format and media, timeframes, and a review process for LIMDIS. (§ 1226.22)

ELECTRONIC RECORDS MANAGEMENT

Records management controls are essential to ensure Federal records in electronic form can provide adequate and proper documentation of agency business for as long as the information is needed. Agencies are required by 36 CFR 1236 to incorporate controls into electronic systems or into a recordkeeping system that provide for the reliability, authenticity, integrity, usability, and preservation of the data. Two critical elements of electronic records management are the consistent, standardized use of metadata and migration strategies and plans for the preservation of records that must be maintained longer than the usual lifespan of software and/or hardware. The key element for ensuring proper electronic records management is the incorporation of records management into the requirements definition and design processes for new information systems. The final element for preservation of electronic records is proper storage for electronic media.

Finding: NGA’s use of records management metadata for geospatial data has been inconsistent.

Metadata consists of structured information which describes the format, content, context, and organization of the underlying information in a document or record. Adequate metadata are essential for information management professionals to discover, identify, describe, manage, and preserve records over time and to support active use of the records. Deficiency in metadata elements will lead to an inability to locate and share critical information. Poor metadata may compromise the authenticity and reliability of digital records.

Historically, NGA has been inconsistent with its use of metadata, an issue which it is actively working to rectify. The agency’s Analysis Directorate has described the problem in its document “National System for Geospatial-Intelligence (NSG) Geospatial Metadata Guide” (December 2010): “NGA has many terabytes of data ... which are not adequately described to enable search, retrieval, or use.” The Directorate goes on further to say that “the lack of data management discipline is costing valuable time and impairs our ability to provide analysis” and that “much ... time is lost trying to decipher the multiple copies of data that now exists in too many directories throughout NGA.”

“The National System for Geospatial-Intelligence (NSG) Metadata Foundation (NMF)” is NGA’s multi-part standard for geospatial metadata. There are currently 23 metadata requirements in this standard which is influenced in part by ISO 19115:2003 (Geographic Information Metadata), DOD 5015.2 (Department of Defense Electronic Records Management Application (RMA) Design Criteria Standard), and Dublin Core (Dublin Core Metadata Initiative). Additions to the standard are being incorporated upon approval from a review board. NGA has plans to add a Part 4 “Records Management Metadata” extension which will allow for the capture of “information that enables the creation, registration, classification, access, preservation and disposition of records through time and within and across domains” (“National System for Geospatial-Intelligence Metadata Foundation (NMF) – Part 4: Records Management Metadata” (July 2012)).

The NARA inspection team is encouraged by NGA’s activities around developing and implementing metadata requirements and would like to be updated on its continued efforts. NGA’s progress in this area should help the agency move into compliance with the Code of Federal Regulations (§ 1236.10) which requires content, context, and structure controls for all Federal records existing in electronic systems. A robust metadata tagging effort will also help NGA meet goal 1.1 of OMB and NARA Directive M-12-18 which requires agencies to manage all permanent records in an electronic format by December 31, 2019.

Recommendation 23: NGA should complete the establishment and implementation of its NMF uniform metadata standard, Part 4 “Records Management Metadata” extension, which includes records management-related metadata tags and provide NARA with updates on the continued development and implementation of this standard. (§ 1236.10)

Finding: NGA has not developed digital migration strategies to ensure preservation and accessibility of permanent electronic records or temporary records that have a long retention period.

All records in an electronic information system must be retrievable and usable for as long as needed to conduct agency business and in accordance with their NARA-approved retention periods. Where records need to be retained beyond the planned life of the information system or longer than the usual life span of today’s software and hardware, agencies must plan and budget for the migration of records and their associated metadata to new storage media and/or formats. Failure to properly plan for this eventuality could cause significant loss to the data due to media decay or technology obsolescence.

Upon querying from the NARA inspection team, NGA could not provide any documentation regarding Agency plans, procedures, or strategies for systematic data migration for permanent electronic records and associated metadata, or temporary records that have a long retention period. According to NGA, data migration is done on an “as needed” basis by the data owners or users. The NARA team has no doubt that when electronic records serve a current mission need, NGA maintains the records and performs data migrations accordingly. However, the Code of Federal Regulations requires agencies to “design and implement migration strategies” that will ensure that all electronic records remain in a usable format until their authorized disposition date. This includes even non-active electronic records that are stored offline. The inspection team discovered that some of the inspected offices “migrate” data to CDs/DVDs. However, no preservation steps are taken to ensure that the information is retrievable over time. NARA feels that this is inadequate as a migration strategy. Developing consistent data migration strategies will increase NGA’s ability to protect and preserve records as required. Data migration strategies will also help NGA comply with the spirit of the OMB and NARA directive M-12-18 which requires that the “Federal Government commit to manage more effectively all records consistent with Federal statutes and regulations and professional standards.”

Recommendation 24: To ensure that electronic records remain usable and accessible until their final disposition, NGA should design migration strategies to counteract hardware and software dependencies of electronic records for existing systems and add migration planning to the budget, design, and certification & accreditation (C&A) processes for new systems that hold permanent electronic records or temporary records that have a retention period of 10 years or more. (§ 1236.14)

Finding: NGA inconsistently integrates records management considerations into the design and development of electronic information systems.

The Code of Federal Regulations requires that “recordkeeping functionality ... be built into electronic information system[s]” (§ 1236.20). This functionality is also required by the Information Management Policy, part (k), that is contained in OMB Circular A-130. The NARA inspection team has determined that there is not enough systematic collaboration between the NGA Records Management Division (SISM) and the agency’s IT Services Directorate (T) to indicate compliance with this regulation. During the course of the inspection, several of the inspected offices indicated a recognition and willingness to incorporate records management into their processes. Such incorporation needs to be established as agency policy.

NGA has weak to non-existent procedures in place for ensuring that the appropriate records management requirements are included in the review and approval process for new electronic information systems or enhancements to existing systems, including systems for digital mapping products. Records management staff does not routinely work with IT staff or participate in the design, development, and implementation of new electronic information systems.

The NGA Readiness Office (TG) reviews information system designs and engineering plans and makes recommendations as to whether or not to advance their development. As part of its routine review processes, the Readiness Office asks just four records management-related questions of proposed systems:

1. Will this system contain electronic records (records as defined by 44 U.S.C. that are in electronic form) that represent work artifacts of NGA;
2. If this system contains electronic records, does the design include incorporation of the metadata required to manage electronic records (as defined by DoD Standard 5015.2);
3. If yes, are they distinguished from and stored separately from non-record data; and
4. Was the Agency Records Officer (ARO) or other records management personnel involved in the preparation and coordination of this readiness review.

While these questions are good ones, there is no evidence of repercussions if the answer to any of the last three questions is “no”. Moreover, there is no process in place to verify that the answers to the records management questions are actually complete or accurate.

The system certification & accreditation (C&A) process that NGA engages in as part of its compliance with the Federal Information Security Management Act of 2002 (FISMA) is another,

already extant, information systems management review environment where records management-related controls should be added. C&A is a formal process for reviewing the controls of electronic information systems and for certifying them to be functioning appropriately. NGA's OCIO gathers information on all the systems in order to safeguard the integrity of the data, ensure regulatory compliance, and to establish appropriate risk and security levels. There is an opportunity to include as part of this process information about whether systems identify, capture, and retain records. NGA's OCIO is willing to include records management as part of the system C&A process, if records management elements are mapped - as they can be - to specific laws and regulations. However, there will be financial costs involved in making changes to the readiness process, and the changes will need strong backing from NGA senior management.

Monitoring compliance with regulations that require recordkeeping functionally be built into electronic systems will help NGA meet goal 2 of the OMB and NARA directive M-12-18 which states that "the Federal Government should commit to manage more effectively all records consistent with Federal statutes and regulations and professional standards."

Recommendation 25: NGA should redesign the process and checklist of questions whereby the Readiness Office asks records management-related questions of proposed electronic systems. If the answers to these questions are inadequate, the approval process and continuation of the system implementation as a whole should be affected. Also, procedures should be put in place to corroborate all answers to records management-related questions asked of proposed electronic information systems. (§ 1236.20)

Recommendation 26: NGA should build into its C&A process for electronic information systems assurances for the identification, capture, and retention of records contained within these systems. (§ 1236.20)

Finding: NGA's records management program does not have a compliant records storage area for holding inactive electronic records that are no longer needed for their daily business but which are required to be maintained by the approved NGA Records Control Schedule.

NGA creates and maintains an extremely large volume of digital data or what is known as "big data". Much of this data is a collection of geospatial datasets that are so large and complex that it is difficult to process, capture, search, and effectively store the information properly. While the data center at the NGA Campus West meets the general standards for the storage of electronic records and ILS Voyager maintains records appropriately, the Records Management Division does not have the capability at NGA Campus East (NCE) to centrally store electronic media. The system owners and users are responsible for storing their own electronic records after they

are no longer needed for business purposes, and this leads inevitably to loss and eventual degradation of data. The NARA inspection team had several program staff tell us that they stored electronic records not required for immediate business purposes on CDs/DVDs in filing cabinets or desk drawers. As mentioned earlier, once data is transferred to CDs/DVDs, there is no attempt at NGA to ensure that the information is preserved and continues to be retrievable.

The Records Management Division has an adequate records holding area for paper records in the lower level of the NCE. However, according to the electronic records specialists on the NARA inspection team, the space is not appropriately climate-controlled to allow for long-term storage of electronic media. The Code of Federal Regulations requires that agencies maintain records storage areas for electronic media between 62 and 68 degrees Fahrenheit and at a relative humidity between 35% and 45%. By maintaining a compliant electronic media records storage area, NGA can centrally store electronic media for various program offices which will help NGA meet goal 1.1 of the OMB and NARA directive M-12-18 which states that “all permanent electronic records in Federal agencies will be managed electronically to the fullest extent possible for eventual transfer and accessioning by NARA in an electronic format.” It will also ensure that long-term temporary records are properly maintained for Freedom of Information Act (FOIA) and discovery processes for their entire retention period.

Recommendation 27: NGA’s Records Management Division should maintain a compliant records storage area for electronic media pending final disposition - including those to be transferred to the National Archives - that meets the temperature and humidity requirements spelled out in the CFR. (§1236.28)

APPENDIX A: LIST OF RELEVANT PRE-INSPECTION DOCUMENTS

- “Challenges and Opportunities: Records Services (EGMR),” NGA, May 11, 2010
- “Data Retention Task Force Study and Recommendations,” Data Retention Task Force, undated
- “Data Storage Strategy,” NGA’s Data Center and Data Management Strategy Focus Group, February 2012
- “Management of Hard Copy Mapping Products in the National Geospatial-Intelligence Agency – Inspection Report,” National Archives and Records Administration, June 2011
- “National System for Geospatial-Intelligence (NSG) Geospatial Metadata Guide,” National Geospatial-Intelligence Agency, Analysis and Production Directorate, December 27, 2010
- “National System for Geospatial-Intelligence Metadata Foundation (NMF) – Part 4: Records Management Metadata,” NGA, July 2012
- “National Geospatial-Intelligence Agency – Electronic Records Management Program – Gap Analysis,” Millican & Associates, Inc., April 19, 2004
- “National Geospatial-Intelligence Agency – Records Storage Study,” Nortel Government Solutions, Inc., September 30, 2006
- “Remediation Plan for Record Storage Facilities,” NGA Office of Security (SIS) and Records Management Division (SISM), July 2012
- “Revised Plan of Corrective Action for Management of Hardcopy Mapping Products,” NGA, June 2012
- “Tier 2 National Geospatial-Intelligence Agency (NGA) Enterprise Readiness (ER) Process & Procedures,” NGA, October 27, 2009
- “White Paper on ERM at NIMA,” NIMA, March 29, 2000

APPENDIX B: REVIEW AND FOLLOW-UP

AUTHORITIES

44 U.S.C. Chapter 29

36 CFR Chapter XII, Subchapter B

Part 1239, Program Assistance and Inspections

FOLLOW-UP STEPS

ACTION PLAN

NGA will submit to NARA an action plan that specifies how the agency will address each inspection report recommendation, including a timeline for completion and proposed progress reporting dates.

The plan should be submitted within 60 days after the date of transmittal of the final report to the head of the agency.

PROGRESS REPORTS

NGA will submit to NARA progress reports on the implementation of the action plan until all actions are completed.

NARA REVIEW

NARA will analyze the adequacy of NGA's action plan, provide comments to NGA on the plan within 60 calendar days of receipt, assist NGA in implementing recommendations, and inform NGA when progress reports are no longer needed.

APPENDIX C: COMPLETE LIST OF FINDINGS AND RECOMMENDATIONS

To avoid confusion between the two phases of the inspection of NGA's management of mapping products we have numbered the recommendations in the two reports consecutively. As there were 19 recommendations in the earlier, hard copy inspection, recommendations in this report begin with the number 20.

RECORDS MANAGEMENT PROGRAM

Finding: NGA's Records Management Program has not been conducting recent, periodic evaluations of records management practices.

Recommendation 20: NGA's Records Management Program should resume the practice of conducting evaluations to measure the effectiveness of records management business processes and practices within the offices, and to ensure that the offices comply with NARA regulations regarding records management. (§ 1220.34)

RECORDS SCHEDULING

Finding: NGA creates multiple, permanent, digital-mapping products derived from the same source data, which is likely resulting in the accessioning of duplicative records to NARA.

Recommendation 21: NGA's Records Management Program should review NGA's Records Control Schedule for soft copies of permanent maps and charts covered by NGA file series 801-10 and 801-11 and determine if the file series are out of date and if changes can be made to avoid the designation of duplicative record copies. (§ 1225.22)

RECORDS DISPOSITION

Finding: NGA has not been transferring - in accordance with its Records Control Schedule - permanent, soft copy maps and charts to the National Archives.

Recommendation 22: NGA and appropriate National Archives custodial units should establish a mutually acceptable and sustainable agreement for the periodic transfer of electronic permanent maps and charts covered by NGA file series 801-10 and 801-11. Such an agreement should include specification of format and media, timeframes, and a review process for LIMDIS. (§ 1226.22)

ELECTRONIC RECORDS MANAGEMENT

Finding: NGA’s use of records management metadata for geospatial data has been inconsistent.

Recommendation 23: NGA should complete the establishment and implementation of its NMF uniform metadata standard, Part 4 “Records Management Metadata” extension, which includes records management-related metadata tags and provide NARA with updates on the continued development and implementation of this standard. (§ 1236.10)

Finding: NGA has not developed digital migration strategies **to ensure preservation and accessibility of its records.**

Recommendation 24: To ensure that electronic records remain usable and accessible until their final disposition, NGA should design migration strategies to counteract hardware and software dependencies of electronic records for existing systems and add migration planning to the budget, design, and certification & accreditation (C&A) processes for new systems. (§ 1236.14)

Finding: NGA inconsistently integrates records management considerations into the design and development of electronic information systems.

Recommendation 25: NGA should redesign the process and checklist of questions whereby the Readiness Office asks records management-related questions of proposed electronic systems. If the answers to these questions are inadequate, the approval process and continuation of the system implementation as a whole should be affected. Also, procedures should be put in place to corroborate all answers to records management-related questions asked of proposed electronic information systems. (§ 1236.20)

Recommendation 26: NGA should build into its C&A process for electronic information systems assurances for the identification, capture, and retention of records contained within these systems. (§ 1236.20)

Finding: NGA’s Records Management Program does not have a compliant records storage area for holding inactive electronic records that are no longer needed for their daily business but which are required to be maintained by the approved NGA Records Control Schedule.

Recommendation 27: NGA’s Records Management Division should maintain a compliant records storage area for electronic media pending final disposition - including those to be transferred to the National Archives - that meets the temperature and humidity requirements spelled out in the CFR. (§1236.28)

APPENDIX D: NGA OFFICES VISITED DURING INSPECTION

NGA Campus East (Springfield, Virginia) – inspections Aug 14-16 and Oct 23, 2012

Analysis Directorate (A)

- Analytic Integration Group
 - Office of Asia-America (AIA)
 - Mobile Apps Demonstration
 - Disaster Relief
 - Special Events

IT Services Directorate (T)

- Architecture and Engineering Group (AEG)
 - Services Design Office (TD)
 - IT Governance Review
 - Functional Requirements Definition
 - Software Development Life Cycle (SDLC)
 - Technical Obsolescence Review
 - Electronic Data Management (EDM) Program
- Service Implementation Group (SIG)
 - Consolidated Analytic Spatial initiative (CASi)
- Validation and Verification Group (VVG)
 - Readiness Office (TG)
 - Readiness Review
 - T Coordination with Records Management

Office of the Chief Information Officer (OCIO)

- Enterprise Architecture and Standards (OCIO/CE)
 - NSG Metadata Foundation (NMF) Review
- IT Portfolio Management (OCIO/CM)
 - Capital Planning & Investment Control (CPIC)
 - IRM Strategic Plan
 - IT Capital Plan
- Information Security Management (OCIO/CS)
 - Accreditation & Risk Analysis Division (CSA)
 - Systems List Review
 - IT Governance Review
 - Certification & Accreditation (C&A) Program
 - Business Continuity (BC)/Disaster Recovery (DR) Program
 - OCIO Coordination with Records Management

- Reviews and Assessments Division (CSR)
 - Information Assurance (IA) Program
 - FISMA

Online GEOINT Services (OGS)

- Application Services Office (OGSA)
 - Standardized Metadata Tagging Service (SMTS)

Source Operations and Management Directorate (S)

- GEOINT Foundation Group (S2)
 - GEOINT Foundation Office (SG)
 - Multinational Geospatial Co-production Program (MGCP)
 - Maritime Safety Office (SH)
 - Digital Nautical Charts (DNCs)
 - World-Wide Navigational Warning Service (WWNWS)
 - Littoral Planning Charts (LPCs)
 - Navigational Safety System (NSS)
 - GEOINT Research Office (SR)
 - Voyager Metadata Review
 - Voyager Overview and Demonstration
 - Scanning Tour and Demonstration

Security and Installations Directorate (SI)

- Office of Security (SIS)
 - Records Management Division (SISM)
 - RIM Engagement Program
 - RIM training
 - Loss Reporting
 - Records Storage
 - ERM Program
- Records Management Coordination with T and OCIO

Mineral Wells Depot (Mineral Wells, Texas) – inspection Aug 23, 2012

IT Services Directorate (T)

- Service Operations Group (SOG)
 - Information Services Office (TF)
 - Facility Tour
 - Review of Materials

NGA Campus West (Arnold, Missouri) – inspection Sep 19, 2012

IT Services Directorate (T)

- Service Implementation Group (SIG)
 - Application Services Office (TE)
 - ERM Example (ePSF – Electronic Personnel Security Folders)
 - Coordination with Records Management
 - Infrastructure Services Office (TI)
 - SharePoint Initiative
 - Data Center Tour

NGA Campus West (St. Louis, Missouri) – inspections Sep 19-20, 2012

Source Operations and Management (S)

- GEOINT Foundation Group (S2)
 - Aeronautical Navigation Office (SF)
 - PHAERO Demonstration
 - Force Protection Airfield Graphics (FPAGs)
 - GEOINT Foundation Office (SG)
 - Custom Maps
 - GEOINT Research Office (SR)
 - GIBCO Demonstration
 - Maritime Safety Office (SH)
 - ePODS Demonstration

APPENDIX E: SELECTED COMPLIANCE QUESTIONS

The following is a list of questions based on the Code of Federal Regulations and other NARA Guidance used to gather information during the course of this inspection. The questions are divided into specific electronic records management topics.

Inventory/System Information

- How many unique systems or processes exist for creating digital mapping products?
- Is there an up-to-date inventory of electronic information systems?
 - Did we get a copy? – if yes, did it provide the information we need if the systems or records are scheduled? Did the RM staff know about this inventory?

NOTE: RMSA 2011: NGA answered “do not know” to question 54: Does your agency maintain an inventory of electronic information systems? (36 CFR 1236.26 (a))

- Does NGA follow a metadata content standard? Do all 52 product lines follow the same metadata standard? Do legacy products follow the same standard?
- Does NGA maintain up-to-date information for mapping products systems that:
 - specify all technical characteristics necessary for entering data or reading or processing records;
 - identify all defined inputs and outputs of the system;
 - define the contents of the files and records;
 - determine restrictions on access and use;
 - identify the purpose(s) and function(s) of the system;
 - describe update cycles or conditions and rules for adding, changing, or deleting information in the system; and

- ensure the proper management of records, including their timely, authorized disposition?
- Can NGA provide descriptions of the systems with basic workflow including the final creation of the record copy of digital products? If document(s) are classified, is there a publicly releasable version? If not, we can review the document according to procedures for classified records.

RM/IT Collaboration

- Does NGA have any procedures or a protocol in place for ensuring that records management requirements, including recordkeeping requirements and disposition, are addressed before approving new electronic information systems or enhancements to existing systems, including systems for digital mapping products?
- Were we able to get copies – were they sufficient?
- Do Records Management staff work with Information Technology staff, and do Records Management staff participate in the design, development, and implementation of new electronic information systems?
- If yes, is this collaboration formal or informal? (i.e. is there a formal “certification” process by which records management official(s) approve/disapprove such systems or changes?) If a formal “certification” process exists, provide copies.
- If yes, do records management official(s) issue written comments concerning new or enhanced electronic information systems? If yes, provide copies. Determine if such comments are used in evaluating systems or enhancements.

Reliability, Authenticity, Integrity, and Usability

- Has NGA incorporated controls to ensure the reliability, authenticity, integrity, and usability of agency electronic records maintained in electronic information systems into the system itself? (36 CFR 1236.10)
- If no, has the agency integrated controls to ensure the reliability, authenticity, integrity, and usability of agency electronic records maintained in electronic information systems into an external recordkeeping system? (36 CFR 1236.10)

NOTE: RMSA 2011: NGA answered yes to question 52: Has your agency incorporated controls to ensure the reliability, authenticity, integrity, and usability of agency electronic records maintained in electronic information systems into the system itself? (36 CFR 1236.10)

Seven follow-up questions based on 36 CFR 1236.10, if response is yes to either of the two previous questions:

- Does the system have controls to ensure a full and accurate representation of the transactions, activities, or facts to which they attest, and can it be depended upon in the course of subsequent transactions or activities? (36 CFR 1236.10 (a))
- Does the system protect against unauthorized addition, deletion, alteration, use, and concealment of electronic records? (36 CFR 1236.10 (b))
- Does NGA or the system create audit trails, to ensure records are complete and unaltered? (36 CFR 1236.10 (c))
- Does the system have mechanisms to ensure that records can be located, retrieved, presented, and interpreted? (36 CFR 1236.10 (d))
- Does the system have mechanisms to preserve the information contained within the record itself that was produced by the creator of the record? (36 CFR 1236.10 (e))
- Does the system have mechanisms to implement cross-references to related records that show the organizational, functional, and operational circumstances about the record, which will vary depending upon the business, legal, and regulatory requirements of the business activity? (36 CFR 1236.10 (f))
- Does the system have controls to ensure the maintenance of the physical and logical format of the records and the relationships among the data elements? (36 CFR 1236.10 (g))

Security

- Does NGA have security procedures relating to electronic records that incorporate the following:

- Ensures that only authorized personnel have access to electronic records;
- Provides for backup and recovery of records to protect against loss of information;
- Ensures that appropriate agency personnel are trained to safeguard sensitive or classified electronic records;
- Minimizes the risk of unauthorized alteration or erasure of records;
- Attaches metadata that identifies the classification level; and
- Ensures that only authorized persons can enter and update classification status?

Training

- Does the agency provide agency-specific training on the preservation of records created and maintained in electronic form? Confirm how training efforts conveyed the most recent additions or revisions to the business processes.
- If yes, is such training mandatory? Who receives this training? How often does such training occur? Provide copies of any training manuals/guidance, along with any documentation of those who attended.

NOTE: RMSA 2011: NGA answered yes to question 58: Does your agency provide training on the preservation of records created and maintained in electronic form? (36 CFR 1220.34(f)) Is this training agency-specific? If so, provide copies of curriculum. This training needs to be more than just mentioning Records Management in conjunction with other training.

Permanent Records

- Does the staff who create and maintain digital mapping products know that the records are permanent?
- Do they understand that the mapping products, according to NGA's records manual, are to be transferred to NARA upon their publication?

- What are the formats of permanent digital products? Are the formats standardized across NGA product lines?
- When was the last time NGA conducted a review of electronic information systems for digital mapping as required by 44 U.S.C. 3506? Can we obtain copies and review?
- If yes, and if resulting reports/documentation noted deficiencies or suggested actions, was appropriate action taken? Please provide copies of reports/documentation. If document(s) are classified, is there a publicly releasable version? If not, we can review the document according to procedures for classified records.

Preservation

Is NGA in compliance with regulations for providing the proper care and handling of electronic records not yet ready for transfer to NARA? Specifically, determine if electronic records are being stored in accordance with 36 CFR 1234.14, paragraphs (b) and (d).

Physical Storage

Is there a centralized place at NGA for the storage of electronic mapping products? Are all 52 product lines responsible for their own storage? (NGA manual says that Records Management office provides storage services for hard-copy records only.)

Migration

- Does NGA have procedures in place for identifying electronic records that have been created on media that is becoming obsolete and for migrating those records to a newer media? Please provide copies. If document(s) are classified, is there a publicly releasable version? If not, we can review the document according to procedures for classified records.
- Does the agency design and implement migration strategies for electronic records and associated metadata to new storage media or formats, or software version updates so that records are retrievable and usable as long as needed to conduct agency business and to meet NARA-approved dispositions, especially long-term temporary and permanent records?

- Does NGA have any legacy systems with records created in an electronic format that is now obsolete?

Scanning

In cases where NGA is scanning legacy mapping products (repromats in Gila Bend, NGA Library's Voyager database, etc.), is the scanning being done according to NARA's published standards?

Transfer of Permanent Records

- Does NGA have any procedures in place to transfer permanent electronic mapping products to NARA?
- What challenges does NGA face in transferring these records to NARA?
- Has NGA successfully transferred any of their electronic mapping products directly to NARA?
- If yes, when was the last time such records were transferred to NARA? If not, why not?
- If yes, does NGA maintain a copy of any permanently valuable electronic records it transfers to NARA until it has received confirmation from NARA that the transfer was successful and that NARA has assumed responsibility for continuing preservation of the records?
- Is NGA interested in pre-accessioning going forward? If so, can we arrange for a test transfer?

Maps Acquired by NGA and Used for NGA Maps

- What is the business process used for maps received from other entities? How are they used? Is NGA actually redistributing maps they have received elsewhere without making any changes to them other than re-labeling them? Are they used in creating NGA maps - or are they just reference, and therefore non-record material?
- From what agencies and entities are these maps received? Are these maps (created by other agencies) scheduled? If so, what is the retention used by those agencies?

Map Products Business Processes

- Describe the business process of digital map products from creation to production.
- Do the processes involved in the creation of the records under 801-10 or 801-11 universally reflect the creation and maintenance of records created and/or maintained electronically in NGA?
- How are RM processes embedded into digital map production?

APPENDIX F: ACRONYMS AND ABBREVIATIONS

A	Analysis Directorate
AEG	Architecture and Engineering Group
AIA	Office of Asia-America
BC	Business Continuity
C&A	Certification & Accreditation
CASi	Consolidated Analytic Spatial initiative
CD	Compact Disc
CFR	Code of Federal Regulations
CPIC	Capital Planning & Investment Control
CSA	Combat Support Agency
CSA	Accreditation & Risk Analysis Division
CSR	Reviews and Assessments Division
DLA	Defense Logistics Agency
DNC	Digital Nautical Chart
DoD	Department of Defense
DR	Disaster Recovery
DVD	Digital Video Disc
EDM	Electronic Data Management
ePSF	Electronic Personnel Security Folders
ER	Enterprise Readiness

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ERA	Electronic Records Archive
ERM	Electronic Records Management
FISMA	Federal Information Security Management Act of 2002
FOIA	Freedom of Information Act
FPAG	Force Protection Airfield Graphic
GEOINT	Geospatial Intelligence
IA	Information Assurance
IC	Intelligence Community
ILS	Integrated Library System
IT	Information Technology
IO	Information Officer
ISO	International Standards Organization
LIMDIS	Limited Distribution
LPC	Littoral Planning Chart
MGCP	Multinational Geospatial Co-production Program
NARA	National Archives and Records Administration
NCE	NGA Campus East
NCW	NGA Campus West
NGA	National Geospatial-Intelligence Agency
NIMA	National Imagery and Mapping Agency
NMF	National System for Geospatial-Intelligence Metadata Foundation

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NSG	National System for Geospatial-Intelligence
NSS	Navigational Safety System
OCIO	Office of the Chief Information Officer
OCIO/CE	Enterprise Architecture and Standards
OCIO/CM	IT Portfolio Management
OCIO/CS	Information Security Management
OGS	Online GEOINT Services
OGSA	Application Services Office
OMB	Office of Management and Budget
PIO	Primary Information Officer
PoCA	Plan of Corrective Action
RCS	Records Control Schedule
RM	Records Management
RMA	Records Management Application
RMSA	Records Management Self-Assessment
S	Source Operations and Management Directorate
S2	GEOINT Foundation Group
SDLC	Software Development Life Cycle
SF	Aeronautical Navigation Office
SF	Standard FormSF-115: Request for Disposition Authority
SG	GEOINT Foundation Office

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SH	Maritime Safety Office
SI	Security and Installations Directorate
SIG	Service Implementation Group
SIS	Office of Security
SISM	Records Management Division
SMTS	Standardized Metadata Tagging Service
SOG	Service Operations Group
Source	Source Operations and Management Directorate
SR	GEOINT Research Office
T	IT Services Directorate
TD	Services Design Office
TE	Application Services Office
TF	Information Services Office
TG	Readiness Office
TI	Infrastructure Services Office
U. S. C.	United States Code
Voyager	Integrated Library System for NGA mapping products
VVG	Validation and Verification Group
WWNWS	World-Wide Navigational Warning Service