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National Aeronautics and Space Administration Research and Development Records

Records Management Inspection Report

National Archives and Records Administration
September 19, 2019

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
RESEARCH AND DEVELOPMENT RECORDS**

INSPECTION REPORT

INTRODUCTION

The National Archives and Records Administration (NARA) is responsible for assessing the proper management of records in all media within Federal agencies to protect rights, assure government accountability, and preserve and make available records of enduring value. In this capacity, and based on authority granted by 44 United States Code (U.S.C.) 2904(c)(7) and 2906, NARA inspects the records management programs of agencies to ensure compliance with Federal statutes and regulations and to investigate specific issues or concerns. NARA then works with agencies, if necessary, to make improvements to their programs based on inspection findings and recommendations.

In FY 2018, NARA began a series of narrowly focused records management (RM) inspections investigating the management of scientific research and development (R&D) records to identify unique and common challenges, risks, and trends that might be of interest to records management programs in other Federal agencies that create and maintain R&D records. The long-term business need for the data poses unique challenges for preservation, access, and eventual transfer of permanent records to the National Archives. These inspections examine whether science and research centers comply with statutory mandates related to the management of R&D records in an electronic format, the ability to digitize or convert analog records, and on the ability of these centers to transfer permanent R&D records to the National Archives. The overall intent was to determine if science and research centers have essential policies, procedures and processes for the creation, maintenance, and transfer of R&D records to the National Archives.

In March 2019, NARA inspected three National Aeronautics and Space Administration (NASA) centers.[1] They were selected as part of the R&D records series of inspections because they create and maintain a large volume of R&D/scientific data. While NARA only inspected a small sample of NASA centers, these three centers are a good representation of the types of research being conducted, approaches that are taken to scientific data stewardship, and the incorporation of RM processes into NASA operations. Further details on the inspection methodology and the selected centers are provided in Appendix A.

OVERVIEW OF RECORDS MANAGEMENT AT THE THREE SCIENCE CENTERS

Records management at the three NASA centers is implemented through a network of Center Records Managers (CRM), Records Liaison Officers (RLO), and Records Custodians (RC)/Records Managers. The RM programs are further supported by the NASA Agency Records

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[1] In order to carry out its mission, NASA has 19 centers and facilities around the country, plus NASA Headquarters, https://www.nasa.gov/about/sites/index.html.

Officer (ARO) and the NASA Senior Agency Official for Records Management (SAORM), both located at NASA Headquarters in Washington, DC.

RM staff provide records guidance to NASA R&D project staff throughout the project life-cycle, and, in collaboration with project managers, oversee the disposition of records created and maintained by scientists at their respective NASA centers. Though the majority of records created at the three NASA centers are now electronic, at least one center had RM staff specifically devoted to managing legacy analog records.

OVERVIEW OF R&D PROJECT DATA MANAGEMENT

R&D or scientific projects at the three NASA centers are managed throughout the active project life-cycle by project managers in collaboration with configuration managers, data/database managers, and project scientists and engineers, among others. Each R&D project goes through documented phases and key decision points (KDP) over the course of the project life-cycle. Before the project can move from one life-cycle phase (or gate) to the next, specific documentation and life-cycle review are required as specified in NASA Procedural Requirements (NPR) 7123.1B, NPR 7120.5E, and NPR 7120.8A.[2] These requirements ensure that the R&D projects not only are implemented consistently and effectively, but also that they are creating adequate and proper documentation of their policies, decisions, procedures and essential transactions as required by 44 U.S.C. 3101 and 36 Code of Federal Regulations (CFR) 1220.

The R&D project data at these centers is being managed in a variety of electronic systems. One center implemented an enterprise records and data management system. The other two centers are utilizing a variety of electronic systems to manage their project records and data, each project determining the system most appropriate for their needs. Regardless of the electronic system, projects are using consistent (and carefully planned) classification schemes and naming conventions as well as a variety of mechanisms to track and maintain their files throughout the R&D project life-cycle, such as master inventories, file plans, and matrices. Using these mechanisms, most R&D projects are assigning early in the project life-cycle the records disposition authority for each document type based on the NASA Records Retention Schedules (NRRS).[3] In addition, R&D projects are adding descriptive metadata to electronic files to include, among other information, designations of proprietary and sensitivity levels as required by NASA's RM directive, NASA Policy Directive (NPD) 1440.61.[4]

Records disposition is being conducted largely at or near the decommissioning phase of R&D projects, or in other words, at the end of their active life-cycle. Project managers collaborate with their assigned RLO or appropriate RM staff to begin the disposition and closeout phase of the

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[2] NPR 7123.1B, *NASA Systems Engineering Processes and Requirements (Updated w/Change 4)*, 04/18/2013; NPR 7120.5E, *NASA Space Flight Program and Project Management Requirements w/Changes 1-16*, 08/14/2012; and NPR 7120.8A, *NASA Research and Technology Program and Project Management Requirements*, 09/14/2018. NPR 7120.5E defines life-cycle review as "A review of a program or project designed to provide a periodic assessment of the technical and programmatic status and health of a program or project at a key point in the life-cycle."
[3] NASA Records Retention Schedules (NRRS) 1441.1A, Change 1, effective 01/19/2017.
[4] NPD 1440.61, *NASA Records Management*, 09/10/2014.

projects.[5] Applying disposition is made easier and more efficient by the earlier assignment of records retention by the projects in collaboration with the RLO. The NARA inspection team reviewed project Data Management Plans (DMP) or similar project management plans and determined they do not always specify clear instructions for final disposition in terms of records management; however, all project staff communicated their awareness of NASA RM policy and procedure in regards to coordinating with RM staff for implementing disposition.

FINDINGS AND RECOMMENDATIONS

NARA identified areas of the data and records management programs that are not compliant with elements of 36 CFR Chapter XII, Subchapter B that need to be addressed. This report makes four findings and seven recommendations. Follow-up actions required for NASA are included in Appendix C.

Finding 1: Implementation of records life-cycle governance per Chapter 3 of NPR 1441.1E is inconsistent.

NPR 1441.1E, *NASA Records Management Program Requirements (Update Chapter 5)*, is NASA's primary records management governance requirement for life-cycle management of NASA records, including R&D records. Chapter 3, in particular, describes the procedural requirements for managing records throughout the records life-cycle. Many of the R&D projects included in this inspection are adhering to these requirements; however, implementation is inconsistent across projects.

JPL project and RM staff indicated R&D projects (and the records created) are being managed based on the type of project. NPR 7120.5 establishes project categories (Type 1, 2 or 3) based upon:

> (1) the project life-cycle cost (LCC) estimate, the inclusion of significant radioactive material, and whether or not the system being developed is for human space flight; and (2) the priority level, which is related to the importance of the activity to NASA, the extent of international participation (or joint effort with other government agencies), the degree of uncertainty surrounding the application of new or untested technologies, and spacecraft/payload development risk classification.

JPL project staff are selectively not applying the NASA RM policy, processes and procedures for Type 2 and Type 3 R&D projects, even though records are still being created and maintained for these projects. This violates NPR 1441.1E as it does not differentiate between types of projects in its requirements. Staff must implement the requirements regardless of the type of project to meet not only NASA policy but also the RM requirements in 36 CFR Chapter XII, Subchapter B.

Projects that create large volumes of R&D records should maintain current records inventories and file plans to aid retrieval and to ensure records that have met their retention period are

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[5] NPD 1440.61 and NPR 1441.1E, *NASA Records Management Program Requirements (Update Chapter 5)*, designate the RLO as responsible for records disposition activities.

properly disposed. These file tracking mechanisms are important for knowing what records are being created and where, whether they are permanent or temporary, and when they are eligible for disposition. They are also an invaluable resource for the RLOs in implementing their disposition responsibilities. Most of the Type 1 project teams are creating and maintaining records inventories and file plans early in the project life-cycle and include records disposition authorities and retention periods. However, one project waited until the decommissioning phase.

Lastly, there are concerns about the ability to access and read data in the future due to unknown technological obsolescence. Even though NPR 1441.1E requires that digital records be periodically migrated to new formats and media to ensure they remain retrievable throughout their life-cycle, it was not always evident that data migration plans were being implemented. To ensure that these historically significant R&D records can be accessed and used throughout their entire retention period, which can sometimes span decades, it is vital that migration plans be established and actively implemented.

Recommendation 1.1: NASA must explicitly incorporate into RM policy, procedure, and training that all projects, regardless of category or type, must manage records according to NPR 1441.1E and 36 CFR Chapter XII, Subchapter B.

Recommendation 1.2: NASA project staff and Center Records Managers must evaluate the condition of active and inactive electronic records, and create a preservation and disposition plan or modify existing Data Management Plans to include records preservation and disposition. (36 CFR 1220.32(c & e), 36 CFR 1234, 36 CFR 1236)

Finding 2: The Jet Propulsion Laboratory (JPL) processes for managing Federal email records violate NPR 1441.1E, 36 CFR 1220.34(i), 36 CFR 1236, and Section H-16 of the NASA/Caltech Prime Contract.

NASA is implementing the Capstone approach to managing email using General Records Schedule (GRS) 6.1.[6] In its approved NARA form 1005 (NA-1005), *Verification for Implementing GRS 6.1*, NASA indicated it will use items 010 and 011 in its management of email.[7] According to the GRS, item 010 currently only designates the Director of JPL as a Capstone official, although other NASA centers include additional director and manager positions. Item 010 email is maintained as permanent. Item 011 includes email of non-Capstone officials, in other words, "all other officials, staff, and *contractors* [emphasis added] not included in item 010."[8] Email falling under item 011 is scheduled to be retained for a minimum of seven years.

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[6] See NARA Bulletin 2013-02 at https://www.archives.gov/records-mgmt/bulletins/2013/2013-02.html for more information regarding the Capstone approach to managing email.

[7] NASA's Capstone schedule, GRS 6.1-0255-2017-0001, http://usnationalarchives.github.io/capstone-grs/api/forms/name-of-agency-to-which-this-form-applies/national-aeronautics-and-space-administration.html, approved by NARA on 10/10/2017.

[8] *General Records Schedule 6.1: Email Management Under a Capstone Approach*, https://www.archives.gov/files/records-mgmt/grs/grs06-1.pdf.

The Ames Research Center (ARC) and the Goddard Space Flight Center (GSFC), the other two centers inspected, are both implementing NASA's Capstone schedule as approved. JPL, however, is maintaining their own process for email systems that does not comply with the NASA Capstone schedule. JPL is unique in that it is a Federally-funded research and development center managed for NASA by the California Institute of Technology (Caltech). Caltech's official position on email is that all emails, regardless of content or use, are considered Caltech property, not NASA's. During discussions with the NARA inspection team, JPL contractors indicated that Caltech staff use NASA email applications on jpl.nasa.gov for both Caltech and Federal Government activity. JPL contractors specified that no Federal Government program/project (R&D) records were contained in email and that the email was proprietary to Caltech. Nevertheless, the contractor emails may contain Federal records. Discussions regarding decisions, R&D data, processes, developments and other standard exchanges of information about NASA projects are most likely included in email or at least transmitted in some way using email.

Section H-16 of the NASA/Caltech Prime Contract includes information about which records are considered NASA records versus which are Caltech, stating that not only are deliverables Government records, but that documentary materials made or received by the contractor in the performance of the contract are Government records as well. NASA's position is that email is covered under the Prime Contract and that any emails created or received by the contractor for or on behalf of the agency would be considered a Government record. Caltech reads the contract as not including email. The NASA Office of General Counsel (OGC) is currently working with the Caltech OGC to resolve the issue and to minimize the risk that Federal records are not being maintained in accordance with Federal regulations leading to unauthorized dispositions. The NASA OGC is also interested in collaborating with the OGC at NARA for assistance with the contract language.

Recommendation 2.1: NASA must review and update NARA form 1005 (NA-1005), Verification for Implementing GRS 6.1, to ensure consistency among centers in the designation of roles/positions.

Recommendation 2.2: NASA must plan, develop and implement the necessary policies, procedures, and training to manage all NASA JPL email in accordance with 36 CFR 1220.34(i); 36 CFR 1222.24(a); 36 CFR 1236; NPR 1441.1E; NASA Capstone Schedule; and Section H-16 of the NASA/Caltech Prime Contract.

Finding 3: RM training is being implemented inconsistently across the three NASA centers and is not required annually.

Training at the centers is being implemented inconsistently, and for many, it is not required. Neither the NASA Policy Directive (NPD) 1440.61, nor the corresponding procedural requirement, NPR 1441.1E, require that staff (including those who create and manage R&D records) take annual RM training. NPD 1440.61 requires that the CRM and RLOs receive RM

training, and that RM training is provided to agency personnel. NPR 1441.1E states that RM training must be made available to agency personnel.[9]

Agencies are required by 36 CFR 1220.34(f) to "provide guidance and training to all agency personnel on their records management responsibilities, including identification of Federal records, in all formats and media."[10] NARA Bulletin 2017-01 further clarifies requirements for agency records management training programs.[11] The Bulletin, which applies to all Federal employees, contractors, volunteers and others that create, receive, access, or use Federal records on behalf of the agency, requires that agency personnel must complete RM training within 60 days of employment and must also complete annual refresher training.

To supplement NASA training policy, the three centers have expanded through center-specific roles and responsibilities who must provide for and/or take RM training. All three have created additional formal and/or informal (and ad hoc) RM training, but these too are not being required annually. Only one project implemented a role-based training program that required certain project roles take particular NASA RM training modules. Even though this project did not require basic RM training for all staff who create and maintain R&D records, the role-based approach could be used as a model by other projects/centers.

To better understand their unique responsibilities for managing R&D/scientific records, R&D staff must be trained on their RM responsibilities. This includes understanding RM requirements in all phases of the records life-cycle from creation through final disposition and for all types of records, including electronic records and email, in accordance with the NRRS.

Recommendation 3.1: NASA must update policy and procedures to require all employees and contractors to take annual RM training in accordance with NARA Bulletin 2017-01.

Recommendation 3.2: NASA should consider creating role-based RM training for R&D/scientific project staff. (NARA Bulletin 2017-01)

Finding 4: The NASA centers have a large quantity of R&D records stored within the Federal Records Centers (FRC) that need proper disposition applied.

The NASA centers have a large quantity of R&D records (over 13,000 cubic feet) stored within NARA's Federal Records Centers (FRC) system. The NASA records schedule has three categories for NASA R&D records: Item 1- Permanent; Items 3 & 7 - 30 year temporary; and Items 5 & 9 - 15 year temporary. The schedule, when approved in 2004, covered all project records and was intended to be applied retroactively to those records already in the FRC. These records were placed in a life-cycle hold status of Pending Agency Action to allow NASA to separate the records into their proper category. (These are referred to by the FRC as 'limbo

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[9] NASA created "Records Management for Everyone" training available on its Learning Management System (LMS) in fulfillment of the NASA directive and procedural requirement.

[10] 36 CFR 1220.34(f), https://www.ecfr.gov/cgi-bin/text-idx?SID=2cb32d56fb6af59e4b4ee022f092b321&mc=true&node=pt36.3.1220&rgn=div5#se36.3.1220_134.

[11] NARA Bulletin 2017-01: *Agency Records Management Training Requirements*, https://www.archives.gov/records-mgmt/bulletins/2017/2017-01-html.

codes.'[12]) Unresolved coding is preventing NASA from implementing timely and proper disposition according to the NRRS.

Recommendation 4: NASA must apply disposition to R&D records placed in a life-cycle hold status of Pending Agency Action through coordination with NARA. (36 CFR Chapter XII, Subchapter B)

CONCLUSION

Overall, the three NASA centers that were included in the NARA R&D inspection have a strong data and records management foundation and strategy. Most projects included at the centers are actively incorporating compliant RM components throughout the data management framework. There is a demonstrated commitment to documenting and preserving R&D permanent historical records and improving internal records management processes.

There are, however, a few areas that NASA and the centers need to address, such as (1) managing all R&D project records according to NASA directives and policy regardless of project type, media, and format; (2) requiring annual RM training; and (3) ensuring R&D records in Pending Agency Action status are addressed through timely disposition. By making the improvements recommended in this report, NASA will strengthen its compliance with records management requirements; further integrate records management into the existing data management framework; ensure the preservation of its historically significant R&D records; and contribute to NASA's overall mission. The specific recommendations related to issues unique to these three centers should serve as touchstones for the NASA ARO when evaluating other NASA centers that may have similar challenges.

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[12] A transfer with one of the following Archives and Records Centers Information System (ARCIS) statuses is considered in limbo: Pending Agency Action; Deferred (reappraisal pending); Archival Sample; Pending Legal Determination; Destruction Prohibited by Statute; Unscheduled; and Z Freeze Code.

APPENDIX A
INSPECTION PROCESS

OBJECTIVE AND SCOPE

The objective of this inspection was to determine if R&D records created and maintained at three NASA centers are in compliance with the Federal Records Act; 36 CFR Chapter XII, Subchapter B; and NASA policy and procedures.

METHODOLOGY

NARA carried out this inspection by conducting site visits at NASA's Jet Propulsion Laboratory (JPL) in Pasadena, California, and NASA's Ames Research Center (ARC) at Moffett Field, California. NARA also held teleconferences with NASA's Goddard Space Flight Center (GSFC) in Greenbelt, Maryland, and with NASA's Headquarters in Washington, DC. More specifically, the inspection team:

- Reviewed records management policies, directives, and other documentation provided by NASA;
- Interviewed a representative sample of RM and research and development program staff of "Type 1" projects at JPL, ARC, and GSFC;
- Guided the course of the inspection using a detailed checklist of questions based on Federal statutes, Federal regulations, and NARA guidance; and
- Reviewed NASA responses to current and past annual Records Management Self-Assessments (RMSA) and current and past annual reports of NASA's SAORM.

OFFICES VISITED/INTERVIEWED

NARA interviewed the following staff at JPL and ARC, March 12-15, 2019:

- Management Staff
- Records Management Staff
- Research and Development Project Managers
- Data and Configuration Management Staff
- Information Technology Staff

NARA interviewed the following staff at GSFC, March 20, 2019:

- Records Management Staff
- Research and Development Project Managers
- Data and Configuration Management Staff

APPENDIX B
RELEVANT INSPECTION DOCUMENTATION

Ames Policy Directive 1440.1, "Records Management Program," 06/02/2015.

Ames Procedural Requirements 1440.1, "Records Management Program Requirements," 09/25/2015.

Goddard Procedural Requirements 1440.8B, "Records Management," 05/07/2018.

NASA-Caltech Prime Contract, Section H-16, no date.

NASA Capstone Schedule, GRS 6.1-0255-2017-0001, 10/10/2017.

NASA Policy Directive 1440.61, "NASA Records Management," 09/10/2014.

NASA Procedural Requirements 1441.1E, "NASA Records Management Program Requirements (Update Chapter 5)," 01/29/2015.

NASA Procedural Requirement 7120.5E, "NASA Space Flight Program and Project Management Requirements w/Changes 1-16," 08/14/2012.

NASA Procedural Requirement 7120.8A, "NASA Research and Technology Program and Project Management Requirements," 09/14/2018.

NASA Procedural Requirement 7123.1B, "NASA Systems Engineering Processes and Requirements (Updated w/Change 4)," 04/18/2013.

NASA Records Retention Schedules 1441.1A, Change 1, January 19, 2017.

Project Configuration Management Plans, Data Management Plans, or similar

Project Records Retention Procedures

Training Materials and Documentation - NASA, Center, and Project

APPENDIX C
AUTHORITIES AND FOLLOW-UP ACTIONS

AUTHORITIES

- 44 U.S.C. Chapter 29

- 36 CFR Chapter XII, Subchapter B

- 36 CFR 1239, Program Assistance and Inspections

OTHER GUIDANCE

- OMB/NARA *Managing Government Records Directive* (M-12-18)

- OMB/NARA *Guidance on Managing Email* (M-14-16)

- Other NARA Bulletins currently in effect

FOLLOW-UP ACTIONS

- ACTION PLAN

  NASA will submit to NARA within 60 days after the date of transmittal of this report to the head of the agency a Plan of Corrective Action (PoCA) that specifies how the agency will address each recommendation, including a timeline for completion and proposed progress reporting dates.

- NARA REVIEW

  NARA will analyze the adequacy of NASA's action plan, provide comments to NASA on the plan within 60 calendar days of receipt, and assist NASA in implementing recommendations.

- PROGRESS REPORTS

  NASA will submit to NARA semi-annual progress reports on the implementation of the action plan until all actions are completed. NARA will inform NASA when progress reports are no longer needed.

APPENDIX D
ACRONYMS AND ABBREVIATIONS

ARC   Ames Research Center
ARCIS   Archives and Records Centers Information System
ARO   Agency Records Officer
Caltech   California Institute of Technology
CFR   Code of Federal Regulations
CRM   Center Records Manager
DMP   Data Management Plan
FRC   Federal Records Center
GRS   General Records Schedule
GSFC   Goddard Space Flight Center
JPL   Jet Propulsion Laboratory
KDP   Key Decision Point
LCC   Life-Cycle Cost
NARA   National Archives and Records Administration
NASA   National Aeronautics and Space Administration
NPD   NASA Policy Directive
NPR   NASA Procedural Requirements
NRRS   NASA Records Retention Schedules
OGC   Office of General Counsel
OMB   Office of Management and Budget
PoCA   Plan of Corrective Action
R&D   Research and Development
RC   Records Custodian
RLO   Records Liaison Officer
RM   Records Management
RMSA   Records Management Self-Assessment
SAORM   Senior Agency Official for Records Management
U.S.C.   United States Code

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