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ACIS REF ID: \_\_\_\_\_

**FINAL IMPLEMENTATION AGREEMENT**  
**BETWEEN THE**  
**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION**  
**AND THE**  
**U. S. DEPARTMENT OF THE INTERIOR'S**  
**UNITED STATES GEOLOGICAL SURVEY**  
**FOR A**  
**LANDSAT DATA CONTINUITY MISSION**

## I. PURPOSE

The National Aeronautics and Space Administration (NASA) and the Department of the Interior's United States Geological Survey (USGS), herein referred to as "the Agencies," as the identified primary Landsat Program Management team under authority of U.S. Code Title 15, Chapter 82, "Land Remote Sensing Policy" and Presidential Decision Directive NSTC-3, "Land Remote Sensing Strategy," agree to execute the responsibilities contained within this document for the acquisition of a Landsat-type capability mission that shall be referred to as the Landsat Data Continuity Mission, or LDCM. The scope of this effort includes development and launch of a land imaging observatory and all ground segment capabilities to operate the observatory including operations, data handling, archive and distribution. The primary objective of this mission is to provide Landsat-quality data to meet US Government operational and scientific requirements for observing land use and land change. Further, the capabilities for LDCM are derived from the mandate to maintain continuity of data quality, characteristics, and accessibility for all Landsat data users.

This document supersedes the LDCM Initial Implementation Agreement signed on November 1, 2001.

## II. RESPONSIBILITIES

In general, the responsibilities for the LDCM implementation are divided between mission segment areas; NASA is responsible for the development of the Space Segment, Launch Segment, and the Mission Operations Element (MOE); USGS is responsible for the development of the Ground System (comprising the Flight Operations and Data Processing and Archive Segments), excluding procurement of the MOE. The USGS is also responsible for LDCM mission operations, after the completion of the on-orbit checkout period. NASA will serve as the system integrator for the entire LDCM and lead the missions systems engineering effort. The LDCM implementation is structured to provide space-based land imaging capability with a mission design life of at least five years.

The following section details each Agency's responsibilities.

NASA shall use reasonable efforts to carry out the following responsibilities:

1. In coordination with USGS develop an LDCM system that is designed to acquire land surface data commensurate with performance that is annotated in the LDCM Draft Level-1 Requirements Document and agreed upon by the Landsat Program Management.
2. Lead, fund and manage the development of the LDCM Space Segment (including the Instrument Element and Spacecraft Element) and Launch Segment, the scope of which shall not exceed on-orbit check-out and acceptance.
3. Procure, on a reimbursable basis, the Mission Operations Element in coordination with USGS, to provide the performance defined in the Mission Operations Element Requirements Document.

4. Provide technical support to USGS for the development of a Ground System to perform flight operations and to ingest, archive, calibrate, validate, process, and distribute LDCM data.
5. Provide funding for NASA Ground and Space Network communications and Flight Dynamics Lab support through on-orbit checkout and acceptance.
6. Provide USGS, on a reimbursable basis, LDCM-related use of NASA Ground and Space Network communications and the Flight Dynamics Lab following on-orbit checkout and acceptance of the LDCM system and throughout the remaining life of the mission.
7. Lead the LDCM development as the systems integrator for all mission segments during development, on-orbit checkout and acceptance.
8. Lead, fund and manage the LDCM systems engineering, including mission systems engineering efforts for all segments throughout development, on-orbit checkout and acceptance.
9. Lead, fund and manage the pre-launch and orbital verification, calibration, validation and characterization of LDCM data through on-orbit checkout and acceptance of the LDCM system.
10. Lead, fund and manage the LDCM on-orbit checkout and acceptance of the LDCM system, including all contract deliverable items.
11. Transfer the LDCM Space Segment (including the Instrument Element and Spacecraft Element) and Mission Operations Element contracts and associated property control to USGS following on-orbit checkout and acceptance of the LDCM system.
12. Support USGS, on a reimbursable basis, with on-orbit performance evaluation of the LDCM system and fund on-orbit performance incentives, following each evaluation period, for the Instrument Element.
13. Support USGS with the calibration, validation, and characterization of the LDCM data following on-orbit acceptance of the LDCM system and throughout the remaining life of the mission.
14. Provide and fund, for the life of the mission, a co-chair for the Landsat Science Team and focus-area (e.g. land use/land cover change science) scientific and technical support.
15. Support USGS, on a reimbursable basis, with anomaly investigations throughout the life of the mission.
16. Support USGS as requested, on a reimbursable basis, with functional area expertise in support of the long-term archive service (provided by the USGS National Satellite Land Remote Sensing Data Archive).

USGS shall use reasonable efforts to carry out the following responsibilities:

1. In coordination with NASA develop an LDCM system that is designed to acquire land surface data commensurate with performance that is annotated in the LDCM Draft Level-1 Requirements Document and agreed upon by the Landsat Program Management.
2. Provide programmatic and Ground System functional-area expertise in support of the NASA-led development of the Space Segment.
3. Provide Ground System functional-area expertise, element funding, and support to NASA on critical design decisions for the LDCM Mission Operation Element development.
4. Lead, fund and manage the development of the Ground System (excluding the Mission Operations Element and Ground Support Equipment) that includes a flight operations and ground data processing capability to ingest, archive, calibrate, validate, process, and distribute LDCM data.
5. Provide Ground System functional-area expertise to NASA during the use of the NASA Ground and Space Network communications or the Flight Dynamics Lab in support of the LDCM.
6. Fund LDCM-related use of NASA Ground and Space Network communications and Flight Dynamics Lab support following on-orbit acceptance of the LDCM system and throughout the remaining life of the mission.
7. Provide Ground System functional-area expertise in support of the NASA LDCM systems integrator.
8. Provide Ground System functional-area expertise in support of the LDCM systems engineering effort and lead the effort after transfer of the LDCM system to USGS.
9. Provide Ground System functional-area expertise in support of the pre-launch and orbital verification, calibration, validation and characterization of LDCM data through on-orbit checkout and acceptance of the LDCM system.
10. Provide Ground System functional-area expertise in support of the on-orbit checkout and system acceptance of the LDCM system.
11. Accept and execute all responsibilities associated with the transfer of the LDCM Space Segment (including the Instrument Element and Spacecraft Element) and Mission Operations Element contracts from NASA following on-orbit acceptance of the LDCM system including assuming contract management and funding responsibility for all aspects of the contract except funding of Instrument Element on-orbit performance incentives.
12. Lead, fund and manage on-orbit performance evaluation of the LDCM system and administrate the on-orbit Instrument Element performance incentive evaluation and award following on-orbit acceptance of the LDCM system and throughout the remaining life of the mission.

13. Lead, fund and manage the calibration, validation, and characterization of the LDCM data following on-orbit acceptance of the LDCM system, and throughout the remaining life of the mission.
14. Lead, fund and manage the Landsat Science Team for the life of the mission.
15. Lead, fund and manage all anomaly investigations following on-orbit acceptance of the LDCM system and throughout the life of the mission.
16. Provide long-term services by the National Satellite Land Remote Sensing Data Archive for all LDCM data acquired by the United States Government.

### III. FINANCIAL OBLIGATIONS

1. Except as provided in paragraph 3 herein, there will be no transfer of funds or other obligations between NASA and USGS in connection with this Agreement, and each Party will fund its own participation under this Agreement.
2. All activities under or pursuant to this Agreement are subject to the availability of appropriated funds and the Parties' respective funding procedures, and no provision shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. § 1341.
3. Insofar as NASA is performing activities on a reimbursable basis for USGS as outlined in Article II above, NASA shall be reimbursed by USGS in connection with the provision of goods or services in accordance with law. Arrangements for the funds transfer should be made in advance of initiation of NASA's efforts. NASA will not provide services or incur costs beyond the funding provided under this Agreement.

### IV. AUTHORITY

NASA enters into this FIA pursuant to Section 203(c) of the National Aeronautics and Space Act of 1958, as amended, 42 U.S.C. § 2473(c)(5) and (6). This FIA is conducted pursuant to the MEMORANDUM OF UNDERSTANDING BETWEEN THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AND THE U.S. GEOLOGICAL SURVEY CONCERNING COLLABORATIVE PROGRAMS, signed by the Director, U.S. Geological Survey on December 8, 1999 and NASA's Associate Administrator for Earth Science on January 4, 2000. It shall be listed as an ANNEX thereof.

### V. INTELLECTUAL PROPERTY RIGHTS - PATENT AND INVENTION

Unless otherwise agreed by NASA and USGS, custody and administration of inventions made as a consequence of, or in direct relation to, the performance of activities under this Agreement will remain with the respective inventing Party. In the event an invention is made jointly by employees of NASA (including employees of NASA contractors or subcontractors) and USGS (including employees of USGS contractors or subcontractors), NASA and USGS will consult and agree as to future actions toward establishment of patent protection for the invention.

## VI. RESULTING DATA

All LDCM data and telemetry obtained by the USGS will be archived and LDCM data products will be available to all users on a nondiscriminatory basis in accordance with U.S. Code Title 15, Chapter 82, "Land Remote Sensing Policy" and OMB Circular A-130 or successor legislation and guidelines. Emphasis will be on customer retrieval, via the Internet or other electronic pathways, of preprocessed, orthorectified LDCM data posted by the USGS. Aside from an initial measurement calibration period after launch and possible national security concerns, no data products will have a period of exclusive access or use. The goal will be release of data products immediately after successful completion of the on-orbit acceptance phase.

## VII. RELEASE OF GENERAL INFORMATION TO THE PUBLIC

Information releases may be made to the public by the appropriate Agency for its own portion of the program/cooperation as desired. Insofar as participation of another Agency is involved, the Agencies will seek to consult with each other prior to any releases, consistent with the Agencies' respective laws and policies.

## VIII. LIABILITY AND RISK OF LOSS

Each Agency agrees to assume liability for its own risks arising from or related to activities undertaken in this Agreement.

## IX. AMENDMENT AND TERMINATION

This FIA may be amended at any time upon the mutual consent of the Agencies. Amendments must be in writing, and signed by the authorized representatives of the Agencies or their designee.

An Agency may terminate its participation in this FIA at its sole discretion, subsequent to providing at least 120 days advance written notice to the other Agency.

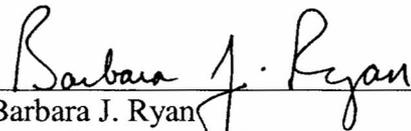
X. TERM OF AGREEMENT AND EFFECTIVE DATE

This FIA shall be effective upon the date of the last signature below and shall remain in effect for ten (10) years. This FIA shall be reviewed every year and any changes deemed necessary by the Agencies may be made by amending the FIA at that time, upon mutual agreement.



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S. Alan Stern  
Associate Administrator for  
Science Mission Directorate  
National Aeronautics and Space  
Administration

Date: 17 Apr 2007



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Barbara J. Ryan  
Associate Director for Geography,  
United States Geological Survey  
Department of the Interior

Date: 23 April 2007