
The Act (P.L. 102-555) directs LandSat Program Management to study options for a successor mission to Landsat 7 to:
1. “adequately serve the civilian, national security, commercial, and foreign policy interests of the United States”;
2. “maintain data continuity with the LandSat system”;
3. “incorporate system enhancements, including any such enhancements developed under the technology demonstration program under section 303, which may potentially yield a system that is less expensive to build and operate, and more responsive to data users”

The 1992 Act defines data continuity as:
the continued acquisition and availability of unenhanced data which are, from the point of view of the user –
1. “sufficiently consistent (in terms of acquisition geometry, coverage characteristics, and spectral characteristics) with previous Landsat data to allow comparisons for global and regional change detection and characterization; and
2. “compatible with such data and with methods used to receive and process such data.”

N/A

LDCM on Third and Final Implementation Strategy
   # Formulation Phase 2 private firms, Resource 21 and DigitalGlobe each awarded $5M to conduct formulation phase studies leading to Dec., 2002 system PDR’s
   # Implementation phase BFP released Jan., 2003; cancelled Sept., 2003
2. 2004–2005: NPOESS Integration
   # Aug. 13, 2004 memo from OSTP chief Marburger directs procurement of LandSat-type sensors for flights aboard NPOESS satellites
   # 2006-present: LDCM Free Flyer
   # Dec. 23, 2005 memo from OSTP chief Marburger redirects NASA to acquire free-flyer satellite for LDCM directs USGS to operate satellite post-launch

LDCM is a NASA/USGS Partnership
N/A

USGS leads:
• development of ground segment
• satellite operations
• post-launch calibration
• data archiving
• data product generation and distribution

Target Launch Date July 2011

New Data Policy
On April 21, 2008 the USGS released a USGS Technical Announcement stating:
“...By February 2009, any Landsat archive scene selected by a user will allow comparisons to
at no charge, automatically to a standard product recipe and staged for electronic
retrieval.”
• Orthorectified
• Universal Transverse Mercator (UTM) Projection

Implementation schedule:
Landsat 7 – all data acquisitions July 2008
Landsat 7 – all data September 2008
Landsat 5 – all TM data December 2008
Landsat 4 – all TM data January 2009
Landsat 1–5 – all MSS data January 2009

In January 2008, Barbara Ryan, USGS Assoc. Director for Geography, and Michael Friedl, NASA Earth Science Division Director, signed a new “Landsat Data Distribution Policy”
“...the USGS provides selected satellite data products for retrieval via the Internet at no charge to the users.”

USGS EROS had historically distributed Landsat data products to the general public on a non-discriminatory basis at the “cost of fulfilling a user request (COFUR).”
• $600 per Landsat 7 ETM+ scene

Landsat 5 and Landsat 7 Status
Landsat 7 - 1999 Launch - 4 years past design life
1. Spacecraft
   - Gyro 3 Failure (Oct 2005)
   - Workinng additional improvements for software gyro
   - Solar Array Drive (not critical)
   - Solid State Recorder - 4 memory boards
   - Electrical Power Subsystem - sheet 14 and sheet 46
   - Fault Line Thermistor
   - EMTs
   - Scan Line Correction Failure (May 31, 2003)
   - Bumper Mode Operations (April 2007)

Landsat 5 - 1984 Launch - 21 years past design life!!!!
1. Spacecraft
   - Battery 2 Anomaly (On-going) – Oct 2007
   - Image collection restarted in Feb. 2005
   - Star Tracker Issue – June 2007
   -Solar Array Issue
   - Field array operations – Aug 2006
2. EMTs
   - Functioning normally in bumper mode

National Asset Declaration
The President’s Science Advisors, Dr. John Marburger, III, stated in an August 13, 2004 memorandum with subject line “Landsat Data Continuity Strategy”
“Landsat is a national asset, and its data have made – and continue to make – important contributions to U.S. economic, environmental, and national security interests. Specifically, Landsat images are the principal source of global, medium resolution, spectral data used by Federal, state, and local government agencies, academia, and the private sector in land use/land cover change research, economic forecasting, disaster recovery and relief, and the scientific study of human impacts on the global environment. Additionally, Landsat data are utilized by over 70 countries and are an important part of a global, integrated Earth observation system.”

Further Information
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Instrument – Operational Land Imager (OLI)
Ball Aerospace Corporation selected July 2007:
• successful preliminary design review March 2008
• instrument delivery to spacecraft by October 2010

OLI Spectral Band Requirements

<table>
<thead>
<tr>
<th>#</th>
<th>L7 ETM+ Bands</th>
<th>LDCM OLI Band Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Band 1 20 m, Blue, 0.450 - 0.515</td>
<td>20 m, Blue, 0.450-0.515</td>
</tr>
<tr>
<td>2</td>
<td>Band 2 20 m, Green, 0.525 - 0.680</td>
<td>20 m, Green, 0.525-0.680</td>
</tr>
<tr>
<td>3</td>
<td>Band 2 20 m, Red, 0.630 - 0.680</td>
<td>20 m, Red, 0.630-0.680</td>
</tr>
<tr>
<td>4</td>
<td>Band 4 20 m, Near-IR, 0.775 - 0.830</td>
<td>20 m, Near-IR, 0.755-0.830</td>
</tr>
<tr>
<td>5</td>
<td>Band 5 20 m, SWIR-1, 1.550 - 1.750</td>
<td>20 m, SWIR-1, 1.600-1.700</td>
</tr>
<tr>
<td>6</td>
<td>Band 6 30 m, LWIR, 10.00 - 12.50</td>
<td>N/A</td>
</tr>
<tr>
<td>7</td>
<td>Band 7 30 m, SWIR-2, 2.100 - 2.200</td>
<td>30 m, SWIR-2, 2.100-2.200</td>
</tr>
<tr>
<td>8</td>
<td>Band 8 15 m, Pan, 0.520 - 0.900</td>
<td>30 m, Cirrus, 1.200-1.600</td>
</tr>
</tbody>
</table>

Explanation of Differences
1. Cirrus Band added in 2001 to detect cirrus contamination in other channels
2. Coastal Band added in 2001 to support high resolution ocean color investigations requiring higher resolution to capture water patterns relative to MODIS and SeaWiFS
3. SWIR added to LDCM in 2003 to allow detection of surface water relative to MODIS and SeaWiFS

Other Spacecraft Issues (non-critical)
• Working additional improvements for software gyro
• Solar Array Drive (not critical)
• Solid State Recorder - 4 memory boards
• Electrical Power Subsystem - sheet 14 and sheet 46
• Fault Line Thermistor
• EMTs
• Scan Line Correction Failure (May 31, 2003)
• Bumper Mode Operations (April 2007)

Spacecraft
General Dynamics Advanced Information Systems, Inc. selected to build spacecraft on April 22, 2008

Launch Vehicle
Lockheed Martin Commercial Launch Services selected on Oct. 3, 2007 to launch LDCM on an Atlas V