

MEMORANDUM OF UNDERSTANDING

BETWEEN THE

**UNITED STATES GEOLOGICAL SURVEY
OF THE DEPARTMENT OF THE INTERIOR**

AND THE

CANADA CENTRE for REMOTE SENSING of NATURAL RESOURCES CANADA**for the Direct Reception and Distribution of Landsat 7 Data**Section I: Purpose

This Memorandum of Understanding (MOU), consisting of a main text and two annexes, establishes the terms and conditions under which the United States Geological Survey (USGS) will provide and the **Canada Centre for Remote Sensing (CCRS)** will receive, process, archive, and distribute data from the U.S. civil land remote sensing satellite program, hereafter referred to as the Landsat-7 system, which is managed by the USGS on behalf of the U.S. Landsat Program Management.

Section II: Undertakings of the Parties

- A. The USGS, will endeavor to provide operational Landsat-7 service under the terms of this MOU and will:
1. Program, as requested by **CCRS**, the Landsat-7 Enhanced Thematic Mapper-Plus (ETM+), to cover areas within the acquisition radius of the **CCRS** ground stations to the extent that such requests can be accommodated by the Landsat-7 spacecraft. The USGS will endeavor to schedule Landsat-7 downlink resources to meet requests from all participating International Cooperators (ICs) in an equitable and balanced manner, subject to conflict-resolution guidelines to be provided to all stations. Programming details to meet such requests will be arranged by mutual agreement of the technical representatives provided for in Section II.C.1 of this MOU, based on arrangements between the USGS and **CCRS**.
 2. Provide the **CCRS** with orbital elements for calculating the antenna pointing angles necessary to acquire the Landsat-7 spacecraft transmitted

signals and with the necessary ancillary information for processing the data acquired.

3. Reserve the right to curtail or terminate transmission of data to the **CCRS** for reasons of (1) U.S. national security or international obligations and/or foreign policies, (2) in the event of spacecraft or the USGS ground equipment limitations require such actions, or (3) non-payment of cost-sharing fees as outlined in Annex I. In these cases, the USGS will notify **CCRS** and discuss the planned action in the most expeditious manner possible.
4. Make Landsat-7 data in its possession available in accordance with U.S. laws, policies and regulations.

B. **CCRS** shall:

1. Operate two ground stations for the reception, processing, archiving, and distribution of Landsat 7 data at its own cost, including the cost of establishing and operating the necessary communication links with NASA/USGS's Landsat-7 Mission Operations Center located at the NASA Goddard Space Flight Center, Greenbelt, Maryland, U.S.A., and the USGS EROS Data Center (EDC) in Sioux Falls, South Dakota, U.S.A.
2. Produce Landsat-7 data products in accordance with such distribution formats as may be agreed. (See definition of "distribution formats" in Annex II)
3. Ensure that all Landsat-7 data acquired by the **CCRS** are available for sale or distribution on a public, nondiscriminatory basis. This applies to all Landsat data acquired under this MOU.
4. Make available to the USGS upon request copies of any arrangements signed by **CCRS** concerning the distribution of Landsat-7 data from the **CCRS**. Such arrangements shall be consistent with the above provisions.
5. Pay to the USGS, or ensure the appropriate authorities of the government pay to the USGS in a timely manner, the cost-sharing fees described in Annex I to this MOU.
6. Maintain a current inventory of its Landsat-7 holdings and provide at least monthly updates of their metadata, to the EDC in an agreed to format, electronically or on an agreed-to media, once the ground station is operational. These metadata will be made available publicly through U.S. data facilities.

7. Establish and maintain an on-line system, with external public access, of browse imagery for its Landsat 7 data holdings, or provide browse data at least monthly to the EDC in an agreed-to format and on agreed-to media, once the ground station is operational.
8. Maintain Landsat-7 data that have met **CCRS** quality standards in the **CCRS** archive for at least 10 years following data acquisition using accepted archive management practices. If the station plans to discard data, it will issue a purge alert to the U.S. National Satellite Land Remote Sensing Data Archive at EDC. The USGS will be given first right of refusal to acquire the data at the cost of reproduction and transmission.
9. Endeavor to ensure that any radio frequency problem occurring in relation to data reception by the **CCRS** ground station is resolved to the satisfaction of the parties to this MOU. Questions concerning radio frequency interference by the Landsat spacecraft raised by parties in third countries will be referred to the U.S. Government and the USGS for reply. The USGS will use the following frequency range for Enhanced Thematic Mapper Plus (ETM+) sensor data transmissions from the Landsat 7 spacecraft:

X-Band (8025 - 8400 MHZ).
10. Provide reasonable quantities of Landsat-7 data in the agreed-to data format and media, and at the cost of reproduction and distribution or a price to be negotiated, when requested by the USGS in support of key U.S. Government programs, once the ground station is operational. (See definition of "data format" and "cost of reproduction and distribution" in Annex II)
11. Exchange limited amounts of Landsat-7 data in the agreed-to data format and media, when requested by the USGS for purposes of validating data quality, once the ground station is operational. Data for this purpose would be exchanged semiannually with no exchange of funds. (See definition of "data format" in Annex II)
12. Provide sufficient quantities of Landsat-7 data to meet U.S. L-7 mission requirements, in agreed-to data format and media, at the cost of reproduction and distribution, when requested by the USGS in response to a significant loss of the L-7 spacecraft capability to acquire L-7 data, once the ground station is operational. For any support to **CCRS** beyond providing Landsat 7 data to the EDC, the USGS and the **CCRS** will negotiate specific financial terms. (See definition of "data format" in Annex II)

C. It is further agreed that:

1. The USGS and **CCRS** will each designate program representatives to be responsible for the implementation of this MOU. The program representatives, or their designated representatives, will participate in the Landsat Ground Station Operations Working Group. This group, chaired by the USGS will serve as a forum for the exchange of programmatic, management, and technical information among station operators and the USGS. Discussions of specific technical matters may be delegated to a technical working group. Supplemental meetings between **CCRS** and the USGS will be held by mutual agreement.
2. The activities under this MOU will be conducted in accordance with the laws and regulations of the United States of America and **Canada** respectively, and are subject to the availability of appropriated funds.
3. The USGS does not warrant the suitability of Landsat-7 data for any purpose.
4. The parties will not make claim or bring action against each other for any damage or injury brought about by the use of the Landsat-7 system.
5. The USGS EROS Data Center and the **CCRS** are authorized to enter into and modify as necessary technical, financial, and management implementing arrangements within the scope of this MOU.
6. EDC staff members will encourage **Canadian** callers to first consider **CCRS** archives for ordering scenes of Canada. To facilitate this arrangement, the **CCRS** shall make available to the USGS EDC complete and current information sufficient for this referral.
7. When the coverage of **CCRS** overlaps with that of another IC, the USGS will encourage the **CCRS** and the other station operator to consult with a view toward reaching a mutually satisfactory understanding on responding to requests for data of the overlapping coverage area.
8. The USGS reserves the right to service the Landsat-7 data requests of all users affiliated with U.S. Government programs regardless of nationality or location.
9. The U.S. Government retains the ownership right to all Raw Landsat-7 Data (see definition in Annex II). Beyond the provisions of Section II.B.3, the USGS places no restrictions on **CCRS** to use, manipulate, generate products from, distribute, or sell Landsat-7 data.

10. Technical information exchanged between the USGS and the **CCRS** will be subject to the laws, policies, and regulations of the United States and **Canada** respectively. In the event it is necessary to exchange technical information and the furnishing party considers that such technical information is to be protected for proprietary or export control purposes, such information must be clearly marked with a legend indicating the country of origin, the conditions of release, that the information relates to this MOU, and that it is furnished in confidence. The USGS and **CCRS** will take all lawful steps available, to prevent disclosure of such information without the consent of the other party and to ensure that it is used only for the purposes of this MOU. The USGS and **CCRS** may release to the public other general, non technical information regarding the Landsat program after ensuring, through consultation with the other party when necessary, that this information is fairly and accurately represented.
11. Any dispute in the interpretation or implementation of the terms of this MOU will be referred to the Chief, USGS National Mapping Division and the Director General, CCRS, Earth Sciences Sector, Natural Resources Canada, for settlement.

Section III: Entry Into Force

- A. This MOU shall enter into force upon signature by both parties and remain in force through the operational lifetime of the Landsat-7 spacecraft. Termination for whatever reasons will not affect the rights and obligations of the parties under sections II.B.3 and II.B.8 which will survive any termination. It is understood that this MOU may be amended by mutual agreement of the parties.
- B. In the event that either the USGS or **CCRS** is unable to comply with any provision of this MOU, either party, after consultation with the other, shall have the option of terminating or suspending the activities under this MOU, providing that reasonable notification of such action is forwarded in writing by one party to the other.

IN WITNESS WHEREOF, respective representatives have signed this Memorandum of Understanding.

For the United States Geological
Survey of the Department
of the Interior:

For the Canada Centre for Remote
Sensing of Natural Resources
Canada

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10 Sept '99

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