



## United States Department of the Interior

GEOLOGICAL SURVEY  
EROS Data Center  
Sioux Falls, South Dakota 57198

IN REPLY REFER TO:

OC 7-10

July 17, 1985

Mr. Edward F. Conlan  
Chief, Landsat Operations Division  
NOAA/Goddard Space Flight Center  
Building 28, Code 435.7  
Greenbelt, Maryland 20771

Dear Ed:

Enclosed is the Fiscal Year 1985 third quarter status report for Landsat data handling and processing activities performed at EDC for NOAA.

I would be happy to discuss any questions or comments you may have.

Sincerely,

Allen H. Watkins  
Chief, EROS Data Center

Enclosure

cc: G. Landis  
R. Pohl  
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M. Yaroch  
W. Rohde  
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bcc: AHW Chron  
✓ AHW Subj  
GGM Chron  
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EDC Chron

GGMetz/mle/x125/7-17-85

EROS Data Center  
Landsat Data Handling and Processing  
Quarterly Report

Third Quarter, Fiscal Year 1985

The EROS Data Center (EDC) operates the final data processing, data archiving, product generation, and distribution portion of the Landsat ground segment for the National Oceanic and Atmospheric Administration (NOAA). This report summarizes the Landsat-related activities performed for NOAA during the third quarter of FY 1985. Included in the attachment are Landsat data processing, production, and distribution statistics, sales summaries, and customer profiles.

1. Data Receipt and Processing

Both the Domsat and Decnet links used for transmitting MSS high density image data and corresponding GHIT information between GSFC and EDC continued to perform satisfactorily. Domsat transmissions were rescheduled as necessary when higher priority shuttle-related activities took priority over Landsat. EDC continued to consolidate incoming high-density image data which averages about 20 scenes per tape to minimize the number of high density tapes required for archive storage. EDC currently stacks an average of 55 MSS scenes per tape.

During the quarter, EDC received 10,246 and cataloged 9,663 scenes of Landsat MSS data. EDIPS pipeline run time was 764 hours to process 9,663 scenes of MSS digital data to archive black-and-white film. 94% of the MSS data was assessed good and fair; the primary reason for MSS downgrade was severe striping and saturated data. MSS backlog at the end of the quarter was 251 scenes.

A total of 2,062 scenes of TIPS TM film data was received and 1,827 scenes cataloged and processed into the archive, bringing the total to over 8,200 film scenes. 90% of the TIPS film data was assessed good and fair; the primary reason for downgrade was radiometric sensor response and sensor striping. A total of 567 scenes of digital data was also added to the archive, bringing the total TM digital archive to 2,311 scenes (2,101 corrected and 210 uncorrected scenes). The TM film backlog at the end of the quarter was 106 scenes.

EDC received 1,484 retrospective customer order and historical MSS CCT scenes from GSFC. These scenes, which are stacked 3 scenes per 6250 BPI tape to conserve storage space, were added to the archive for future reproduction of user products, as needed.

2. Archive and Data Base Generation and Maintenance

Approximately 51,000 frames of MSS and TM archive film were generated and added to the Landsat archive, bringing the total number of frames to just over 2,183,640, which are referenced in the computerized data base (Main Image File) by 656,034 georeference accessions. Foreign accessions reflected in the international data base at the end of the quarter were: Brazil - 41,309; ESA (Italy & Sweden) - 188,874; Canada - 297,365; South Africa - 28,245; Australia - 41,452; and Argentina - 10,790.

3. Customer Interface

Landsat orders averaged 275 per month, resulting in shipped Landsat product sales of \$1,331,495 for the quarter, a decrease of about \$80,000 from last quarter.

Landsat data acquisition requirements for the NOAA Basic Data Set, the U.S. Department of Agriculture, and other Federal and non-Federal users were consolidated at EDC and sent to GSFC for data acquisition scheduling. Revenue from special acquisitions this quarter amounted to \$1,463,405, an increase of about \$1,000,000 over last quarter.

The April issue of the Landsat Data Users Notes was distributed and the special supplemental issue regarding TM radiometric lookup table changes was assembled and distributed for review and comment.

The monthly and quarterly micro catalog updates for Landsat MSS and TM coverage (approximately 1,000 sheets) were reproduced and issued. Approximately 14,000 frames of Landsat MSS and TM data coverage were microfiched, reproduced, and issued.

A special mailing was made to all customers regarding the TM quadrant CCT price change scheduled for July 1, 1985.

4. Product Generation and Distribution

Over 71,000 black-and-white (includes EDIPS MSS masters, TM masters, intermediates, and final user products) and 2,700 color (includes color intermediates and final user products) photographic products were processed by the EDC photographic laboratory. Approximately 10,500 of these were photographic products distributed to users.

A total of 1,443 Landsat digital products including floppy discs and CCT's generated from EDIPS, CCT's reproduced from the EDC archive, and retrospective CCT's generated by GSFC

and reproduced by EDC were distributed to users. The volume of TM quads requested by the NASA Science Office Landsat TM investigators continues to be a large percentage of digital sales. If TM quad sales continue at this level for the rest of the fiscal year, TM quad reproduction and distribution will triple the volume (1,500 quads) projected in the EDC FY1985 baseline document dated June 5, 1984.

Average turnaround time for product orders was eight days. Specific product turnaround times are reflected in the attachment.

#### 5. Miscellaneous

EDC completed testing and analysis required to include requests for TM acquisitions on the Acquisition Requirements Order Tape (AROT). The first TM AROT file for acquisitions was provided to GSFC in early April. Requests for retrospective products will be included on the AROT later this fall. Manual compilation of retrospective orders will continue in the meantime.

Modifications to Landsat software systems included: change in band combination from 1, 3, 4 to 2, 3, 4 for standard TM false color composites; new condition code for TM data processed through improved LBR radiometric look-up tables at GSFC; change to Landsat by Country report to break out MSS and TM; special program to report Landsat digital sales for 1982-1985; and other minor changes to AROT/ASIT and Landsat request systems.

Engineering analysis and testing continued to support the effort to make TIPS color film products look more like MSS film products for the Agency. New look-up tables are scheduled to be implemented at GSFC on 7/01/85.

Effort continued to update all of the Interface Control Documents (ICD's) between GSFC and EDC reflecting NOAA responsibility for both MSS and TM operations and other recent TM changes since takeover by NOAA.

EDC and GSFC continued efforts to develop an agreed-to format for the TM HDT-A inventory tape file. EDC also supported test activities to transmit TM GFIT tapes over Decnet in lieu of mailing them with TM film.

One of the two EDIPS black-and-white contact printers underwent major refurbishment this quarter. This unit had seen several years of service and therefore needed to be updated both electrically and mechanically.

EDC hosted and provided technical support for the April Landsat Interface Planning meeting which included representatives from NOAA, CSC, G.E., EDC, and the Agency.

6. NOAA Administrative Support

Miscellaneous administrative support was provided as required. EDC responded to requests from NOAA regarding past, current, and projected Landsat data sales and for software and hardware impacts for changes to certain Landsat data handling and processing systems and procedures, etc.

7. Problems

- a. Domsat transmissions from GSFC to EDC were rescheduled, as needed, when higher priority shuttle-related activities took priority over Landsat. Only minimal impact resulted from these occurrences. For a short period of time in April, EDC received MSS HDT data that would not process through the system. The problem was traced to a higher than normal bit error rate in the RCA Domsat link which was subsequently fixed at GSFC.
- b. TM problems:
  - o EDC completed testing and analysis support needed to develop improved look-up tables for the GSFC LBR's that would increase the infrared component response and decrease the cyan color saturation of false-color photographic products that currently exists. Implementation of improved look-up tables is scheduled for July 1, 1985.
  - o The problem of lack of contrast or definition in black-and-white photographic products over very high/very low reflectance areas continued. EDC continued to optimize these scenes by printing to image density rather than standard gray scale until modified look-up tables are implemented.
  - o EDC continued to work closely with GSFC to increase the volume of and improve the timeliness of TM data products available to users. TM film and CCT shipment from GSFC to EDC has shown some improvement. The volume of TM CCT's without film continued to remain at the couple of hundred level during this quarter.
  - o EDC quality control personnel continued to support GSFC Bldg. 23 efforts to clean up TM film dirt problems which continue to improve.

- c. Both LBR's experienced periodic density, scale, and modulator problems during the quarter and the laser was replaced in unit 2. These problems had minimal impact on MSS data processing.

## EROS Data Center

Landsat Processing, Production and Data Distribution Summary  
Third Quarter FY 1985

Data Processing Performance

	<u>MSS</u>	<u>TM</u>
Scenes received at EDC	10,246	2,062
Scenes Processed to MIF	9,663	1,827
Average Days-Rec'd. to MIF	3	3
Quality of Scenes to MIF		
Good (8)	88%	5%
Fair (5)	6%	86%
Poor (2)	5%	8%
End-of-quarter Scene Backlog	251	106

Standard Data Production Performance

<u>Product Type</u>	<u>Frames Produced</u>	<u>Average Days- Order to Product Ship *</u>
B/W Film	5,252	12
B/W Paper Contact	1,669	14
B/W Paper Enlargement	820	10
FCC Generation	837	7
Color Paper Contact	169	6
Color Paper Enlargement	495	7
Color Film	1,035	5
CCT's (scenes/quadrants)	1,348	2

Special Product Processing Performance

MSS Scenes Processed and Shipped	540
Average Days-Data Rec'd. to Product Ship	5

Landsat Order Processing Performance

824 orders  
Average turnaround time - 8 days

\*Turnaround time for standard black-and-white data products was higher than normal because of extensive TM radiometric testing being done to support improved LBR look-up table development at GSFC.

LANDSAT SALES SUMMARY

Third Quarter FY 1985

<u>Category</u>	<u>Current Quarter</u>		<u>Last Quarter</u>	
	<u>Items</u>	<u>Dollars</u>	<u>Items</u>	<u>Dollars</u>
1. Imagery	10,485	\$619,929	10,775	\$544,868
a. MSS/RBV	(7,001)	(387,071)	(6,090)	(334,579)
b. TIPS (TM Image Proc. Sys.)	(3,312)	(225,503)	(4,566)	(205,505)
c. TM Scrounge	(172)	(7,355)	(119)	(4,784)
2. Digital Products	1,443	708,375	1,790	\$852,465
a. MSS/RBV Scenes	(321)	(222,945)	(436)	(285,820)
b. TIPS Quadrants	(1,018)	(468,900)	(1,247)	(552,950)
c. TM Scrounge Scenes	(2)	(8,800)	(5)	(6,435)
d. TM Sample CCT Scenes	(3)	(600)	(3)	(600)
e. MSS Sample CCT Scenes	(4)	(200)	(6)	(300)
f. Floppy Disks	(95)	(6,930)	(93)	(6,360)
3. Accession Aids		\$3,191		\$13,523
4. Subtotal (#1-#3)	11,928	\$1,331,495	12,565	\$1,410,856
5. Acquisition Charges and Cloud-Cover Surcharges	8,771	\$1,463,405	2,866	\$379,815
6. TOTAL LANDSAT SALES	20,699	\$2,794,900	15,431	\$1,790,671
7. Sales Returns/Allowances (deducted from #1-4)		\$56,211		\$40,313
8. Reimbursable Work-In- Process (End-of-Quarter)		\$199,344		\$188,345
9. Average Order Turnaround Time for Std. Photo. and Digital Products		8 days		7 days

REMARKS:

#8 "Current Quarter" includes \$90,810 for retrospective CCT's.

NOAA LANDSAT CUSTOMER PROFILE PERCENTAGES

Third Quarter FY 1985

<u>CATEGORY</u>	<u>IMAGERY</u>		<u>DIGITAL DATA</u>	
	<u>Items</u>	<u>Dollars</u>	<u>Scenes</u>	<u>Dollars</u>
Federal Government	52%	51%	58%	26%
USGS	( 5%)	( 6%)	( 1%)	( 3%)
Other Federal	(47%)	(45%)	(57%)	(23%)
State/Local Government	4%	7%	1%	2%
Academic	4%	3%	5%	6%
Industrial	19%	23%	27%	50%
Individual	3%	2%	0%	0%
Non-U.S.	<u>18%</u>	<u>14%</u>	<u>9%</u>	<u>16%</u>
	100%	100%	100%	100%