

NOAA file



United States Department of the Interior

GEOLOGICAL SURVEY  
EROS Data Center  
Sioux Falls, South Dakota 57198

IN REPLY REFER TO:

OC 4-21

April 25, 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 second quarter status report for Landsat data handling and processing activities performed at EDC for NOAA.

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

Sincerely,

Allen H. Watkins  
Chief, EROS Data Center

Enclosure

- cc: G. Landis
- R. Pohl
- R. Thompson
- D. Lauer
- M. Yaroch
- W. Rohde
- R. Byrnes
- B. Bailey
- G. Thorley
- L. Pettinger
- H. Warriner
- B. Youngren

- bcc: GGM Chron
- GGM Subj
- AHW Chron
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- EDC Chron

GGMetz/mle/x125/4-25-85

EROS Data Center  
Landsat Data Handling and Processing  
Quarterly Report

Second 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 second 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 8,377 and cataloged 7,962 scenes of Landsat MSS data. EDIPS pipeline run time was 566 hours to process 7,962 scenes of MSS digital data to archive black-and-white film. 96% of the MSS data was assessed good and fair; the primary reason for MSS downgrade was severe striping, saturated data, and band 4 haze bias. The band 4 haze bias problem was compensated for with a software modification made to EDIPS in February. MSS backlog at the end of the quarter was 135 scenes.

A total of 1,588 scenes of TIPS TM film data were received and 1,492 scenes cataloged and processed into the archive, bringing the total to about 6,520 film scenes. 77% 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 1,479 scenes of digital data were also added to the archive, bringing the total TM digital archive to 1,746 scenes (1,573 corrected and 173 uncorrected scenes). The film TM backlog at the end of the quarter was 12 scenes.

EDC received 1,764 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. The volume of MSS scenes decreased during the second quarter as GSFC had reduced their production goal from 200 scenes per week to 125 scenes per week.

2. Archive and Data Base Generation and Maintenance

Approximately 41,000 frames of MSS and TM archive film were generated and added to the Landsat archive, bringing the total number of frames to just over 2,132,770, which are referenced in the computerized data base (Main Image File) by 644,203 georeference accessions. Foreign accessions reflected in the international data base at the end of the quarter were: Brazil - 41,101; ESA (Italy & Sweden) - 247,749; Canada - 259,836; South Africa - 18,781; Australia - 41,452; and Argentina - 9,118.

3. Customer Interface

Changes to Landsat forms, etc., to reflect the February 1, 1985, price increases were completed. Landsat orders averaged 307 per month, resulting in shipped Landsat product sales of \$1,410,856 for the 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 \$379,815.

A draft issue of the April Landsat Data Users Notes was assembled and distributed for review and comment.

The monthly and quarterly micro catalog updates for Landsat MSS and TM coverage (approximately 940 sheets) were reproduced and issued. Approximately 9,350 frames of Landsat MSS and TM data coverage were microfilmed, reproduced, and issued. Modifications were completed and the switch from microfilm to microfiche for both TM and MSS data was made. A Diplomat step and repeat camera has been brought on-line for this activity which will produce a higher quality product than the currently used microfilm.

4. Product Generation and Distribution

Approximately 60,000 black-and-white (includes EDIPS masters, intermediates, and final user products) and 1,900 color (includes color intermediates and final user products) photographic products were processed by the EDC photographic laboratory. Approximately 10,775 of these photographic products were distributed to users.

A total of 1,790 (MSS, RBV, and TM) 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 and the 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 seven days. Specific product turnaround times are reflected in the attachment.

5. Miscellaneous

Testing and analysis required to include requests for TM acquisitions and retrospective products on the Acquisition Requirements Order Tape (AROT) was completed. The first TM AROT file for acquisitions was provided to GSFC the first of April. Including retrospective products on the AROT is on hold until a later date; therefore, manual compilation will continue in the meantime.

Modifications to Landsat software systems included: price file changes to reflect February 1 price increases for Landsat products; AROT and ASIT changes for TM Acquisition and products; deleted auto product order (at EDC) for basic data set data acquired; added product code for TM microfiche generation and customer subscription service; and modified correction code to reflect GCP vs. non-GCP corrected TM data.

Engineering analysis and testing continued to support the effort to make TIPS color film products look more like MSS film products for the Agency.

Sample MSS color transparencies were generated on the color recorder for evaluation and comparison with standard color composites by the Agency. Agency response indicated preference for the color recorder product, therefore, production of this product was switched February 1, 1985. Limited testing was also done to produce TM color products on the color recorder.

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 supported 7 mil film testing at GSFC by providing laser beam recorder film cassettes and the 7 mil film required to conduct the tests.

EDC supported NOAA with two representatives at the Landsat Technical Working Group meeting held in Williamsburg, VA, February 26 - March 1, 1985.

#### 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.
- b. TM problems:
  - o Testing and analysis continued to develop modified 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.
  - 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 large volume of TM CCT's without film was decreased from approximately 1,600 quads to 300 quads during this quarter.
  - o EDC quality control personnel continued to support GSFC Bldg. 23 efforts to clean up TM film dirt problems which improved significantly during this quarter.

- c. Both LBR's experienced periodic density and scale 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  
Second Quarter FY 1985

Data Processing Performance

	<u>MSS</u>	<u>TM</u>
Scenes received at EDC	8,377	1,588
Scenes Processed to MIF	7,962	1,492
Average Days-Rec'd. to MIF	2	2
Quality of Scenes to MIF		
Good (8)	88%	15%
Fair (5)	8%	61%
Poor (2)	4%	13%
End-of-quarter Scene Backlog	135	12

Standard Data Production Performance

<u>Product Type</u>	<u>Frames Produced</u>	<u>Average Days- Order to Product Ship</u>
B/W Film	5,819	13
B/W Paper Contact	2,151	9
B/W Paper Enlargement	1,189	7
FCC Generation	653	11
Color Paper Contact	747	7
Color Paper Enlargement	497	8
Color Film	825	9
CCT's (scenes/quadrants)	1,790	3

Special Product Processing Performance

MSS Scenes Processed and Shipped	182
Average Days-Data Rec'd. to Product Ship	11*

Landsat Order Processing Performance

921 orders  
Average turnaround time - 7 days

\*Turnaround time for this quarter was 3-4 days higher than normal—primary reason for this was the extensive TM radiometric testing being done for the Agency.

LANDSAT SALES SUMMARY

Second 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	10,775	\$544,868	10,286	\$570,967
a. MSS/RBV	(6,090)	(334,579)	(8,228)	(467,718)
b. TIPS (TM Image Proc. Sys.)	(4,566)	(205,505)	(1,806)	(88,521)
c. TM Scrounge	(119)	(4,784)	(252)	(14,728)
2. Digital Products	1,790	\$852,465	1,746	\$762,080
a. MSS/RBV Scenes	(436)	(285,820)	(524)	(332,530)
b. TIPS Quadrants	(1,247)	(552,950)	(1,165)	(418,150)
c. TM Scrounge Scenes	(5)	(6,435)	(2)	(6,800)
d. TM Sample CCT Scenes	(3)	(600)	(4)	(800)
e. MSS Sample CCT Scenes	(6)	(300)	(5)	(250)
f. Floppy Disks	(93)	(6,360)	(46)	(3,550)
3. Accession Aids		\$13,523		\$6,413
4. Subtotal (#1-#3)	12,565	\$1,410,856	12,032	\$1,339,460
5. Acquisition Charges and Cloud-Cover Surcharges	2,866	\$379,815	5,280	\$1,889,095
6. TOTAL LANDSAT SALES	15,431	\$1,790,671	17,312	\$3,228,555
7. Sales Returns/Allowances (deducted from #1-4)		\$40,313		\$30,197
8. Reimbursable Work-In- Process (End-of-Quarter)		\$188,345		\$260,140
9. Average Order Turnaround Time for Std. Photo. and Digital Products		7 days		8 days

REMARKS:

#8 "Current Quarter" includes \$86,200 for retrospective CCT's.

NOAA LANDSAT CUSTOMER PROFILE PERCENTAGES

Second 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	51%	43%	56%	34%
USGS	( 3%)	( 3%)	( 2%)	( 3%)
Other Federal	(48%)	(40%)	(54%)	(31%)
State/Local Government	3%	3%	3%	4%
Academic	9%	8%	4%	3%
Industrial	17%	25%	24%	39%
Individual	3%	3%	1%	1%
Non-U.S.	<u>17%</u>	<u>18%</u>	<u>12%</u>	<u>19%</u>
	100%	100%	100%	100%