GES 10068

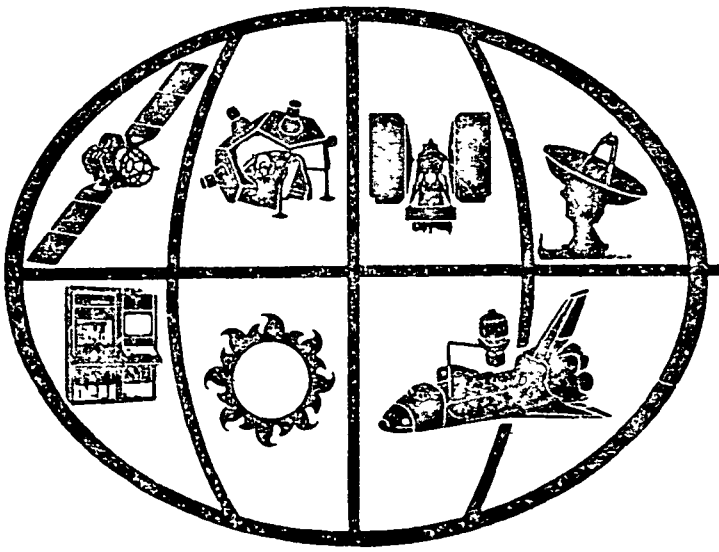
LANDSAT D

DATA FORMAT CONTROL BOOK

VOLUME VI APPENDIX G

GSFC HDT-AM INVENTORY TAPE

(GHIT-AM)



space division

GENERAL ELECTRIC

CONTRACT NO.
NAS 5-25300

GENERAL ELECTRIC
SPACE SYSTEMS PHILA., PA.

ALTERATION NOTICE

Field	Entry
SECURITY CLASS.	Unclassified
INITIATOR	T. Horn
CONTRACT	NAS5-25300
RM. NO.	W277
EXT. NO.	7876
OPER. NO.	1KMC
ALTERATION NO.	GES-10068-03
REG AN DWG	X
SHEET	1 OF 3
PORG NO.	N/A
DRAWING OR SPECIFICATION TITLE	DFCB Volume VI Appendix G (GHIT-AM)
NEXT ASSEMBLY NO.	430 D 100
AREA OR END ITEM	G.S.
EPR NO.	N/A
ECP NO.	N/A
CONTROL NO.	N/A

NATURE OF CHANGE
(1) Additions to distribution list
(2) Deletion of cover letter

REASON FOR CHANGE
(1) Additional distribution of DFCB as an external interface document is required
(2) Cover letter obsolete after contract delivery of DFCB

(1) Add names to distribution list - see attached page (pg 2 of 3, attached)
(2) Delete cover letter - copy attached (pg 3 of 3, attached)

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Field	Entry
PROGRAM AND/OR MODEL NO.	Landsat-D
EFFECTIVITY	NONE
CLASS	2
CODE	N/A
TYPE	N/A

DISPOSITION OF MATERIAL (IN PROD., IN STOCK, COMPLETED, INSTLD, TEST, FIELD): REWORK, SCRAP, RETROFIT, RET TO STOCK, REQUALIFY, RETEST — N/A
EXPLAN. FOR MAT'L. DISP.:

CHANGE AFFECTS

SPEC.	X	INTCHG		RETROFIT	
PERFRMNCE		COST			
SAFETY		DELIVERY			
RFI		SPARES		NONE	

Δ WEIGHT: N/A Δ POWER: N/A Δ RFM: N/A

OTHER OPERATIONS AFFECTED: NONE

DISTRIBUTION CODE: Attached

SECURITY CLASS.: uncl. QA/PCER 12/4/81

APPROVALS AND DATE

Role	Signature	Date
WRITTEN BY	T. Horn	11/16/81
CHECKED BY	D. M. Smith	
DRAWING CHGD BY	/	
DESIGN ENG.	X	
QE	[signature]	11/20/81
PROD. CONTROL	N/A	
CUSTOMER	N/A	
DCB REP.	N/A	
DCB CHAIRMAN	D. M. Smith	

FORM 1037-T (REV. 10-79)

GENERAL ELECTRIC
SPACE SYSTEMS PHILA., PA.

ALTERATION NOTICE

SECURITY CLASS.: UNCLAS	CONTRACT: NAS 5 25300	ALTERATION NO.: GES 10068-04
INITIATOR: D. Abbott	RM. NO.: WMD; EXT. NO.: 9427; OPER. NO.: 1783	REQ AN DWG PL: X; CHGD AN DWG PL: X; SHEET 1 OF 40
DRAWING OR SPECIFICATION TITLE: DFCB VOL II APPENDIX G GHIT-AM	P OR S NO.:	

NATURE OF CHANGE

General revision of the DFCB

NEXT ASSEMBLY NO.: GSFC-430-.110
AREA OR END ITEM: MMF-M
EPR NO.: N/A
ECP NO.: N/A
CONTROL NO.: N/A

REASON FOR CHANGE

1. Clarify meanings / values of fields represented on GHIT-AM and HDT-AM.
2. Clarify meanings / values of flags set by MMF-M.
3. Add units to numerous fields.
4. Define representation of average previous registration success (percentage) when it equals 100 percent.
5. Resolve inconsistency between HDT-AM spec and GHIT-AM DFCB with respect to data source and overall band quality.
6. Add valid values to numerous fields.
7. Supply valid sample listings.
8. Require all records to be multiple of 4 bytes in length.

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PROGRAM AND/OR MODEL NO.	EFFECTIVITY	CLASS	CODE	TYPE
LANDSAT-D	MMF-M ~~MIPS~~	II	N/A	N/A

CHANGE AFFECTS

SPEC. ✓	INTCHG	RETROFIT		
PERFRMNCE	COST			
SAFETY	DELIVERY			
RFI	SPARES	NONE		
Δ WEIGHT N/A	Δ POWER N/A	Δ RFM N/A		

OTHER OPERATIONS AFFECTED: N/A
DISTRIBUTION CODE: DISTRIBUTION LIST ATTACHED
SECURITY CLASS.: UNCLAS

DISPOSITION OF MATERIAL (IN PROC., IN STOCK, COMPLED, INSTLD, IN TEST, QUAL, IN FIELD): REWORK, SCRAP, RETROFIT, RET TO STOCK, REQUALIFY, RETEST — N/A

EXPLAN. FOR MAT'L. DISP.:

APPROVALS AND DATE

WRITTEN BY: [signature] 4/29/82
CHECKED BY:
DRAWING CHKD BY: [signature] 4/30/82
DESIGN ENG: [signature] 6/1/82
[signature]
PROD. CONTROL:
CUSTOMER:
DCB REP.: [signature] ACER 6/14/82
DCB CHAIRMAN: [signature]

FORM 1037-2 (REV. 10-78)

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III, IV, V

LANDSAT-D

DATA FORMAT CONTROL BOOK

VOLUME VI APPENDIX C

GSFC HDT-AM INVENTORY TAPE (GHIT-AM)

TBD/TBR/TBS LOG

PARAGRAPH NUMBER	PARAGRAPH NAME	TYPE	RESOLUTION EXPECTED
Figure 5-2	Sample GHIT List of Associated Tapes		10/81
Figure 5-4	Sample GHIT Tape Inventory Sheet		10/81

SECTION 1

SCOPE

1.1 INTRODUCTION

The NASA GSFC Landsat-D Project is developing a Data Management System (DMS) to provide a variety of standard image products from the thematic mapper (TM) and multispectral scanner (MSS) instruments. The major digital image processing functions to be performed by the DMS for Landsat-D include: screening imagery for quality, determining cloud cover, applying radiometric and geometric corrections (including resampling the data in either cubic convolution or nearest neighbor techniques and presenting the data in either a space oblique mercator, universal transverse mercator, polar stereographic ~~or lambert conformal conic~~ projection), and copying original archive output tapes for distribution purposes. The archival MSS tapes (HDT-AMs) will contain radiometrically corrected but geometrically uncorrected image data plus certain ancillary data necessary to perform the geometric corrections.

Each shipment of archive copy HDT-AMs will be accompanied by at least one Goddard HDT Inventory Tape (GHIT), and its listing, which will serve as an inventory and description of the image data included in the shipment. The GHIT is a nine-track, 1600-BPI tapes which conforms to the ANSI standard. These tapes also follow standardized conventions with respect to data formats, record construction and record identification. Each GHIT will be accompanied by a hardcopy listing of that tape.

SECTION 3

COMMON CONVENTIONS

3.1 BIT

One binary digit (either a zero or a one).

3.2 BYTE

A byte is eight bits in length and may contain any type of data. The most significant bit occurs first and is the left-most bit of the byte.

3.3 RECORD

(Each record is a multiple of four bytes in length.)

A physical record is equal to one block not greater than 4096 bytes. The record length (block size) is dependent on the type of file and on the type of record within a file. There are three types of files: system header file, tape directory file, and HDT directory file. The system header file contains one record type, the system header record. This record is fixed in size, contains information pertaining to MMF operations and is the first record on the tape.

The tape directory file contains one record type, the tape directory record, which is of variable length and contains information describing which HDT-AMs are reported on by the CHIT.

The HDT directory file contains four types of records: HDT directory record, header record, annotation record, and trailer record. The HDT directory record, which is variable in length, contains data describing one HDT. This record

a.	System Header	SYST
b.	Tape Directory	TDHD
c.	HDT Directory	HDID
d.	Header	HEDR
e.	Annotation	ANNO
f.	Trailer	TRLR

Each record has a standard format as shown in Section 5.

3.3.3 RECORD LENGTH

This is the length of the data record in number of bytes. This field is right justified, 0001 to 4096. In all cases, the record length is a multiple of four bytes.

3.4 FILE

A file consists of an integral number of records. The system header file consists of one record and appears once per GHIT. The tape directory file also consists of one record and also appears once per GHIT. The HDT directory file consists of at least one record and appears on the GHIT once per HDT reported. The HDT directory file appears at least once per GHIT.

An HDT directory file consists of information referencing the images corresponding to a single HDT. Each HDT directory file contains one directory record and at least one set of header, annotation, and trailer records.

All imagery associated with one HDT is reported in one HDT directory file, which is fully contained on one GHIT.

3-2, 3 3

as the CHIT tape reel identification (also written on the CHIT tape cannister label) and the tape identifications of the HDTs inventoried on the CHIT.

The length of the tape descriptive data depends on the number of HDTs inventoried.

4.3 HDT DIRECTORY

The HDT directory occurs at the beginning of each HDT directory file and identifies the images contained on the HDT.

4.4 IMAGE DESCRIPTION RECORDS

The image description records of images are reported on the CHIT on an HDT basis following their respective HDT directory record and appear in the same order on the CHIT as ordered in the HDT directory record. Image description records on the CHIT include one record each for header, and trailer data, and two records for annotation data as recorded on the respective HDT image tape and as defined in Table 5-5.

The second Annotation CHIT Image Description record represents the annotation data associated with a second Map Projection output by the IGF for partially processed image data. In all cases, annotation data containing the tick mark location data is excluded from CHIT Image Description records.

Image description records for HDT image data contain the 12 bytes of CHIT standard information followed by alphanumeric bytes of image description information, the first 24 bytes of which are common for each image.

INSERT A here

INSERT A

The data items following the 12 bytes of GHIT standard information and 24 bytes of common information have been extracted from the corresponding records on the HST-AM and have, in many cases, been reformatted. Unless otherwise specified, the value of each data item has not been changed. The detailed description of these data items can be found in the document referenced in paragraph 2.2a.

SECTION 5

RECORD LAYOUTS

Included herein are the contents and format of each of the files, records, and summary listings discussed in Section 4. The layout of the GHIT tape is shown in Figure 5-1 while Figure 5-2 depicts the general format of GHIT data records.

5.1 HDT-AM GHIT SYSTEM HEADER

The HDT-AM GHIT system header data appears in Table 5-1.

5.2 HDT-AM GHIT TAPE DIRECTORY

The HDT-AM GHIT tape directory data appears in Table 5-2.

5.3 HDT-AM DIRECTORY

The HDT-AM directory data appears in Table 5-3.

5.4 IMAGE DESCRIPTION RECORDS

The image description data appears in Tables 5-4 through 5-6.

5.5 LIST OF ASSOCIATED TAPES

The format for the list of associated tapes appears in Figure 5-3.

5.6 TAPE INVENTORY SHEET

The format for the tape inventory sheet appears in Figure 5-4.

Table 5-2. HDT-AH CHIT Tape Directory Record (Sheet 1 of 3)

BYTES	DATA	DESCRIPTION
1-4		RECORD SEQUENCE NUMBER RIGHT-JUSTIFIED, ZERO FILLED
5-8	T D W O	RECORD TYPE CODE = 'TDWO'
9-12		RECORD LENGTH IN CHARACTERS RIGHT-JUSTIFIED, ZERO FILLED
13-32	L N S C T Y Y D D D X X B B B B B B B B	CHIT TAPE ID L = 'L' LANDSAT MISSION N = '4', '5', 'Ø' = MISSION NUMBER S = SENSOR TYPE: 'M' = MSS CT = TAPE TYPE: 'CT' = CHIT YY = YEAR DDD = DAY OF YEAR XX = SEQUENCE NUMBER WITHIN DAY B = BLANK

Table 5-3. HDT-AM Directory Record (Sheet 1 of 3)

BYTES	DATA	DESCRIPTION
1-4		RECORD SEQUENCE NUMBER RIGHT-JUSTIFIED, ZERO FILLED
5-8	H D I D	RECORD TYPE CODE = 'HDID'
9-12		RECORD LENGTH IN CHARACTERS. RIGHT-JUSTIFIED, ZERO FILLED
13-32	L N S H A Y Y D D D X X b b b b b b b b	HDT-AM IDENTIFICATION L = 'L', LANDSAT MISSION N = MISSION NUMBER: '4' = LANDSAT-D '5' = LANDSAT-D PRIME '0' = MIXED LANDSAT-D AND D PRIME S = SENSOR; 'M' = MSS HA = 'HA', TAPE TYPE YY = LAST TWO DIGITS OF YEAR DDD = DAY OF YEAR XX = SEQUENCE NUMBER: '01'-'99'
33-34	X X	NUMBER OF SCENES XX = '01'-'99'
35-38	X X X b	NUMBER OF IMAGES XXX = '001'-'499'
39-40	b b	BLANK FILL

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5-6, 5-7

Table 5-3. HDT-AM Directory Record (Sheet 2 of 3)

BYTES	DATA	DESCRIPTION
~~39-48~~ 41-50	N D D D D H H M M T	NASA SCENE IDENTIFICATION N = MISSION NUMBER: '4' or '5' DDDD = DAYS SINCE LAUNCH HH = HOUR OF ACQUISITION MM = MINUTES OF ACQUISITION T = TENS OF SECONDS OF ACQUISITION
51-52 ~~49-50~~	C C	CLOUD COVER ASSESSMENT, IN TENS OF PERCENT CC = '00'-'10'; 'NA' FOR NOT ASSESSED
53 ~~51~~ 54-56	F	REGENERATED PRODUCT FLAG F = 'R' IF THIS IS A REGENERATED SCENE 'B' OTHERWISE
INSERT B		
~~52~~ 57	Q	QUALITY ASSURANCE REJECTION FLAG Q = 'R' IF IMAGE WAS REJECTED BY QA
INSERT C		
~~53-54~~ 58	B	BAND NUMBER B = '1','2','3','4'
59-68 ~~55-64~~	D D D H H M M S S T	IRIG START TIME OF HEADER OF THE IMAGE DDD = DAYS HH = HOURS MM = MINUTES SS = SECONDS T = TENTHS OF SECONDS
69-78 ~~65-74~~	D D D H H M M S S T	IRIG STOP TIME OF TRAILER OF THE IMAGE DDD = DAYS HH = HOURS MM = MINUTES SS = SECONDS T = TENTHS OF SECONDS

INSERT B

A regenerated scene is one which replaces a previously generated archival scene (i.e., one which has been successfully recorded on an HST-AM).

INSERT C

(75)

QA rejected images have been successfully recorded on the HST-AM but rejected by QA prior to generation of the GHIT-AM.

Table 5-3. MDT-AM Directory Record (Sheet 3 of 3)

(16)

BYTES	DATA	DESCRIPTION
79-144 ~~75-143~~	ORIGINAL PAGE IS OF POOR QUALITY	QA REJECTION FLAG, BAND NUMBER IRIG HEADER TIME AND IRIG TRAILER TIME REPEATED 3 TIMES, ONCE FOR EACH REMAINING IMAGE OF THE FIRST SCENE, CODED AS FOR THE FIRST IMAGE
145-160 ~~144-156~~	AND BLANK FILL	NASA SCENE IDENTIFICATION, CLOUD COVER ASSESSMENT, AND REGENERATED PRODUCT FLAG FOR THE SECOND SCENE, CODED AS FOR THE FIRST SCENE
		• • •
41+(N-1)104- ~~38+(N-1)105-~~ ~~39+(N-1)105+13~~ 41+(N-1)104+15	AND BLANK FILL	NASA SCENE IDENTIFICATION, CLOUD COVER ASSESSMENT, AND REGENERATED PRODUCT FLAG FOR THE NTH (LAST) SCENE, CODED AS FOR THE FIRST SCENE
		• • •
41+(N)104-22- ~~39+(N)105-23~~ ~~39+(N)105-1~~ 41+(N)104-1		QA REJECTION FLAG, BAND NUMBER, IRIG HEADER TIME AND IRIG TRAILER TIME FOR THE FOURTH IMAGE OF THE NTH (LAST) SCENE, CODED AS FOR THE FIRST IMAGE

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Table 5-4. Image Descripter-Header Record (Sheet 1 of 10)

BYTES	DATA	DESCRIPTION
1-4		RECORD SEQUENCE NUMBER RIGHT-JUSTIFIED, ZERO FILLED
5-8	H E D R	RECORD TYPE CODE = 'HEDR'
9-12	0 5 1 2	RECORD LENGTH, IN CHARACTERS = '0512'
13-24	N S P P P R R R D D D D	GEOGRAPHIC SCENE IDENTIFICATION N = MISSION NUMBER: '4'=LANDSAT-D '5'=LANDSAT-D PRIME S = SENSOR: 'M'=MSS PPP = PATH RRR = ROW DDDD = DAYS SINCE LAUNCH OF ACQUISITION
25-34	N D D D D H H M M T	NASA SCENE IDENTIFICATION N = MISSION NUMBER: '4'=LANDSAT-D '5'=LANDSAT-D PRIME DDDD = DAYS SINCE LAUNCH OF ACQUISITION HH = HOUR OF ACQUISITION MM = MINUTE OF ACQUISITION T = TENS OF SECONDS OF ACQUISITION
35-36	B B	BAND ID B = '1' - '4'

Table 5-4. Image Descriptor-Header Record (Sheet 3 of 10)

BYTES	DATA	DESCRIPTION
~~79-80~~ 79-80	XX	NUMBER OF ACTIVE DETECTORS XX = '00' - '24'
81-84	XXXX	NOMINAL IMAGE DATA NUMBER OF PIXELS PER ~~UNCORRECTED~~ SCAN LINE, GEOMETRICALLY UNCORRECTED IMAGE. RIGHT-JUSTIFIED, ZERO FILLED.
85-98	YYDDDHHMMSSTTT	SCENE CENTER TIME YY = LAST TWO DIGITS OF YEAR DDD = DAY OF YEAR HH = HOUR MM = MINUTE SS = SECOND TTT = MILLISECOND
99-100	D	ORBITAL DIRECTION D = 'A':ASCENDING 'D':DESCENDING
101-102	P	FIRST MAP PROJECTION SELECTED P = 'U':UTM 'P':PS
103-104	X	OVERALL BAND QUALITY X = ~~(AS DEFINED IN REFERENCE 2.2.a)~~ set {0-9, A, B, C}
105-106	C	RADIOMETRIC CALIBRATION METHOD C = 'N':NO CORRECTIONS APPLIED 'H':HISTOGRAM METHOD 'C':CAL WEDGE VALUES ONLY (NO HISTOGRAM) 'Q':NON-STANDARD CORRECTIONS APPLIED

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Table 5-4. Image Descriptor-Header Record (Sheet 5 of 10)

BYTES	DATA	DESCRIPTION
141-144	X X X X	NUMBER REJECTED EPHEMERIS POINTS XXXX = '0000'-'9999'
145-158	+/- 0 . X X X X X X X E +/- Y Y	ACCURACY OF EPHEMERIS FIT ALTITUDE (METERS)
159-172	+/- 0 . X X X X X X X E +/- Y Y	ACCURACY OF EPHEMERIS FIT ALONG-TRACK POSITION (METERS)

Table 5-4. Image Descriptor-Header Record (Sheet 6 of 10)

BYTES	DATA	DESCRIPTION
173-186	+/- 0 . X X X X X X X E +/- Y Y	ACCURACY OF EPHEMERIS FIT ACROSS-TRACK POSITION (METERS)
187-190	X X X X	NUMBER OF ATTITUDE DATA POINTS IN TELEMETRY INTERVAL XXXX = '0001'-'9999'
191-194	X X X X	NUMBER OF REJECTED ATTITUDE DATA POINTS IN TELEMETRY INTERVAL XXXX = '0000'-'9999'
195-208	+/- 0 . X X X X X X X E +/- Y Y	ACCURACY OF ATTITUDE FIT PITCH (RADIANS)

Table 5-4. Image Descriptor-Header Record (Sheet 7 of 10)

BYTES	DATA	DESCRIPTION
209-222	+/- 0 . X X X X X X X E +/- Y Y	ACCURACY OF ATTITUDE FIT ROLL (RADIANS) ORIGINAL PAGE IS OF POOR QUALITY
223-236	+/- 0 . X X X X X X X E +/- Y Y	ACCURACY OF ATTITUDE FIT YAW (RADIANS)
237-240	X X X X	OVERALL BAND QUALITIES OF SCENE FROM WHICH CONTROL POINTS WERE EXTRACTED. X = (AS DEFINED IN REFERENCE 2.2.a) 0-9, A, B, C
241-242	X X	NUMBER OF GEODETIC POINTS USED IN REFERENCE CONTROL POINT EXTRACTION PROCESS XX = '00'-'99'

Table 5-4. Image Descriptor-Header Record (Sheet 8 of 10)

BYTES	DATA	DESCRIPTION
~~243-244~~ 243-244	X X	AVERAGE PREVIOUS REGISTRATION SUCCESS (PERCENTAGE) XX = '00'-'99' ~~(100 PERCENT REPRESENTED AS '99')~~ *
245-258	+/- 0 . X X X X X X X E +/- Y Y	AVERAGE INITIAL AUTOCORRECLATION VALUE *99% and 100% will both be expressed as '99'
259-272	+/- 0 . X X X X X X X E +/- Y Y	90% ERROR ELLIPSE OF CONTROL POINTS IN REFERENCE IMAGE ALONG-TRACK (METERS)
273-286	+/- 0 . X X X X X X X E +/- Y Y	90% ERROR ELLIPSE OF CONTROL POINTS IN REFERENCE IMAGE ACCROSS-TRACK (METERS)

* In the corresponding HDT-ARM field both '99' and '100' will be used.

Table 5-4. Image Descriptor-Header Record (Sheet 9 of 10)

BYTES	DATA	DESCRIPTION
287-300	+/- 0 . X X X X X X X E +/- Y Y	CORRELATION FACTOR: AVERAGE OF CONTROL POINT CORRELATION PEAK VALUES ORIGINAL PAGE IS OF POOR QUALITY
301-314	+/- 0 . X X X X X X X E +/- Y Y	AVERAGE CONTROL POINT SUITABILITY MEASURE (AVERAGE OF ~~AUTOCORRELATION~~ AUTOCORRELATION SURFACE PEAK CURVATURES)
315-317	X X X	NOMINAL OVERLAP PIXEL OFFSET XXX = '000'-'999'
318	X	QUALITY ASSESSMENT OF APPENDED GEOMETRIC MODELING DATA X = AS DEFINED IN REFERENCE 2.2.a
319	X	DATA SOURCE X = ~~'G':GSFC,~~ 'W':WHITE SANDS(TDRSS) 'T':TGS, 'F':FOREIGN GROUND STATION, 'U': ALASKA, 'G': GOLDSTONE, 'S': SIMULATOR, 'N': NTTF

Table 5-4. Image Descriptor-Header Record (Sheet 10 of 10)

BYTES	DATA	DESCRIPTION
320	b	BLANK FILL
321-325	X X X X X	UNCORRECTABLE ECC COUNT XXXXX = '00000'-'99999'
326-329	X X X X	INDICATION OF [redacted] BIT ERROR RATE (XXXX = '0000'-'9999')
330	X	USE OF NOMINAL CAL WEDGE VALUES X = 'N':NOT USED 'C':USED FOR COMPARISON ONLY 'W':USED TO REPLACE CWVs OUTSIDE WINDOW, BUT NOT USED IN RADIOMETRIC CALIBRATION 'R':USED TO REPLACE CWVs OUTSIDE WINDOW, AND USED IN RADIOMETRIC CALIBRATION
331-332	X X	WINDOW SIZE XX = '00'-'99'
333-404		NOMINAL CAL WEDGE VALUES (36 VALUES, 2 CHARACTERS EACH) EACH VALUE = '00'-'63'
405-512		CAL WEDGE QUALITIES (36 VALUES, 3 CHARACTERS EACH) EACH VALUE = '000'-'200'

INSERT D

INSERT D

Number of sweeps which had at least one minor frame sync loss (more than three consecutive minor frame sync words containing at least one bit error). There are six bits per sync word; including calibration data there are about 2100 sync words per sweep.

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Table 5-5. Image Descriptor-Annotation Record (Sheet 1 of 4)

BYTES	DATA	DESCRIPTION
1-4		RECORD SEQUENCE NUMBER RIGHT-JUSTIFIED, ZEROFILLED
5-8	ANNO	RECORD TYPE CODE = 'ANNO'
9-12	0152	RECORD LENGTH, IN CHARACTERS = '0152' ~~RIGHT-JUSTIFIED, ZERO-FILLED~~
13-24	NSPPPRRRDDDD	GEOGRAPHIC SCENE ID N = MISSION NUMBER: '4'=LANDSAT-D '5'=LANDSAT-D PRIME S = SENSOR: 'M'=MSS PPP = PATH RRR = ROW DDDD = DAYS SINCE LAUNCH OF ACQUISITION
25-34	NDDDDHHMMT	NASA SCENE ID N = MISSION NUMBER: '4'=LANDSAT-D '5'=LANDSAT-D PRIME DDDD = DAYS SINCE LAUNCH OF ACQUISITION HH = HOUR OF ACQUISITION MM = MINUTE OF ACQUISITION T = TENS OF SECONDS OF ACQUISITION
35-36	B	BAND ID B = '1'-'4'

Table 5-5. Image Descriptor-Annotation Record (Sheet 2 of 4)

BYTES	DATA	DESCRIPTION
37-44	D D M M N Y Y Y	IMAGE ACQUISITION DATE DD = DAY MM = MONTH YY = YEAR
45-61	C B D L L - S S / D M M M - S S B	IMAGE FORMAT CENTER C = 'C' D = 'N':NORTH; 'S':SOUTH LATITUDE DIRECTION LL = LATITUDE DEGREES SS = LATITUDE MINUTES D = 'E':EAST; 'W':WEST LONGITUDE DIRECTION MM = LONGITUDE DEGREES SS = LONGITUDE MINUTES
62	X	ORBITAL DIRECTION X = 'A':ASCENDING; 'D':DESCENDING
63-70	P P P - R R R B	PATH/ROW PPP = PATH ('001'-'248') RRR = ROW ('001'-'248')

Table 5-5. Image Descriptor-Annotation Record (Sheet 3 of 4)

BYTES	DATA	DESCRIPTION
71-87	N Ø D M M - S S / D M M M - S S Ø	WRS' CENTER LATITUDE & LONGITUDE N = 'N':NOMINAL CENTER INDICATOR D = 'N'; 'S':LATITUDE DIRECTION MM = LATITUDE ~~MINUTES~~ DEGREES SS = LATITUDE ~~SECONDS~~ MINUTES D = 'E'; 'W': LONGITUDE DIRECTION MMM = LONGITUDE DEGREES SS = LONGITUDE MINUTES
88-97	X Ø B B B B Ø Ø D Ø	SENSOR X = 'M':MSS BAND ID CODE BBBB = '1ØØØ', 'Ø2ØØ', 'ØØ3Ø', 'ØØØ4' D = 'D':DIRECT TRANSMISSION
98-111	S U N Ø E L X X Ø A X X X Ø	SUN ANGLES SUN = 'SUN' EL = 'EL' XX = SUN ELEVATION ('00'-'90') A = 'A' XXX = SUN AZIMUTH ('000'-'359')

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Table 5-5. Image Descriptor-Annotation Record (Sheet 4 of 4)

BYTES	DATA	DESCRIPTION
112-123	X bb P - bb E - N bb C T bb	PROCESSING CODES X = TYPE OF GEOMETRIC CORRECTION P = PROJECTION E = TYPE OF EPHEMERIS USED N = PROCESSING PROCEDURE C = SENSOR GAIN T = TRANSMISSION TYPE
124-136	N A S A bb L A N D S A T bb	AGENCY/PROJECT 'NASAbLANDSATb'
137-151	E - N D D D D - H H M M S - B	FRAME ID E = 'E' N = LANDSAT MISSION NUMBER DDDD = DAYS SINCE LAUNCH HH = HOURS MM = MINUTES S = TENS OF SECONDS B = BAND ID
152	b	BLANK FILL

(30)

INSERT #

INSERT E1

X = 'U' - Uncorrected

X = 'S' - System level corrected

= 'G' - Geometrically corrected based on geodetic information (no temporal registration performed)

= 'T' - Temporal registration using geodetic information from a single reference scene

= 'R' - Temporal registration to a single reference scene (no geodetic information available).

INSERT E2

P = 'P' - Polar stereographic

'S' = Space oblique mercator

'U' - Universal transverse mercator.

INSERT E3

E = 'P' - Predictive

'D' - Definitive

'G' - GPS

INSERT E4

N = 'N' - Normal

'A' - Abnormal

INSERT E

INSERT E5

G = 'H' - High gain
'L' - Low gain

INSERT E6

T = '1' - Linear mode
'2' - Compressed mode

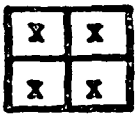
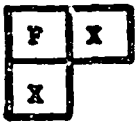
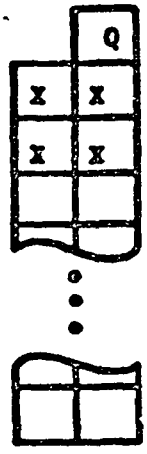
Table 5-6. Image Descriptor-Trailer Record (Sheet 1 of 3)

BYTES	DATA	DESCRIPTION
1-4	[ ][ ] / [ ][ ]	RECORD SEQUENCE NUMBER RIGHT-JUSTIFIED, ZERO FILLED
5-8	[T][R] / [L][R]	RECORD TYPE CODE = 'TRLR'
9-12	[1][3] / [1][6]	RECORD LENGTH, IN CHARACTERS = '1316' RIGHT-JUSTIFIED, ZERO FILLED
13-24	[M][S] / [P][P] / [P][R] / [R][R] / [D][D] / [D][D]	GEOGRAPHIC SCENE ID M = MISSION NUMBER: '4'=LANDSAT-D '5'=LANDSAT-D PRIME S = SENSOR: 'M' = MSS PPP = PATH RRR = ROW DDDD = DAYS SINCE LAUNCH OF ACQUISITION
25-34	[N][D] / [D][D] / [D][H] / [H][M] / [M][T]	NASA SCENE ID N = MISSION NUMBER: '4'=LANDSAT-D '5'=LANDSAT-D PRIME DDDD = DAYS SINCE LAUNCH OF ACQUISITION HH = HOUR OF ACQUISITION MM = MINUTE OF ACQUISITION T = TENS OF SECONDS OF ACQUISITION
35-36	[B][B]	BAND ID:B='1'-'4'
37	[X]	LAST SCENE IN SWATH FLAG X = 'Y':YES, 'N':NO

Table 5-6. Image Descriptor-Trailer Record (Sheet 2 of 3)

BYTES	DATA	DESCRIPTION
38	X	LAST SCENE ON TAPE FLAG X = 'Y':YES; 'N':NO
39-40	X X	GEOMETRIC MODELING FLAG X = 'P':PRECISION ATTITUDE FIT WITH CONTROL POINTS 'S' = SYSTEMATIC FIT
41-796		ATTITUDE MODELING VALUES 36 VALUES OF THE INVERSE STATE COVARIANCE MATRIX EACH IN THE FORMAT ±0.XXXXXXXXXXXXXXE±YY
797-802	X X X X X X	STATE VECTOR MODELED FLAG X = 'Y' or 'N', ORDER DEFINED IN REFERENCE 2.2a
803-806	X X X X	NUMBER OF SCAN LINES:Q0 RIGHT-JUSTIFIED, ZERO FILLED
807-810	X X X X	NUMBER OF SCAN LINES:Q1 RIGHT-JUSTIFIED, ZERO FILLED
811-814	X X X X	NUMBER OF SCAN LINES:Q2 RIGHT-JUSTIFIED, ZERO FILLED

Table 5-6. Image Descriptor-Trailer Record (Sheet 3 of 3)

BYTES	DATA	DESCRIPTION
815-818		NUMBER OF SCAN LINES:Q3 RIGHT-JUSTIFIED, ZERO FILLED
819-821		LINE QUALITY MAP WORD COUNT P = 'F':FULL; 'P':PARTIAL XX = '00'-'99'
822-1316		QUALITY MAP WORD TABLE CONTAINS 99 QUALITY MAP WORDS OF THE FORMAT: QXXXX Q = '1','2','3','4':QUALITY '0', XXXX = NUMBER OF CONSECUTIVE LINES WITH THIS QUALITY RIGHT-JUSTIFIED, ZERO FILLED

Unused map word table entries are blank filled.

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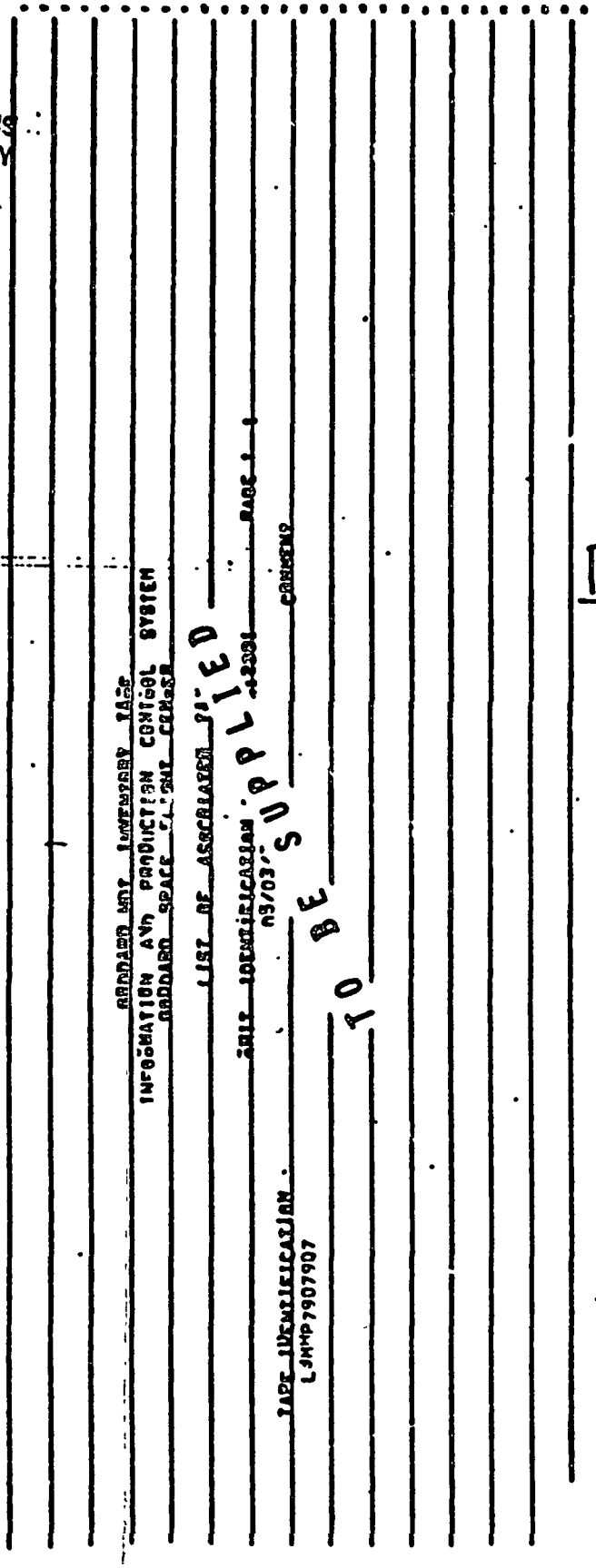

REPLACE WITH INSERT F

Figure 5-3. Sample GMIT List of Associated Tapes

LISTING : GG1560
SUBSYSTEM : GMS

NATIONAL AERONAUTICS AND SPA
GODDARD SPACE FLIGH
LANDSAT MISSION MANAGE

GHIT GENERATION
LIST OF ASSOCIATED T

35

GHIT IDENTIFICATION: L4HGT8131301

TAPE IDENTIFICATION	COMME
L4MHA8100101	
L4MHA8100202	

END-OF-REPORT

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page 1 of 2
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& retype

GENERATION
ASSOCIATED TAPES

388

COMMENT

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page 2 of 2
turn sideways

GODDARD HDT INVENTORY TAPE
INFORMATION AND PRODUCTION CONTROL SYSTEM
GODDARD SPACE FLIGHT CENTER

TAPE INVENTORY SHEET

UNIT IDENTIFICATION : LOXGT7012301 PAGE 1 1

83/03/30 08101

TAPE IDENTIFICATION : L3MMP7907947

SCENE	SENSOR	TAPE BAND	IMAGE DATA TIME BEGIN	END	CLOUD COVER	REQUESTED PRODUCT
30283027963	MSS	A	0010000380	0010005022	06	
		5	0010003058	0010005337	06	
		6	0010005364	0010006008	06	
		7	0010006079	0010006358	06	
		8	0010006420	0010007068	06	
30283027970	MSS	4	0010007100	0010007379	10	
		5	0010007410	0010008080	10	
		6	0010008120	0010008399	10	
		7	0010008431	0010008708	10	
		8	0010009141	0010009020	10	
30283027972	MSS	A	0010009850	0010010168	10	
		5	0010010220	0010010479	10	
		6	0010010510	0010011188	10	
		7	0010011221	0010011499		
		8	0010011531	0010012		
30283027975	MSS	4	0010012201	001		
		5	0010012550		10	
		6	0010	.9581	10	
		7		.0014261	10	
		8		0010014561	10	
30283027981	MSS	4	.014893	0010015272	00	
		5	0010015303	0010015582	00	
		6	0010016013	0010016292	00	
		7	0010016324	0010017003	00	
		8	0010017034	0010017313	00	
30283027211	MSS	4	0010020559	0010021238	10	
		5	0010021260	0010021588	10	
		6	0010021589	0010022258	10	
		7	0010022290	0010022569	10	
		8	0010023020	0010023279	10	
30283027213	MSS	A	0010023311	0010023588	00	
		5	0010024021	0010024300	00	
		6	0010024331	0010025010	00	
		7	0010025041	0010025321	00	
		8	0010025352	0010026031	00	
30283027492	MSS	4	0010027101	0010027379	VA	
		5	0010027410	0010028130	VA	
		6	0010028161	0010028440	VA	
		7	0010028472	0010029151	VA	
		8	0010029182	0010029461	VA	

TO BE SUPPLIED

REPLACE WITH TAPE ID

Figure 5-4. Sample GSFT Tape Inventory Sheet

GODDARD HDT INVENTORY TAPE
INFORMATION AND PRODICTION CONTROL SYSTEM
GODDARD SPACE FLIGHT CENTER

TAPE INVENTORY SHEET

GHIT IDENTIFICATION : LOX07?=12301 PAGE : 2
05/03/?0 08101

3039316141	MSS	4	0010033139	0010033388	NA
		5	0010033819	0010034098	NA
		6	0010034130	0010034408	NA
		7	0010034840	0010035110	NA
		8	0010035150	0010035429	NA
3039316142	MSS	1	0010035861	0010036129	NA
		2	0010036171	0010036450	NA
		3	0010036851	0010037160	NA
		4	0010037191	0010037	
		5	0010037		
3039316120	MSS	1	0010038		NA
		2	0010	3562	NA
		3		0010038277	NA
		4		0010038588	NA
		5	0010038	0010038298	NA
3039316123	MSS	1	0010038	0010039008	NA
		2	0010039	0010039318	NA
		3	0010039	0010039628	NA
		4	0010039	0010039938	NA
		5	0010040	0010040248	NA
3039316125	MSS	1	0010040	0010040560	NA
		2	0010040	0010040870	NA
		3	0010041	0010041180	NA
		4	0010041	0010041490	NA
		5	0010041	0010041801	NA

TO BE SUPPLIED

Figure 5-4. Sample GHIT Tape Inventory Sheet (Continued)

LISTING : GG1540
SUBSYSTEM : GMS

NATIONAL AERONAUTICS AND SPACE AD
GODDARD SPACE FLIGHT CEN
LANDSAT MISSION MANAGEMENT

GMIT GENERATION - TAPE INVEN

GMIT IDENTIFICATION: L4MGT8131301

39

TAPE ID	SCENE ID	SENSOR	BAND	IMA BEG
L4MMA8100101	4M0110282801	MSS	1	269
			2	269
	4M0180382802		1	269
	4M0180392802		1	269
	4M0180402802		1	269
L4M4A8100202	4M0180312802		1	269
	4M0180322802		1	269
	4M0180342802		1	269
	4M0180352802		1	269
	4M0180362802		1	269
	4M0180372802		1	269

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page 1 of 2
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...TION - TAPE INVENTORY SHEET

40

BAND	IMAGE BEGIN	IRIG TIME END	CLOUD COVER	REGENERATED PRODUCT
1	2690901005	2690901305	00	NA
2	2690902005	2690902305		
1	2690903005	2690903305	00	NA
1	2690904005	2690904305	00	NA
1	2690905005	2690905305	00	NA
1	2691006005	2691006305	00	NA
1	2691007005	2691007305	00	NA
1	2691008005	2691008305	00	NA
1	2691009005	2691009305	00	NA
1	2691010005	2691010305	00	NA
1	2691011005	2691011305	00	NA

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page 2 of 2
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GENERAL ELECTRIC
5030 HERZEL PLACE
BELTSVILLE, MD. 20705

SPACE SYSTEMS OPERATIONS

COPIES

SUBJECT

DFCB APPENDIX G
GHIT - AM

TO: Distribution

FROM: T. Horn
Landsat D Mission Operations

DATE:

Attached is your copy of the subject document. This publication becomes a part of the Landsat D Data Format Control Book (preliminary issue) - other volumes of which were published in March, 1979. CDRL delivery of the DFCB is scheduled for September, 1980. Although marked "preliminary" for DFCB purposes, this Appendix has been published as GES 10068 in order to serve as the format specification to be used for system development purposes. Changes will be handled according to applicable configuration control procedures by the author, and will be coordinated for DFCB update purposes by the undersigned.

T. Horn

Attachment

/bp

GES 10068
Revision A
21 September 1981

LANDSAT D

DATA FORMAT CONTROL BOOK

VOLUME VI APPENDIX G

GSFC HDT-AM INVENTORY TAPE (GHIT-AM)

PREPARED FOR

NATIONAL AERONAUTICS AND SPACEFLIGHT ADMINISTRATION

GODDARD SPACE FLIGHT CENTER

GREENBELT, MD

UNDER

CONTRACT NO. NAS5-25300

PREPARED BY

GENERAL ELECTRIC COMPANY

SPACE SYSTEMS DIVISION

LANHAM, MD

GES 10068
Revision A
21 September 1981

LANDSAT-D

DATA FORMAT CONTROL BOOK

VOLUME VI APPENDIX G

GSFC HDT-AM INVENTORY TAPE (GHIT-AM)

PREPARED BY: O.J. Inscoe

O.J. Inscoe, GMS System Engineer

APPROVED BY: Per Hon for

T. Aepli, Manager, LSD System Engineer

APPROVED BY: R. Katucki

R. Katucki, Landsat-D Program Manager

Issued by: Mary J Dougherty Date: 10/29/81
Print Control & Reproduction

REVISION LOG

This log identifies those portions of this document which have been revised since original issue. Revised portions of each page, for the current revision only, are identified by marginal striping.

Revision	Page No.	Para. No. Affected	Rev. Date
A	1-2	1.1., 1.2	21 September 1981
"	3-2	3.3	"
"	3-4	3.4	"
"	3-6	3.5.7	"
"	4-1	4.0, 4.2	"
"	4-2	4.4	"
"	4-3	4.4.1, 4.4.2, 4.4.3	"
"	4-4	4.6	"
"	5-1	5.4	"
"	5-3	Figure 5-1	"
"	5-4	Table 5-1	"
"	5-5	Table 5-2	"
"	5-8	Table 5-3	"
"	5-11	Table 5-4	"
"	5-21	Table 5-5	"
"	5-25	Table 5-6	"
		INCORPORATES AN-01 & 02	

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LANDSAT-D

DATA FORMAT CONTROL BOOK

VOLUME VI APPENDIX G

GSFC HDT-AM INVENTORY TAPE (GHIT-AM)

TBD/TBR/TBS LOG

PARAGRAPH NUMBER	PARAGRAPH NAME	TYPE	RESOLUTION EXPECTED
Figure 5-2	*Sample GHIT List of Associated Tapes*		*10/81*
Figure 5-4	Sample GHIT Tape Inventory Sheet		10/81

SECTION 1

SCOPE

1.1 INTRODUCTION

The NASA GSFC Landsat-D Project is developing a Data Management System (DMS) to provide a variety of standard image products from the thematic mapper (TM) and multispectral scanner (MSS) instruments. The major digital image processing functions to be performed by the DMS for Landsat-D include: screening imagery for quality, determining cloud cover, applying radiometric and geometric corrections (including resampling the data in either cubic convolution or nearest neighbor techniques and presenting the data in either a space oblique mercator, universal transverse mercator, polar stereographic or lambert conformal conic projection), and copying original archive output tapes for distribution purposes. The archival MSS tapes (HDT-AMs) will contain radiometrically corrected but geometrically uncorrected image data plus certain ancillary data necessary to perform the geometric corrections.

Each shipment of archive copy HDT-AMs will be accompanied by at least one Goddard HDT Inventory Tape (GHIT), and its listing, which will serve as an inventory and description of the image data included in the shipment. The GHIT is a nine-track, 1600-BPI tapes which conforms to the ANSI standard. These tapes also follow standardized conventions with respect to data formats, record construction and record identification. Each GHIT will be accompanied by a hardcopy listing of that tape.

Requirements for this appendix to Data Format Control Book, Volume VI, "Products" (SVS 10127) are allocated or derived from the GSFC Specification for the Landsat-D System (GSFC 430-D-100).

1.2 PURPOSE

The purpose of this document is to define the format of the Goddard HDT Inventory Tapes (GHITs) which accompany shipments of archival digital MSS image data (HDT-AM tapes).

This document provides the complete data format specifications for MSS HDT-A GHITs and should be followed in utilizing and interpreting the format of these GHITs and their associated listings.

1.3 APPLICABILITY

This document applies to all GHITs which describe partially-processed MSS data as recorded as HDT-AMs. The formats for GHITs which are related to partially-processed and fully-processed TM data (HDT-ATs and HDT-PTs, respectively) are defined separately in other Data Format Control Book Appendices.

SECTION 2

APPLICABLE DOCUMENTS

2.1 GOVERNMENT DOCUMENTS

None

2.2 GENERAL ELECTRIC COMPANY DOCUMENTS

a. GES 10077

Data Format Control Book Volume VI, Appendix C

- Partially Processed Multispectral Scanner

High Density Tape (HDT-AM/AMC).

2.3 OTHER DOCUMENTS

None

SECTION 3

COMMON CONVENTIONS

3.1 BIT

One binary digit (either a zero or a one).

3.2 BYTE

A byte is eight bits in length and may contain any type of data. The most significant bit occurs first and is the left-most bit of the byte.

3.3 RECORD

A physical record is equal to one block not greater than 4096 bytes. The record length (block size) is dependent on the type of file and on the type of record within a file. There are three types of files: system header file, tape directory file, and HDT directory file. The system header file contains one record type, the system header record. This record is fixed in size, contains information pertaining to MMF operations and is the first record on the tape.

The tape directory file contains one record type, the tape directory record, which is of variable length and contains information describing which HDT-AMs are reported on by the GHIT.

The HDT directory file contains four types of records: HDT directory record, header record, annotation record, and trailer record. The HDT directory record, which is variable in length, contains data describing one HDT. This record

provides a list of the images contained on the corresponding HDT as well as their location on the HDT. One set of header, annotation, and trailer records, hereafter referred to as the image description records, is provided in the HDT directory file for each image contained on the HDT.

The first 12 bytes in each GHIT record contain standard information: four bytes for GHIT record sequence number, four bytes for GHIT record type code, and four bytes for GHIT record length code.

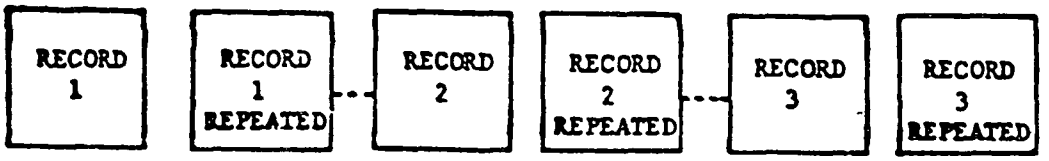
The record length of the system header record is fixed at 312 bytes. The length of the tape directory record is a function of the number of HDTs reported on the GHIT. The record length of the HDT directory record is a function of the number of images on the HDT. The record length of the image description records is fixed. GHIT data record formats are shown in Section 5.

On a GHIT, each record is recorded as many times as is indicated by the record repetition code in the tape directory record. Records are separated by the inter-record gaps. The first record is preceded by a load point marker and an initial gap.

3.3.1 RECORD SEQUENCE NUMBER

Every physical record of the GHIT has a record sequence number embedded in it. This is a sequential decimal count in ASCII of the records on the GHIT. The record number increases monotonically across file boundaries. The four-byte ASCII number is right justified, 0001 to 9999.

In the interest of tape reliability, every physical record will be repeated several times. As an example, every record may be repeated two times on GHITs generated during periods of good tape reliability while every record may be repeated five times during periods of frequent tape failures. The record sequence number will be the same for the original record and all the repeated records. The record sequence number will change for the next record with new information in it.



If a record is read successfully, all the repeated records are skipped until the next record with a different record sequence number is encountered. If an error is encountered while reading a record, the repeated records are read successively until a good read is registered.

The repetition of physical records is not reflected in the remainder of this document.

3.3.2 RECORD TYPE CODE

Each GHIT data record contains one of six types of information, uniquely identified by the record type code found at the beginning of the record. The record type codes are four-byte alphanumerics in ASCII code as follows:

a.	System Header	SYST
b.	Tape Directory	TDWO
c.	HDT Directory	HDID
d.	Header	HEDR
e.	Annotation	ANNO
f.	Trailer	TRLR

Each record has a standard format as shown in Section 5.

3.3.3 RECORD LENGTH

This is the length of the data record in number of bytes. This field is right justified, 0001 to 4096.

3.4 FILE

A file consists of an integral number of records. The system header file consists of one record and appears once per GHIT. The tape directory file also consists of one record and also appears once per GHIT. The HDT directory file consists of at least one record and appears on the GHIT once per HDT reported. The HDT directory file appears at least once per GHIT.

An HDT directory file consists of information referencing the images corresponding to a single HDT. Each HDT directory file contains one directory record and at least one set of header, annotation, and trailer records.

All imagery associated with one HDT is reported in one HDT directory file, which is fully contained on one GHIT.

A file cannot exceed the length of one reel of magnetic tape. However, multiple files can be stored on a reel. The last file is followed by an end-of-tape marker (EOT).

3.5 TAPE GAPS, MARKERS, AND LABELING

3.5.1 LOAD POINT MARKER

A small piece of reflective aluminum tape is located on the non-recording side a few feet from the beginning of each reel of tape. This load point marker indicates the beginning of the tape for reading and writing.

3.5.2 INITIAL GAP

A gap of 3.0 in. minimum separates the first record on a GHIT from the load point marker. A gap maximum of 25 ft. is specified to permit corrective action when gaps of excessive length are encountered (successive erase instructions).

3.5.3 INTER-RECORD GAP

An inter-record gap of 0.6-in. nominal (0.5-in. minimum, 25-ft. maximum) separates records in a file.

3.5.4 END-OF-FILE MARKER

A physical gap of 3.5 in. followed by an end-of-file marker (EOF) code separates files on GHIT. EOFs also follow the system header record and the last HDT directory record.

3.5.5 END-OF-TAPE MARKER

The end-of-tape marker (EOT) consists of two consecutive EOFs.

3.5.6 TAPE LABELING

The GHIT is unlabeled.

3.5.7 DATA ENCODING

Every field of data on the GHIT is recorded in the American Standard Code for Information Interchange (ASCII).

SECTION 4

FORMATS

The major function of a GHIT is to identify the contents of a given set of HDTs. It is structured on an HDT basis (with one file corresponding to one HDT) and starts with a system header used for internal operations, and a tape directory identifying the HDTs inventoried. Each HDT directory file begins with a directory containing basic identification and processing information on the digital image products on the HDT described in that file. The HDT directory is followed by a header section, annotation section, and trailer section for each image carried on the given HDT. These provide additional and more detailed image data information. In each of these sections, all fields are alphanumeric and are coded in ASCII. The format for each section is defined below and shown in its corresponding section in Section 5.

4.1 SYSTEM HEADER

The system header is record number one on a GHIT. It contains information in ASCII code which is required for MMF interal operations and accounting; such as computer identification, operating system identification, and version number.

4.2 TAPE DIRECTORY

The GHIT tape directory appears once at the beginning of a GHIT and identifies the GHIT tape and its contents. It consists of one record, containing an alphanumeric description of the tape. The description contains information such

as the GHIT tape reel identification (also written on the GHIT tape cannister label) and the tape identifications of the HDTs inventoried on the GHIT.

The length of the tape descriptive data depends on the number of HDTs inventoried.

4.3 HDT DIRECTORY

The HDT directory occurs at the beginning of each HDT directory file and identifies the images contained on the HDT.

4.4 IMAGE DESCRIPTION RECORDS

The image description records of images are reported on the GHIT on an HDT basis following their respective HDT directory record and appear in the same order on the GHIT as ordered in the HDT directory record. Image description records on the GHIT include one record each for header, and trailer data, and two records for annotation data as recorded on the respective HDT image tape and as defined in Table 5-5.

The second Annotation GHIT Image Description record represents the annotation data associated with a second Map Projection output by the IGF for partially processed image data. In all cases, annotation data containing the tick mark location data is excluded from GHIT Image Description records.

Image description records for HDT image data contain the 12 bytes of GHIT standard information followed by alphanumeric bytes of image description information, the first 24 bytes of which are common for each image.

4.4.1 HEADER

The header identifies the image data and describes the format in which the data are recorded on the associated HDT. This record also includes various quality and processing indicators.

4.4.2 ANNOTATION

The annotation data contain the alphanumeric information (with the exception of the tick mark location data) printed by the film recorder on the film product.

4.4.3 TRAILER

The trailer section follows the annotation section. It contains a subset of the information found in the trailer section of the associated HDT (i.e., last scene flags, quality indicators, etc.).

4.5 LIST OF ASSOCIATED TAPES

The purpose of this summary listing is to provide a mechanism for the collection of HDT data tapes reported on by the GHIT. This sheet contains a list of the HDT-AM tape identifications and provides room for comments. Reference Figure 5-3 for a sample listing format.

4.6 TAPE INVENTORY SHEET

There shall be a tape inventory sheet for each HDT-AM reported on by the GHIT.

This listing is intended to provide a visual summary of the scenes contained on the HDT-AM tapes. This listing includes the GHIT tape identification, HDT identification, and a list of scenes on the HDT. For each scene, the listing includes the scene identification, sensor type, cloud cover assessment and information depicting the location of the scene on the HDT. Reference Figure 5-4 for a sample listing format.

SECTION 5

RECORD LAYOUTS

Included herein are the contents and format of each of the files, records, and summary listings discussed in Section 4. The layout of the GHIT tape is shown in Figure 5-1 while Figure 5-2 depicts the general format of GHIT data records.

5.1 SYSTEM HEADER

The HDT-AM GHIT system header data appears in Table 5-1.

5.2 TAPE DIRECTORY

The HDT-AM GHIT tape directory data appears in Table 5-2.

5.3 HDT-AM DIRECTORY

The HDT-AM directory data appears in Table 5-3.

5.4 IMAGE DESCRIPTION RECORDS

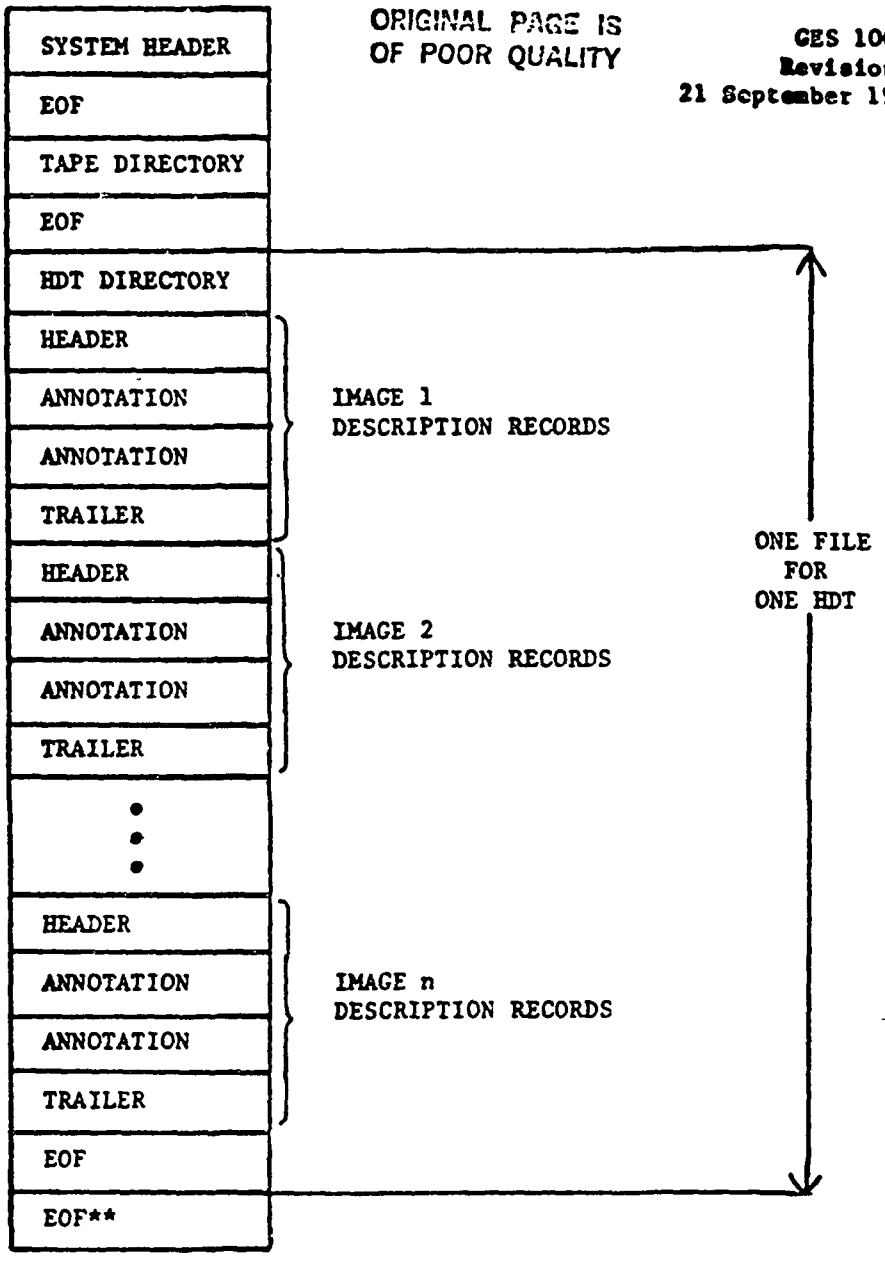
The image description data appears in Tables 5-4 through 5-6.

5.5 LIST OF ASSOCIATED TAPES

The format for the list of associated tapes appears in Figure 5-3.

5.6 TAPE INVENTORY SHEET

The format for the tape inventory sheet appears in Figure 5-4.



**TWO EOFs, REPRESENTING THE END-OF-VOLUME (EOV), FOLLOWS THE LAST RECORD FOR THE LAST FILE ON THE TAPE: OTHERWISE, ONE EOF, REPRESENTING THE END-OF-FILE, FOLLOWS THE LAST RECORD OF THE FILE FOR THE HDT.
n=NUMBER OF IMAGES ON THE HDT.

Figure 5-1. Layout of an HDT-AM GHIT.

a.

RECORD NUMBER	RECORD TYPE CODE	RECORD LENGTH	DATA FIELD
4 BYTES	4 BYTES	4 BYTES	

STANDARD DATA RECORD FORMAT

b. RECORD NUMBER	RECORD TYPE CODE	RECORD LENGTH	ALPHANUMERIC BYTES OF SYSTEM HEADER DATA

SYSTEM HEADER

c. RECORD NUMBER	RECORD TYPE CODE	RECORD LENGTH	ALPHANUMERIC BYTES OF TAPE DIRECTORY DATA

TAPE DIRECTORY

d. RECORD NUMBER	RECORD TYPE CODE	RECORD LENGTH	ALPHANUMERIC BYTES OF HDT DIRECTORY

HDT DIRECTORY

e. RECORD NUMBER	RECORD TYPE CODE	RECORD LENGTH	ALPHANUMERIC BYTES OF HEADER DATA

HEADER

f. RECORD NUMBER	RECORD TYPE CODE	RECORD LENGTH	ANNOTATION DATA

ANNOTATION

g. RECORD NUMBER	RECORD TYPE CODE	RECORD LENGTH	TRAILER DATA

TRAILER

Figure 5-2. GHIT Data Record Formats

Table 5-1. HDT-AM GHIT System Header Record

BYTES	DATA	DESCRIPTION
1-4	0 0 0 1	RECORD SEQUENCE NUMBER '0001'
5-8	S Y S T	RECORD TYPE CODE = 'SYST'
9-12	0 3 1 2	RECORD LENGTH IN BYTES = '0312'
13-312	T A P E • • • H : M M b b b b b b • • b b	300 BYTES OF INFORMATION OF THE FORM GIVEN BELOW. THE FIELDS 'XXXX' ARE FILLED IN WITH THE APPROPRIATE VERSION NUMBER AT ACTIVITY EXECUTION. TAPEbORIGINb:bbGODDARDbSPACEbFLIGHTb CENTERb,bbCOMPUTERbSYSTEMb:bbDECSYSTEM-20b,bbOPERATINGbSYSTEMb:bbTOPS-20b,bb OPERATINGbSYSTEMbVERSIONbNUMBERb:bbXX XXXb,bbSOFTWAREbSYSTEMb:bbGROUNDb SEGMENTbMANAGEMENTbSUBSYSTEMb,bbAPPLI CATIONbSOFTWAREbACTIVITYbVERSIONb NUMBERb:bbXXXXb,bbMM/DD/YYbHH:MM TRAILING BLANKS COMPLETE THE FIELD AS REQUIRED

Table 5-2. HDT-AM GHIT Tape Directory Record (Sheet 1 of 3)

BYTES	DATA	DESCRIPTION
1-4		RECORD DEQUENCE NUMBER
5-8	T D W O	RECORD TYPE CODE = 'TDWO'
9-12		RECORD LENGTH IN CHARACTERS
13-32	L N S G T Y Y D D D X X Ø Ø Ø Ø Ø Ø Ø Ø	GHIT TAPE ID L = 'L' LANDSAT MISSION N = '4', '5', 'Ø' = MISSION NUMBER S = SENSOR TYPE: 'M' = MSS GT = TAPE TYPE: 'GT' = GHIT YY = YEAR DDD = DAY OF YEAR XX = SEQUENCE NUMBER WITHIN DAY Ø = BLANK

Table 5-2. HDT-AM GHIT Tape Directory Record (Sheet 2 of 3)

BYTES	DATA	DESCRIPTION
33-42	Y Y D D D H H M M ∅	DATE/TIME OF GHIT TAPE GENERATION YY = YEAR DDD = DAY OF YEAR HH = HOUR MM = MINUTE
43-44	R ∅	RECORD OCCURRANCE CODE R = '1': RECORDS ARE RECORDED ONCE R = '2': RECORDS ARE RECORDED TWICE,ETC.
45-64	L N S H A Y Y D D D X X ∅ ∅ ∅ ∅ ∅ ∅ ∅ ∅	TAPE ID, FIRST HDT-AM L = 'L': LANDSAT MISSION N = '4','5','∅'; MISSION NUMBER S = SENSOR TYPE: 'M' = MSS HA = TAPE TYPE: 'HA' = HDT-A YY = YEAR DDD = DAY XX = SEQUENCE NUMBER ∅ = BLANK
65-67	X X X	NUMBER OF IMAGES, FIRST HDT-AM XXX = '001'-'999'

Table 5-2. HDT-AM GHIT Tape Directory Record (Sheet 3 of 3)

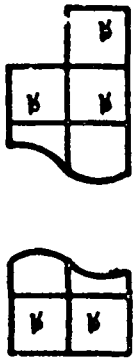
BYTES	DATA	DESCRIPTION
68-144		BLANK FILL: 77 CHARACTERS
145-244		TAPE ID, NUMBER OF IMAGES AND BLANK FILL FOR SECOND HDT-AM, AS CODED FOR FIRST HDT-AM
		. . .
(45+(N-1)100)-(45+(N)100-1)		TAPE ID, NUMBER OF IMAGES AND BLANK FILL FOR NTH (LAST) HDT-AM, AS CODED FOR FIRST HDT-AM

Table 5-3. HDT-AM Directory Record (Sheet 1 of 3)

BYTES	DATA	DESCRIPTION
1-4		RECORD SEQUENCE NUMBER
5-8	H D I D	RECORD TYPE CODE = 'HDID'
9-12		RECORD LENGTH IN CHARACTERS
13-32	L N S M A Y Y D D D X X b b b b b b b b	HDT-AM IDENTIFICATION L = 'L',LANDSAT MISSION N = MISSION NUMBER: '4' = LANDSAT-D '5' = LANDSAT-D PRIME '0' = MIXED LANDSAT-D AND D PRIME S = SENSOR; 'M' = MSS HA = 'HA', TAPE TYPE YY = LAST TWO DIGITS OF YEAR DDD = DAY OF YEAR XX = SEQUENCE NUMBER: '01'-'59'
33-34	X X	NUMBER OF SCENES XX = '01'-'99'
35-38	X X X b	NUMBER OF IMAGES XXX = '001'-'999'

Table 5-3. HDT-AM Directory Record (Sheet 2 of 3)

BYTES	DATA	DESCRIPTION
39-48	N D D D D H H M M T	NASA SCENE IDENTIFICATION N = MISSION NUMBER: '4' or '5' DDDD = DAYS SINCE LAUNCH HH = HOUR OF ACQUISITION MM = MINUTES OF ACQUISITION T = TENS OF SECONDS OF ACQUISITION
49-50	C C	CLOUD COVER ASSESSMENT, IN TENS OF PERCENT CC = '00'-'10'; 'NA' FOR NOT ASSESSED
51	F	REGENERATED PRODUCT FLAG F = 'R' IF THIS IS A REGENERATED SCENE 'Ø' OTHERWISE
52	Q	QUALITY ASSURANCE REJECTION FLAG Q = 'R' IF IMAGE WAS REJECTED BY QA
53-54	B Ø	BAND NUMBER B = '1','2','3','4'
55-64	D D D H H M M S S T	IRIG START TIME OF HEADER OF THE IMAGE DDD = DAYS HH = HOURS MM = MINUTES SS = SECONDS T = TENTHS OF SECONDS
65-74	D D D H H M M S S T	IRIG STOP TIME OF TRAILER OF THE IMAGE DDD = DAYS HH = HOURS MM = MINUTES SS = SECONDS T = TENTHS OF SECONDS

Table 5-3. HDT-AM Directory Record (Sheet 3 of 3)

BYTES	DATA	DESCRIPTION
75-143	ORIGINAL PAGE IS OF POOR QUALITY	QA REJECTION FLAG, BAND NUMBER IRIG HEADER TIME AND IRIG TRAILER TIME REPEATED 3 TIMES, ONCE FOR EACH REMAINING IMAGE OF THE FIRST SCENE, CODED AS FOR THE FIRST IMAGE
144-156		NASA SCENE IDENTIFICATION CLOUD COVER ASSESSMENT AND REGENERATED PRODUCT FLAG FOR THE SECOND SCENE, CODED AS FOR THE FIRST SCENE
		. . .
39+(N-1)105- 39+(N-1)105+13		NASA SCENE IDENTIFICATION CLOUD COVER ASSESSMENT AND REGENERATED PRODUCT FLAG FOR THE NTH (LAST) SCENE, CODED AS FOR THE FIRST SCENE
		. . .
39+(N)105-23 39+(N)105-1		QA REJECTION FLAG, BAND NUMBER, IRIG HEADER TIME AND IRIG TRAILER TIME FOR THE FOURTH IMAGE OF THE NTH (LAST) SCENE, CODED AS FOR THE FIRST IMAGE

Table 5-4. Image Descriptor-Header Record (Sheet 1 of 10)

BYTES	DATA	DESCRIPTION
1-4		RECORD SEQUENCE NUMBER
5-8	H E D R	RECORD TYPE CODE = 'HEDR'
9-12	0 5 1 2	RECORD LENGTH, IN CHARACTERS
13-24	N S P P P R R R D D D D	GEOGRAPHIC SCENE IDENTIFICATION N = MISSION NUMBER: '4'=LANDSAT-D '5'=LANDSAT-D PRIME S = SENSOR: 'M'=MSS PPP = PATH RRR = ROW DDDD = DAYS SINCE LAUNCH OF ACQUISITION
25-34	N D D D D H H M M T	NASA SCENE IDENTIFICATION N = MISSION NUMBER: '4'=LANDSAT-D '5'=LANDSAT-D PRIME DDDD = DAYS SINCE LAUNCH OF ACQUISITION HH = HOUR OF ACQUISITION MM = MINUTE OF ACQUISITION T = TENS OF SECONDS OF ACQUISITION
35-36	B [illegible]	B AND ID B = '1' - '4'

Table 5-4. Image Descriptor-Header Record (Sheet 2 of 10)

BYTES	DATA	DESCRIPTION
37-48	Y Y D D D H H M M S S Ø	DATE/TIME HDT-A GENERATED YY = LAST TWO DIGITS OF YEAR DDD = DAY OF YEAR HH = HOUR MM = MINUTE SS = SECOND
49-54	X X X X X Ø	ORBIT NUMBER XXXXX = '00000' - '99999'
55-78	S S S S S S S S S S S S S S S S S S S S S S S S	DETECTOR STATUS S = '0' - '9' = ACTIVE, X = DISABLED REPEATED FOR EACH OF THE 24 MSS DETECTORS THE VALUE OF S IS EQUAL TO THE RIGHTMOST DIGIT OF THE DETECTOR NUMBER IF THE DETECTOR IS ACTIVE. EG, IF DETECTOR 23 IS ACTIVE, ITS VALUE WILL BE '3'

Table 5-4. Image Descriptor-Header Record (Sheet 3 of 10)

BYTES	DATA	DESCRIPTION
79-80	X X	NUMBER IF ACTIVE DETECTORS XX = '00' - '04'
81-84	X X X X	NUMBER OF PIXELS PER UNCORRECTED SCAN LINE
85-98	Y Y D D D H H M M S S T T T	SCENE CENTER TIME YY = LAST TWO DIGITS OF YEAR DDD = DAY OF YEAR HH = HOUR MM = MINUTE SS = SECOND TTT = MILLISECOND
99-100	D b	ORBITAL DIRECTION D = 'A :ASCENDING 'D':DESCENDING
101-102	P b	MAP PROJECTION SELECTED P = 'U':UTM 'P':PS
103-104	X b	OVERALL BAND QUALITY X = AS DEFINED IN REFERENCE 2.2.a
105-106	C b	RADIOMETRIC CALIBRATION METHOD C = 'N':NO CORRECTIONS APPLIED 'H':HISTOGRAM METHOD 'C':CAL WEDGE VALUES ONLY (NO HISTOGRAM) 'Q':NON-STANDARD CORRECTIONS APPLIED

Table 5-4. Image Descriptor-Header Record (Sheet 4 of 10)

BYTES	DATA	DESCRIPTION
107-120	+/- 0 . X X X X X X X E +/- Y Y	RELATIVE CALIBRATION ACCURACY
121-122	X X	SENSOR MODE XX = 'LL' LOW GAIN LINEAR 'LC' LOW GAIN COMPRESSED 'HL' HIGH GAIN LINEAR 'HC' HIGH GAIN COMPRESSED
123-136	+/- 0 . X X X X X X X E +/- Y Y	LENGTH OF TELEMETRY INTERVAL, IN SECONDS
137-140	X X X X	NUMBER OF EPHEMERIS POINTS IN TELEMETRY INTERVAL XXXX = '0001'-'9999'

Table 5-4. Image Descriptor-Header Record (Sheet 5 of 10)

BYTES	DATA	DESCRIPTION
141-144	X X X X	NUMBER REJECTED EPHEMERIS POINTS XXXX = '0000'-'9999'
145-158	+/- 0 . X X X X X X X E +/- Y Y	ACCURACY OF EPHEMERIS FIT ALTITUDE
159-172	+/- 0 . X X X X X X X E +/- Y Y	ACCURACY OF EPHEMERIS FIT ALONG-TRACK POSITION

Table 5-4. Image Descriptor-Header Record (Sheet 6 of 10)

BYTES	DATA	DESCRIPTION
173-186	+/- 0 . X X X X X X X E +/- Y Y	ACCURACY OF EPHEMERIS FIT ACROSS-TRACK POSITION
187-190	X X X X	NUMBER OF ATTITUDE DATA POINTS IN TELEMETRY INTERVAL XXXX = '0001'-'9999'
191-194	X X X X	NUMBER OF REJECTED ATTITUDE DATA POINTS IN TELEMETRY INTERVAL XXXX = '0000'-'9999'
195-208	+/- 0 . X X X X X X X E +/- Y Y	ACCURACY OF ATTITUDE FIT PITCH

Table 5-4. Image Descriptor-Header Record (Sheet 7 of 10)

BYTES	DATA	DESCRIPTION
209-222	+/- 0 . X X X X X X X E +/- Y Y	ACCURACY OF ATTITUDE FIT ROLL
223-236	+/- 0 . X X X X X X X E +/- Y Y	ACCURACY OF ATTITUDE FIT YAW
237-240	X X X X	OVERALL BAND QUALITIES OF SCENE FROM WHICH CONTROL POINTS WERE EXTRACTED. X = AS DEFINED IN REFERENCE 2.2.a
241-242	X X	NUMBER OF GEODETIC POINTS USED IN REFERENCE CONTROL POINT EXTRACTION PROCESS XX = '00'-'99'

Table 5-4. Image Descriptor-Header Record (Sheet 8 of 10)

BYTES	DATA	DESCRIPTION
243-244	X X	AVERAGE PREVIOUS REGISTRATION SUCCESS (PERCENTAGE) XX = '00'-'99'
245-258	+/- 0 . X X X X X X X E +/- Y Y	AVERAGE INITIAL AUTOCORRECLATION VALUE
259-272	+/- 0 . X X X X X X X E +/- Y Y	90% ERROR ELLIPSE OF CONTROL POINTS IN REFERENCE IMAGE ALONG-TRACK
273-286	+/- 0 . X X X X X X X E +/- Y Y	90% ERROR ELLIPSE OF CONTROL POINTS IN REFERENCE IMAGE ACCROSS-TRACK

Table 5-4. Image Descriptor-Header Record (Sheet 9 of 10)

BYTES	DATA	DESCRIPTION
287-300	+/- 0 . X X X X X X X E +/- Y Y	CORRELATION FACTOR: AVERAGE OF CONTROL POINT CORRELATION PEAK VALUES
301-314	+/- 0 . X X X X X X X E +/- Y Y	AVERAGE CONTROL POINT SUITABILITY MEASURE
315-317	X X X	NOMINAL OVERLAP PIXEL OFFSET XXX = '000'-'999'
318	X	QUALITY ASSESSMENT OF APPENDED GEOMETRIC MODELING DATA X = AS DEFINED IN REFERENCE 2.2.a
319	X	DATA SOURCE X = 'G':GSTDN, 'W':WHITE SANDS(TDRSS) 'T':TGS, 'F':FOREIGN GROUND STATION

Table 5-4. Image Descriptor-Header Record (Sheet 10 of 10)

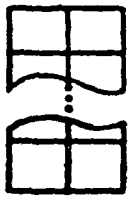
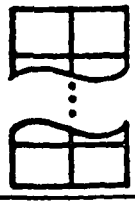
BYTES	DATA	DESCRIPTION
320	B	BLANK FILL
321-325	X X X X X	UNCORRECTABLE ECC COUNT XXXXX = '00C00'-'99999'
326-329	X X X X	BIT ERROR RATE XXXX = '0000'-'9999'
330	X	USE OF NOMINAL CAL WEDGE VALUES X = 'N':NOT USED 'C':USED FOR COMPARISON ONLY 'W':USED TO REPLACE CWVs OUTSIDE WINDOW, BUT NOT USED IN RADIOMETRIC CALIBRATION 'R':USED TO REPLACE CWVs OUTSIDE WINDOW, AND USED IN RADIOMETRIC CALIBRATION
331-332	X X	WINDOW SIZE
333-404		NOMINAL CAL WEDGE VALUES (36 VALUES, 2 CHARACTERS EACH) EACH VALUE = '00'-'63'
405-512		CAL WEDGE QUALITIES (36 VALUES, 3 CHARACTERS EACH) EACH VALUE = '000'-'200'

Table 5-5. Image Descriptor-Annotation Record (Sheet 1 of 4)

BYTES	DATA	DESCRIPTION
1-4		RECORD SEQUENCE NUMBER
5-8	A N N C	RECORD TYPE CODE = 'ANNO'
9-12	0 1 5 1	RECORD LENGTH, IN CHARACTERS
13-24	N S P P P R R R D D D D	GEOGRAPHIC SCENE ID N = MISSION NUMBER: '4'=LANDSAT-D '5'=LANDSAT-D PRIME S = SENSOR: 'M'=MSS PPP = PATH RRR = ROW DDDD = DAYS SINCE LAUNCH OF ACQUISITION
25-34	N D D D D H H M M T	NASA SCENE ID N = MISSION NUMBER: '4'=LANDSAT-D '5'=LANDSAT-D PRIME DDDD = DAYS SINCE LAUNCH OF ACQUISITION HH = HOUR OF ACQUISITION MM = MINUTE OF ACQUISITION T = TENS OF SECONDS OF ACQUISITION
35-36	B B	BAND ID B = '1'-'4'

Table 5-5. Image Descriptor-Annotation Record (Sheet 2 of 4)

BYTES	DATA	DESCRIPTION
37-44	D D M M M b Y Y	IMAGE ACQUISITION DATE DD = DAY MMM = MONTH YY = YEAR
45-61	C b D L L - S S / D M M M - S S b	IMAGE FORMAT CENTER C = 'C' D = 'N':NORTH; 'S':SOUTH LATITUDE DIRECTION LL = LATITUDE MINUTES SS = LATITUDE SECONDS D = 'E':EAST; 'W':WEST LONGITUDE DIRECTION MMM = LONGITUDE MINUTES SS = LONGITUDE SECONDS
62	X	ORBITAL DIRECTION X = 'A':ASCENDING; 'D':DESCENDING
63-70	P P P - R R R b	PATH/ROW PPP = PATH RRR = ROW

Table 5-5. Image Descriptor-Annotation Record (Sheet 3 of 4)

BYTES	DATA	DESCRIPTION
71-87	N Ø D M M - S S / D M M M - S S Ø	WRS' CENTER LATITUDE & LONGITUDE N = 'N':NOMINAL CENTER INDICATOR D = 'N'; 'S':LATITUDE DIRECTION MM = LATITUDE MINUTES SS = LATITUDE SECONDS D = 'E'; 'W': LONGITUDE DIRECTION MMM = LONGITUDE DEGREES SS = LONGITUDE MINUTES
88-97	X Ø B B B B Ø Ø D Ø	SENSOR X = 'M':MSS BAND ID CODE BBBB = '1ØØØ', 'Ø2ØØ', 'ØØ3Ø', 'ØØØ4' D = 'D':DIRECT TRANSMISSION
98-111	S U N Ø E L X X Ø A X X X Ø	SUN ANGLES SUN = 'SUN' EL = 'EL' XX = SUN ELEVATION A = 'A' XXX = SUN AZIMUTH

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Table 5-5. Image Descriptor-Annotation Record (Sheet 4 of 4)

BYTES	DATA	DESCRIPTION
112-123	X Ø P - Ø E - N Ø G T Ø	PROCESSING CODES X = TYPE OF GEOMETRIC CORRECTION P = PROJECTION E = TYPE OF EPHEMERIS USED N = PROCESSING PROCEDURE G = SENSOR GAIN T = TRANSMISSION TYPE
124-136	N A S A Ø L A N D S A T Ø	AGENCY/PROJECT 'NASAØLANDSATØ'
137-151	E - N D D D D - H H M M S - B	FRAME ID E = 'E' N = LANDSAT MISSION NUMBER DDDD = DAYS SINCE LAUNCH HH = HOURS MM = MINUTES S = TENS OF SECONDS B = BAND ID

Table 5-6. Image Descriptor-Trailer Record (Sheet 1 of 3)

BYTES	DATA	DESCRIPTION
1-4		RECORD SEQUENCE NUMBER
5-8	T R L R	RECORD TYPE CODE = 'TRLR'
9-12		RECORD LENGTH, IN CHARACTERS
13-24	N S P P P R R R D D D D	GEOGRAPHIC SCENE ID N = MISSION NUMBER: '4'=LANDSAT-D '5'=LANDSAT-D PRIME S = SENSOR: 'M' = MSS PPP = PATH RRR = ROW DDDD = DAYS SINCE LAUNCH OF ACQUISITION
25-34	N D D D D H H M M 1	NASA SCENE ID N = MISSION NUMBER: '4'=LANDSAT-D '5'=LANDSAT-D PRIME DDDD = DAYS SINCE LAUNCH OF ACQUISITION HH = HOUR OF ACQUISITION MM = MINUTE OF ACQUISITION T = TENS OF SECONDS OF ACQUISITION
35-36	B B	BAND ID:B='1'-'4'
37	X	LAST SCENE IN SWATH FLAG X = 'Y':YES, 'N':NO

Table 5-6. Image Descriptor-Trailer Record (Sheet 2 of 3)

BYTES	DATA	DESCRIPTION
38	X	LAST SCENE ON TAPE FLAG X = 'Y':YES; 'N':NO
39-40	X Y	GEOMETRIC MODELING FLAG X = 'P':PRECISION ATTITUDE FIT WITH CONTROL POINTS 'S' = SYSTEMATIC FIT
41-796		ATTITUDE MODELING VALUES 36 VALUES OF THE INVERSE STATE COVARIANCE MATRIX EACH IN THE FORMAT ±0.XXXXXXXXXXXXXXE±YY
797-802	X X X X X X	STATE VECTOR MODELED FLAG X = 'Y' or 'N', ORDER DEFINED IN REFERENCE 2.2a
803-806	X X X X	NUMBER OF SCAN LINES:Q0
807-810	X X X X	NUMBER OF SCAN LINES:Q1
811-814	X X X X	NUMBER OF SCAN LINES:Q2

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Table 5-6. Image Descriptor-Trailer Record (Sheet 3 of 3)

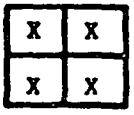
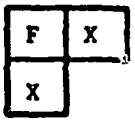
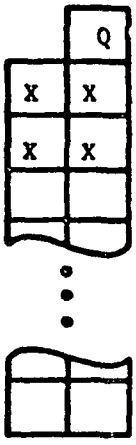
BYTES	DATA	DESCRIPTION
815-818		NUMBER OF SCAN LINES:Q3
819-821		LINE QUALITY MAP WORD COUNT F = 'F':FULL; 'P':PARTIAL XX = '00'-'99'
822-1316		QUALITY MAP WORD TABLE CONTAINS 99 QUALITY MAP WORDS OF THE FORMAT: QXXXX Q = '1','2','3','4':QUALITY
		XXXX = NUMBER OF CONSECUTIVE LINES WITH THIS QUALITY

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Figure 5-3. Sample GHIT List of Associated Tapes

GODDARD HDT INVENTORY TAPE
INFORMATION AND PRODUCTION CONTROL SYSTEM
GODDARD SPACE FLIGHT CENTER

TAPE INVENTORY SHEET
GHIT IDENTIFICATION : 19XGT7012301 PAGE : 1
05/03/79 08101
TAPE IDENTIFICATION : L3MHP7907207

SCENE	SENSOR	BAND	IMAGE IRIG TIME BEGIN	IMAGE IRIG TIME END	CLOUD COVER	REGENERATED PRODUCT
3023307963	MSS	4	0010004344	0010005032	06	
		5	0010005058	0010005337	06	
		6	0010005360	0010006048	06	
		7	0010006079	0010006358	06	
		8	0010006380	0010007068	06	
3019307970	MSS	4	0010007100	0010007379	10	
		5	0010007410	0010008080	10	
		6	0010008120	0010008399	10	
		7	0010008431	0010009108	10	
		8	0010009141	0010009420	10	
3019307972	MSS	4	0010009490	0010010168	10	
		5	0010010201	0010010479	10	
		6	0010010510	0010011189	10	
		7	0010011221	0010011499		
		8	0010011531	00100012[illegible]		
3019307975	MSS	4	0010012241	00[illegible]		
		5	0010012550	[illegible]	10	
		6	0010[illegible]	[illegible]3581	10	
		7	[illegible]	[illegible]0014281	10	
		8	[illegible]22	0010014961	10	
3019307991	MSS	4	[illegible]14593	0010015272	00	
		5	0010015303	0010015582	00	
		6	0010016013	0010016292	00	
		7	0010016324	0010017003	00	
		8	0010017034	0010017313	00	
3019307211	MSS	4	0010020559	0010021235	10	
		5	0010021259	0010021548	10	
		6	0010021590	0010022258	10	
		7	0010022230	0010022569	10	
		8	0010023020	0010023279	10	
3019307213	MSS	4	0010023311	0010023589	00	
		5	0010024021	0010024307	00	
		6	0010024331	0010025012	00	
		7	0010025041	0010025327	00	
		8	0010025352	0010026031	00	
3019314292	MSS	4	0010027141	0010027420	NA	
		5	0010027451	0010028130	NA	
		6	0010028152	0010028440	NA	
		7	0010028472	0010029151	NA	
		8	0010029182	0010029461	NA	

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Figure 5-4. Sample GHIT Tape Inventory Sheet

GODDARD HDT INVENTORY TAPE
INFORMATION AND PRODUCTION CONTROL SYSTEM
GODDARD SPACE FLIGHT CENTER

TAPE INVENTORY SHEET
GHIT IDENTIFICATION : LOX0170012301 PAGE 1 2
05/23/79 08101

3079314?01	MSS	4	0010033129	0010033388	NA
		5	0010033919	0010034098	NA
		6	0010034130	0010034408	NA
		7	0010034880	0010035119	NA
		8	0010035150	0010035929	NA
3079314?49	MSS	4	0010035961	0010036138	NA
		5	0010036171	0010036930	NA
		6	0010036881	0010037160	[illegible]
		7	0010037191	[illegible]	[illegible]
		8	0010037532	[illegible]	[illegible]
3079316120	MSS	4	[illegible]	[illegible]	NA
		5	[illegible]	[illegible]	NA
		6	[illegible]	0010044277	NA
		7	[illegible]	0010044588	NA
		8	0010045019	0010045298	NA
3079314123	MSS	4	0010045320	0010046008	NA
		5	0010046099	0010046318	NA
		6	0010046350	0010047028	NA
		7	0010047050	0010047339	NA
		8	0010047371	0010048049	NA
3079315125	MSS	4	0010048081	0010048360	NA
		5	0010048391	0010049070	NA
		6	0010049102	0010049380	NA
		7	0010049812	0010050091	NA
		8	0010050122	0010050901	NA

TO BE SUPPLIED

Figure 5-4. Sample GHIT Tape Inventory Sheet (Continued)

SECTION 6

ABBREVIATIONS, ACRONYMS, SYMBOLS, AND TERMS

ANSI	American National Standards Institute
ANSCII	American Standard Code for Information Interchange
DMS	Data Management System
EOF	End-Of-File Marker
EOT	End-Of-Tape Marker
EOV	End-Of-Volume
GHIT	Goddard High Density Tape Inventory Tape
GSFC	Goddard Space Flight Center
HDT	High Density Digital Tape
HDT-AM	Partially Processed Multispectral Scanner HDT
MMF	Mission Management Facility
MSS	Multispectral Scanner