[redacted]

#415

VIKING ORBITER 1 & 2

REDUCED INFRARED THERMAL MAPPER DATA

75-083A-02A
75-075A-02A

Table of Contents

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1. INTRODUCTION:

The documentation for this data set was originally on paper, kept in NSSDC's Data Set Catalogs (DSCs). The paper documentation in the Data Set Catalogs have been made into digital images, and then collected into a single PDF file for each Data Set Catalog. The inventory information in these DSCs is current as of July 1, 2004. This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system. The information existing in the DSCs is now not needed for locating the data files, but we did not remove that inventory information.

The offline tape datasets have now been migrated from the original magnetic tape to Archival Information Packages (AIP's).

A prior restoration may have been done on data sets, if a requestor of this data set has questions; they should send an inquiry to the request office to see if additional information exists.

2. ERRATA/CHANGE LOG:

NOTE: Changes are made in a text box, and will show up that way when displayed on screen with a PDF reader.

When printing, special settings may be required to make the text box appear on the printed output.

Version	Date	Person	Page	Description of Change
01				
02				

3 LINKS TO RELEVANT INFORMATION IN THE ONLINE NSSDC INFORMATION SYSTEM:

http://nssdc.gsfc.nasa.gov/nmc/

[NOTE: This link will take you to the main page of the NSSDC Master Catalog. There you will be able to perform searches to find additional information]

4. CATALOG MATERIALS:

a. Associated Documents To find associated documents you will need to know the document ID number and then click here. http://nssdcftp.gsfc.nasa.gov/miscellaneous/documents/

b. Core Catalog Materials

VIKING 1 ORBITER

Decalibrated IRTM Data on Magtape

75-075A-02A PSPA-00306

This data set has been restored. There were originally 36 9-track, 800 BPI tapes written in Binary, 2 of these tapes were bad. There are 8 restored tapes. The DR tapes are 3480 cartridges and the DS tapes are 9-track, 6250 BPI. The tapes were created on a 360 computer. The DR and DS numbers along with the corresponding D numbers and the time spans are as follows:

DR#	DS#	D#	FILES	TIME SPAN
DR03599	DS03599	D34379	1-17	06/22/76 - 07/18/76
		D34375	18-35	07/22/76 - 08/10/76
		D34376	36-55	08/10/76 - 08/30/76
		D34377	56-70	08/31/76 - 09/20/76
		D34378	71-93	09/21/76 - 10/19/76
		D34380	94-107	10/21/76 - 11/05/76
DR03600	DS03600	D34030	1-26	12/14/76 - 02/22/77
		D34031 *		
		D34032	27-39	03/16/77 - 03/29/77
		D34033	40-53	03/30/77 - 04/16/77
		D34381	54-67	04/17/77 - 05/11/77
		D34382	68-82	05/12/77 - 06/16/77
DR03601	DS03601	D34383	1-21	06/17/77 - 07/22/77
		D34384	22-36	07/23/77 - 08/15/77
		D34385	37-54	08/16/77 - 09/12/77
		D34386	55-70	09/13/77 - 10/04/77
		D34387	71-85	10/04/77 - 10/25/77
		D34388	86-100	10/26/77 - 11/18/77
DR03602	DS03602	D34389	1-17	11/19/77 - 12/23/77
		D34390	18-32	12/24/77 - 01/14/78
		D34391	33-48	01/17/78 - 02/08/78
		D34392	49-68	02/09/78 - 03/15/78
		D34396	69-84	03/02/78 - 06/25/78
DR03603	DS03603	D34393	1-19	03/16/78 - 04/05/78
DR03604	DS03604	D34394	1-19	04/05/78 - 05/01/78
		D34395	20-37	05/02/78 - 06/01/78
		D34397	38-54	06/26/78 - 07/21/78
		D34398	55-71	07/22/78 - 08/11/78
		D35106	72-92	08/11/78 - 09/04/78

DR03605	DS03605	D35107	1-24	09/05/78 - 09/28/78
		D35108 **	25-26	09/29/78
		D35109	27-44	10/24/78 - 11/12/78
DR03606	DS03606	D35110	1-18	11/13/78 - 12/14/78
		D35111	19-48	12/15/78 - 02/23/79
		D57423	49-145	08/11/79 - 02/11/80
		D57424	146-259	01/13/80 - 07/30/80

* Read errors occurred in record 23, 33, 99, 101, 111, 113, 116, 118, 120, 121 File 1.

** Read errors occurred in record 23, 99, 163, 359, 385, 481, 490, 638, 647, file 1 and record 187, file 2.

VIKING 2 ORBITER

Decalibrated IRTM Data on Magtape

75-083A-02A PSPA-00013

This data set has been restored. There were originally 20 9-track, 800 BPI tapes written in Binary. There are three restored tapes. The DR tapes are 3480 cartridges and the DS tapes are 9-track, 6250 BPI. The tapes were created on a Varian computer. The DR and DS numbers along with the corresponding D numbers and the time spans are as follows:

DR#	DS#	DD#	FILES	TIME SPAN	
DR03562	DS03562	D34399	1-20	08/11/76 - 09/19/76	
		D34400	21-43	09/20/76 - 10/21/76	
		D34401	44-58	10/22/76 - 11/07/76	
		D34034	59-80	12/15/76 - 01/13/77	
		D34035	81-104	01/14/77 - 02/22/77	*
		D34036	105-116	03/03/77 - 04/15/77	
DR03563	DS03563	D34402	1-14	04/17/77 - 05/14/77	
		D34403	15-27	05/15/77 - 06/16/77	
		D34404	28-43	06/17/77 - 07/11/77	
		D34405	44-62	07/12/77 - 08/16/77	
		D34406	63-77	08/17/77 - 09/06/77	
		D34407	78-95	09/07/77 - 10/05/77	
DR03564	DS03564	D34408	1-14	10/06/77 - 10/29/77	
		D34409	15-26	10/30/77 - 11/19/77	
		D34410	27-42	11/20/77 - 12/19/77	
		D34411	43-55	12/21/77 - 01/16/78	
		D34412	56-68	01/18/78 - 02/10/78	
		D34413	69-85	02/12/78 - 03/16/78	
		D34414	86-93	03/16/78 - 03/28/78	*
		D34415	94-102	06/18/78 - 07/24/78	

* NOTE: There is no data for the time spans 02/23/77 - 03/02/77 and 03/29/78 - 06/17/78

REQ. AGENT	RAND NO.	ACQ. AGENT
VJP	RD2658	WSC

VIKING ORBITER 1 & 2

REDUCED INFRARED THERMAL MAPPER DATA

75-075A-02A

75-083A-02A

This data set catalog consists of 36 Viking 1 and 20 Viking 2 data tapes. The tapes are 9 track, 800 BPI, binary and are multi-filed. The tapes were created on a Varian computer.

The time spans, D#'s and C#'s of each data tape follows:

VIKING ORBITER 1 75-075A-02A

D#	C#	FILES	TIME SPAN
D-34030	C-20718	26	12/14/76 - 2/22/77
D-34031	C-20719	13	2/26/77 - 3/15/77
D-34032	C-20720	13	3/16/77 - 3/29/77
D-34033	C-20721	14	3/30/77 - 4/16/77
D-34375	C-21160	18	7/22/76 - 8/10/76
D-34376	C-21161	20	8/10/76 - 8/30/76
D-34377	C-21162	15	8/31/76 - 9/20/76
D-34378	C-21163	23	9/21/76 - 10/19/76
D-34379	C-21164	17	6/22/76 - 7/18/76
D-34380	C-21165	14	10/21/76 - 11/05/76
D-34381	C-21166	14	4/17/77 - 5/11/77
D-34382	C-21167	15	5/12/77 - 6/16/77
D-34383	C-21168	21	6/17/77 - 7/22/77
D-34384	C-21169	15	7/23/77 - 8/15/77
D-34385	C-21170	18	8/16/77 - 9/12/77
D-34386	C-21171	16	9/13/77 - 10/04/77
D-34387	C-21172	15	10/04/77 - 10/25/77
D-34388	C-21173	15	10/26/77 - 11/18/77
D-34389	C-21174	17	11/19/77 - 12/23/77
D-34390	C-21175	15	12/24/77 - 1/14/78
D-34391	C-21176	16	1/17/78 - 2/08/78
D-34392	C-21177	20	2/09/78 - 3/15/78
D-34393	C-21178	19	3/16/78 - 4/05/78
D-34394	C-21179	19	4/05/78 - 5/01/78
D-34395	C-21180	19	5/02/78 - 6/01/78
D-34396	C-21181	16	6/02/78 - 6/25/78
D-34397	C-21182	17	6/26/78 - 7/21/78
D-34398	C-21183	16	7/22/78 - 8/10/78

VIKING 1 (Con't)

D#	C#	FILES	TIME SPAN
D-35106	C-20844	21	8/11/78 - 9/04/78
D-35107	C-20844	24	9/05/78 - 9/28/78
D-35108	C-20846	24	9/29/78 - 10/23/78
D-35109	C-20847	18	10/24/78 - 11/12/78
D-35110	C-20848	18	11/13/78 - 12/14/78
D-35111	C-20849	30	12/15/78 - 2/23/79
D-57423	C-23106	97	08/11/79 - 02/11/80
D-57424	C-23107	114	01/13/80 - 07/30/80

VIKING ORBITER 2 75-083A-02A

D#	C#	FILES	TIME SPAN
D-34034	C-20722	22	12/15/76 - 1/13/77
D-34035	C-20723	24	1/14/77 - 2/22/77
D-34036	C-20840	12	3/03/77 - 4/15/77
D-34399	C-21278	20	8/11/76 - 9/19/76
D-34400	C-21279	23	9/20/76 - 10/21/76
D-34401	C-21280	15	10/22/76 - 11/07/76
D-34402	C-21281	14	4/17/77 - 5/14/77
D-34403	C-21282	13	5/15/77 - 6/16/77
D-34404	C-21283	16	6/17/77 - 7/11/77
D-34405	C-21284	19	7/12/77 - 8/16/77
D-34406	C-21285	15	8/17/77 - 9/06/77
D-34407	C-21286	18	9/07/77 - 10/05/77
D-34408	C-21287	14	10/06/77 - 10/29/77
D-34409	C-21288	12	10/30/77 - 11/19/77
D-34410	C-21289	16	11/20/77 - 12/19/77
D-34411	C-21290	13	12/21/77 1/16/78
D-34412	C-21291	13	1/18/78 - 2/10/78
D-34413	C-21292	17	2/12/78 - 3/16/78
D-34414	C-21293	8	3/16/78 - 3/28/78
D-34415	C-21294	9	6/18/78 - 7/24/78

JET PROPULSION LABORATORY *California Institute of Technology • 4800 Oak Grove Drive, Pasadena, California 91103*

January 11, 1980

Refer: 325-FDP-phu

Dr. Robert Vostreys
National Space Science Data Center
Code 601
Goddard Space Flight Center
Greenbelt, MD 20771

Dear Dr. Vostreys:

Enclosed are data tapes and printed summaries from the Viking Infrared Thermal Mapping Experiment:

Tape Contents:

	Spacecraft	Orbit Range	Tape Label
	1	175-245	ARD007
	1	250-268	ARD008
	1	269-283	ARD009
	1	284-301	ARD010
	2	119-145	BRD004
	2	146-181	BRD005
(No VO-2 data for 182-189)	2	190-233	BRD006

These tapes are recreations of the tapes sent to you in June 1979 and carry the same lables. I wish to express regret at having taken so long to regenerate the missing tapes, but we no longer have available the personnel to do this task rapidly. I am also including the United Parcel Service Shipper Tracer, on the off chance it may be of some use.

Please inform me of your receipt of these tapes.

Best regards,

Frank Don Palluconi

Frank Don Palluconi
Viking Thermal Mapping Team

Distribution:
J. Bennett (Caltech)
H. Kieffer (USGS)
R. Mehlman (UCLA)
D. Finnerty
C. Snyder

Telephone (213) 354-4321 *Twx 910-588-3269* *Twx 910-588-3294*

DSC #415

75-083A-02
75-083A-02

JET PROPULSION LABORATORY *California Institute of Technology • 4800 Oak Grove Drive, Pasadena, California 91103*

56 TAPES

May 27, 1981

Refer to: 382-TZM:st

Dr. Robert W. Vostreys
National Space Science Data Center
Code 601
Goddard Space Flight Center
Greenbelt, MD 20771

Dear Dr. Vostreys:

We are pleased to be able to send you the enclosed set of data tapes, which represent Viking Thermal Mapping Team observations of Mars for the entire mission. These tapes supercede those previously furnished to you; we have re-decalibrated the entire data set to account for small but important secular instrument gain changes. The tapes correspond in numbering and format precisely to the ones you have already received. There are, however, two new tapes, ARD035 and ARD036, that contain data from the Survey Mission - VO-1 revs 1144-1315. Because of the numbering, it is crucial that you do not mix the tape sets!

For your information, we include a brief description of the re-decalibration process. We begin with the existing brightness temperatures, T, and apply a correction to them to get the new brightness temperatures:

$$T_{new} = T_{old} - (GC - 1) \cdot R \cdot \frac{dT}{dR}$$

The parameter GC is known as the gain correction. The factor, $R\frac{dT}{dR}$, where R = radiance, is applied because the gain correction is linear in radiance rather than brightness temperature. The gain correction is

$$GC = A + B\ln(M + C)$$

where M = VO-1 rev number, and A, B, and C are constants. The constants, which are different for each spectral band, are determined by fitting

Telephone (213) 354-4321 *Twx 910-588-3269* *Twx 910-588-3294*

this expression to gain data obtained over the course of the mission.

For the bolometric albedo channels, the form of the correction is

$$VB_{new} = VB_{old}/GC$$

where VB is visual brightness, the quantity supplied on the tapes. The maximum difference for a given measurement between new and old VB values is about 5%. Because an attempt was made also to improve the relative calibration between the instruments on the two spacecraft, the maximum difference between any two albedo measurements of a common area in similar geometry could be as large as 17%.

For the thermal channels, the maximum possible differences between new and old temperatures are as follows:

Band:	7 μm	9 μm	11 μm	15 μm	20 μm
VO-1	-0.11K	0.48	0.65	0.18	1.23
VO-2	0.77	1.00	1.52	0.41	1.67

These corrections might occur near the end of each spacecraft's lifetime and for the highest observed temperatures.

Sincerely,

Terry Z. Martin

Terry Z. Martin
Viking Thermal Mapping Team

THE

INFRARED THERMAL MAPPER

REDUCED DATA RECORD TAPE

29 September 77

IRTM RDR Tape

Table of Contents

1. Introduction

1.1 Scope

This write-up describes the Reduced Data Record (RDR) magnetic tapes for the Viking infrared thermal mapper (IRTM) experiment. The RDR tapes include decalibrated measurements of the thermal emission of the Martian surface and atmosphere, and the reflected sunlight (Kieffer et al., 1976) together with related pointing geometry.* The data will cover the primary and extended missions of both Viking orbiters. Data were reduced and tapes generated on a Varian 73 computer which is part of the Viking Infrared Processing System (IRPS) at the Jet Propulsion Laboratory, Pasadena, California.

Included in this write-up is a brief description of the IRTM instrument to facilitate an understanding of the terminology used in describing the contents of the RDR tapes. Also included, besides a description of the tapes themselves, is a description of abbreviations and acronyms and other terms not described in the instrument description.

Appendix A goes into more detail on certain tape words and contains a warning on the use of these RDR tapes and also describes how the tapes of the extended mission vary slightly in form from those of the primary mission.

* A description of the geometry for several typical science sequences is contained in Kieffer et al., 1977.

1.2 A Brief Description of the Infrared Thermal Mapper Instrument

The Viking infrared thermal mapper (IRTM) is a multi-channel infrared radiometer, composed of four small Cassegrain telescopes with detectors that cover six spectral bands (Chase et al., 1977). Each telescope has seven detectors so that the IRTM has a total of 28 channels. All 28 channels sample simultaneously for each observation. Since the seven detector array of each telescope is arranged in a chevron pattern and the four telescopes are aligned such that they are boresighted to make the chevrons coincident in object space, the seven detector locations are simply referred to as the seven spots of the IRTM in this RDR write-up. The field of view of each spot is 5.2 mrad in diameter.

Table 1 shows the relationship between the four telescopes, the six spectral bands and the spot number designations. Note, in this RDR write-up, that Telescope C is referenced as C1, C2 and C3 to distinguish between the three different spectral bands within that telescope. Detector number is the detector number within the telescope described and channel number is the number within the 28-channel IRTM instrument.

Furthermore, the IRTM is mounted on the orbiter's scan platform such that it is boresighted with the visual imaging system (VIS) and the Mars atmospheric water detector (MAWD) to allow concurrent sampling of the martian surface by all three of these instruments (Soffen and Snyder, 1976). Figure 1 shows the nominal IRTM, MAWD and VIS field-of-view nesting. The L-vector, also called the IRTM boresight, is the scan platform pointing direction. Figure 2 shows the actual in-flight alignment of VIS and IRTM for VO-1 and VO-2 (Chase et al., 1977).

TABLE 1. IRTM TELESCOPES AND SPECTRAL BANDS

TELESCOPE	TELESCOPE ALIAS	DETECTOR NO. = SPOT NO.	CHANNEL NO.	SPECTRAL BAND	COMMENTS
A	A	1 - 7	1 - 7	17.7 TO 24.0 μm	Surface temperature.
B	B	1 - 7	8 - 14	9.8 TO 12.5 μm	Surface temperature.
C	C1	1 - 3	15 - 17	6.1 TO 8.3 μm	Surface temperature.
	C2	4 - 6	18 - 20	8.3 TO 9.8 μm	Surface temperature.
	C3	7	21	14.56 TO 15.41 μm	Atmospheric temperature.
D	D	1 - 7	22 - 28	0.3 TO 3.0 μm	Solar reflectance.

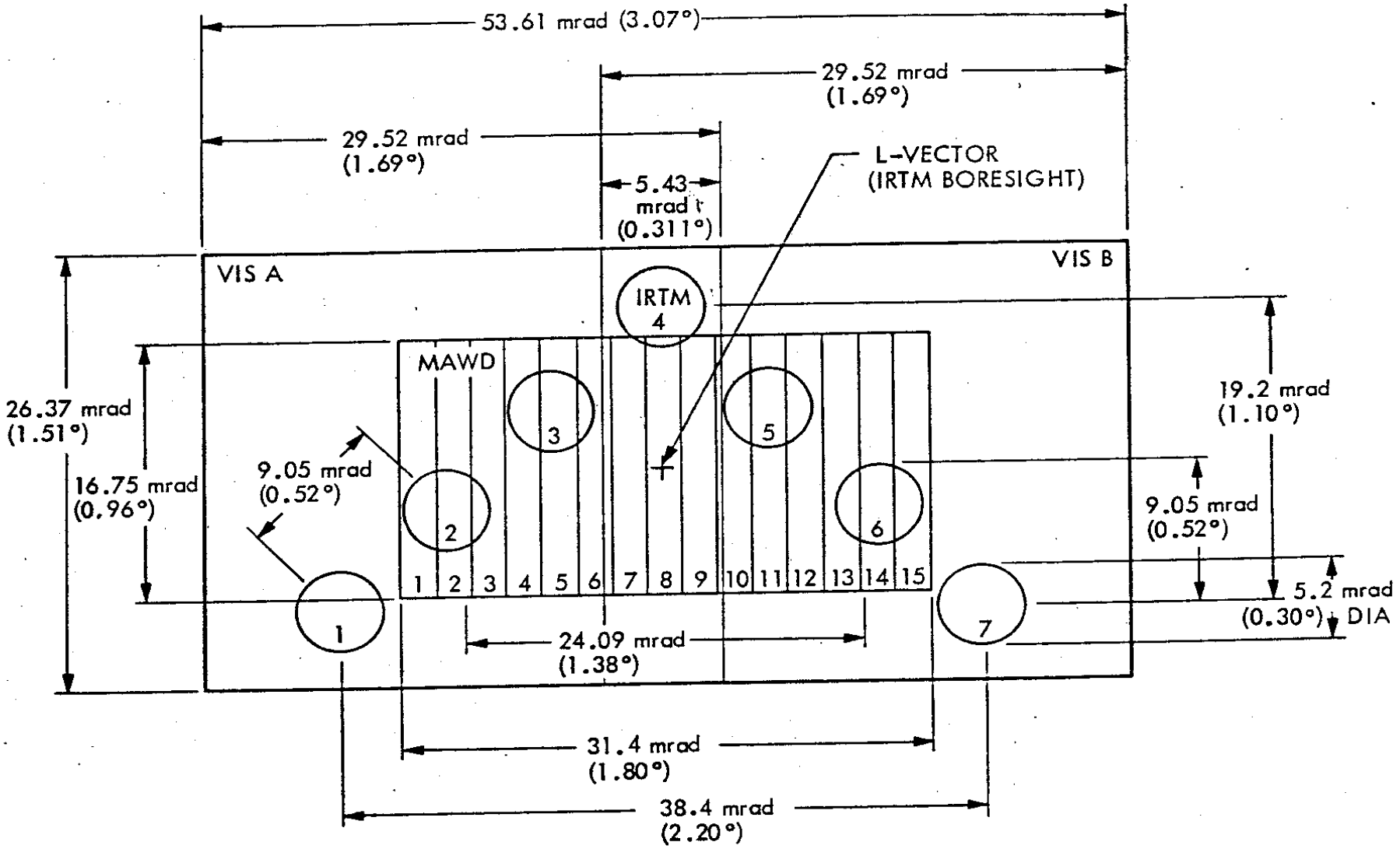


Fig. 1. Fields of view of IRTM, MAWD and VIS

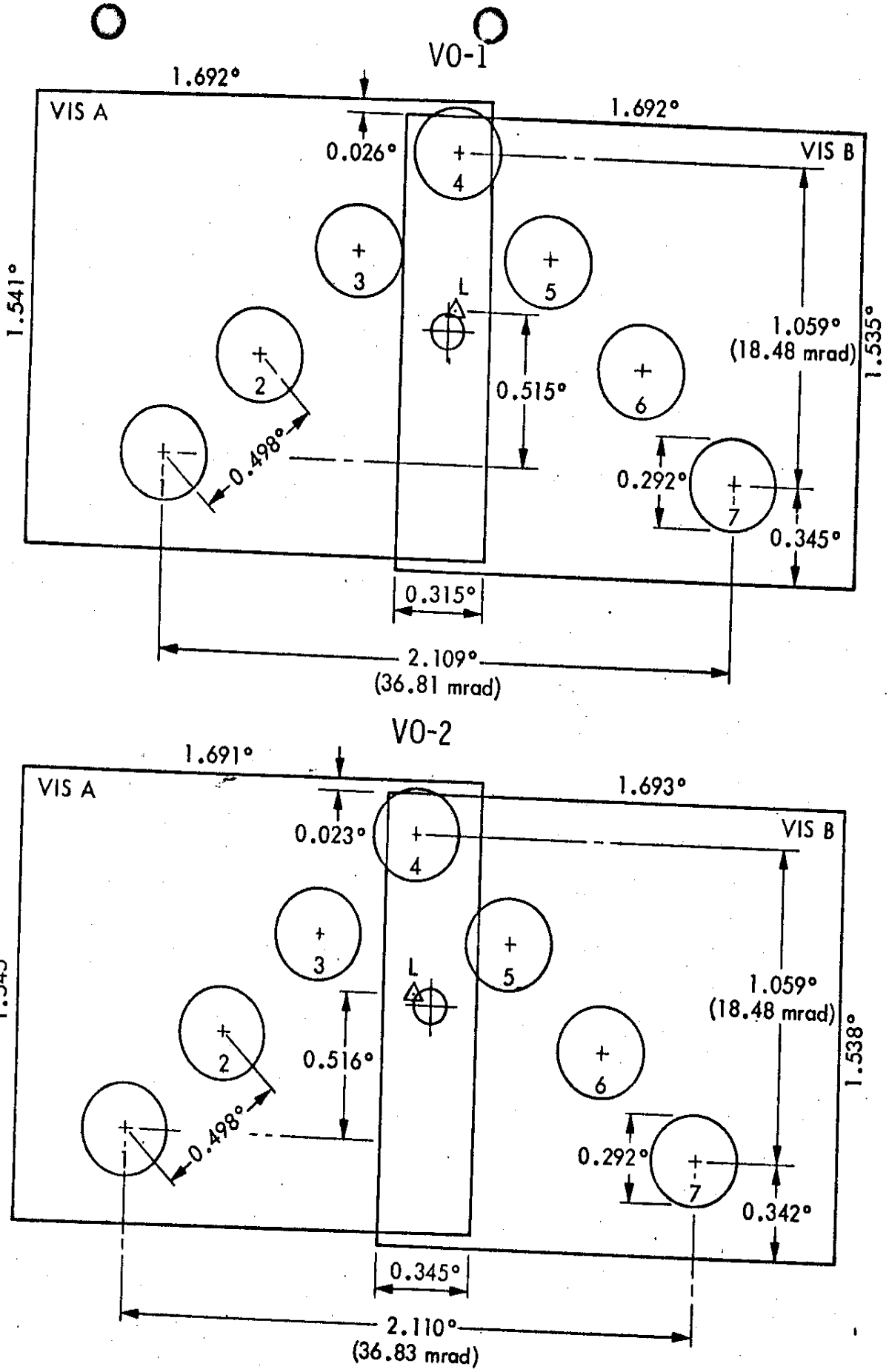


Fig. 2. Actual VIS/IRTM Alignment

1.3 General Description of the RDR Tapes

1.3.1 Physical Description of Tape

Type: 9 track

Density: 800 bpi.

Word (Varian): 2 8-bit bytes.

Blocking: Fixed Block - 10 logical records (84 Varian words each) per physical record of 840 Varian words.

Real number representation: See Format descriptions in Section 2.1.5.

No. of files per tape: Variable. There are two end-of-file marks at the end of each tape.

1.3.2 General Description of Tape Files

For the Primary Mission, each file contains data for one revolution of one spacecraft around Mars. However, there may be more than one file per revolution. For the Extended Mission see notes in Section A.3. There are six types of logical records in each file. The record type code is in the first word of each 84-word logical record.

Code

0 indicates the first half of the Orbit Header.

1 indicates the second half of the Orbit Header.
Note: There is only one Orbit Header, made up of two logical records, per file.

2 indicates a Sequence Header Record.
Note: There may be many Sequence Header Records in a file, each preceding a varying number of Data Records.

3 indicates a Data Record. Each data record contains data for one observation. There will be a varying number of Data Records in each sequence.

4 indicates a record of fill preceding a new Sequence Header Record.

5 indicates a record of fill preceding an end-of-file mark.
Note: There may be up to ten type 5 logical records in order to fill up the unused portion of the physical record.

2. Description of Terms Used in This Write-up

2.1 Description of Column Headings in the Record Type Descriptions

2.1.1 Word no. in LREC: The word number within the 84-word logical record, where word is defined as 2 8-bit bytes.

2.1.2 Variable Name: A name assigned, for the purpose of discussion, to the variable described.

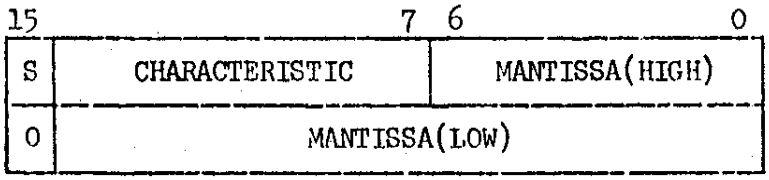
2.1.3 Scale Factor: The factor by which to divide the value on the tape in order to get the real or actual value.

2.1.4 Units: Units of measurement.

2.1.5 Format: Format Codes. The following codes have been used:

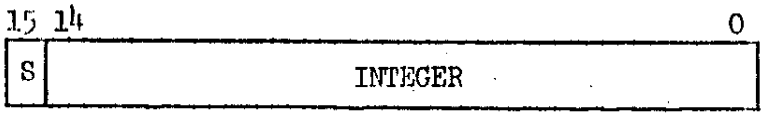
ASCII American Standards Code for Information Interchange.

F Varian floating point single-precision number. It is composed of two 16-bit words.



S is the mantissa sign (0 = positive, 1 = negative). The characteristic is eight bits long with a bias of 0200. If the mantissa is negative, the entire first word is one's complemented. To represent zero, both words are set to zero.*

I An integer. It is composed of one 16-bit word.



S is the integer sign (0 = positive, 1 = negative). If the integer is negative, it is in two's complement form.

* V70/620 Fortran IV Reference Manual (June 1974 Varian Data Machines, Irvine, California), p. 2-3 and 2-4.

2.1.6 Content: Description of the variable.

The following abbreviations and acronyms are used:

F Mars Fixed Coordinate system, where the x-axis is towards Mars Vernal Equinox, the z-axis is towards Mars North Pole, and the y-axis is $\bar{z} \times \bar{x}$.

FDSC Flight Data System Count. The FDSC increments each 0.28 seconds and is constantly increasing throughout the mission.

ICK Incremental Counter Keeper. ICK is relative to a base FDSC for the sequence. It increments each 1.12 seconds within a sequence. (1 ICK interval = 4 FDSC intervals)

LSB Least significant bit(s).

MSB Most significant bit(s).

N.A. "Not applicable"(may be zero or non-zero fill).

OET Orbiter Event Time, Greenwich Mean Time at the Viking Orbiter Spacecraft.

S/C Spacecraft.

2.2 Definitions of Other Terms Used in this Write-up

Extended Mission	Revolutions occurring after the Primary Mission.
IRTM	Infrared thermal mapper.
LREC	Logical record.
Primary Mission	VO-1 revolutions through 135 and VO-2 revolutions through 85 (i.e. up to solar conjunction).
Periapsis	The point in the spacecraft's elliptical orbit about Mars where the spacecraft is closest to Mars.
RDR	Reduced Data Record.
Rev	A revolution of the spacecraft around Mars.
Sequence	A series of time-sequential observations such that there was never a gap between observations of more than 10 ICKS (11.2 seconds) in the data stream used as input for the generation of the decalibrated data for the RDR.
VO	Viking Orbiter.

3. DETAILED DESCRIPTION OF RECORD TYPES

3.1 Type code 0: Orbit Header, Part 1

WORD NO. IN LREC	VARIABLE NAME	SCALE FACTOR	UNITS	FORMAT	CONTENT
1	ICODE	1.0	-	I	Record type code = 0.
2	-	-	-	-	Fill of zero.
3	IDSC	1.0	-	I	Orbiter (1 for VO-1, 2 for VO-2).
4	IORB	1.0	-	I	Revolution number or designation.
5-16	-	-	-	-	N.A.
17	IOETYD	-	-	I	Beginning OET: year in bits 15-9, day in bits 8-0.
18	IOETHM	-	-	I	Beginning OET: hour in bits 10-6, minutes in bits 5-0.
19	JOETYD	-	-	I	Ending OET: year in bits 15-9, day in bits 8-0.
20	JOETHM	-	-	I	Ending OET: hour in bits 10-6, minutes in bits 5-0.
21-84	-	-	-	-	N.A.

3.2 Type Code 1: Orbit Header, Part 2

WORD NO. IN LREC	VARIABLE NAME	SCALE FACTOR	UNITS	FORMAT	CONTENT
1	ICODE	1.0	-	I	Record type = 1.
2	-	-	-	-	Fill of zero.
3-4	ZMAG	1.0	km	F	Distance from Mars to the sun.
5-6	ZLNG	1.0	deg	F	Sun longitude in Mars Fixed Coordinates (0 towards Mars Vernal Equinox).
7-8	ZCOL	1.0	deg	F	Sun colatitude in Mars Fixed Coordinates (0 towards Mars North Pole).
9-44	-	-	-	-	N.A.
45	ISHIFT	1.0	-	I	Scale factor indicator for planet range parameters (Sequence Header words 46,47 and 48 and Data Record words 4,5,6 and 12). ISHIFT of 1,2,3,4 indicates scale factors of 1.,.5,.25,.125 respectively.
46-84	-	-	-	-	N.A.

3.3 Type Code 2: Sequence Header Record

WORD NO. IN LREC	VARIABLE NAME	SCALE FACTOR	UNITS	FORMAT	CONTENT
1	ICODE	1.0	-	I	Record type code = 2.
2	-	-	-	-	Fill of zero.
3	ISEQ	1.0	-	I	Sequence ID (usually 100 + order of receipt).
4	-	-	-	-	N.A.
5	IFDSQ	-	-	I	Base of FDSC in the sequence: 15 MSB right-adjusted in word.
6		-	-	I	Base of FDSC in the sequence: 15 LSB right-adjusted in word.
7-8	-	-	-	-	N.A.
9	NPSEQ	1.0	-	I	Number of observations in the sequence.
10	IDSC	1.0	-	I	Orbiter (1 for VO-1, 2 for VO-2).
11	ICRB	1.0	-	I	Revolution number or designation.
12	-	-	-	-	N.A.
13-14	TFPFRQ	1.0	sec	F	Time from periapsis at IFDSQ.
15	JDQ4	1.0	day	I	Integer part of Julian day from 2440000. (Add fractional part of Julian day, below, to this value to get real value)
16	-	-	-	-	Fill of zero.
17-18	FJDQ	1.0	day	F	Fractional part of Julian day (may be negative or greater than 1.0).
19-20	XUFBQ'	1.0	radians	F	Angle of rotation between Mars Fixed Coordinate System and Mars Rotating Coordinate System - 3.063 radians, at the beginning of the sequence. (XUFBQ' - 3.063 = ARCTAN(X/Y) of the 0 degree longitude in Mars Rotating Coordinates).
21	LPICK	1.0	-	I	Last ICK in the sequence.
22-24	-	-	-	-	N.A.

WORD NO. IN LREC	VARIABLE NAME	SCALE FACTOR	UNITS	FORMAT	CONTENT
25-44	ITITLE	-	-	ASCII	40-character sequence description. The leftmost characters include the actual revolution number and planned science observation number. Since this description was intended for internal IRTM team use, the remainder of the description may or may not be accurate. If Phobos or Diemos appear in the description the whole sequence could possibly contain invalid or off-limb data, as described in Section A.2.
45	-	-	-	-	Fill of zero.
46	IVFXM	1.0[a]	km	I	S/C position (x-component) relative to center of Mars in F coordinates of middle ICK in the sequence.
47	IVFYM	1.0[a]	km	I	S/C position (y-component) relative to center of Mars in F coordinates of middle ICK in the sequence.
48	IVFZM	1.0[a]	km	I	S/C position (z-component) relative to center of Mars in F coordinates of middle ICK in the sequence.
49	IOET(1)	1.0	day	I	OET at start of sequence: day of year.
50	IOET(2)	1.0	hr	I	" " " hour.
51	IOET(3)	1.0	min	I	" " " minute.
52	IOET(4)	1.0	sec	I	" " " second.
53-62	-	-	-	-	N.A.
63	IDCONE	80.0	deg	I	Delta cone (inertial - encoder) at start of sequence.[b]
64	IDCLOK	80.0	deg	I	Delta clock (inertial - encoder) at start of sequence.[c]
65	LATS	80.0	deg	I	Start value of latitude at I-vector intercept.
66	LATE	80.0	deg	I	End " " " "
67	LONS	80.0	deg	I	Start value of longitude at I-vector intercept. (Positive West
68	LONE	80.0	deg	I	End " " " "

WORD NO. IN LREC	VARIABLE NAME	SCALE FACTOR	UNITS	FORMAT	CONTENT
69	IHAS	800.0	hr	I	Start value of hour angle at L-vector intercept. (0 = 24 = midnight)
70	IHAE	800.0	hr	I	End " " " " "
71	IRESS	1.0	km	I	Start value of resolution at L-vector intercept. Resolution = 0.005 * Range(in km) / cos(Emission angle).
72	IRESE	1.0	km	I	End value of resolution at L-vector intercept.
73	INS	80.0	deg	I	Start value of incidence angle at L-vector intercept.(0=normal incidenc
74	INE	80.0	deg	I	End " " " " "
75	IEMS	80.0	deg	I	Start value of emission angle at L-vector intercept.(0=vertical viewing)
76	IEME	80.0	deg	I	End " " " " "
77	LIMBS	80.0	deg	I	Start value of limb angle at L-vector intercept. (Negative on-planet)
78	LIMBE	80.0	deg	I	End " " " " "
79	ICONES	80.0	deg	I	Start value of encoder cone angle.
80	ICONEE	80.0	deg	I	End " " " "
81	ICLOKS	80.0	deg	I	Start value of encoder clock angle.
82	ICLOKE	80.0	deg	I	End " " " "
83	ITPERS	10.0	min	I	Start value of time from periapsis.
84	ITPERE	10.0	min	I	End " " " "

a Usually 1.0. The scale factor is indicated by the value of ISHIFT in word 45 of the Orbit Header, Part 2 (Section 3.2).

b Inertial cone angle is the inertial pointing of the scan platform relative to sun (0 to 180 deg.).
Encoder cone angle is cone angle from the S/C encoders (not including S/C attitude).

c Inertial clock angle is the inertial azimuth of the scan platform relative to Canopus (0 to 360 deg.).
Encoder clock angle is clock angle from the S/C encoders (not including S/C attitude).

3. Type Code 3: Data Record

WORD NO. IN LREC	VARIABLE NAME	SCALE FACTOR	UNITS	FORMAT	CONTENT
1	ICODE	1.0	-	I	Record type = 3.
2	ICK	1.0	-	I	1.12 second interval count from IFDSQ in Sequence Header Record (Actual FDSC = ICK * 4 + IFDSQ).
3	IQUAL	1.0	-	I	16 bits of status indicators. See Section A.1.
4	IVFX	1.0*	km	I	S/C position (x-component) relative to center of Mars in F coordinates.
5	IVFY	1.0*	km	I	S/C position (y-component) relative to center of Mars in F coordinates.
6	IVFZ	1.0*	km	I	S/C position (z-component) relative to center of Mars in F coordinates.
7	IPHASE(1)	80.0	deg	I	Phase angle (angle between S/C and Sun vectors) at L-vector intercept.
8	IN(1)	80.0	deg	I	Solar incidence angle at spot 1 intercept. (0 = normal incidence, 90 deg. = terminator)
9	IEM(1)**	80.0	deg	I	Viewing angle at spot 1 intercept. (0 = vertical viewing, 90 deg. = limb)
10	LAT(1)	80.0	deg	I	Latitude at spot 1 intercept.
11	LON(1)	80.0	deg	I	Longitude at spot 1 intercept. (Positive West)
12	IRANGE(1)	1.0*	km	I	S/C to surface range at spot 1 intercept. (if negative, subtract value from 65536 for correct range)
13	LIMB(1)	80.0	deg	I	Limb angle at spot 1 intercept. (Negative on-planet, positive off-planet)
14	IHA(1)	800.0	hr	I	Mars local time at spot 1 intercept. (0 = midnight, 12 hr. = noon)
15-21					Same as words 8-14, except values apply to spot 2 intercept.
22-28					Same as words 8-14, except values apply to spot 3 intercept.

WORD NO. IN LREC	VARIABLE NAME	SCALE FACTOR	UNITS	FORMAT	CONTENT
29-35					Same as words 8-14, except that values apply to spot 4 intercep
36-42					Same as words 8-14, except that values apply to spot 5 intercep
43-49					Same as words 8-14, except that values apply to spot 6 intercep
50-56					Same as words 8-14, except that values apply to spot 7 intercep
57	IT20A1	80.0	deg K	I	Observed brightness temperature for spot 1 in Telescope A.
58	IT20A2	80.0	deg K	I	" " " " 2 " "
59	IT20A3	80.0	deg K	I	" " " " 3 " "
60	IT20A4	80.0	deg K	I	" " " " 4 " "
61	IT20A5	80.0	deg K	I	" " " " 5 " "
62	IT20A6	80.0	deg K	I	" " " " 6 " "
63	IT20A7	80.0	deg K	I	" " " " 7 " "
64	IT10B1	80.0	deg K	I	Observed brightness temperature for spot 1 in Telescope B.
65	IT10B2	80.0	deg K	I	" " " " 2 " "
66	IT10B3	80.0	deg K	I	" " " " 3 " "
67	IT10B4	80.0	deg K	I	" " " " 4 " "
68	IT10B5	80.0	deg K	I	" " " " 5 " "
69	IT10B6	80.0	deg K	I	" " " " 6 " "
70	IT10B7	80.0	deg K	I	" " " " 7 " "
71	IT7C11	80.0	deg K	I	Observed brightness temperature for spot 1 in Telescope C1.
72	IT7C12	80.0	deg K	I	" " " " 2 " "
73	IT7C13	80.0	deg K	I	" " " " 3 " "
74	IT9C24	80.0	deg K	I	" " " " 4 in Telescope C2.
75	IT9C25	80.0	deg K	I	" " " " 5 " "
76	IT9C26	80.0	deg K	I	" " " " 6 " "
77	IT15C3	80.0	deg K	I	" " " " 7 in Telescope C3.

WORD NO. IN LREC	VARIABLE NAME	SCALE FACTOR	UNITS	FORMAT	CONTENT
78	IVBD1	10000.	-	I	Visual brightness relative to a perfect diffuser at normal solar incidence at the distance of Mars from Sun (i.e. corrected for eccentricity of Mars orbit) for spot 1 in Telescope D.
79	IVBD2	10000.	-	I	Same as word 78, except that value applies to spot 2 in Telescope D.
80	IVBD3	10000.	-	I	Same as word 78, except that value applies to spot 3 in Telescope D.
81	IVBD4	10000.	-	I	Same as word 78, except that value applies to spot 4 in Telescope D.
82	IVBD5	10000.	-	I	Same as word 78, except that value applies to spot 5 in Telescope D.
83	IVBD6	10000.	-	I	Same as work 78, except that value applies to spot 6 in Telescope D.
84	IVBD7	10000.	-	I	Same as work 78, except that value applies to spot 7 in Telescope D.

* Usually 1. The scale factor is indicated by the value of ISHIFT in word 45 of the Orbit Header, Part 2 (Section 3.2).

** If word 9 is -32000 (without scale factor applied) data is invalid due to interference from other bodies. None of the geometry for the ICK at which the -32000 occurs will be valid. Word 9 is the only word that contains the flag for this occurrence.

A. Appendix A

A.1 Status Indicators in Word 3 of the Data Record.

Bit no.*	Meaning if bit is one
0	Instrument restored just before this observation.
1	Platform in motion (cone and/or clock slew).
2	N.A.
3	N.A.
4	Observation off-limb (at least 0.2 deg. in each of spots 1 and 6, and 1.0 deg. in spot 7).
5	Cone slew greater than 0.11 deg. per second.
6	Clock slew greater than 0.11 deg. per second.
7	Cone slew direction is negative.
8	Clock slew direction is negative.
9	N.A.
10	Data in some channel(s) may have small errors.
11	Data in some channel(s) have been corrected by a despiking procedure.
12	Thermal data may have large errors, but visual brightness data is okay.
13	Data in some channel(s) may have large errors.
14	This observation has serious errors and should be ignored.
15	Not used. Will be zero.

* Bit no. 0 is low order bit, 15 is high order bit.

A.2 Notes on Use of RDR Data

When examining the data in the Data Record, it is important to check certain key words in order to determine the validity of the observational data in the record.

Bits in word 3 of the Data Record are described in detail in Section A.1. The most important bits to check are numbers 4, 10, 12, 13, and 14. Note that bit 4 in word 3 indicates if the entire observation is off planet. Also, if word 9 is -32000 (without scale factor applied), regardless of what bit 4 in word 3 is, the data is invalid, in this case, due to interference from other bodies. None of the geometry for the ICK at which the -32000 occurs will be valid.

If bit 4 in word 3 is zero and the other bits indicate satisfactory data, further checks are needed in order to determine the validity of the data for each spot at each ICK. The limb angle for each spot (words 13, 20, 27, 34, 41, 48 and 55 for spots 1 through 7, respectively) should be examined. Since the limb angle is negative when the data is on planet and the field of view of each spot is 5.2 mrad (full width, half maximum), the limb angle must be -0.5 degrees or less to ensure that the spot's field of view is completely filled by the martian surface. Only if the entire field of view for a spot is filled by the planet's surface will the surface temperature and visual brightness data be valid for the spot being investigated.

Under some circumstances an observation may contain data, for one or more channels, that can not be properly decalibrated because of insufficient signal or irrecoverable bit errors. In such a case the observed brightness temperature(s) associated with the affected channel(s) (words 57 - 77 in the Data Record for channels 1 - 21, respectively) is set to zero for that observation. Since zero is not a valid temperature in this RDR, it functions

as a flag indicating that the data on the affected channel should be ignored.

Occasionally, on channels 22 through 28, the visual brightness (words 78 - 84 of the Data Record) as seen by some channels is represented by a small negative number. This representation should be interpreted as a visual brightness of zero. A visual brightness that is represented by a zero on the RDR tape may indicate an actual visual brightness of zero or a case where the data could not be properly decalibrated.

A.3 Notes for RDR Tapes of the Extended Mission

Tapes for revolutions after Rev 135 on VO-1 and after Rev 85 on VO-2 may contain files that have data for up to four revolutions around Mars. In this case, there will still be only one Type Code 0 (Orbit Header, Part 1) and one Type Code 1 (Orbit Header, Part 2) record per file. However, word number 4 of the Orbit Header, Part 1, will contain only the revolution number of the first revolution in that file. Also, word 10 in the Sequence Header Records, in that file, will always contain the revolution number of that first revolution. The actual revolution number of a particular sequence will be found within the first few ASCII characters of ITITLE (words 25-44 of the Sequence Header Record) for that sequence.

References

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D-34390
V-1
12/24/77 - 1/14/78

DUMP OF TAPE X-402

INPUT TAPE X-402 ON MT3
DATA INPUT H9 NF 15 FL 1 1 1 SR 15 1 1 SR 15 LAST 1

FILE 1 RECORD 1 LENGTH 1680BYTES

(0)	00000000	00010228	03000000	00000000	00000000	00000000	01000811	30343031	9B66 2F5	9B6E0484
(40)	00000000	00000000	00000000	00000000	0E171912	01317820	10260001	73632230	00000000	3DCB2EE6
(80)	3DCB2EE6	3D4B58D7	3D4B58D7	40C00000	40C00000	3DFA70A3	43D67C6A	3E6020C4	43CF77CE	43DA0831
(120)	44C02EB0	00000000	17000811	30343031	0001022B	07740AAE	47CE310F	40684C82	42F15FE6	44546417
(160)	434F03D9	48D42374	00010000	4E730484	42D646A3	43DC13CC	00000000	00000000	00000000	00000000
(200)	00000000	00000000	00000000	00000000	00000000	C11A2F33	BF8C718E	C0165AC8	40717111	3EEB6BDB
(240)	C00E5BB8	3FF20B49	C016276F	406562CE	00010000	00000000	00000000	00000000	00000000	00000000
(280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(320)	00000000	00000000	00000000	00000000	00020000	00650187	45B95E00	000009F5	04A80001	022B0300
(360)	B89D11C9	0DAD0000	40C069DA	BF8E4370	06670836	06680065	B5B5B5B0	B8B0A0A0	A0CFD0D0	CFD3C9D4
(400)	C9CFCEA0	C2CFD8A0	A3B2A0A0	A0A0A0A0	A0A0A0A0	A0A0A0A0	00003930	3A7B13F3	0166000C	00120026
(440)	0000000C	0032002C	00000166	00140007	0014000E	0006FF43	101AF013	36322939	18BB22EE	FF1A007D
(480)	1427133A	1DC41F19	01990233	2E3D2CC9	49505903	F7D3F8C6	00030028	00220861	568A16FF	1CEF15C0
(520)	38D100C9	1705172F	1CC915DB	394A00A2	16B41761	1CA215F9	39CC007B	165E1794	1C7B1618	3A530053
(560)	16031743	1C761535	39F0004D	164616F0	1C73144E	39980049	16801698	1C731365	39470047	16B60000
(600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(640)	FFFCFFFA	FFFC0003	FFFC0004	00020000	00000000	00000000	00000000	00000000	00030029	00220848
(680)	5694172E	1CE11619	391600BC	16D7175F	1CBC1638	39990095	16801794	1C95165B	3A26006E	162217C9
(720)	1C6E167F	3ABB0046	15BE1777	1C681599	3A48003F	1ECB1723	1C6414AF	39E4003A	164E16CC	1CE313C2
(760)	398A0038	168A0000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(800)	00000000	2D020000	0003FFFA	FFF30002	0003FFFD	00020000	00000000	00000000	00000000	00000000
(840)	0003002A	00220836	569D175B	1CD61670	395D00B0	16A8178E	1CB01694	39EB008A	164A17C4	1C8A16BC
(880)	3A850063	15E317FC	1C6316E4	3B2A003B	157517A9	1C5C15FC	3AA30033	15CE1754	1C57150F	3A33002D
(920)	161A16FD	1C56141F	39CE002A	165C0000	00000000	00000000	00000000	00000000	00000000	00000000
(960)	00000000	00000000	00000000	00000000	FFFCFFF9	FFFC0002	00030004	00020000	00000000	00000000
(1000)	00000000	00000000	0003002B	00220822	56A51785	1CCB16C4	39A700A5	1677178B	1CA516EB	3A4C007F
(1040)	161117F3	1C7F1717	3AEA0058	15A0182C	1C591744	3BA20031	15251709	1C51165B	3B040028	158E1783
(1080)	1C4B156C	3A830022	15E4172B	1C491478	3A14001D	162F0000	00000000	00000000	00000000	00000000
(1120)	00000000	00000000	00000000	00000000	00000000	00000000	0003FFF9	00030002	00020004	00020000
(1160)	00000000	00000000	00000000	00000000	0003002C	00220800	56AD1785	1CC01722	3A01009A	163B17EC
(1200)	1C9A174E	3AAC0074	15CA1826	1C74177F	3B6A004D	154B1862	1C4E177B1	3C3D0026	14BE180F	1C4516C7
(1240)	3B7E001D	153E17B9	1C3F15D5	3AE70015	15A2175F	1C3B14DE	3A670010	15F70000	00000000	00000000
(1280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	0003FFF9	FFFC0002
(1320)	00020000	000B0000	00000000	00000000	00000000	00000000	0003002D	002207F7	56B517E6	1CB51783
(1360)	3A69008F	15F6181F	1C9017B4	3B280069	1577185B	1C6A17E9	3C020043	14E51899	1C441820	3CF8001C
(1400)	14411846	1C3A1735	3C0B0012	14DF17F0	1C321642	3B580009	15571795	1C2D1548	3AC50003	15B90000
(1440)	00000000	00000000	00002413	00000000	00000000	00000000	2AB5000Q	00000000	00000000	2C062974
(1480)	00020000	FFFC0002	000B0068	01440000	00000000	00000000	00000000	00000000	0003002E	002207E5
(1520)	56BB1810	1CAB17D7	3ACF0086	15B3184B	1C86180B	3BA50060	15241889	1C611844	3C9D003A	147E18C9
(1560)	1C3B187F	3DBB0014	13C01876	1C311795	3C9A0008	14811740	1B2916CA	38A00000	17271549	1B6A1588
(1600)	336BFFF8	1AA00000	00000000	00000000	27042D39	00000000	00000000	00002D8E	32CA0000	00000000
(1640)	00000000	2FBA2D95	0002FFF9	FFFC000B	008A02ED	056C0000	00000000	00000000	00002E90	00000000

FILE 1 RECORD 504 LENGTH 1680BYTES

(0)	00030752	002C0F8B	41B31E8D	1DC3EBBA	221000C2	37A61F02	1DABEB68	210A00AD	38551F7D	1D92EB15
(40)	1FE00098	391B1FFB	1D7BEAC5	1E940084	39F91FD2	1D61EB15	1F0A0061	39AA1FA4	1D48EB69	1F81003F
(80)	395A1F6E	1D30EBC4	2001001D	39050000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00000000	FFFDFFF2	FFFBFFFD	FFF3FFFC	FFF30000	00000000	00000000
(160)	00000000	00000000	00030753	002C0F76	41B01ECB	1DC3EB7A	218C00C6	37FE1F41	1DABEB29	207800B2
(200)	38B61FBB	1D94EAD8	1F3E009E	39872039	1D7EEA8A	1DE1008A	3A702013	1D63EAD8	1E590067	3A201FE9
(240)	1D48EB28	1ED30044	39CF1FB7	1D2FEB7F	1F550022	39780000	00000000	00000000	00000000	00000000
(280)	00000000	00000000	00000000	00000000	00000000	00000000	FFFDFFE9	FFF2FFFD	FFF3FFFC	FFF30000
(320)	00000000	00000000	00000000	00000000	00030754	002C0F60	41AD1F09	1DC3EB3B	2102000B	38EA1F7E
(360)	1DACEAEC	1FE000B7	391C1FF8	1D96EA9D	1E9600A4	39F82075	1D81EA53	1D260091	3AED2052	1D65EA9D
(400)	1DA1006E	3A9B202C	1D4AEAEA	1E1D004A	3A491FFE	1D30EB3D	1EA10028	39F00000	00000000	00000000
(440)	00000000	00000000	00000000	00000000	00000000	0CCC0000	00000000	00000000	FFFDFFE9	FFFBFFFD
(480)	FFF3FFFC	FFF30000	00000000	00000000	00000000	00000000	00030755	002C0F4A	41A91F45	1DC3EAFD
(520)	207200D0	38BB1FB9	1DADEAB0	1F4100BD	39862033	1D98EA64	1DE600AA	3A6E20AF	1D84EA1E	1C630098

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(560)	3B6F2090	1D6CEAB4	1CE10074	3B1C206D	1D4CEAAE	1D5E0051	3A1C2043	1D31EAFE	1DE5002E	3A6E0000
(600)	00000000	00000000	00000000	00000000	00000000	00CC0000	00000000	00000000	00002CD6	00000000
(640)	FFFDFFF2	FFF2FFFD	FFF3FFFC	FFF30000	00000000	00CC0000	00000000	00000000	00030756	002C0F35
(680)	41A51F7F	1DC5EAC1	1FDC00D6	391F1FF4	1DB0EA76	1E9A00C3	39F5206D	1D9BEA2E	1D2E00B1	3AE820E7
(720)	1D88E9EB	1B9800A0	3BF720CC	1D6BEA2F	1C180070	3BA220AD	1D4FEA75	1C980058	3B4C2087	1D33EAC1
(760)	1D210034	3AF10000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00CC0000
(800)	00000000	00000000	0004FFF2	FFFBFFFD	FFF3FFFC	FFEA0000	00000000	00000000	00000000	00000000
(840)	00030757	002C0F1F	41A01FB9	1DC7EA87	1F3F00DC	39882020	1DB2EA3F	1DED00CA	3A6920A5	1D9FE9FA
(880)	1C6E00B8	3B69211E	1D8DE9BC	1AC500A8	3C842106	1D7CE9FC	1B470083	3C2D20EB	1D52EA40	1BC9005F
(920)	3BD720C8	1D36EA87	1C550038	3B790000	00000000	0C000000	00000000	00000000	00000000	00000000
(960)	00000000	00000000	00000000	00000000	FFFDFFE9	FFFBFFFD	FFF3FFFC	FFF30000	00000000	00000000
(1000)	00000000	00000000	00030758	002C0F09	419B1FF1	1DC9EA4F	1E9B00E2	39F62064	1DB6EA0A	1D3800D1
(1040)	3AE220DB	1DA4E9C9	1BA600C0	3BEE2154	1D92E990	19EA00B0	3D16213F	1D74E9CD	1A6E008B	3CBE2127
(1080)	1D57EA0D	1AF20067	3C662108	1D3AEA51	1B7F0042	3C080000	00000000	00000000	00000000	00000000
(1120)	00000000	00000000	00000000	00000000	00000000	00000000	FFFDFFF2	FFF2FFFD	FFF3FFFC	FFF30000
(1160)	00300000	00000000	00000000	00000000	00030759	0C2C0EF4	41962028	1DCCEA19	1DEF00E9	3AE8209A
(1200)	1DBAE9D7	1C7B00D8	3B602110	1DA9E99B	1AD600C8	3C792187	1D98E967	19070068	3DAE2175	1D7AE9A1
(1240)	198D0094	3D542161	1D5BE9DE	1A12096F	3CFC2146	1D3EEA1E	1AA2004A	3C9C0000	00000000	00000000
(1280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	FFF5FFF2	FFF2FFFD
(1320)	FFF3FFFC	FFF30000	00000000	00000000	00000000	00000000	00050000	00000000	00000000	00000000
(1360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00050000	00000000
(1560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	504	503	1680	2	0	0	0	8	25

FILE 15 RECORD 1 LENGTH 1680BYTES

(0)	00000000	00010241	03480000	00000000	00000000	00000000	01000811	30343136	9CCE03CF	9C0F0458
(40)	00000000	00000000	00000000	00000000	0E171912	02257805	34000001	80051905	00000000	3DCB2EE6
(80)	3DCB2EE6	3D4B58D7	3D4B58D7	40C00000	40C00000	3CFA70A3	43D67C6A	3E6020C4	43CF77CE	43DA0831
(120)	44C02EB0	00000000	17000811	30343136	00010241	07AE02A6	47CE334A	40684D7F	42DF0D89	44575E8C
(160)	434E7AB6	48D4270C	00010000	4E743469	42FC60BF	43CC26BA	00000000	00000000	00000000	00000000
(200)	00000000	00000000	00000000	00000000	00000000	C11A2F76	BF8C718D	C0165AC7	40717110	3EEB6BA4
(240)	C00E5BBF	3FF20B48	C0162776	406562CC	00020000	0C000000	00000000	00000000	00000000	00000000
(280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(320)	00000000	00000000	00000000	00000000	00020000	00650187	46855860	00000A65	008C0001	02410348
(360)	B7B24FBB	0DC30000	40557ACD	C09D0700	00AF04BC	0CAF0000	B5B7B7BC	E3B1ACC1	B0B1A0A0	A0C8C5C1
(400)	C4C5D2AC	A0D4C8C1	D2D3C9D3	A0CDCFCE	D4C5D3A0	A0A0A0A0	0000419C	1ADFFE7A	000F0004	00070003
(440)	00000006	00060038	0000000F	00070016	0006000C	000D0030	F6C1FEE4	2D3C2483	250D2B06	01C70053
(480)	0D8B09D5	09F40C21	FF36FF60	33593245	23FF23A2	E622E63A	0003000B	00004D8	41340EE3	0CA4F5D8
(520)	28C8FF6A	28050EC4	0BF1F5A2	2AA3FF5D	26C80EDF	0B89F56A	2C7FFF55	258B0F2D	0B6DF534	2E5CFF53
(560)	244D0D66	096EF708	2EA0FF2B	24200BC0	078CF8C0	2EDDFF04	23F70A33	05BFFA63	2F0EFEDC	23D64C16
(600)	4B8A4BAC	4A5C4C6B	4E0D5074	4C294BCD	4BBB4AC0	4C714DC5	50494CA2	4C6C4C74	4B284CDD	4DD636E2
(640)	06520636	06450525	0707087C	0A0149D7	493C4865	474E49B4	4B9C4D21	FD0CFE32	0003000C	000004D7
(680)	41350EEA	0CABF5D0	28C9FF6A	28040ECB	0BF8F59A	2AA4FF5D	26C80EE7	0B91F561	2C81FF56	258A0F35
(720)	0B76F52C	2E5FFF54	244B0D6E	0976F701	2EA2FF2C	241E0BC8	0794F8B8	2EE0FF04	23F50A3A	05C7FA5C
(760)	2F11FEDC	23D54C0B	4BA24BAC	4A5C4C76	4E17507F	4C354BD9	4BBA4ACC	4C894DC5	50494CCB	4C6C4C73
(800)	4B274CEB	4DF336A3	065A0636	064F0525	0707087B	0A0149CC	49304858	473F49AA	4B934D1A	FD0DFE32
(840)	00030000	000004D7	41370EF2	0CB1F5C8	28CBFF6B	28040ED3	0C00F592	2AA6FF5E	26C70EEF	0B99F559
(880)	2C83FF56	25890F3E	0B7FF524	2E62FF54	244A0D76	097FF6F9	2EA5FF2D	241D0BCF	079CF8B1	2EE2FF05
(920)	23F40A41	05CEFA55	2F14FEDD	23D34C0B	4BA24BA0	4A5C4C81	4E225074	4C354BCD	4BC64ACC	4C894DC5
(960)	503F4CCB	4C6C4C72	4B454CEA	4DF33788	065A0636	064F052E	0707087B	0A0149C1	49254840	4733499F
(1000)	4B8B4D12	FD0DFE32	0003000E	000004D7	41360EF2	0CB1F5C8	28CAFF6B	28040ED3	0BFFF593	2AA6FF5E
(1040)	26C70EEF	0B99F55A	2C83FF56	25890F3D	0B7EF524	2E61FF54	244A0D75	097EF6F9	2EA5FF2D	241D0BCF
(1080)	079BF8B1	2EE2FF05	23F40A41	05CEFA55	2F13FEDD	23D34C16	4BA24BAC	4A5B4C81	4E0B5074	4C344BD9
(1120)	4BBA4ACB	4C894DC5	50494CB5	4C804C87	4B344CE9	4DF33717	065A0636	064F052E	07070884	0A0149C1
(1160)	4926484D	4733499F	4B8B4D12	FD0DFE32	0003000F	000004D7	41360EF1	0CB1F5C9	28CAFF6B	28040ED2
(1200)	0BFFF593	2AA6FF5E	26C80EEE	0B98F55A	2C82FF56	2E8A0F3C	0B7EF525	2E61FF54	244B0D75	097EF6FA
(1240)	2EA4FF2D	241E0BCE	079BF8B2	2EE2FF05	23F50A40	0ECDFA56	2F13FEDD	23D44C16	4BAE4BAC	4AE64C81