Viking Orbiter 1+2 682
INFRARED Thermal Mapper

MARINER 6 + 7 75-075A-02B
75-083A-02B

INFRARED SPECTROMETER

69-014A-02B
69-030A-02B

Table of Contents

1. Introduction

2. Errata/Change Log

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

4. Catalog Materials

    a. Associated Documents

    b. Core Catalog Materials

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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 This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system.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

| REQ. AGENT | ACQ. AGENT |
| --- | --- |
| BMW | PSB |

VIKING ORBITER

INFRARED THERMAL MAPPER

75-075A-02B PSPA-00305
75-083A-02B PSPA-00176

This data set catalog consists of seven tapes. These tapes are 9 track, 6250 BPI, ASCII with 6 files (2 data files) of data. These tapes were created on a VAX 11/780 computer. The data consists of two complimentary portions, water ice cloud observations and surface observations, thus will not reflect specific time spans.

| D# | C# |
| --- | --- |
| D-79941 | C-27600 |
| D-79942 | C-27601 |
| D-79943 | C-27602 |
| D-79944 | C-27603 |
| D-79945 | C-27604 |
| D-79946 | C-27605 |
| D-79947 | C-27606 |

```
CCSD1Z00000100000000NJPL1V00PDS100026212 = SFDU_LABEL

OBJECT                          = VOLUME_SET
 DATA_SET_ID                    = "V01/V02-M-IRTM-5-BINNED/CLOUDS-V1.0"
 MEDIA_TYPE                     = TAPE
 TAPES                          = 7
 NOTE                           = "This data set, derived from the Viking
Orbiter Infrared Thermal Mapper (IRTM) data set, has been binned in both space
and time.  It consists of two complementary portions, water ice cloud
observations and surface observations."

 OBJECT                          = VOLUME
  NAME                           = IRTM02
  MEDIA_TYPE                     = TAPE
  TAPE_DENSITY                   = 1600
  TAPES                          = 7
  SEQUENCE_NUMBER                = 2
  PROCESS_NAME                   = COPY
  FORMAT                         = ANSI
  BLOCK_BYTES                    = 9963
  HARDWARE_NAME                  = "VAX 11/785"
  OPERATING_SYSTEM_NAME          = "VMS 5.1-1"
  FILES                          = 2
  DATE_TIME                      = 1989-08-25

  OBJECT                          = DIRECTORY
   NAME                           = ROOT

   OBJECT                         = FILE
    NAME                          = "VOLDESC.SFD"
    RECORD_TYPE                   = STREAM
   END_OBJECT                     = FILE

   OBJECT                         = FILE
    NAME                          = "SUR1_190.DAT"
    RECORD_TYPE                   = FIXED_LENGTH
    FORMAT                        = ASCII
    FILE_RECORDS                  = 265030
    TABLE_RECORD_BYTES            = 123
    SPACECRAFT_NAME               = "VIKING ORBITER 1"
    SPACECRAFT_ID                 = V01
    SPACECRAFT_NAME               = "VIKING ORBITER 2"
    SPACECRAFT_ID                 = V02
    NATIVE_START_TIME             = "90 AREOCENTIC SOLAR LONGITUDE, MISSION
      YEAR 1"
    NATIVE_STOP_TIME              = "190 AREOCENTIC SOLAR LONGITUDE, MISSION
      YEAR 1"
    NOTE                          = "This file contains records from the
      surface observations portion of the data set."

    OBJECT                         = HISTORY
     PROCESS_NAME                  = PANDA
     VERSION_DATE                  = 1989-08-08
     VERSION_NUMBER                = 0
     DATE_TIME                     = 1989-08-25
```

Mariner 6 & 7

Infrared Spectrometer

69-014A-02B PSPA-00060

69-030A-02B

These data sets are contained on one tape. The tape is labeled, 9 track, 6250 BPI, with ASCII documentation files and binary data files, created on a Vax 11/780 computer. The label name, D and C numbers, along with the time spans follow:

| D# | C# | Label Name | Time Span |
|---|---|---|---|
| D-079930 | C-027549 | MRIRS1 | 07/31/69 - 08/05/69 |

Directory Listing of D-079930 Label = MRIRS1

| File Name | Blocks | Original Generation Date |
|---|---|---|
| VOLDESC.SFD;1 | 12 | 31-AUG-1989 00:00:00.00 |
| MRIRS.LBL;1 | 4 | 31-AUG-1989 00:00:00.00 |
| MRIRS.DAT;1 | 512 | 31-AUG-1989 00:00:00.00 |
| MRIRS.TAB;1 | 516 | 31-AUG-1989 00:00:00.00 |

Total of 4 files, 1044 blocks.

Listing of the VOLDESC.SFD file on D79930

```
CCSD1Z00000100039916NJPL1V00PDS100002956 = SFDU_LABEL

OBJECT                          = VOLUME
 NAME                           = MRIRS1
 MEDIA_TYPE                     = TAPE
 TAPE_DENSITY                   = 6250
 TAPES                          = 1
 PROCESS_NAME                   = COPY
 FORMAT                         = ANSI
 BLOCK_BYTES                    = 3584
 HARDWARE_NAME                  = "VAX 11/780"
 OPERATING_SYSTEM_NAME          = "VMS 4.8"
 FILES                          = 4
 DATE_TIME                      = 1989-08-30
 DATA_SET_ID                    = 'MR6/MR7-M-IRS-3-V1.0'
 NOTE                           = "This data set is a partial
  collection of spectra in digital form from the Mariner 6 and 7
  Infrared Spectrometer experiments. All Mars and near-Mars sky
  spectra are included here, as well as some relevant laboratory
  spectra of blackbody sources. Lacking are the inflight spectra
  of reference targets including the wavelength calibration
  spectra. The IRS data are arranged as a single set of 512
  spectra; there are first 36 calibration spectra, followed by 122
  Mariner 6 spectra, followed by 354 Mariner 7 spectra. The latter
  set is larger because the long-wavelength channel detector
  system failed on Mariner 6. These spectra are presented here in
  raw form, as originally supplied to the NSSDC on microfiche.
  Note that the geometry information in the spectrum headers was
  revised by the producer in 1984 to account for the revision in
  the location of the Mars pole following Mariner 9 observations.

  This data set consists of a volume description file, a detached
  label describing the data file contents, the data file, and as
  a PDS table with the label and data in a single file."

 OBJECT                         = DIRECTORY
  NAME                          = ROOT

  OBJECT                         = FILE
   NAME                          = "VOLDESC.SFD"
   RECORD_TYPE                   = STREAM
  END_OBJECT                     = FILE

  OBJECT                         = FILE
   NAME                          = 'MRIRS.LBL'
   RECORD_TYPE                   = STREAM
   NOTE                          = "Detached label for MARIRS.DAT"
  END_OBJECT                     = FILE

  OBJECT                         = FILE
   NAME                          = 'MRIRS.DAT'
   RECORD_TYPE                   = FIXED_LENGTH
   RECORD_BYTES                  = 3584
   FILE_RECORDS                  = 512
   NOTE                          = "Data file."
  END_OBJECT                     = FILE

  OBJECT                         = FILE
   NAME                          = 'MRIRS.TAB'
   RECORD_TYPE                   = FIXED_LENGTH
   RECORD_BYTES                  = 3584
   FILE_RECORDS                  = 516
   NOTE                          = "PDS table containing combined
    label and data files."
  END_OBJECT                     = FILE
```

Listing of ... from D-79930

```
NJPL1I00PDS100000000            = SFDU_LABEL
RECORD_TYPE                     = FIXED_LENGTH
RECORD_BYTES                    = 3584
FILE_RECORDS                    = 512
^SPECTRUM_RECORD                = 'MARIRS.DAT'
SPACECRAFT_NAME                 = {MARINER_6, MARINER_7}
MISSION_PHASE_NAME              = MARS_ENCOUNTER
TARGET_NAME                     = MARS
DATA_SET_ID                     = 'MR6/MR7-M-IRS-3-V1.0'
EVENT_START_DATE                = 1969-07-31
EVENT_STOP_DATE                 = 1969-08-05
INSTRUMENT_NAME                 = INFRARED_SPECTROMETER
NOTE                            = "File contains 36 laboratory blackbody
 spectra, for both Mariner 6 and 7 instruments, followed by 122
 Mariner 6 flight spectra, followed by 354 Mariner 7 flight spectra:

  'Record    Spectra Nos.   Channel  Instrument          Subject    '\n
  ' ----------------------------------------------------------------'\n
  ' 1-22      (negative)    1,2        2 (Mar. 7)    BB calibration '\n
  ' 23-36     (negative)      2        1 (Mar. 6)    BB calibration '\n
  ' 37-158    14-290          2        1             space, Mars    '\n
  ' 159-323   2-274           2        2             space, Mars    '\n
  ' 324-512   2-274           1        2             space, Mars    '\n

 Each spectrum is preceded by a header containing spectrum number,
 instrument number, channel number, spacecraft clock count, geometry
 information, and target blackbody temperature in the case of
 calibration data (stored in the location for clock). Note that the
 wavelength scale varies somewhat from spectrum to spectrum; refer to
 items 23-26 in the header for linear wavelength scale coefficients. "

OBJECT                          = SPECTRUM_TABLE
 ROWS                           = 512
 ROW_BYTES                      = 3584

 OBJECT                          = SPECTRUM_HEADER_TABLE
  ROWS                           = 1
  ROW_COLUMNS                    = 30
  ROW_BYTES                      = 120
  NOTE                           = "The header consists of 30 floating
   point values."

  OBJECT                          = INSTRUMENT_NUMBER
   START_BYTE                     = 1
   BYTES                          = 4
   TYPE                           = VAX_REAL
   FORMAT                         = 'F2.0'
   NOTE                           = "1 = Mariner 6; 2 = Mariner 7"
  END_OBJECT                      = INSTRUMENT_NUMBER

  OBJECT                          = CHANNEL_NUMBER
   START_BYTE                     = 5
   BYTES                          = 4
   TYPE                           = VAX_REAL
   FORMAT                         = 'F2.0'
   NOTE                           = "1 = 4-14 micrometer; 2 = 1.9-6 mu"
  END_OBJECT                      = CHANNEL_NUMBER

  OBJECT                          = SPECTRUM_NUMBER
   START_BYTE                     = 9
   BYTES                          = 4
   TYPE                           = VAX_REAL
   FORMAT                         = 'F5.0'
   NOTE                           = "Normally positive; negative for
    calibration"
  END_OBJECT                      = SPECTRUM_NUMBER
```

MRIRS.DAT and MRIRS.TAB

Listing of file MRIRS.1
from D-79930

```
NJPL1I00PDS100000000                = SFDU_LABEL
RECORD_TYPE                         = FIXED_LENGTH
RECORD_BYTES                        = 3584
FILE_RECORDS                        = 512
^SPECTRUM_RECORD                    = 'MARIRS.DAT'
SPACECRAFT_NAME                     = {MARINER_6, MARINER_7}
MISSION_PHASE_NAME                  = MARS_ENCOUNTER
TARGET_NAME                         = MARS
DATA_SET_ID                         = 'MR6/MR7-M-IRS-3-V1.0'
EVENT_START_DATE                    = 1969-07-31
EVENT_STOP_DATE                     = 1969-08-05
INSTRUMENT_NAME                     = INFRARED_SPECTROMETER
NOTE                                = "File contains 36 laboratory blackbody
 spectra, for both Mariner 6 and 7 instruments, followed by 122
 Mariner 6 flight spectra, followed by 354 Mariner 7 flight spectra:

  'Record    Spectra Nos.   Channel  Instrument          Subject    '\n
  ' ----------------------------------------------------------------'\n
  ' 1-22      (negative)    1,2        2 (Mar. 7)    BB calibration '\n
  ' 23-36     (negative)      2        1 (Mar. 6)    BB calibration '\n
  ' 37-158    14-290          2        1             space, Mars    '\n
  ' 159-323   2-274           2        2             space, Mars    '\n
  ' 324-512   2-274           1        2             space, Mars    '\n

 Each spectrum is preceded by a header containing spectrum number,
 instrument number, channel number, spacecraft clock count, geometry
 information, and target blackbody temperature in the case of
 calibration data (stored in the location for clock). Note that the
 wavelength scale varies somewhat from spectrum to spectrum; refer to
 items 23-26 in the header for linear wavelength scale coefficients. "

OBJECT                              = SPECTRUM_TABLE
 ROWS                               = 512
 ROW_BYTES                          = 3584

 OBJECT                              = SPECTRUM_HEADER_TABLE
  ROWS                               = 1
  ROW_COLUMNS                        = 30
  ROW_BYTES                          = 120
  NOTE                               = "The header consists of 30 floating
   point values."

  OBJECT                              = INSTRUMENT_NUMBER
   START_BYTE                         = 1
   BYTES                              = 4
   TYPE                               = VAX_REAL
   FORMAT                             = 'F2.0'
   NOTE                               = "1 = Mariner 6; 2 = Mariner 7"
  END_OBJECT                          = INSTRUMENT_NUMBER

  OBJECT                              = CHANNEL_NUMBER
   START_BYTE                         = 5
   BYTES                              = 4
   TYPE                               = VAX_REAL
   FORMAT                             = 'F2.0'
   NOTE                               = "1 = 4-14 micrometer; 2 = 1.9-6 mu"
  END_OBJECT                          = CHANNEL_NUMBER

  OBJECT                              = SPECTRUM_NUMBER
   START_BYTE                         = 9
   BYTES                              = 4
   TYPE                               = VAX_REAL
   FORMAT                             = 'F5.0'
   NOTE                               = "Normally positive; negative for
    calibration"
  END_OBJECT                          = SPECTRUM_NUMBER
```

```
OBJECT                                  = GMT_HOUR
 START_BYTE                             = 13
 BYTES                                  = 4
 TYPE                                   = VAX_REAL
 FORMAT                                 = 'F2.0'
END_OBJECT                              = GMT_HOUR

OBJECT                                  = GMT_MINUTE
 START_BYTE                             = 17
 BYTES                                  = 4
 TYPE                                   = VAX_REAL
 FORMAT                                 = 'F3.0'
END_OBJECT                              = GMT_MINUTE

OBJECT                                  = GMT_SECOND
 START_BYTE                             = 21
 BYTES                                  = 4
 TYPE                                   = VAX_REAL
 FORMAT                                 = 'F5.1'
END_OBJECT                              = GMT_SECOND

OBJECT                                  = ENCOUNTER_RELATIVE_TIME_MINUTES
 START_BYTE                             = 25
 BYTES                                  = 4
 TYPE                                   = VAX_REAL
 FORMAT                                 = 'F4.0'
END_OBJECT                              = ENCOUNTER_RELATIVE_TIME_MINUTES

OBJECT                                  = ENCOUNTER_RELATIVE_TIME_SECONDS
 START_BYTE                             = 29
 BYTES                                  = 4
 TYPE                                   = VAX_REAL
 FORMAT                                 = 'F5.1'
END_OBJECT                              = ENCOUNTER_RELATIVE_TIME_SECONDS

OBJECT                                  = SPACECRAFT_CLOCK_COUNT
 START_BYTE                             = 33
 BYTES                                  = 4
 TYPE                                   = VAX_REAL
 FORMAT                                 = 'F10.0'
END_OBJECT                              = SPACECRAFT_CLOCK_COUNT

OBJECT                                  = BLACKBODY_TEMPERATURE
 START_BYTE                             = 33
 BYTES                                  = 4
 TYPE                                   = VAX_REAL
 FORMAT                                 = 'F5.0'
 NOTE                                   = "For calibration spectra, the
  blackbody temperature replaces the spacecraft clock count."
END_OBJECT                              = BLACKBODY_TEMPERATURE

OBJECT                                  = CENTER_LATITUDE
 START_BYTE                             = 37
 BYTES                                  = 4
 TYPE                                   = VAX_REAL
 FORMAT                                 = 'F6.2'
 NOTE                                   = "Latitude of slit center intercept
  on planet"
END_OBJECT                              = CENTER_LATITUDE

OBJECT                                  = CENTER_LONGITUDE
 START_BYTE                             = 41
 BYTES                                  = 4
 TYPE                                   = VAX_REAL
 FORMAT                                 = 'F6.2'
```

```
 NOTE                                  = "Longitude of slit center intercept
  on planet"
END_OBJECT                             = CENTER_LONGITUDE

OBJECT                                 = UPPER_LATITUDE
 START_BYTE                            = 45
 BYTES                                 = 4
 TYPE                                  = VAX_REAL
 FORMAT                                = 'F6.2'
 NOTE                                  = "Latitude of slit north end
  intercept on planet"
END_OBJECT                             = UPPER_LATITUDE

OBJECT                                 = UPPER_LONGITUDE
 START_BYTE                            = 49
 BYTES                                 = 4
 TYPE                                  = VAX_REAL
 FORMAT                                = 'F6.2'
 NOTE                                  = "Longitude of slit north end
  intercept on planet"
END_OBJECT                             = UPPER_LONGITUDE

OBJECT                                 = LOWER_LATITUDE
 START_BYTE                            = 53
 BYTES                                 = 4
 TYPE                                  = VAX_REAL
 FORMAT                                = 'F6.2'
 NOTE                                  = "Latitude of slit south end
  intercept on planet"
END_OBJECT                             = LOWER_LATITUDE

OBJECT                                 = LOWER_LONGITUDE
 START_BYTE                            = 57
 BYTES                                 = 4
 TYPE                                  = VAX_REAL
 FORMAT                                = 'F6.2'
 NOTE                                  = "Longitude of slit south end
  intercept on planet"
END_OBJECT                             = LOWER_LONGITUDE

OBJECT                                 = EMISSION_ANGLE
 START_BYTE                            = 61
 BYTES                                 = 4
 TYPE                                  = VAX_REAL
 FORMAT                                = 'F6.2'
 NOTE                                  = "Emission angle (degrees) for slit
  center intercept"
END_OBJECT                             = EMISSION_ANGLE

OBJECT                                 = INCIDENCE_ANGLE
 START_BYTE                            = 65
 BYTES                                 = 4
 TYPE                                  = VAX_REAL
 FORMAT                                = 'F6.2'
 NOTE                                  = "Incidence angle (degrees) for slit
  center intercept"
END_OBJECT                             = INCIDENCE_ANGLE

OBJECT                                 = PHASE_ANGLE
 START_BYTE                            = 69
 BYTES                                 = 4
 TYPE                                  = VAX_REAL
 FORMAT                                = 'F6.2'
 NOTE                                  = "Phase angle (degrees) for slit
  center intercept"
END_OBJECT                             = PHASE_ANGLE
```

```
OBJECT                          = CENTER_ANGLE
 START_BYTE                     = 73
 BYTES                          = 4
 TYPE                           = VAX_REAL
 FORMAT                         = 'F6.2'
 NOTE                           = "Angle (degrees) between slit
  center intercept and planet center as seen from spacecraft"
END_OBJECT                      = CENTER_ANGLE

OBJECT                          = LOCAL_SUNSET_RELATIVE_TIME
 START_BYTE                     = 77
 BYTES                          = 4
 TYPE                           = VAX_REAL
 FORMAT                         = 'F4.1'
 NOTE                           = "Time past local sunset at slit
  center intercept (hours and tenths)"
END_OBJECT                      = LOCAL_SUNSET_RELATIVE_TIME

OBJECT                          = SLANT_DISTANCE
 START_BYTE                     = 81
 BYTES                          = 4
 TYPE                           = VAX_REAL
 FORMAT                         = 'F6.0'
 NOTE                           = "Slant distance (km) to slit center
  intercept"
END_OBJECT                      = SLANT_DISTANCE

OBJECT                          = LIMB_ALTITUDE
 START_BYTE                     = 85
 BYTES                          = 4
 TYPE                           = VAX_REAL
 FORMAT                         = 'F6.0'
 NOTE                           = "Altitude of tangent ray above
  planetocentric sphere for non-intercepting views"
END_OBJECT                      = LIMB_ALTITUDE

OBJECT                          = LEFT_WAVELENGTH_INTERVAL
 START_BYTE                     = 89
 BYTES                          = 4
 TYPE                           = VAX_REAL
 FORMAT                         = 'F8.6'
 NOTE                           = "Wavelength interval per spectrum
  point, left segment (between left and central spike) derived from
  the spectra."
END_OBJECT                      = LEFT_WAVELENGTH_INTERVAL

OBJECT                          = LEFT_START_WAVELENGTH
 START_BYTE                     = 93
 BYTES                          = 4
 TYPE                           = VAX_REAL
 FORMAT                         = 'F6.3'
 NOTE                           = "Wavelength (micrometers) of first
  point in left segment derived from the spectra."
END_OBJECT                      = LEFT_START_WAVELENGTH

OBJECT                          = RIGHT_WAVELENGTH_INTERVAL
 START_BYTE                     = 97
 BYTES                          = 4
 TYPE                           = VAX_REAL
 FORMAT                         = 'F8.6'
 NOTE                           = "Wavelength interval per spectrum
  point, right segment (between central and right spike) derived
  from the spectra."
END_OBJECT                      = RIGHT_WAVELENGTH_INTERVAL
```

```
  OBJECT                                = RIGHT_START_WAVELENGTH
   START_BYTE                           = 101
   BYTES                                = 4
   TYPE                                 = VAX_REAL
   FORMAT                               = 'F6.3'
   NOTE                                 = "Wavelength of point 350 in
    spectrum (derived from the spectra)."
  END_OBJECT                            = RIGHT_START_WAVELENGTH

  OBJECT                                = SPARE
   START_BYTE                           = 105
   BYTES                                = 16
   TYPE                                 = CHARACTER
  END_OBJECT                            = SPARE

 END_OBJECT                            = SPECTRUM_HEADER_TABLE

 OBJECT                                = SPECTRUM
  ITEMS                                = 740
  ITEM_TYPE                            = VAX_REAL
  ITEM_BYTES                           = 4
  START_BYTE                           = 121
  NOTE                                 = "The  spectra are each a set of 740
   floating point numbers, ranging in value between about -10. to
   +99.999. "
 END_OBJECT                            = SPECTRUM

END_OBJECT                            = SPECTRUM_TABLE

END
```

Listing of the VOLDESC.SFI file on D7993

```
CCSD1Z00000100039916NJPL1V00PDS100002956 = SFDU_LABEL

OBJECT                                  = VOLUME
 NAME                                   = MRIRS1
 MEDIA_TYPE                             = TAPE
 TAPE_DENSITY                           = 6250
 TAPES                                  = 1
 PROCESS_NAME                           = COPY
 FORMAT                                 = ANSI
 BLOCK_BYTES                            = 3584
 HARDWARE_NAME                          = "VAX 11/780"
 OPERATING_SYSTEM_NAME                  = "VMS 4.8"
 FILES                                  = 4
 DATE_TIME                              = 1989-08-30
 DATA_SET_ID                            = 'MR6/MR7-M-IRS-3-V1.0'
 NOTE                                   = "This data set is a partial
  collection of spectra in digital form from the Mariner 6 and 7
  Infrared Spectrometer experiments. All Mars and near-Mars sky
  spectra are included here, as well as some relevant laboratory
  spectra of blackbody sources. Lacking are the inflight spectra
  of reference targets including the wavelength calibration
  spectra. The IRS data are arranged as a single set of 512
  spectra; there are first 36 calibration spectra, followed by 122
  Mariner 6 spectra, followed by 354 Mariner 7 spectra. The latter
  set is larger because the long-wavelength channel detector
  system failed on Mariner 6. These spectra are presented here in
  raw form, as originally supplied to the NSSDC on microfiche.
  Note that the geometry information in the spectrum headers was
  revised by the producer in 1984 to account for the revision in
  the location of the Mars pole following Mariner 9 observations.

  This data set consists of a volume description file, a detached
  label describing the data file contents, the data file, and as
  a PDS table with the label and data in a single file."

OBJECT                                  = DIRECTORY
 NAME                                   = ROOT

 OBJECT                                  = FILE
  NAME                                   = "VOLDESC.SFD"
  RECORD_TYPE                            = STREAM
 END_OBJECT                              = FILE

 OBJECT                                  = FILE
  NAME                                   = 'MRIRS.LBL'
  RECORD_TYPE                            = STREAM
  NOTE                                   = "Detached label for MARIRS.DAT"
 END_OBJECT                              = FILE

 OBJECT                                  = FILE
  NAME                                   = 'MRIRS.DAT'
  RECORD_TYPE                            = FIXED_LENGTH
  RECORD_BYTES                           = 3584
  FILE_RECORDS                           = 512
  NOTE                                   = "Data file."
 END_OBJECT                              = FILE

 OBJECT                                  = FILE
  NAME                                   = 'MRIRS.TAB'
  RECORD_TYPE                            = FIXED_LENGTH
  RECORD_BYTES                           = 3584
  FILE_RECORDS                           = 516
  NOTE                                   = "PDS table containing combined
   label and data files."
 END_OBJECT                               = FILE
```

```
NJPL1I00PDS100036920                = SFDU_LABEL
  OBJECT                            = CATALOG

   OBJECT                            = DATASET
    DATA_SET_ID                      = 'MR6/MR7-M-IRS-3-V1.0'

    OBJECT                            = DATASETINFO
     DATA_SET_NAME                    = "MR6/MR7 MARS INFRARED
      SPECTROMETER CALIBRATED DATA V1.0"
     EVENT_START_TIME                 = 1969-07-31
     EVENT_STOP_TIME                  = 1969-08-05
     NATIVE_START_TIME                = "1701267" /* MAR 6 CLOCK COUNT */
                                                  /* FIRST SPECTRUM    */
     NATIVE_STOP_TIME                 = "45083360"/* MAR 7 CLOCK COUNT */
                                                  /* LAST SPECTRUM     */
     DATA_OBJECT_TYPE                 = SPECTRUM
     DATA_SET_RELEASE_DATE            = 19891101
     PROCESSING_LEVEL_ID              = 3
     PRODUCER_FULL_NAME               = "TERRY Z. MARTIN"
     PRODUCER_INSTITUTION_NAME        = "JET PROPULSION LABORATORY"
     SOFTWARE_FLAG                    = Y
     DETAILED_CATALOG_FLAG            = N
     PROCESSING_START_TIME            = 1969
     PROCESSING_STOP_TIME             = 1970
     DATA_SET_DESC                    = "This data set is a partial
      collection of spectra in digital form from the Mariner 6 and 7
      Infrared Spectrometer experiments. All Mars and near-Mars sky
      spectra are included here, as well as some relevant laboratory
      spectra of blackbody sources. Lacking are the inflight spectra
      of reference targets including the wavelength calibration
      spectra. The IRS data are arranged as a single set of 512
      spectra; there are first 36 calibration spectra, followed by 122
      Mariner 6 spectra, followed by 354 Mariner 7 spectra. The latter
      set is larger because the long-wavelength channel detector
      system failed on Mariner 6. These spectra are presented here in
      raw form, as originally supplied to the NSSDC on microfiche.
      Note that the geometry information in the spectrum headers was
      revised by the producer in 1984 to account for the revision in
      the location of the Mars pole following Mariner 9 observations.


      Each spectrum corresponds to the complete rotation of the
      circular variable interference filter for that channel. Spikes
      appear near the beginning, middle, and end of each spectrum.
      These correspond to pinholes in the filters, passing broadband
      light and acting as rotational fiduciary marks. Data beyond the
      spikes at either end should be disregarded; these are data from
      earlier or later spectra.

      The  final report for JPL contract 951722 (see reference for
      Calibration Description in UC SPACE SCIENCE LAB SERIES 11)
      contains the original (1970) geometry information for the
      dataset and certain  information about spectral and spatial
      calibration. Note that the geometry information in the spectrum
      headers was produced by the supplier in 1984, based on the
      original data, to account for the revision in the location of
      the Mars pole following Mariner 9 observations. This reference
      is identical to the microfiched information available with the
      data set from the NSSDC."
     CONFIDENCE_LEVEL_NOTE            = "The user should be aware of
      several factors when treating these data. First, no instrumental
      response, including zero-level response, has been removed from
      the spectra. It is for this reason that the Y coordinate of the
      spectra is referred to as 'spectral intensity' with no units
      assigned. The instrumental response may be assessed by looking
      at the laboratory spectra, which were obtained with blackbody
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  sources. The zero-level response may be assessed by looking at
  the spectra of space near Mars. Second, although 'spikes' appear
  in the data acting as wavelength fiduciaries, there is evidence
  that the wavelength scale between the spikes is somewhat
  nonlinear and inconstant, due presumably to variations in the
  rate of rotation of the circular variable filters."
END_OBJECT                          = DATASETINFO

OBJECT                              = DATASETTARG
 TARGET_NAME                        = MARS
END_OBJECT                          = DATASETTARG

OBJECT                              = DSPARMINFO
 SAMPLING_PARAMETER_NAME            = WAVELENGTH
 SAMPLING_PARAMETER_RESOLUTION      = 0.02
 MINIMUM_SAMPLING_PARAMETER         = 1.9
 MAXIMUM_SAMPLING_PARAMETER         = 14.4
 SAMPLING_PARAMETER_INTERVAL        = 0.01
 MINIMUM_AVAILABLE_SAMPLING_INT     = 0.005
 SAMPLING_PARAMETER_UNIT            = MICROMETER
 DATA_SET_PARAMETER_NAME            = "SPECTRAL INTENSITY"
 NOISE_LEVEL                        = UNK
 DATA_SET_PARAMETER_UNIT            = 'N/A'
END_OBJECT                          = DSPARMINFO

OBJECT                              = SCDATASET
 INSTRUMENT_HOST_ID                 = MR6
 INSTRUMENT_ID                      = IRS
END_OBJECT                          = SCDATASET

OBJECT                              = SCDATASET
 INSTRUMENT_HOST_ID                 = MR7
 INSTRUMENT_ID                      = IRS
END_OBJECT                          = SCDATASET

OBJECT                              = DSREFINFO
 REFERENCE_KEY_ID                   = HERR_ETAL1972

 OBJECT                              = REFERENCE
  DOCUMENT_TOPIC_TYPE                = "INSTRUMENT DESCRIPTION"
  JOURNAL_NAME                       = "APPLIED OPTICS"
  PUBLICATION_DATE                   = 1972
  REFERENCE_DESC                     = "Mariner Mars 1969 IR
   Spectrometer, vol. 11, p. 493."

  OBJECT                              = REFAUTHORS
   AUTHOR_FULL_NAME                   = "Ken C. Herr"
  END_OBJECT                          = REFAUTHORS

  OBJECT                              = REFAUTHORS
   AUTHOR_FULL_NAME                   = "P.B. Forney"
  END_OBJECT                          = REFAUTHORS

  OBJECT                              = REFAUTHORS
   AUTHOR_FULL_NAME                   = "George C. Pimentel"
  END_OBJECT                          = REFAUTHORS

 END_OBJECT                           = REFERENCE

END_OBJECT                          = DSREFINFO

OBJECT                              = DSREFINFO
 REFERENCE_KEY_ID                   = PIMENTEL_HERR1970

 OBJECT                              = REFERENCE
  DOCUMENT_TOPIC_TYPE                = "CALIBRATION DESCRIPTION"
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    JOURNAL_NAME                        = "UC SPACE SCIENCE LAB SERIES"
    PUBLICATION_DATE                    = 1970-05-01
    REFERENCE_DESC                      = "Infrared Spectrometer Mariner
     Mars 1969 - Data Format Report , vol. 11, issue 44 (Berkeley)
     (Final report for JPL Contract 951722)."

    OBJECT                               = REFAUTHORS
     AUTHOR_FULL_NAME                    = "George C. Pimentel"
    END_OBJECT                           = REFAUTHORS

    OBJECT                               = REFAUTHORS
     AUTHOR_FULL_NAME                    = "Ken C. Herr"
    END_OBJECT                           = REFAUTHORS

   END_OBJECT                           = REFERENCE

  END_OBJECT                           = DSREFINFO

 END_OBJECT                           = DATASET

 OBJECT                               = SCINSTRUMENT
  SPACECRAFT_ID                       = MR6
  INSTRUMENT_ID                       = IRS

  OBJECT                               = INSTINFO
   INSTRUMENT_NAME                     = "INFRARED SPECTROMETER"
   INSTRUMENT_TYPE                     = "INFRARED SPECTROMETER"
   PI_PDS_USER_ID                      = GCPIMENTEL
   NAIF_DATA_SET_ID                    = 'N/A'
   BUILD_DATE                          = 1969
   INSTRUMENT_MASS                     = 17.4
   INSTRUMENT_HEIGHT                   = 0.25
   INSTRUMENT_LENGTH                   = 0.49
   INSTRUMENT_WIDTH                    = 0.23
   INSTRUMENT_MANUFACTURER_NAME        = "UC BERKELEY"
   INSTRUMENT_SERIAL_NUMBER            = UNK
   INSTRUMENT_DESC                     = "The IRS instrument is comprised
    of a 10-inch Dall-Kirkham  telescope feeding a pair of
    circular-variable filter (CVF) spectrometers. Channel 1 covers
    4.0 to 14.3 microns, detected by  a HgGe detector at 22K, cooled
    by a Joule-Thomson cryostat. Channel 2 covers 1.9-6.0 microns;
    detection is by a PbSe detector at 175K, with radiative cooling.
    Wavelength resolution is 0.51.0%. Note that the cooling system
    did not operate on Mariner 6 for Channel 1, so that no data were
    returned.

    The filters were each comprised of two semicircular filters
    bonded together and accompanied by a matching set of blocking
    filters. Thus one rotation of the wheel covered roughly n to 2n
    and 2n to 4n in wavelength space. The spectral resolution varied
    between 0.7 to 1.1%. Two 'radiometer' slots were produced
    between the filter segments, twice per revolution, by rotating
    the blocking filter 0.01 degrees of arc relative to the CVF,
    allowing broadband light to fall on the detectors. "
   SCIENTIFIC_OBJECTIVES_SUMMARY  = "The IR Spectrometers were
    intended to determine the composition of the Mars atmosphere,
    including minor constituents."
   INSTRUMENT_CALIBRATION_DESC    = "Pre-flight calibration of the
    IRS instruments consisted of  obtaining spectra of blackbody
    sources at varying temperatures in  the range 77-300K, as well
    as absorption spectra of NH3, CH4,  H20, CO2, and polystyrene
    with a high-temperature source. During flight,  spectra were
    obtained periodically of a reference thermal target and of
    polystyrene superimposed on the Mars spectrum. Refer to the
    instrument paper. Several laboratory blackbody calibration
    spectra at various target temperatures are available in the data
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file; they are the first spectra in the set, flagged by having negative spectrum numbers."
OPERATIONAL_CONSID_DESC = "It appears that the rate of rotation of the filter wheels is somewhat variable, producing a 'stretching' effect in the data. Also note that the Mariner 6 IRS instrument failed in the longwave section (channel 1), so that no such data were obtained."
END_OBJECT = INSTINFO

OBJECT = INSTDETECT
DETECTOR_ID = CH2
DETECTOR_TYPE = PBSE
DETECTOR_ASPECT_RATIO = 0.2
MINIMUM_WAVELENGTH = 1.9
MAXIMUM_WAVELENGTH = 6.5
NOMINAL_OPERATING_TEMPERATURE = 175
DETECTOR_DESC = "The PbSe (PBSE) detectors were made by Santa Barbara Research Center, had an active area of 1 by 5 mm, and were bonded to an aluminum heat sink cooled by a 23 by 20 cm radiator plate."
SENSITIVITY_DESC = "The Mariner 6 PbSe detector had a lab measured sensitivity with a 500K source of 2.6 E-10 watt (noise equivalent power) and a D* (detectivity) of 2.4 E10. "
END_OBJECT = INSTDETECT

OBJECT = INSTELEC
ELECTRONICS_ID = IRS
ELECTRONICS_DESC = "The incoming radiation for each detector was chopped by tuning forks, at 500 hz for channel 1 and 550 hz for channel 2. The modulated signal from each detector was fed directly to its preamp, which contained the detector bias circuit. The preamp input stage was an FET designed to provide high gain and low noise. The amplifiers were operated with both ac and dc feedback so that the gain and bandwidth would be relatively insensitive to internal component changes. Following the preamp were a synchronous filter, demodulator, log converter, output amplifier, science data multiplexer, and data analog to pulse width converter. For additional information, please refer to the instrument description reference: Applied Optics, 1972, 'Mariner Mars 1969 IR Spectrometer, vol. 11, p. 493'."
END_OBJECT = INSTELEC

OBJECT = INSTFILTER
FILTER_NUMBER = 2
FILTER_NAME = SHORTWAVE
FILTER_TYPE = "CIRCULAR-VARIABLE INTERFERENCE"
MINIMUM_WAVELENGTH = 1.88
CENTER_FILTER_WAVELENGTH = 'N/A'
MAXIMUM_WAVELENGTH = 6.1
MEASUREMENT_WAVE_CALBRT_DESC = "Wavelength calibration information in flight was derived from observations of polystyrene film, which has many absorption features in the range of interest. The polystyrene spectrum was superimposed on the target (Mars) spectrum each 12th time. Unfortunately, these spectra are unavailable at the present time in digital form. The spikes that occur in all the spectra are introduced by allowing broadband radiation onto the detector at certain rotational positions of the circular variable filters. These spikes represent wavelength fiduciaries. Thus, for Mariner 6, the spikes mark nominally 1.88 and 3.72 micrometers for the shortwave part of channel 2, and 3.04 and 6.14 micrometers on the longwave side. It will be found that the spikes do not relate reproducibly to the locations of atmospheric CO2 features; there is a small jitter in the relative locations. Wavelength information can also be derived from the known

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  positions of  these CO2 atmospheric features in the Mars data;
  this is   probably the most accurate  and dependable scheme.
  The supplier has generated coefficients that describe a linear
  fit to the wavelength scale, based on atmospheric features and
  the spikes. These appear in the headers for each spectrum. Note
  that the quality of the coefficients is variable and depends on
  the noise level and the method chosen for that spectrum.

  Refer to the instrument paper in Applied Optics for figures
  showing the wavelength variation of filter transmission and
  spectral resolution."
END_OBJECT                          = INSTFILTER

OBJECT                              = INSTOPTICS
 TELESCOPE_ID                       = IRS
 TELESCOPE_FOCAL_LENGTH             = 0.498
 TELESCOPE_DIAMETER                 = 0.248
 TELESCOPE_F_NUMBER                 = 2.0
 TELESCOPE_RESOLUTION               = UNK
 TELESCOPE_TRANSMITTANCE            = 0.877
 TELESCOPE_T_NUMBER                 = UNK
 TELESCOPE_T_NUMBER_ERROR           = UNK
 TELESCOPE_SERIAL_NUMBER            = UNK
 OPTICS_DESC                        = "The IRS instrument is comprised
  of a 10inch Dall-Kirkham telescope feeding a pair of
  circular-variable filter spectrometers.  The size of the
  instrument field of view (a slit) is 2.07 by 0.10 degrees, or
  36.1 by 1.75 milliradians."
END_OBJECT                          = INSTOPTICS

OBJECT                              = SCINSTOFFSET
 PLATFORM_OR_MOUNTING_NAME          = "SCAN PLATFORM"
 CONE_OFFSET_ANGLE                  = UNK
 CROSS_CONE_OFFSET_ANGLE            = UNK
 TWIST_OFFSET_ANGLE                 = UNK
 INSTRUMENT_MOUNTING_DESC           = "Position of the IRS FOV relative
  to the television experiment (from Data Format Report, 1970):

  '                  Cone                      Cross-cone          '\n
  '                                                                  '\n
  '    TV-B   -0 deg.  1 min 50 sec    +0 deg. 0 min 30 sec          '\n
  '    TV-A   +0      14 min 50 sec    +0      9 min 31 sec          '\n
  '    IRS    -3      53 min 12 sec    +1     33 min 42 sec          '\n

  It is not stated for which spacecraft these values apply. The
  offset was intentional and is likely similar for both
  spacecraft."
END_OBJECT                          = SCINSTOFFSET

OBJECT                              = INSTSECTION
 SECTION_ID                         = "CH2"

 OBJECT                              = INSTSECTINFO
  SCAN_MODE_ID                       = 'N/A'
  DATA_RATE                          = UNK
  SAMPLE_BITS                        = UNK
  TOTAL_FOVS                         = 1

  OBJECT                              = INSTSECTFOVS
   FOV_SHAPE_NAME                     = RECTANGULAR
   HORIZONTAL_PIXEL_FOV               = 'N/A'
   VERTICAL_PIXEL_FOV                 = 'N/A'
   HORIZONTAL_FOV                     = 0.10
   VERTICAL_FOV                       = 2.07
   FOVS                               = 1
  END_OBJECT                          = INSTSECTFOVS
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    END_OBJECT                          = INSTSECTINFO

    OBJECT                              = INSTSECTPARM
     INSTRUMENT_PARAMETER_NAME          = "SPECTRAL INTENSITY"
     MINIMUM_INSTRUMENT_PARAMETER       = -10.0
     MAXIMUM_INSTRUMENT_PARAMETER       = 100.0
     NOISE_LEVEL                        = UNK
     INSTRUMENT_PARAMETER_UNIT          = 'N/A'
     SAMPLING_PARAMETER_NAME            = WAVELENGTH
     MINIMUM_SAMPLING_PARAMETER         = 1.88
     MAXIMUM_SAMPLING_PARAMETER         = 6.1
     SAMPLING_PARAMETER_INTERVAL        = 0.007
     SAMPLING_PARAMETER_RESOLUTION      = 0.03
     SAMPLING_PARAMETER_UNIT            = MICROMETER
    END_OBJECT                          = INSTSECTPARM

    OBJECT                              = INSTSECTDET
     DETECTOR_ID                        = CH2
    END_OBJECT                          = INSTSECTDET

    OBJECT                              = INSTSECTELEC
     ELECTRONICS_ID                     = IRS
    END_OBJECT                          = INSTSECTELEC

    OBJECT                              = INSTSECTFILT
     FILTER_NUMBER                      = 2
    END_OBJECT                          = INSTSECTFILT

    OBJECT                              = INSTSECTOPTC
     TELESCOPE_ID                       = IRS
    END_OBJECT                          = INSTSECTOPTC

   END_OBJECT                           = INSTSECTION

   OBJECT                               = INSTMODEINFO
    INSTRUMENT_MODE_ID                  = OPERATING
    GAIN_MODE_ID                        = 'N/A'
    DATA_PATH_TYPE                      = REAL
    INSTRUMENT_POWER_CONSUMPTION        = 11.0
    INSTRUMENT_MODE_DESC                = "There are no separate operating
     modes for the IRS. Data were acquired continuously during
     encounter, with the instrument taking successive spectra in this
     sequence: blackbody reference target, five Mars,  polystyrene
     wavelength calibrator + Mars, five Mars, reference target, etc."

    OBJECT                              = INSTMODESECT
     SECTION_ID                         = "CH2"
    END_OBJECT                          = INSTMODESECT

   END_OBJECT                           = INSTMODEINFO

   OBJECT                               = INSTREFINFO
    REFERENCE_KEY_ID                    = HERR_ETAL1972
   END_OBJECT                           = INSTREFINFO

   OBJECT                               = INSTREFINFO
    REFERENCE_KEY_ID                    = PIMENTEL_HERR1970
   END_OBJECT                           = INSTREFINFO

  END_OBJECT                            = SCINSTRUMENT

  OBJECT                                = SCINSTRUMENT
   SPACECRAFT_ID                        = MR7
   INSTRUMENT_ID                        = IRS
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OBJECT                                = INSTINFO
 INSTRUMENT_NAME                      = "INFRARED SPECTROMETER"
 INSTRUMENT_TYPE                      = "INFRARED SPECTROMETER"
 PI_PDS_USER_ID                       = GCPIMENTEL
 NAIF_DATA_SET_ID                     = 'N/A'
 BUILD_DATE                           = 1969
 INSTRUMENT_MASS                      = 17.4
 INSTRUMENT_HEIGHT                    = 0.25
 INSTRUMENT_LENGTH                    = 0.49
 INSTRUMENT_WIDTH                     = 0.23
 INSTRUMENT_MANUFACTURER_NAME         = "UC BERKELEY"
 INSTRUMENT_SERIAL_NUMBER             = UNK
 INSTRUMENT_DESC                      = "The IRS instrument is comprised
  of a 10-inch Dall-Kirkham  telescope feeding a pair of
  circular-variable filter (CVF) spectrometers. Channel 1 covers
  4.0 to 14.3 microns, detected by  a HgGe detector at 22K, cooled
  by a Joule-Thomson cryostat. Channel 2 covers 1.9-6.0 microns;
  detection is by a PbSe detector at 175K, with radiative cooling.
  Wavelength resolution is 0.5-1.0%.

  The filters were each comprised of two semicircular filters
  bonded together and accompanied by a matching set of blocking
  filters. Thus one rotation of the wheel covered roughly n to 2n
  and 2n to 4n in wavelength space. The spectral resolution varied
  between 0.7 to 1.1%. Two 'radiometer' slots were produced
  between the filter segments, twice per revolution, by rotating
  the blocking filter 0.01 degrees of arc relative to the CVF,
  allowing broadband light to fall on the detectors. "
 SCIENTIFIC_OBJECTIVES_SUMMARY  = "The IR Spectrometers were
  intended to determine the composition of the Mars atmosphere,
  including minor constituents."
 INSTRUMENT_CALIBRATION_DESC    = "Pre-flight calibration of the
  IRS instruments consisted of  obtaining spectra of blackbody
  sources at varying temperatures in  the range 77-300K, as well
  as absorption spectra of NH3, CH4,  H20, CO2, and polystyrene
  with a high-temperature source. During flight,  spectra were
  obtained periodically of a reference thermal target and of
  polystyrene superimposed on the Mars spectrum. Refer to the
  instrument paper. Several blackbody calibration  spectra at
  various target temperatures are available in the data  file;
  they are the first spectra in the set, flagged by having
  negative spectrum numbers."
 OPERATIONAL_CONSID_DESC              = "It appears that the rate of
  rotation of the filter wheels is somewhat variable, producing a
  'stretching' effect in the data. "
END_OBJECT                            = INSTINFO

OBJECT                                = INSTDETECT
 DETECTOR_ID                          = CH2
 DETECTOR_TYPE                        = PBSE
 DETECTOR_ASPECT_RATIO                = 0.2
 MINIMUM_WAVELENGTH                   = 1.9
 MAXIMUM_WAVELENGTH                   = 6.5
 NOMINAL_OPERATING_TEMPERATURE        = 175
 DETECTOR_DESC                        = "The PbSe detectors were made by
  Santa Barbara Research Center, had an active area of 1 by 5 mm,
  and were bonded to an aluminum heat sink cooled by a 23 by 20 cm
  radiator plate."
 SENSITIVITY_DESC                     = "The Mariner 7 PbSe detector had
  a labmeasured sensitivity with a 500K source of 1.36 E-10 watt
  (NEP) and a D* (detectivity) of 2.6 E10. "
END_OBJECT                            = INSTDETECT

OBJECT                                = INSTDETECT
 DETECTOR_ID                          = CH1
 DETECTOR_TYPE                        = HG
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 DETECTOR_ASPECT_RATIO           = 0.2
 MINIMUM_WAVELENGTH              = 3.9
 MAXIMUM_WAVELENGTH              = 14.5
 NOMINAL_OPERATING_TEMPERATURE   = 22
 DETECTOR_DESC                   = "The Hg:Ge detectors were made by
  Santa Barbara Research Center, had an active area of 1 by 5 mm,
  and were bonded to a copper heat sink cooled by a two-stage
  (nitrogen and hydrogen) Joule-Thomson cryostat."
 SENSITIVITY_DESC                = "The Mariner 7 Hg:Ge detector had
  a labmeasured sensitivity with a 500K source of 1.4 E-11 watt
  (noise equivalent power) and a D* (detectivity) of 2.73 E10."
END_OBJECT                       = INSTDETECT

OBJECT                           = INSTELEC
 ELECTRONICS_ID                  = IRS
 ELECTRONICS_DESC                = "The incoming radiation for each
  detector was chopped by tuning forks, at 500 hz for channel 1
  and 550 hz for channel 2. The modulated signal from each
  detector was fed directly to its preamp, which contained the
  detector bias circuit. The preamp input stage was an FET
  designed to provide high gain and low noise. The amplifiers were
  operated with both ac and dc feedback so that the gain and
  bandwidth would be relatively insensitive to internal component
  changes. Following the preamp were a synchronous filter,
  demodulator, log converter, output amplifier, science data
  multiplexer, and data analog to pulse width converter. For
  additional information, please refer to the instrument
  description reference:  Applied Optics, 1972, 'Mariner Mars 1969
  IR Spectrometer, vol. 11, p. 493'"
END_OBJECT                       = INSTELEC

OBJECT                           = INSTFILTER
 FILTER_NUMBER                   = 1
 FILTER_NAME                     = LONGWAVE
 FILTER_TYPE                     = "CIRCULAR-VARIABLE INTERFERENCE"
 MINIMUM_WAVELENGTH              = 3.9
 CENTER_FILTER_WAVELENGTH        = 'N/A'
 MAXIMUM_WAVELENGTH              = 14.4
 MEASUREMENT_WAVE_CALBRT_DESC    = "Wavelength calibration
  information in flight was derived  from observations of
  polystyrene film, which has many absorption  features in the
  range of interest. The polystyrene spectrum was   superimposed
  on the target (Mars) spectrum each 12th time.  Unfortunately,
  these spectra are unavailable at the present time  in digital
  form. The  spikes that occur in all the spectra are introduced
  by allowing  broadband radiation onto the detector at certain
  rotational  positions of the circular variable filters.
  Ostensibly, these  spikes represent wavelength fiduciaries.
  Thus, for Mariner 7, the  first spike is at 3.86 microns, the
  middle spike at 7.88. The longwave segment of CHANNEL 1 uses the
  middle spike as 7.37 microns and the third spike as 14.45.
  However, it will be found  that the spikes do not relate
  reproducibly to the locations of  atmospheric CO2 features;
  there is a small jitter in the  relative locations. Wavelength
  information  can also be derived  from the known positions of
  these CO2 atmospheric features in the  Mars data; this is
  probably the most accurate  and dependable  scheme. The supplier
  has generated coefficients that describe a linear fit to the
  wavelength scale, based on atmospheric features and the spikes.
  These appear in the headers for each spectrum. Note that the
  quality of the coefficients is variable and depends on the noise
  level and the method chosen for that spectrum.

  Refer to the instrument paper in Applied Optics for figures
  showing the wavelength variation of filter transmission and
  spectral resolution."
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END_OBJECT                          = INSTFILTER

OBJECT                              = INSTFILTER
 FILTER_NUMBER                      = 2
 FILTER_NAME                        = SHORTWAVE
 FILTER_TYPE                        = "CIRCULAR-VARIABLE INTERFERENCE"
 MINIMUM_WAVELENGTH                 = 1.88
 CENTER_FILTER_WAVELENGTH           = 'N/A'
 MAXIMUM_WAVELENGTH                 = 6.0
 MEASUREMENT_WAVE_CALBRT_DESC       = "Wavelength calibration
  information in flight was derived  from observations of
  polystyrene film, which has many absorption  features in the
  range of interest. The polystyrene spectrum was   superimposed
  on the target (Mars) spectrum each 12th time.  Unfortunately,
  these spectra are unavailable at the present time  in digital
  form. The  spikes that occur in all the spectra are introduced
  by allowing  broadband radiation onto the detector at certain
  rotational  positions of the circular variable filters.
  Ostensibly, these  spikes represent wavelength fiduciaries.
  Thus, for Mariner 7, the spikes mark 1.88 microns and 3.69
  microns for the  shortwave  part of channel 2, and 2.99 and 6.00
  microns on the longwave  side.  It will be found that the spikes
  do  not relate  reproducibly to the locations of atmospheric CO2
  features;   there is a small jitter in the relative locations.
  Wavelength  information  can also be derived from the known
  positions of  these CO2 atmospheric features in the Mars data;
  this is   probably the most accurate  and dependable scheme. The
  supplier has generated coefficients that describe a linear fit
  to the wavelength scale, based on atmospheric features and the
  spikes. These appear in the headers for each spectrum. Note that
  the quality of the coefficients is variable and depends on the
  noise level and the method chosen for that spectrum.

  Refer to the instrument paper in Applied Optics for figures
  showing the wavelength variation of filter transmission and
  spectral resolution."
END_OBJECT                          = INSTFILTER

OBJECT                              = INSTOPTICS
 TELESCOPE_ID                       = IRS
 TELESCOPE_FOCAL_LENGTH             = 0.498
 TELESCOPE_DIAMETER                 = 0.248
 TELESCOPE_F_NUMBER                 = 2.0
 TELESCOPE_RESOLUTION               = UNK
 TELESCOPE_TRANSMITTANCE            = 0.877
 TELESCOPE_T_NUMBER                 = UNK
 TELESCOPE_T_NUMBER_ERROR           = UNK
 TELESCOPE_SERIAL_NUMBER            = UNK
 OPTICS_DESC                        = "The IRS instrument is comprised
  of a 10inch Dall-Kirkham telescope feeding a pair of
  circular-variable filter spectrometers.  The size of the
  instrument field of view (a slit) is 2.07 by 0.10 degrees, or
  36.1 by 1.75 milliradians."
END_OBJECT                          = INSTOPTICS

OBJECT                              = SCINSTOFFSET
 PLATFORM_OR_MOUNTING_NAME          = "SCAN PLATFORM"
 CONE_OFFSET_ANGLE                  = UNK
 CROSS_CONE_OFFSET_ANGLE            = UNK
 TWIST_OFFSET_ANGLE                 = UNK
 INSTRUMENT_MOUNTING_DESC           = "Position of the IRS FOV relative
  to the television experiment (from Data Format Report, 1970):

  '                    Cone                    Cross-cone       '\n
  '                                                             '\n
  '    TV-B     -0 deg.  1min 50sec   +0 deg. 0min 30sec        '\n
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  '     TV-A      +0       14min 50sec   +0       9min 31sec  '\n
  '     IRS       -3       53min 12sec   +1      33min 42sec  '\n

  It is not stated for which spacecraft these values apply. The
  offset was intentional and is likely similar for both
  spacecraft."
END_OBJECT                          = SCINSTOFFSET

OBJECT                              = INSTSECTION
 SECTION_ID                         = "CH1"

 OBJECT                              = INSTSECTINFO
  SCAN_MODE_ID                       = 'N/A'
  DATA_RATE                          = UNK
  SAMPLE_BITS                        = UNK
  TOTAL_FOVS                         = 1

  OBJECT                              = INSTSECTFOVS
   FOV_SHAPE_NAME                     = RECTANGULAR
   HORIZONTAL_PIXEL_FOV               = 'N/A'
   VERTICAL_PIXEL_FOV                 = 'N/A'
   HORIZONTAL_FOV                     = 0.10
   VERTICAL_FOV                       = 2.07
   FOVS                               = 1
  END_OBJECT                          = INSTSECTFOVS

 END_OBJECT                           = INSTSECTINFO

 OBJECT                               = INSTSECTPARM
  INSTRUMENT_PARAMETER_NAME           = "SPECTRAL INTENSITY"
  MINIMUM_INSTRUMENT_PARAMETER        = -10.0
  MAXIMUM_INSTRUMENT_PARAMETER        = 100.0
  NOISE_LEVEL                         = UNK
  INSTRUMENT_PARAMETER_UNIT           = 'N/A'
  SAMPLING_PARAMETER_NAME             = WAVELENGTH
  MINIMUM_SAMPLING_PARAMETER          = 3.9
  MAXIMUM_SAMPLING_PARAMETER          = 14.5
  SAMPLING_PARAMETER_INTERVAL         = 0.016
  SAMPLING_PARAMETER_RESOLUTION       = 0.05
  SAMPLING_PARAMETER_UNIT             = MICROMETER
 END_OBJECT                           = INSTSECTPARM

 OBJECT                               = INSTSECTDET
  DETECTOR_ID                         = CH1
 END_OBJECT                           = INSTSECTDET

 OBJECT                               = INSTSECTELEC
  ELECTRONICS_ID                      = IRS
 END_OBJECT                           = INSTSECTELEC

 OBJECT                               = INSTSECTFILT
  FILTER_NUMBER                       = 1
 END_OBJECT                           = INSTSECTFILT

 OBJECT                               = INSTSECTOPTC
  TELESCOPE_ID                        = IRS
 END_OBJECT                           = INSTSECTOPTC

END_OBJECT                           = INSTSECTION

OBJECT                               = INSTSECTION
 SECTION_ID                          = "CH2"

 OBJECT                               = INSTSECTINFO
  SCAN_MODE_ID                        = 'N/A'
  DATA_RATE                           = UNK
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  SAMPLE_BITS                          = UNK
  TOTAL_FOVS                           = 1

  OBJECT                               = INSTSECTFOVS
   FOV_SHAPE_NAME                      = RECTANGULAR
   HORIZONTAL_PIXEL_FOV                = 'N/A'
   VERTICAL_PIXEL_FOV                  = 'N/A'
   HORIZONTAL_FOV                      = 0.10
   VERTICAL_FOV                        = 2.07
   FOVS                                = 1
  END_OBJECT                           = INSTSECTFOVS

 END_OBJECT                            = INSTSECTINFO

 OBJECT                                = INSTSECTPARM
  INSTRUMENT_PARAMETER_NAME            = "SPECTRAL INTENSITY"
  MINIMUM_INSTRUMENT_PARAMETER         = -10.0
  MAXIMUM_INSTRUMENT_PARAMETER         = 100.0
  NOISE_LEVEL                          = UNK
  INSTRUMENT_PARAMETER_UNIT            = 'N/A'
  SAMPLING_PARAMETER_NAME              = WAVELENGTH
  MINIMUM_SAMPLING_PARAMETER           = 1.88
  MAXIMUM_SAMPLING_PARAMETER           = 6.0
  SAMPLING_PARAMETER_INTERVAL          = 0.007
  SAMPLING_PARAMETER_RESOLUTION        = 0.03
  SAMPLING_PARAMETER_UNIT              = MICROMETER
 END_OBJECT                            = INSTSECTPARM

 OBJECT                                = INSTSECTDET
  DETECTOR_ID                          = CH2
 END_OBJECT                            = INSTSECTDET

 OBJECT                                = INSTSECTELEC
  ELECTRONICS_ID                       = IRS
 END_OBJECT                            = INSTSECTELEC

 OBJECT                                = INSTSECTFILT
  FILTER_NUMBER                        = 2
 END_OBJECT                            = INSTSECTFILT

 OBJECT                                = INSTSECTOPTC
  TELESCOPE_ID                         = IRS
 END_OBJECT                            = INSTSECTOPTC

END_OBJECT                            = INSTSECTION

OBJECT                                = INSTMODEINFO
 INSTRUMENT_MODE_ID                   = OPERATING
 GAIN_MODE_ID                         = 'N/A'
 DATA_PATH_TYPE                       = 'REAL-TIME'
 INSTRUMENT_POWER_CONSUMPTION         = 11.0
 INSTRUMENT_MODE_DESC                 = "There are no separate operating
  modes for the IRS. Data were acquired continuously during
  encounter, with the instrument taking successive spectra in this
  sequence: blackbody reference target, five Mars,  polystyrene
  wavelength calibrator + Mars, five Mars, reference target, etc."

 OBJECT                                = INSTMODESECT
  SECTION_ID                           = "CH1"
 END_OBJECT                            = INSTMODESECT

 OBJECT                                = INSTMODESECT
  SECTION_ID                           = "CH2"
 END_OBJECT                            = INSTMODESECT

END_OBJECT                            = INSTMODEINFO
```

```
    OBJECT                          = INSTREFINFO
     REFERENCE_KEY_ID               = HERR_ETAL1972
    END_OBJECT                      = INSTREFINFO

    OBJECT                          = INSTREFINFO
     REFERENCE_KEY_ID               = PIMENTEL_HERR1970
    END_OBJECT                      = INSTREFINFO

   END_OBJECT                       = SCINSTRUMENT

  END_OBJECT                        = CATALOG

 END_OBJECT                         = DIRECTORY

END_OBJECT                          = VOLUME

END
ęęęęęęęęęęęęęęęę
```

DSC # 612
75-067A-02A
75-083A-02B

```
CCSD1Z00000100000000NJPL1V00PDS100026212 = SFDU_LABEL

OBJECT                          = VOLUME_SET
 DATA_SET_ID                    = "V01/V02-M-IRTM-5-BINNED/CLOUDS-V1.0"
 MEDIA_TYPE                     = TAPE
 TAPES                          = 7
 NOTE                           = "This data set, derived from the Viking
Orbiter Infrared Thermal Mapper (IRTM) data set, has been binned in both space
and time.  It consists of two complementary portions, water ice cloud
observations and surface observations."

 OBJECT                          = VOLUME
  NAME                           = IRTM02
  MEDIA_TYPE                     = TAPE
  TAPE_DENSITY                   = 1600
  TAPES                          = 7
  SEQUENCE_NUMBER                = 2
  PROCESS_NAME                   = COPY
  FORMAT                         = ANSI
  BLOCK_BYTES                    = 9963
  HARDWARE_NAME                  = "VAX 11/785"
  OPERATING_SYSTEM_NAME          = "VMS 5.1-1"
  FILES                          = 2
  DATE_TIME                      = 1989-08-25

  OBJECT                          = DIRECTORY
   NAME                           = ROOT

   OBJECT                         = FILE
    NAME                          = "VOLDESC.SFD"
    RECORD_TYPE                   = STREAM
   END_OBJECT                     = FILE

   OBJECT                         = FILE
    NAME                          = "SUR1_190.DAT"
    RECORD_TYPE                   = FIXED_LENGTH
    FORMAT                        = ASCII
    FILE_RECORDS                  = 265030
    TABLE_RECORD_BYTES            = 123
    SPACECRAFT_NAME               = "VIKING ORBITER 1"
    SPACECRAFT_ID                 = V01
    SPACECRAFT_NAME               = "VIKING ORBITER 2"
    SPACECRAFT_ID                 = V02
    NATIVE_START_TIME             = "90 AREOCENTIC SOLAR LONGITUDE, MISSION
      YEAR 1"
    NATIVE_STOP_TIME              = "190 AREOCENTIC SOLAR LONGITUDE, MISSION
      YEAR 1"
    NOTE                          = "This file contains records from the
      surface observations portion of the data set."

    OBJECT                         = HISTORY
     PROCESS_NAME                  = PANDA
     VERSION_DATE                  = 1989-08-08
     VERSION_NUMBER                = 0
     DATE_TIME                     = 1989-08-25
```

```
 NODE                              = ORION
 USER                              = LEE
 PROGRAM_NOTE                      = "PIN PANDA Query Results from
  ATMOSPHERES database"

 OBJECT                             = PARAMETER_GROUP
  SQL_QUERY                         = "SELECT INTO LEE  *  FROM
   M_IRTM_SURF  WHERE  MISSION_YEAR  =  1  AND
   SOL_LON_BIN  BETWEEN  90  AND  190"
 END_OBJECT                         = PARAMETER_GROUP

END_OBJECT                          = HISTORY

OBJECT                              = TABLE
 ROWS                               = 265030
 ROW_BYTES                          = 123
 ROW_COLUMNS                        = 20
 COLUMN_DELIMITER              = BLANK

 OBJECT                             = MISSION_YEAR
  TYPE                              = INTEGER
  FORMAT                            = I2
  START_BYTE                        = 1
  BYTES                             = 2
  DEFINITION                        = "Viking mission year, starting at 1
    when the Viking spacecraft reached Mars, and incremented at Ls = 0
    every martian year"
 END_OBJECT                         = MISSION_YEAR

 OBJECT                             = SOL_LON_BIN
  TYPE                              = INTEGER
  FORMAT                            = I4
  START_BYTE                        = 3
  BYTES                             = 4
  DEFINITION                        = "Areocentric solar longitude (Ls),
    stored as the value at the beginning of the 10 degree Ls binning
    period"
  UNIT                              = "deg"
 END_OBJECT                         = SOL_LON_BIN

 OBJECT                             = LOCAL_HR_BIN
  TYPE                              = INTEGER
  FORMAT                            = I3
  START_BYTE                        = 7
  BYTES                             = 3
  DEFINITION                        = "The local hour (1/24 of a martian day,
    beginning at midnight), stored as the time of the beginning of the
    4 hour binning period.  The bins included in the surface
    observations portion of the data set are:
          2 - local hour 2 to 6
          6 - local hour 6 to 10
         10 - local hour 10 to 14
         14 - local hour 14 to 18
         18 - local hour 18 to 22
         22 - local hour 22 to 2"
```

```
 UNIT                              = "hour"
END_OBJECT                         = LOCAL_HR_BIN

OBJECT                             = LAT_BIN
 TYPE                              = INTEGER
 FORMAT                            = I4
 START_BYTE                        = 10
 BYTES                             = 4
 DEFINITION                        = "The latitude at the center of the 2x2
   degree spatial bin"
 UNIT                              = "deg"
END_OBJECT                         = LAT_BIN

OBJECT                             = LON_BIN
 TYPE                              = INTEGER
 FORMAT                            = I4
 START_BYTE                        = 14
 BYTES                             = 4
 DEFINITION                        = "The longitude at the center of the 2x2
   degree spatial bin"
 UNIT                              = "deg"
END_OBJECT                         = LON_BIN

OBJECT                             = OBS_COUNT
 TYPE                              = INTEGER
 FORMAT                            = I5
 START_BYTE                        = 18
 BYTES                             = 5
 DEFINITION                        = "The number of observations in the bin"
END_OBJECT                         = OBS_COUNT

OBJECT                             = T20
 TYPE                              = REAL
 FORMAT                            = F7.2
 START_BYTE                        = 23
 BYTES                             = 7
 DEFINITION                        = "Mean 20 micrometer brightness
   temperature of observations in the bin"
 UNIT                              = "kelvin"
END_OBJECT                         = T20

OBJECT                             = T20_DEV
 TYPE                              = REAL
 FORMAT                            = F7.2
 START_BYTE                        = 30
 BYTES                             = 7
 DEFINITION                        = "Standard deviation of the 20
   micrometer brightness temperature of observations in the bin
   (normalized by OBS_COUNT)"
 UNIT                              = "kelvin"
END_OBJECT                         = T20_DEV

OBJECT                             = T11T20_CNR
 TYPE                              = REAL
 FORMAT                            = F8.2
```

```
 START_BYTE                      = 37
 BYTES                           = 8
 DEFINITION                      = "Mean contrast between the 11 and 20
   micrometer brightness temperatures of observations in the bin "
 UNIT                            = "kelvin"
END_OBJECT                       = T11T20_CNR

OBJECT                           = T11T20_DEV
 TYPE                            = REAL
 FORMAT                          = F7.2
 START_BYTE                      = 45
 BYTES                           = 7
 DEFINITION                      = "Standard deviation of the contrast
   between the 11 and 20 micrometer brightness temperatures of
   observations in the bin (normalized by OBS_COUNT)"
 UNIT                            = "kelvin"
END_OBJECT                       = T11T20_DEV

OBJECT                           = T7T20_CNR
 TYPE                            = REAL
 FORMAT                          = F8.2
 START_BYTE                      = 52
 BYTES                           = 8
 DEFINITION                      = "Mean contrast between the 7 and 20
   micrometer brightness temperatures of observations in the bin "
 UNIT                            = "kelvin"
END_OBJECT                       = T7T20_CNR

OBJECT                           = T7T20_DEV
 TYPE                            = REAL
 FORMAT                          = F7.2
 START_BYTE                      = 60
 BYTES                           = 7
 DEFINITION                      = "Standard deviation of the contrast
   between the 7 and 20 micrometer brightness temperatures of
   observations in the bin (normalized by OBS_COUNT)"
 UNIT                            = "kelvin"
END_OBJECT                       = T7T20_DEV

OBJECT                           = T9T20_CNR
 TYPE                            = REAL
 FORMAT                          = F8.2
 START_BYTE                      = 67
 BYTES                           = 8
 DEFINITION                      = "Mean contrast between the 9 and 20
   micrometer brightness temperatures of observations in the bin "
 UNIT                            = "kelvin"
END_OBJECT                       = T9T20_CNR

OBJECT                           = T9T20_DEV
 TYPE                            = REAL
 FORMAT                          = F7.2
 START_BYTE                      = 75
 BYTES                           = 7
 DEFINITION                      = "Standard deviation of the contrast
```

```
  between the 9 and 20 micrometer brightness temperatures of
  observations in the bin (normalized by OBS_COUNT)"
 UNIT                              = "kelvin"
END_OBJECT                         = T9T20_DEV

OBJECT                             = T15
 TYPE                              = REAL
 FORMAT                            = F7.2
 START_BYTE                        = 82
 BYTES                             = 7
 DEFINITION                        = "Mean 15 micrometer brightness
  temperature of observations in the bin"
 UNIT                              = "kelvin"
END_OBJECT                         = T15

OBJECT                             = T15_DEV
 TYPE                              = REAL
 FORMAT                            = F7.2
 START_BYTE                        = 89
 BYTES                             = 7
 DEFINITION                        = "Standard deviation of the 15
  micrometer brightness temperature of observations in the bin
  (normalized by OBS_COUNT)"
 UNIT                              = "kelvin"
END_OBJECT                         = T15_DEV

OBJECT                             = LAMALB
 TYPE                              = REAL
 FORMAT                            = F7.4
 START_BYTE                        = 96
 BYTES                             = 7
 DEFINITION                        = "Mean Lambert albedo of observations in
  the bin"
END_OBJECT                         = LAMALB

OBJECT                             = LAMALB_DEV
 TYPE                              = REAL
 FORMAT                            = F7.4
 START_BYTE                        = 103
 BYTES                             = 7
 DEFINITION                        = "Standard deviation of the Lambert
  albedo of observations in the bin (normalized by OBS_COUNT)"
END_OBJECT                         = LAMALB_DEV

OBJECT                             = PHSALB
 TYPE                              = REAL
 FORMAT                            = F7.4
 START_BYTE                        = 110
 BYTES                             = 7
 DEFINITION                        = "Mean phase-corrected albedo of
  observations in the bin."
 FORMATION_RULE                    = "Phase-corrected albedo is calculated
  by dividing the Lambert albedo by a phase angle correction of the form:
      1.0 + [0.000146 * exp(0.075 * g)]
      where g = phase angle in degrees"
```

```
    END_OBJECT                          = PHSALB

    OBJECT                              = PHSALB_DEV
     TYPE                               = REAL
     FORMAT                             = F7.2
     START_BYTE                         = 117
     BYTES                              = 7
     DEFINITION                         = "Standard deviation of the
       phase-corrected albedo of observations in the bin (normalized
       by OBS_COUNT)"
    END_OBJECT                          = PHSALB_DEV

   END_OBJECT                          = TABLE

  END_OBJECT                          = FILE

 END_OBJECT                          = DIRECTORY

 OBJECT                              = CATALOG

OBJECT                              = DATASET
DATA_SET_ID                         = "V01/V02-M-IRTM-5-BINNED/CLOUDS-V1.0"

OBJECT                              = DATASETINFO
DATA_SET_NAME                       = "V01/V02 MARS IRTM BINNED DATA AND DERIVED
CLOUDS V1.0"
MISSION_NAME                        = "VIKING"
EVENT_START_TIME                    = 1976
EVENT_STOP_TIME                     = 1979
NATIVE_START_TIME                   = "90 AREOCENTIC SOLAR LONGITUDE, EARTH YEAR
1976"
NATIVE_STOP_TIME                    = "230 AREOCENTIC SOLAR LONGITUDE, EARTH YEAR
1979"
DATA_OBJECT_TYPE                    = "TABLE"
DATA_SET_RELEASE_DATE               = 1989-11-01
PROCESSING_LEVEL_ID                 = 5
PRODUCER_FULL_NAME                  = "PHILIP R. CHRISTENSEN"
PRODUCER_INSTITUTION_NAME           = "ARIZONA STATE UNIVERSITY"
SOFTWARE_FLAG                       = "Y"
DETAILED_CATALOG_FLAG               = "N"
PROCESSING_START_TIME               = 1986
PROCESSING_STOP_TIME                = 1987
DATA_SET_DESC                       = "This data set, derived from the Viking
Orbiter Infrared Thermal Mapper (IRTM) data set, has been binned in both space
and time.  It consists of two complementary portions, water ice cloud
observations and surface observations.  For details on the IRTM instrument and
data set, refer to KIEFFER_ETAL_1977.

An algorithm for detecting clouds was employed, based upon the contrasts among
the brightness temperatures derived from the 7 micrometer (T7), 9 micrometer
(T9), 11 micrometer (T11), and 20 micrometer (T20) IRTM channels.  Water ice
clouds were identified by their characteristic thermal signature (negative
T11-T20 and positive T7-T20 or T9-T20 brightness temperature contrasts);  see
CHRISTENSEN_ZUR_1984 for details on the cloud detection algorithm.  The IRTM
observations in which clouds were detected were binned at 2 x 2 degree spatial
```

(latitude, longitude) resolution for every 10 degrees in areocentric solar longitude (Ls). Each Ls bin is further divided into 3 daytime hour bins (see field list, below), each spanning 4 hours. For the cloud observations, the data set catalogs differences in brightness temperature sensed by the various IRTM channels, Lambert and phase-corrected albedos, the number of cloud observations in each bin, and the standard deviations of the measurements in each bin (normalized by the number of points in the bin).

The cloud catalog portion of the data set contains the following fields (listed as the field name followed by a description):

MISSION_YEAR
Viking mission year, starting at 1 when the Viking spacecraft reached Mars, and incremented at Ls = 0 every martian year

SOL_LON_BIN
Areocentric solar longitude (Ls), stored as the value at the beginning of the 10 degree Ls binning period

LOCAL_HR_BIN
The local hour (1/24 of a martian day, beginning at midnight), stored as the time of the beginning of the 4 hour binning period. The bins included in the cloud catalog portion of the data set are:

6 - local hour 6 to 10
10 - local hour 10 to 14
14 - local hour 14 to 18

LAT_BIN
The latitude at the center of the 2x2 degree spatial bin

LON_BIN
The longitude at the center of the 2x2 degree spatial bin

CLOUD_COUNT
The number of cloud occurrences identified in the bin

C_T20
Mean 20 micrometer brightness temperature of cloud occurrences in the bin

C_T20_DEV
Standard deviation of the 20 micrometer brightness temperature of cloud occurrences in the bin (normalized by CLOUD_COUNT)

C_T11T20_CNR
Mean contrast between the 11 and 20 micrometer brightness temperatures of cloud occurrences in the bin

C_T11T20_DEV
Standard deviation of the contrast between the 11 and 20 micrometer brightness temperatures of cloud occurrences

in the bin (normalized by CLOUD_COUNT)

C_LAMALB
Mean Lambert albedo of cloud occurrences in the bin

C_LAMALB_DEV
Standard deviation of the Lambert albedo of cloud occurrences in the bin (normalized by CLOUD_COUNT)

C_PHSALB
Mean phase-corrected albedo of cloud occurrences in the bin. This is calculated by dividing the Lambert albedo by a phase angle correction of the form:

$$1.0 + [0.000146 * \exp(0.075 * g)]$$

where g = phase angle in degrees

C_PHSALB_DEV
Standard deviation of the phase-corrected albedo of cloud occurrences in the bin (normalized by CLOUD_COUNT)

The surface observations were also binned at 2 x 2 degree spatial (latitude, longitude) resolution for every 10 degrees in Ls. Each Ls bin is further divided into 6 hour bins (see field list, below), each spanning 4 hours. The data set catalogs differences in brightness temperature sensed by the various IRTM channels, Lambert and phase-corrected albedos, the number of observations in each bin, and the standard deviations for the measurements in each bin (normalized by the number of points in the bin).

The surface observations portion of the data set contains the following fields (listed as the field name followed by a description):

MISSION_YEAR
Viking mission year, starting at 1 when the Viking spacecraft reached Mars, and incremented at Ls = 0 every martian year

SOL_LON_BIN
Areocentric solar longitude (Ls), stored as the value at the beginning of the 10 degree Ls binning period

LOCAL_HR_BIN
The local hour (1/24 of a martian day, beginning at midnight), stored as the time of the beginning of the 4 hour binning period. The bins included in the surface observations portion of the data set are:

2 - local hour 2 to 6
6 - local hour 6 to 10
10 - local hour 10 to 14
14 - local hour 14 to 18
18 - local hour 18 to 22
22 - local hour 22 to 2

LAT_BIN
The latitude at the center of the 2x2 degree spatial bin

LON_BIN
The longitude at the center of the 2x2 degree spatial bin

OBS_COUNT
The number of observations in the bin

T20
Mean 20 micrometer brightness temperature of observations in the bin

T20_DEV
Standard deviation of the 20 micrometer brightness temperature of observations in the bin (normalized by OBS_COUNT)

T11T20_CNR
Mean contrast between the 11 and 20 micrometer brightness temperatures of observations in the bin

T11T20_DEV
Standard deviation of the contrast between the 11 and 20 micrometer brightness temperatures of observations in the bin (normalized by OBS_COUNT)

T7T20_CNR
Mean contrast between the 7 and 20 micrometer brightness temperatures of observations in the bin

T7T20_DEV
Standard deviation of the contrast between the 7 and 20 micrometer brightness temperatures of observations in the bin (normalized by OBS_COUNT)

T9T20_CNR
Mean contrast between the 9 and 20 micrometer brightness temperatures of observations in the bin

T9T20_DEV
Standard deviation of the contrast between the 9 and 20 micrometer brightness temperatures of observations in the bin (normalized by OBS_COUNT)

T15
Mean 15 micrometer brightness temperature of observations in the bin

T15_DEV
Standard deviation of the 15 micrometer brightness temperature of observations in the bin (normalized by OBS_COUNT)

LAMALB
Mean Lambert albedo of observations in the bin

LAMALB_DEV
Standard deviation of the Lambert albedo of observations in the bin (normalized by OBS_COUNT)

PHSALB
Mean phase-corrected albedo of observations in the bin. This is calculated by dividing the Lambert albedo by a phase angle correction of the form:

$$1.0 + [0.000146 * \exp(0.075 * g)]$$

where g = phase angle in degrees

PHSALB_DEV
Standard deviation of the phase-corrected albedo of observations in the bin (normalized by OBS_COUNT)"

CONFIDENCE_LEVEL_NOTE = "To avoid including measurements contaminated by long path lengths through a possibly dusty atmosphere, only those observations collected at less than 65 degree emission angles were included in this data set. Many factors, including non-uniform surface temperatures, non-unit thermal emissivity, and the presence of atmospheric dust, produce characteristic spectral differences which vary diurnally and between wavelength bands.

The cloud catalog portion of the data set contains the following fields related to confidence level (listed as the field name followed by a description):

CLOUD_COUNT
The number of cloud occurrences identified in the bin

C_T20_DEV
Standard deviation of the 20 micrometer brightness temperature of cloud occurrences in the bin (normalized by CLOUD_COUNT)

C_T11T20_DEV
Standard deviation of the contrast between the 11 and 20 micrometer brightness temperatures of cloud occurrences in the bin (normalized by CLOUD_COUNT)

C_LAMALB_DEV
Standard deviation of the Lambert albedo of cloud occurrences in the bin (normalized by CLOUD_COUNT)

C_PHSALB_DEV
Standard deviation of the phase-corrected albedo of cloud occurrences in the bin (normalized by CLOUD_COUNT)

The surface observations portion of the data set contains the following fields related to confidence level (listed as the field name followed by a description):

OBS_COUNT
The number of observations in the bin

T20_DEV
Standard deviation of the 20 micrometer brightness temperature of observations in the bin (normalized by OBS_COUNT)

T11T20_DEV
Standard deviation of the contrast between the 11 and 20 micrometer brightness temperatures of observations in the bin (normalized by OBS_COUNT)

T7T20_DEV
Standard deviation of the contrast between the 7 and 20 micrometer brightness temperatures of observations in the bin (normalized by OBS_COUNT)

T9T20_DEV
Standard deviation of the contrast between the 9 and 20 micrometer brightness temperatures of observations in the bin (normalized by OBS_COUNT)

T15_DEV
Standard deviation of the 15 micrometer brightness temperature of observations in the bin (normalized by OBS_COUNT)

LAMALB_DEV
Standard deviation of the Lambert albedo of observations in the bin (normalized by OBS_COUNT)

PHSALB_DEV
Standard deviation of the phase-corrected albedo of observations in the bin (normalized by OBS_COUNT)"

```
END_OBJECT                    = DATASETINFO

OBJECT                         = DATASETTARG
TARGET_NAME                   = "MARS"
END_OBJECT                    = DATASETTARG

OBJECT                         = SCDATASET
INSTRUMENT_HOST_ID            = "V01"
INSTRUMENT_ID                 = "IRTM"
END_OBJECT                    = SCDATASET

OBJECT                         = SCDATASET
INSTRUMENT_HOST_ID            = "V02"
INSTRUMENT_ID                 = "IRTM"
END_OBJECT                    = SCDATASET

OBJECT                         = DSREFINFO
REFERENCE_KEY_ID              = "CHRISTENSEN_ZUR_1984"

OBJECT                         = REFERENCE
DOCUMENT_TOPIC_TYPE           = "DERIVATION AND ANALYSIS TECHNIQUES"
JOURNAL_NAME                  = "JOURNAL OF GEOPHYSICAL RESEARCH"
```

```
PUBLICATION_DATE                = 1984
REFERENCE_DESC                  = "Martian North Polar Hazes and Surface Ice:
Results from the Viking Survey and Completion Mission, Journal of Geophysical
Research, 89, 4587-4596, 1984."

OBJECT                           = REFAUTHORS
AUTHOR_FULL_NAME                = "PHILLIP R. CHRISTENSEN"
END_OBJECT                      = REFAUTHORS

OBJECT                           = REFAUTHORS
AUTHOR_FULL_NAME                = "RICHARD W. ZUREK"
END_OBJECT                      = REFAUTHORS
END_OBJECT                      = REFERENCE

OBJECT                           = DSREFINFO
REFERENCE_KEY_ID                = "KIEFFER_ETAL_1977"

OBJECT                           = REFERENCE
DOCUMENT_TOPIC_TYPE             = "MAPPING DESCRIPTION AND RESULTS"
JOURNAL_NAME                    = "JOURNAL OF GEOPHYSICAL RESEARCH"
PUBLICATION_DATE                = 1977
REFERENCE_DESC                  = "Thermal and Albedo Mapping of Mars During the
Viking Primary Mission, Journal of Geophysical Research, 82, 4249-4291, 1977."

OBJECT                           = REFAUTHORS
AUTHOR_FULL_NAME                = "HUGH H. KIEFFER"
END_OBJECT                      = REFAUTHORS

OBJECT                           = REFAUTHORS
AUTHOR_FULL_NAME                = "TERRY Z. MARTIN"
END_OBJECT                      = REFAUTHORS

OBJECT                           = REFAUTHORS
AUTHOR_FULL_NAME                = "ALAN R. PETERFREUND"
END_OBJECT                      = REFAUTHORS

OBJECT                           = REFAUTHORS
AUTHOR_FULL_NAME                = "BRUCE M. JAKOSKY"
END_OBJECT                      = REFAUTHORS

OBJECT                           = REFAUTHORS
AUTHOR_FULL_NAME                = "ELLIS D. MINER"
END_OBJECT                      = REFAUTHORS

OBJECT                           = REFAUTHORS
AUTHOR_FULL_NAME                = "FRANK DON PALLUCONI"
END_OBJECT                      = REFAUTHORS

END_OBJECT                      = REFERENCE
END_OBJECT                      = DSREFINFO

END_OBJECT                      = DATASET

  END_OBJECT                        = CATALOG
```

```
 END_OBJECT                    = VOLUME
END_OBJECT                     = VOLUME_SET
END
```

69-014A-02B
69-030A-02B
D 79930 , C-27549
LABEL = MRIRS1

HEX DUMP OF MKA200:MRIRS.DAT

RECORD 1  3584 BYTES

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ( 0) | 00410000 | 80400000 | 52C40000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 26440000 | 00000000 |
| ( 40) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 80) | 00000000 | 00000000 | 453DF2C9 | 584178E8 | AC3DFD9D | DD417601 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 120) | E541F4F6 | E1410A9D | DD416A83 | D9416A0E | D5417427 | D041EA74 | CB4180CA | C7414A64 | C341F432 | BF41C054 |
| ( 160) | BA412AB0 | B44180F0 | AF41F4D1 | AB410A12 | A5417A75 | A041B67D | 9A41A6B8 | 944104F6 | 8E41AE11 | 8741089E |
| ( 200) | 8141F064 | 7441601E | 654190D9 | 59413893 | 4A41A489 | 3941649B | 2F419074 | 21413034 | 164188A5 | 0B411C9A |
| ( 240) | F940E8F6 | EE405079 | DC4050B3 | CA40C819 | C94098F4 | AA40182D | 2C417044 | 964278A1 | EE42E83C | AF42769C |
| ( 280) | 11426A64 | 8941607A | EE40088D | 614030EA | F43F2A3E | 933FE6AB | 6C3FE41D | 263F8057 | 0C3F34E7 | C13ED04D |
| ( 320) | C73E90CA | AF3E2034 | 543EB0C0 | D73D40DA | 993E88DC | 343EC009 | 753EB074 | 913EB8AE | 963E3097 | E43D4AD4 |
| ( 360) | CA3DAABB | 543E4ABF | 813E0042 | F13DCAF4 | C43DA025 | 293D004F | 4E3E352E | 823EF8E6 | DB3E1869 | E63E00DE |
| ( 400) | A03E3065 | D73DC0D4 | 6CBD008F | 9C3D00AF | A93DCAD3 | A83E489B | 823EB0E6 | A83E189A | 3A3E0586 | 513DA633 |
| ( 440) | 093E1A5A | A83E1895 | 513E1A5B | 753E2576 | 133EE522 | 513E8A63 | 2D3E555D | 983ED834 | 0F3EF5EC | 903EC007 |
| ( 480) | 753EF568 | CA3ED0FE | FD3ED8D3 | E03EF855 | D63E407C | A63E30FF | 443E3A52 | A63E36F1 | 843E606C | 903EE009 |
| ( 520) | 863E102E | 8E3E2062 | D33EB845 | 183F8859 | E03E2056 | AA3E304F | 023F7034 | CB3EA805 | F43E1801 | E63E8085 |
| ( 560) | CC3EE0A7 | AD3E908B | D93EC0C5 | FA3EB08C | 063F584D | 323F7495 | 1A3FA8CC | 1B3FF89E | 223FD830 | 333F086A |
| ( 600) | 333F3469 | 2D3F64AB | 173F9894 | 0D3FC4B1 | 2C3F6408 | 293FD493 | 393F1028 | 3E3F00E9 | 223FD02F | 043FFCA8 |
| ( 640) | 273F64EC | 4C3F64DA | 383F0056 | 253FDC78 | 303F3023 | 6B3FC437 | 763FE0B6 | 7B3F40AE | 6D3F3CB3 | 703FCCF7 |
| ( 680) | 5E3F4C14 | 573FF093 | 6C3FB8E0 | 833FCEFC | 933FB02D | 8A3FDA0D | 8C3FD231 | A03F4A54 | 9C3FAA38 | A43FD008 |
| ( 720) | 983F48EF | 9D3F560B | A13F5427 | AC3FD4A8 | B23FB4D3 | B83FC095 | C93F9474 | CB3FAA61 | BF3FA094 | B63F1489 |
| ( 760) | C83FE0A3 | C63F0A95 | D43F0A92 | E23F4AF6 | DA3F2A52 | D23F6AEB | DE3FE06E | E63F60AA | EE3FE07D | F93F0A32 |
| ( 800) | F83FD4C8 | 054005DE | FF3FEAC8 | F73FCA22 | F13FCA5E | FC3F147E | 0540B074 | 0940C5C7 | 0F402A58 | 0A403066 |
| ( 840) | 124040D9 | 0B400504 | 1A40F044 | 1F40BAA1 | 204095DE | 1E404A65 | 19403A3D | 2040B50B | 22403065 | 2A405A2A |
| ( 880) | 3040EA8D | 3E4090CD | 39408A6E | 2E40FAB1 | 3140E0CA | 32408A9D | 38402A66 | 40406A3F | 47406510 | 40406A3F |
| ( 920) | 41403547 | 4940E58A | 4840754E | 49402A56 | 47405AAF | 4B4075D1 | 4A40AA2B | 52406509 | 4D40E045 | 50404A28 |
| ( 960) | 5540EA53 | 5E402AA2 | 5D40E598 | 5840256D | 57409099 | 66409AE8 | 6840C590 | 6540BA40 | 6C4020B4 | 67407ABC |
| ( 1000) | 6D40051E | 75409032 | 7B404034 | 7D405A45 | 82402028 | 8440988F | 894010D4 | 8C406086 | 8B405097 | 9140C831 |
| ( 1040) | 9140284C | 92403056 | 9140E04C | 974030F1 | 9A40A06F | 9F40C0D7 | A2407806 | A640E8CE | A9407068 | A84070E3 |
| ( 1080) | A940A8ED | AC40501D | AE404867 | B44060F7 | B54008CD | B1404037 | B24098FC | B9409008 | B540C0CC | B740F078 |
| ( 1120) | BA4018E9 | C340F891 | C540E0DD | C940006B | C84088CA | CA409076 | CF40207B | D04030F2 | D340B009 | D8406810 |
| ( 1160) | DB40B019 | DD406882 | DE401009 | E140507E | E34020B2 | E6406087 | EE4048D3 | EC4098B9 | EF400009 | EE4098B8 |
| ( 1200) | F440C84A | F8407880 | 0241C40B | 0041644E | 0141B026 | 044148CA | 044148CA | 044138CA | 0A41F03B | 0A41E8B5 |
| ( 1240) | 0A4128D1 | 0B414C3D | 0D410C0A | 114100C2 | 11419C70 | 10419C0F | 13418023 | 1441C433 | 1441105D | 1641B038 |
| ( 1280) | 174110FA | 194120D7 | 1941 5CC9 | 1B41F4C1 | 1C41C8B7 | 1C41A073 | 1E418051 | 2041FC81 | 21418441 | 2341A880 |
| ( 1320) | 25416029 | 2541B089 | 2641142E | 2741586A | 2A41D0AF | 2841607C | 28412 4B3 | 2C416407 | 2E414420 | 2D4114DC |
| ( 1360) | 2D418CE9 | 2E41B480 | 2F41ECF4 | 3041A010 | 2F415C5D | 32413039 | 3541383E | 3641786E | 37412891 | 3841901B |
| ( 1400) | 38417045 | 37414891 | 3A41A800 | 39418CE5 | 3941D8D7 | 394128BC | 3B41D0AE | 3C41D89A | 3F41AC60 | 404150F3 |
| ( 1440) | 4441C41B | 4441B46F | 42410C0A | 4541E05C | 424160CD | 4341A820 | 4341A082 | 4541C494 | 4941B8E5 | 4A4144C6 |
| ( 1480) | 4B41F451 | 4C414424 | 4C41584E | 4E415C1D | 4F41C8ED | 5141CCCB | 514160BD | 52417890 | 5341D0E2 | 53419C01 |
| ( 1520) | 5541407C | 57416823 | 56413CF9 | 5841F0D9 | 5941E475 | 5A41E09E | 5B41DCBA | 5E414C47 | 5E41CC9C | 61415863 |
| ( 1560) | 60415C1C | 5F41709C | 6241F838 | 5F414447 | 5D410C9D | 4D41D004 | 26411C8E | 0341F485 | F0402831 | C8406046 |
| ( 1600) | 21C1D01E | E23F80F5 | E23F80F5 | 53C11C11 | C9C04863 | C140A0F4 | 56410C1A | 64410001 | 5A41BC66 | 52414491 |
| ( 1640) | 5541AC0B | 5841444C | 58412077 | 5B41E4D6 | 60417438 | 6241C4C7 | 64418081 | 69418C79 | 6E41D420 | 6F41AC23 |
| ( 1680) | 70419043 | 7141C838 | 74410CC6 | 774118D3 | 784170F4 | 7B414056 | 7D411045 | 80415A16 | 82419C99 | 824110A1 |
| ( 1720) | 834140C6 | 84418CFA | 85410E02 | 86412646 | 8641CAE0 | 864182D9 | 8741B82A | 88419661 | 8841A4AB | 89414486 |
| ( 1760) | 8941A204 | 8A41E2E6 | 8A41BCEE | 8B41920C | 8B41EC3F | 8D416451 | 8E414266 | 91417A81 | 934112CE | 94411E31 |
| ( 1800) | 9641F670 | 974112F5 | 9841AE9C | DD41A070 | 9D417822 | 9F413E5E | 9F41E4BA | A041585D | A141BA9B | A341CC11 |
| ( 1840) | A5417405 | A5413CA2 | A5418C5B | A54190C9 | A741B603 | A74168EF | A64180CC | A74180C0 | A941F032 | A841B8DC |
| ( 1880) | A941E679 | AA41F4DD | AB41CA74 | AB41CA7C | AC413443 | AB41E05C | A9412C92 | AA410611 | A94150D1 | A8411046 |
| ( 1920) | A84162C4 | A841FA65 | A641705E | A441BCCE | A2418A2F | A14152AB | A04128C2 | A141FA55 | A0416E9B | 9F414694 |
| ( 1960) | 9E41188D | 9C417443 | 9C41B405 | 9C417890 | 9C41A235 | 9D41E070 | 9B41B683 | 9941DCE5 | 99411A91 | 9741A4CE |
| ( 2000) | 9841E0B3 | 98418A86 | 9841FC6E | 99417626 | 99417807 | 9841905F | 9941240F | 99413EC7 | 9B41BA08 | 9A415049 |
| ( 2040) | 9A418250 | 9B4146B9 | 9A416E95 | 9B41CC83 | 9D41003A | 9D414868 | 9D41F667 | 9D410C32 | 9C418A3B | 9B41265D |
| ( 2080) | 9C417C79 | 9D417CE3 | 9D411404 | 9E41F83F | 9F413AE9 | 9F4166C2 | 9F419EC2 | 9E4112A5 | 9E41D8CA | A04168D9 |
| ( 2120) | 9F41DC7C | A0419400 | A0412865 | A1412C27 | A2416228 | A041D8C2 | A0412A65 | 9F41CAD9 | A0414884 | A1419CC2 |
| ( 2160) | A14178CB | A241C827 | A241904E | A3412067 | A2410C85 | A3412EB5 | A3412E6F | A2410466 | A2419C56 | A1414884 |
| ( 2200) | A2418C5E | A2410CAC | A241C0DA | A241FCBB | A1413AAB | A04126F9 | A0414065 | 9F410A66 | 9D411CCC | 9C414E5A |
| ( 2240) | 9C4160C6 | 9B41D82E | 9B41586D | 994182A0 | 984136F8 | 9841326F | 974164E6 | 974144DE | 9541D48C | 96417A61 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ( 2280) | 96411269 | 95416A04 | 93412E11 | 9141246B | 8E41429A | 8D4138B2 | 8B41A8E3 | 8B419AE3 | 8A41C807 | 8841A686 |
| ( 2320) | 8741346D | 86411046 | 864174D9 | 8641E40A | 83418450 | 8141E01C | 82416C1E | 8041E28C | 7E41086A | 7B41EC56 |
| ( 2360) | 7741F041 | 76412877 | 78411864 | 7341D822 | 6F41B0C1 | 6F41745D | 6D415074 | 6A418098 | 68418494 | 62413839 |
| ( 2400) | 5E41882A | 5D416400 | 584128F6 | 5741B45C | 5241FCE7 | 4C41E096 | 4941B44B | 494144BC | 45417009 | 424164A3 |
| ( 2440) | 3E4198D4 | 3A4154B5 | 3841A098 | 37419CD6 | 3041F847 | 3141A432 | 3141B0A0 | 2F41F033 | 2D41B85F | 2D41907B |
| ( 2480) | 2C41C430 | 2A41046B | 274168F3 | 28410CDD | 2841DC97 | 2641082E | 2641A4D2 | 2441584E | 23414413 | 214150AF |
| ( 2520) | 1F415C03 | 1B415899 | 184180EF | 17411805 | 1441DCAD | 1341D859 | 11418811 | 0F41206D | 0C417862 | 0741606E |
| ( 2560) | 08415454 | 0741341D | 05415036 | 0141C8D5 | 00417418 | FB40D072 | FE40F065 | FA404880 | F4400030 | ED40A025 |
| ( 2600) | E64018BD | E04070A7 | DD408067 | D94050A2 | D5400807 | CF401896 | CC40B822 | CA4010C7 | CA40205D | C64078E9 |
| ( 2640) | C440B867 | C140E045 | B74018FD | 8540982C | B040A82C | A34070AF | 9F40B801 | 9D40A8C2 | 9A40D854 | 98400041 |
| ( 2680) | 9540C08D | 8B405897 | 844010A5 | 844068A5 | 844080F4 | 7B409AD1 | 6F40DA64 | 674070F1 | 6B400A0C | 6A4025A2 |
| ( 2720) | 6B409577 | 6140CA87 | 5A4030B4 | 52409539 | 52409539 | 4D40250E | 3A4035AB | 2F402A50 | 2E400013 | 244055FF |
| ( 2760) | 1C407A20 | 13405077 | 1240F53A | 12401506 | 0C409A0C | 0540A00A | 0440556C | F23F009B | E53F406F | D03FAA09 |
| ( 2800) | D73FCADA | D93F80E8 | D93FD47E | D53FA061 | BE3F5457 | A93F70C9 | A73F22BA | 943F5AD2 | A03F3ABE | 953F1CA7 |
| ( 2840) | 8F3F2E7C | 6C3F4CDC | 573F4884 | 393FF028 | 433FACD5 | 593F24FC | 4F3F944E | 393F30F8 | 0E3F507F | F23E485B |
| ( 2880) | BA3E489D | 9B3EB07A | C23E80D1 | 9D3EC01C | 063E6502 | 333EF5EC | FF3D8A0C | 093E406B | AB3E08DF | 573E1AFF |
| ( 2920) | 033F2803 | 233FC800 | 4A3F3063 | C73F9463 | 813FFEF0 | 19C14842 | E63F00AA | E63F00AA | E63F00AA | 2AC12CDE |
| ( 2960) | C5C0084B | 0EBD8077 | 953FF4AA | 6D3FACAE | 3B3FB09E | 273F5CEC | C63E9814 | AB3E20DE | 333E55ED | 063EA506 |
| ( 3000) | 0F3D5461 | 54B95415 | B7BDB4C4 | BD3D747D | 9B3CA82D | 9C3D8AC4 | DE3D0035 | 093E3553 | 063E0016 | 9C3D14D3 |
| ( 3040) | 0C3E00A5 | 303E9596 | 6A3DA8E9 | E43DD4ED | CA3D3499 | 723E9A3E | 233ED08B | 903E4008 | AB3E58E0 | 893E4075 |
| ( 3080) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 3120) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 3160) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 3200) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 3240) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 3280) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 3320) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 3360) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 3400) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 3440) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 3480) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 3520) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 3560) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | | | | |

HEX DUMP OF MKA200:MR1RS.DAT

RECORD 512 3584 BYTES

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ( 0) | 00410000 | 80400000 | 89440000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 2B4DB8FA | 00000000 |
| ( 40) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 80) | 00002000 | 00000000 | 453D5932 | 5C418CD9 | AD3DE621 | DF41A8AA | 00000000 | 00000000 | 00000000 | 00000000 |
| ( 120) | 0AC1305B | 07C1F49C | 04C1A8DA | 06C1583C | 03C15C78 | 06C1583C | 07C1F49C | 04C1A8DA | FBC070CA | F6C0302D |
| ( 160) | F6C0302D | F0C03889 | EAC078DE | E8C04007 | E2C08853 | E2C08853 | DCC0489A | D6C0A8DB | D1C09017 | DCC0489A |
| ( 200) | CEC06033 | C5C0A87F | B9C060D5 | A5C05041 | A5C05041 | 90C0707F | 93C0C078 | 81C02093 | 59C05020 | 1CC080B2 |
| ( 240) | A7BF805E | 83BE0008 | 45C130FD | 45C130FD | 45C130FD | 45C130FD | 45C130FD | 45C130FD | D6C0A8DB | 0BBFC00F |
| ( 280) | 1B3FD09D | 1B3FD09D | 643E10FD | 023ED0BC | 23BE00E5 | 83BE0008 | 83BE0008 | 23BF008C | 0BBFC00F | E5BE801A |
| ( 320) | E5BE801A | 0BBFC00F | E5BE801A | 0BBFC00F | E5BE801A | 0BBFC00F | B4BE800F | 83BD0066 | 013DC0DF | 83BE0008 |
| ( 360) | 013DC0DF | 83BD0066 | 023ED0BC | 013DC0DF | 013DC0DF | B4BE800F | B4BE800F | 0BBFC00F | 83BE0008 | 83BE0008 |
| ( 400) | 83BE0008 | 83BD0066 | 013DC0DF | 83BD0066 | 013DC0DF | 83BD0066 | 83BD0066 | B4BE800F | 23BE00E5 | E5BE801A |
| ( 440) | B4BE800F | 83BD0066 | 013DC0DF | 23BE00E5 | 23BE00E5 | E5BE801A | B4BE800F | 23BE00E5 | 23BE00E5 | 23BE00E5 |
| ( 480) | 013DC0DF | 23BE00E5 | 83BD0066 | 023ED0BC | 023ED0BC | 83BD0066 | 013DC0DF | 83BE0008 | 83BE0008 | 83BD0066 |
| ( 520) | 023ED0BC | A33EB0A9 | 023ED0BC | 83BE0008 | 023ED0BC | 83BD0066 | 013DC0DF | 643E10FD | 643E10FD | 83BD0066 |
| ( 560) | 023ED0BC | 23BE00E5 | 013DC0DF | 643E10FD | A33EB0A9 | 643E10FD | A33EB0A9 | 023ED0BC | A33EB0A9 | 023ED0BC |
| ( 600) | 023ED0BC | 023ED0BC | 013DC0DF | 83BD0066 | 83BD0066 | A33EB0A9 | A33EB0A9 | 643E10FD | 83BD0066 | 643E10FD |
| ( 640) | 033F0802 | 343FB43B | 1B3FD09D | 4C3F68D7 | 1B3FD09D | 343FB43B | 343FB43B | 4C3F68D7 | 343FB43B | 033F0802 |

HEX DUMP OF MKA200:MR1RS.TAB

RECORD 1  3584 BYTES

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ( 0) | 4E4A504C | 31493030 | 50445331 | 30313834 | 39333234 | 20202020 | 20202020 | 2020203D | 20534644 | 555F4C41 |
| ( 40) | 42454C0D | 0A524543 | 4F52445F | 54595045 | 20202020 | 20202020 | 20202020 | 20202020 | 20202020 | 3D204649 |
| ( 80) | 5845445F | 4C454E47 | 54480D0A | 5245434F | 52445F42 | 59544553 | 20202020 | 20202020 | 20202020 | 20202020 |
| ( 120) | 2020203D | 20333538 | 340D0A46 | 494C455F | 5245434F | 52445320 | 20202020 | 20202020 | 20202020 | 20202020 |
| ( 160) | 20203D20 | 3531360D | 0A4C4142 | 454C5F52 | 45434F52 | 44532020 | 20202020 | 20202020 | 20202020 | 20202020 |
| ( 200) | 3D20340D | 0A5E5350 | 45435452 | 554D5F54 | 41424C45 | 20202020 | 20202020 | 20202020 | 20202020 | 3D20350D |
| ( 240) | 0A535041 | 43454352 | 4146545F | 4E414D45 | 20202020 | 20202020 | 20202020 | 20202020 | 3D207B4D | 4152494E |
| ( 280) | 45525F36 | 2C204D41 | 52494E45 | 525F377D | 0D0A4D49 | 5353494F | 4E5F5045 | 4153455F | 4E414D45 | 20202020 |
| ( 320) | 20202020 | 20202020 | 203D204D | 4152535F | 454E434F | 554E5445 | 520D0A54 | 41524745 | 545F4E41 | 4D452020 |
| ( 360) | 20202020 | 20202020 | 20202020 | 20202020 | 20203D20 | 4D415253 | 0D0A4441 | 54415F53 | 45545F49 | 44202020 |
| ( 400) | 20202020 | 20202020 | 20202020 | 20202020 | 203D2027 | 4D52362F | 4D52372D | 4D2D4952 | 532D332D | 56312E30 |
| ( 440) | 270D0A45 | 56454E54 | 5F535441 | 52545F44 | 41544520 | 20202020 | 20202020 | 20202020 | 20203D20 | 31393639 |
| ( 480) | 2D30372D | 33310D0A | 4556454E | 545F5354 | 4F505F44 | 41544520 | 20202020 | 20202020 | 20202020 | 2020203D |
| ( 520) | 20313936 | 392D3038 | 2D30350D | 0A494E53 | 5452554D | 454E545F | 4E414D45 | 20202020 | 20202020 | 20202020 |
| ( 560) | 20202020 | 3D20494E | 46524152 | 45445F53 | 50454354 | 524F4D45 | 5445520D | 0A4E4F54 | 45202020 | 20202020 |
| ( 600) | 20202020 | 20202020 | 20202020 | 20202020 | 20202020 | 3D202246 | 696C6520 | 636F6E74 | 61696E73 | 20333620 |
| ( 640) | 6C61626F | 7261746F | 72792062 | 6C61636B | 626F6479 | 0D0A2073 | 70656374 | 72612C20 | 666F7220 | 626F7466 |
| ( 680) | 204D6172 | 696E6572 | 20362061 | 6E642037 | 20696E73 | 7472756D | 656E7473 | 2C20666F | 6C6C6F77 | 65642062 |
| ( 720) | 79203132 | 32200D0A | 204D6172 | 696E6572 | 20362066 | 6C696766 | 74207370 | 65637472 | 612C2066 | 6F6C6C6F |
| ( 760) | 77656420 | 62792033 | 3534204D | 6172696E | 65722037 | 20666C69 | 67667420 | 73706563 | 7472613A | 5C6E0D0A |
| ( 800) | 205C6E0D | 0A202027 | 5265636F | 72642020 | 20205370 | 65637472 | 61204E6F | 732E2020 | 20436661 | 6E6E656C |
| ( 840) | 2020496E | 73747275 | 6D656E74 | 20202020 | 20202020 | 20537562 | 6A656374 | 20202020 | 275C6E0D | 0A202027 |
| ( 880) | 202D2D2D | 2D2D2D2D | 2D2D2D2D | 2D2D2D2D | 2D2D2D2D | 2D2D2D2D | 2D2D2D2D | 2D2D2D2D | 2D2D2D2D | 2D2D2D2D |
| ( 920) | 2D2D2D2D | 2D2D2D2D | 2D2D2D2D | 2D2D2D2D | 2D2D2D2D | 2D2D2D2D | 275C6E0D | 0A202027 | 20312D32 | 32202020 |
| ( 960) | 20202026 | 6E656761 | 74697665 | 29202020 | 20312C32 | 20202020 | 20202020 | 3220264D | 61722E20 | 37292020 |
| ( 1000) | 20424220 | 63616C69 | 62726174 | 696F6E20 | 275C6E0D | 0A202027 | 2032332D | 33362020 | 20202026 | 6E656761 |
| ( 1040) | 74697665 | 29202020 | 20202032 | 20202020 | 20202020 | 3120264D | 61722E20 | 36292020 | 20424220 | 63616C69 |
| ( 1080) | 62726174 | 696F6E20 | 275C6E0D | 0A202027 | 2033372D | 31353620 | 20202031 | 342D3239 | 30202020 | 20202020 |
| ( 1120) | 20202032 | 20202020 | 20202020 | 31202020 | 20202020 | 20202020 | 20737061 | 63652C20 | 4D617273 | 20202020 |
| ( 1160) | 275C6E0D | 0A202027 | 20313539 | 2D333233 | 20202032 | 2D323734 | 20202020 | 20202020 | 20202032 | 20202020 |
| ( 1200) | 20202020 | 32202020 | 20202020 | 20202020 | 20737061 | 63652C20 | 4D617273 | 20202020 | 275C6E0D | 0A202027 |
| ( 1240) | 20333234 | 2D353132 | 20202032 | 2D323734 | 20202020 | 20202020 | 20202031 | 20202020 | 20202020 | 32202020 |
| ( 1280) | 20202020 | 20202020 | 20737061 | 63652C20 | 4D617273 | 20202020 | 275C6E0D | 0A205C6E | 0D0A2045 | 61636820 |
| ( 1320) | 73706563 | 7472756D | 20697320 | 70726563 | 65646564 | 20627920 | 61206865 | 61646572 | 20636F6E | 7461696E |
| ( 1360) | 696E6720 | 73706563 | 7472756D | 206E756D | 6265722C | 200D0A20 | 696E7374 | 72756D65 | 6E74206E | 756D6265 |
| ( 1400) | 722C2063 | 68616E6E | 656C206E | 756D6265 | 722C2073 | 70616365 | 63726166 | 7420636C | 6F636B20 | 636F756E |
| ( 1440) | 742C2067 | 656F6D65 | 74727920 | 0D0A2069 | 6E666F72 | 6D617469 | 6F6E2C20 | 616E6420 | 74617267 | 65742062 |
| ( 1480) | 6C61636B | 626F6479 | 2074656D | 70657261 | 74757265 | 20696E20 | 74686520 | 63617365 | 206F6620 | 0D0A2063 |
| ( 1520) | 616C6962 | 72617469 | 6F6E2064 | 61746120 | 2873746F | 72656420 | 696E2074 | 6865206C | 6F636174 | 696F6E20 |
| ( 1560) | 666F7220 | 636C6F63 | 6B292E20 | 4E6F7465 | 20746861 | 74207468 | 65200D0A | 20776176 | 656C656E | 67746820 |
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| ( 1760) | 20202020 | 20203D20 | 53504543 | 5452554D | 5F544142 | 4C450D0A | 20524F57 | 53202020 | 20202020 | 20202020 |
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| ( 1840) | 20202020 | 20202020 | 20202020 | 2020203D | 20333538 | 340D0A0D | 0A204F42 | 4A454354 | 20202020 | 20202020 |
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| ( 1920) | 450D0A20 | 20524F57 | 53202020 | 20202020 | 20202020 | 20202020 | 20202020 | 20202020 | 20202020 | 3D20310D |
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| ( 2040) | 20204E4F | 54452020 | 20202020 | 20202020 | 20202020 | 20202020 | 20202020 | 20202020 | 203D2022 | 54666520 |
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HEX DUMP OF MKA200:MRIRS.TAB

RECORD 516  3584 BYTES

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