412

PIONEER 10 & 11
PLASMA ANALYZER DATA
72-012A-00F,13C,13D,13E
73-019A-00E,13B,13C,13D

PIONEER 10
TRAJECTORY EPHEMERIS
72-012A-00H

PIONEER 11
TRAJECTORY EPHEMERIS
73-019A-00G

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

---

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 This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system.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

PIONEER 10

TRAJECTORY EPHEMERIS

72-012A-00H XXNO-00112

THIS DATA SET CONSISTS OF ONE MAGNETIC TAPE. THE TAPE IS 9-TRACK, 6250 BPI, ASCII, WITH A VAX STANDARD LABEL, AND 39 FILES OF DATA. THE TAPE WAS CREATED ON AN IBM 360 COMPUTER. THE D AND C NUMBERS ALONG WITH THE TIME SPAN IS AS FOLLOWS:

D#	C#	TIME SPANS
D#85883	C#29141	04/06/73-01/01/90

VOL LAB= TRJP10

72-012A-00H

73-019A-00G [redacted]

#412

Pioneer 11 Trajectory Ephemeris (73-019A-00H)

1 6250-bpi VAX standard-label tape
Vol. Label = TRJP11
SFDU dataset: includes
VOLDESC.SFD and FORMAT.SFD files
Contact: D.W. Lozier, NASA/Ames
Agent: J. F. Cooper 1972-03-03 thru 1990-01-01

72-012A-00H

CCSD3ZF0000100000001CCSD3VS00002MRK**001

VOL_IDENT: USA_NASA_NSSD_P10Z_0001
VOL_CREATION_DATE: 1991-12-06
MEDIUM_DESCRIPTION: 1/2-inch, 9-track, 6250 bpi magnetic tape
TECHNICAL_CONTACT: David W. Lozier
NASA Ames Research Center (Mail Stop 244-14)
Moffett Field, CA 94035

Electronic Mail: Span OPS::LOZIER
NASAMAIL/DLOZIER
Telephone: 415-604-3147
FTS 464-3147

PREV_VOLS: none

CCSD$$MARKERMRK**001CCSD3SS00002MRK**002

DATA_SET_NAME: PIONEER 10 TRAJECTORY EPHEMERIS ARCHIVE
DATA_SOURCE: Pioneer 10 trajectory data were generated using the Jet Propulsion Laboratory's (JPL) "Double Precision Trajectory" (DPTRAJ) computer program, an element of the JPL Navigation Software System, reference (A).

DPTRAJ creates a spacecraft ephemeris by integrating the equations of motion for a full set of acceleration models. For the Pioneer 10 trajectory ephemeris, DPTRAJ integration was limited to the N-body gravitational terms (planets, Sun and Moon) with Earth oblateness, Jupiter oblateness (J2 and J4), and a simple solar pressure model included.

Initial conditions for the DPTRAJ runs were obtained from various Orbit Determination (OD) solutions performed during the mission. A set of seven spacecraft initial state vectors (position, velocity and epoch) was compiled to cover all phases of the mission from launch to 1 January 1990.

(1) Launch to second midcourse maneuver
(2) Second midcourse maneuver to first "IO" targeting maneuver
(3) First "IO" targeting maneuver to second "IO" targeting maneuver
(4) Second "IO" targeting maneuver to Jupiter phase
(5) Jupiter encounter OD
(6) Jupiter encounter to 1983 solar escape
(7) 1983 solar escape to 1 January 1990

A complete set of input for the DPTRAJ runs is provided in reference (B).

SCIENTIFIC_CONTACT: none
SPACECRAFT_CHARACTERISTICS: Pioneer 10 is a 550 pound spin stabilized spacecraft powered by four RTGs. Communications with the Earth is provided by a 9 ft. diameter parabolic high gain antenna located on the spin axis of the spacecraft. Periodic precession maneuvers are performed to maintain Earth pointing of the high gain antenna. The spacecraft possesses a complete complement of particles and fields instruments as well as a UV spectrometer, IR radiometer

and an imaging device (IPP). The primary mission objective was the exploration of the plant Jupiter with a secondary objective of exploring the interplanetary environment between Earth and Jupiter and beyond Jupiter. Pioneer 10 was launched on March 3, 1972 and encountered Jupiter on December 4, 1973. After passing Jupiter, Pioneer 10's trajectory became escape with respect to the Sun and is moving away from the Sun at about 2.4 AU per year.

INSTRUMENT_ATTRIBUTES: not applicable

DATA_SET_PARAMETERS: Following is a description of the seventy-seven trajectory parameters found in each output record.
Julian Date of reference epoch = 2433282.5 (J1950.0)
Body-1 is JUPITER, Body-2 is SATURN

MNEMONIC	DESCRIPTION
ETSPRF	Time of record in Ephemeris Time (ET) seconds past the reference epoch
JULDAT	Julian date (days)
DOYDAT	Days past the start of the year
TFLANC	Time from launch (sec) Launch time was 01:49:03.6 UTC 3 March 1972
TFINJE	Time from injection (sec) Injection epoch is 02:03:18 UTC 3 March 1972
ETMUTC	ET - Universal Time Coordinated (UTC) (sec)
DEVENT	Flag which gives the type of event which caused the record to be written: = 0.D0 for an absolute or TDT save tape event = 1.D0 for some other type of TWIST geometric event

The next 13 parameters are defined in a geocentric space-fixed coordinate system referenced to Earth's true equinox and equator plane of date. The X-axis is in the direction of the Vernal Equinox, the Z-axis is normal to the equatorial plane and the Y-axis lies in the equatorial plane completing the right-handed coordinate sytem.

RANGRP	Range rate of spacecraft (rate of change of REARPR below, km/sec)
MAGVEL	Magnitude of spacecraft inertial velocity vector (km/sec)
INPATH	Inertial path angle (deg)
INAZIM	Inertial azimuth angle (deg)
REARPR	Earth-spacecraft range (km)
DECPRO	Declination of spacecraft (deg)
RTASCP	Right ascension of spacecraft (deg)
REARSU	Earth-Sun range (km)
DECSUN	Declination of Sun (deg)
RTASCS	Right ascension of Sun (deg)
REARMO	Earth-Moon range (km)
DECMOO	Declination of Moon (deg)
RTASCM	Right ascension of Moon (deg)

The next 7 parameters are defined in a heliocentric space-fixed coordinate system referenced to Earth's true equinox and orbit plane (Ecliptic) of date. The X-axis is in the direction of the Vernal Equinox, the Z-axis is normal to the orbit plane and the Y-axis lies in the orbit plane completing the right-handed coordinate system.

HRANGP	Sun-spacecraft range (km)
HMAGVP	Magnitude of spacecraft inertial velocity vector (km/sec)
HINPTH	Inertial path angle (deg)
CELLTP	Celestial latitude of spacecraft (deg)
CELLNP	Celestial longitude of spacecraft (deg)
CELLTE	Celestial latitude of Earth (deg)
CELLNE	Celestial longitude of Earth (deg)

The next 5 parameters are defined in a heliocentric rotating coordinate system referenced to the direction of Earth and Earth's true orbit of date. In the Sun-Earth-line coordinate system the X-axis points to the Earth, the Z-axis is normal to the Earth's orbit plane (Ecliptic) and the Y-axis lies in the orbit plane completing the right-handed coordinate sytem.

XSCSEL	X-component of spacecraft position in Sun-Earth-line coordinate system (km)
YSCSEL	Y-component of spacecraft position in Sun-Earth-line coordinate system (km)
ZSCSEL	Z-component of spacecraft position in Sun-Earth-line coordinate system (km)
SPSEXY	Projection of Sun-spacecraft range vector into the XY-plane of the Sun-Earth-line coordinate system (km)
LNPSEL	Longitude of spacecraft in Sun-Earth-line coordinate system (deg)
ICBODY	Integration central body number. = 1 for SUN = 3 for EARTH = 5 for JUPITER
FERPFL	FERP flag for equinox and reference plane for the next 28 parameters: = 12 is the Earth's mean equinox and orbit of B1950.0

The next 28 parameters are defined in a space-fixed coordinate system referenced to the equinox and plane specified above in FERPFL. The X-axis is in the direction of the mean 1950.0 Vernal Equinox, the Z-axis is normal to the mean 1950.0 Earth's orbit plane (Ecliptic) and the Y-axis lies in the orbit plane completing the right-handed coordinate sytem.

XPGSFF	X-component of geocentric spacecraft

	position (km)
YPGSFF	Y-component of geocentric spacecraft position (km)
ZPGSFF	Z-component of geocentric spacecraft position (km)
DXPGSF	X-component of geocentric spacecraft velocity vector (km/sec)
DYPGSF	Y-component of geocentric spacecraft velocity vector (km/sec)
DZPGSF	Z-component of geocentric spacecraft velocity vector (km/sec)
XPHSFF	X-component of heliocentric spacecraft position (km)
YPHSFF	Y-component of heliocentric spacecraft position (km)
ZPHSFF	Z-component of heliocentric spacecraft position (km)
DXPHSF	X-component of heliocentric spacecraft velocity vector (km/sec)
DYPHSF	Y-component of heliocentric spacecraft velocity vector (km/sec)
DZPHSF	Z-component of heliocentric spacecraft velocity vector (km/sec)
XP1SFF	X-component of Body-1 centered spacecraft position (km)
YP1SFF	Y-component of Body-1 centered spacecraft position (km)
ZP1SFF	Z-component of Body-1 centered spacecraft position (km)
DXP1SF	X-component of Body-1 centered spacecraft velocity vector (km/sec)
DYP1SF	Y-component of Body-1 centered spacecraft velocity vector (km/sec)
DZP1SF	Z-component of Body-1 centered spacecraft velocity vector (km/sec)
XP2SFF	X-component of Body-2 centered spacecraft position (km)
YP2SFF	Y-component of Body-2 centered spacecraft position (km)
ZP2SFF	Z-component of Body-2 centered spacecraft position (km)
DXP2SF	X-component of Body-2 centered spacecraft velocity vector (km/sec)
DYP2SF	Y-component of Body-2 centered spacecraft velocity vector (km/sec)
DZP2SF	Z-component of Body-2 centered spacecraft velocity vector (km/sec)
B1MAGR	Body-1 centered spacecraft range (km)
B1MAGV	Body-1 centered magnitude of spacecraft velocity vector (km/sec)
B2MAGR	Body-2 centered spacecraft range (km)
B2MAGV	Body-2 centered magnitude of spacecraft velocity vector (km/sec)

The next 15 parameters are defined in a body centered body-fixed rotating coordinate system. The XY-plane is the true-of-date equatorial plane of the body where the X-axis points towards the prime meridian of the body, the Z-axis is normal to the equatorial plane and the

Y-axis completes the right-handed coordinate system. Definition of the direction to the north pole, the prime meridian and the rotational rate is per reference (C).

EALATP	Earth centered latitude of spacecraft (deg)
EALONP	Earth centered longitude of spacecraft (deg)
EAVELP	Earth centered magnitude of spacecraft velocity vector (km/sec)
EAPTHP	Earth centered path angle (deg)
EAAZIP	Earth centered azimuth angle (deg)
B1LATP	Body-1 centered latitude of spacecraft (deg)
B1LONP	Body-1 centered longitude of spacecraft (deg)
B1VELP	Body-1 centered magnitude of spacecraft velocity vector (km/sec)
B1PTHP	Body-1 centered path angle (deg)
B1AZIP	Body-1 centered azimuth angle (deg)
B2LATP	Body-2 centered latitude of spacecraft (deg)
B2LONP	Body-2 centered longitude of spacecraft (deg)
B2VELP	Body-2 centered magnitude of spacecraft velocity vector (km/sec)
B2PTHP	Body-2 centered path angle (deg)
B2AZIP	Body-2 centered azimuth (deg)

DATA_PROCESSING_OVERVIEW: not applicable

LIT_REFERENCE:

(A) NOCC NAVIGATION SUBSYSTEM
Software Operators Manual - Vol. 1
Overview of DPTRAJ and ODP Software
Doc. No. SOM-NVI-5241-OP, Rev. D
18 April 1989 Jet Propulsion Laboratory

(B) Pioneer Project Technical Coordination Memorandum,titled: DPTRAJ inputs for the Pioneer 10/11 NSSDC Trajectory Ephemeris Archive; 28 January 1992 NASA/ARC David W. Lozier.

(C) IAU "Report of the IAU Working Group on Cartographic Coordinates and Rotational Elements of the Planets and Satellites: 1982", M.E. Davies, et.al., published in Celestial Mechanics vol. 29 (1983) pp. 309-321.

CCSD$$MARKERMRK**002CCSD3KS00002MRK**003

VOL_TIME_COVERAGE: 1972-03-03 02:04:00.000 UTC to
1990-01-01 00:00:00.000 UTC

FILE_NAMING_CONVENTION: PIONEER 10 TRAJECTORY files are named according to each data record contained on the tape as follows:

TRJP10YYA.DAT
TRJP10YYB.DAT

TRJ for TRAJECTORY.
P10 for PIONEER 10.
YY for year 72, 73, ... 89, 90.
A for 1st six months of the year.

```
                                        B   for 2nd six months of the year.
FILE_TIME_COVERAGE:      TRJP1072A.DAT
                         TRJP1072B.DAT
                         TRJP1073A.DAT
                         TRJP1073B.DAT
                         TRJP1074A.DAT
                         TRJP1074B.DAT
                             (etc.)
                         TRJP1089A.DAT
                         TRJP1089B.DAT
                         TRJP1090A.DAT

CCSD$$MARKERMRK**003CCSD3RF0000300000001

REFERENCETYPE=$VMS;
LABEL=ATTACHED;
REFERENCE=FORMAT.SFD;

LABEL=NSSD3IF0006600000001;
REFERENCE=TRJP10*.*

/* END OF FILE GOES HERE */

/* FORMAT.SFD BEGINS HERE */
CCSD3FF0000500000001CCSD3CS00004MRK**001
ADIDNAME=NSSD0066;
CCSD$$MARKERMRK**001CCSD3KS00002MRK**002

SUBM_NAME:       David W. Lozier
SUBM_ADDR:       NASA Ames Research Center (Mail Stop 244-14)
                 Moffett Field,  CA   94035

                 Electronic mail:        Span OPS::LOZIER
                                         NASAMAIL/DLOZIER
                 Telephone:              415-604-3147
                                         FTS 464-3147
SUBM_DATE:       1991-03-01
TITLE:           FORMAT FOR PIONEER 10 TRAJECTORY EPHEMERIS ARCHIVE
DESCR:           Format of the Pioneer 10 trajectory data
REL_DATE:        1991-12-06

CCSD$$MARKERMRK**002CCSD3DF0000200000001

FILE_CLASS_NAME:  PIONEER 10 TRAJECTORY EPHEMERIS ARCHIVE
RECORD_TYPE_NAME: Pioneer 10 trajectory parameter
RECORD_ALGORITHMS:Refer to references (A) and (B) in Supplementary Information.
RECORD_STRUCTURE: Fixed Length, no control fields
RECORD_LENGTH:    1 logical record = 2048 ASCII bytes = 4 physical records.
                  1 physical record = 512 block bytes.
RECORD_FIELD_MNEMONICS: ETSPRF, JULDAT, DOYDAT, TFLANC, TFINJE, ETMUTC, DEVENT,
                 RANGRP, MAGVEL, INPATH, INAZIM, REARPR, DECPRO, RTASCP, REARSU,
                 DECSUN, RTASCS, REARMO, DECMOO, RTASCM, HRANGP, HMAGVP, HINPTH,
                 CELLTP, CELLNP, CELLTE, CELLNE, XSCSEL, YSCSEL, ZSCSEL, SPSEXY,
                 LNPSEL, ICBODY, FERPFL, XPGSFF, YPGSFF, ZPGSFF, DXPGSF, DYPGSF,
                 DZPGSF, XPHSFF, YPHSFF, ZPHSFF, DXPHSF, DYPHSF, DZPHSF, XP1SFF,
                 YP1SFF, ZP1SFF, DXP1SF, DYP1SF, DZP1SF, XP2SFF, YP2SFF, ZP2SFF,
                 DXP2SF, DYP2SF, DZP2SF, B1MAGR, B1MAGV, B2MAGR, B2MAGV, EALATP,
                 EALONP, EAVELP, EAPTHP, EAAZIP, B1LATP, B1LONP, B1VELP, B1PTHP,
                 B1AZIP, B2LATP, B2LONP, B2VELP, B2PTHP, B2AZIP
RECORD_SYNTAX:   77 fields per record, in the following order:
```

ETSPRF, JULDAT, DOYDAT, TFLANC, TFINJE, ETMUTC, DEVENT, RANGRP, MAGVEL, INPATH, INAZIM, REARPR, DECPRO, RTASCP, REARSU, DECSUN, RTASCS, REARMO, DECMOO, RTASCM, HRANGP, HMAGVP, HINPTH, CELLTP, CELLNP, CELLTE, CELLNE, XSCSEL, YSCSEL, ZSCSEL, SPSEXY, LNPSEL, ICBODY, FERPFL, XPGSFF, YPGSFF, ZPGSFF, DXPGSF, DYPGSF, DZPGSF, XPHSFF, YPHSFF, ZPHSFF, DXPHSF, DYPHSF, DZPHSF, XP1SFF, YP1SFF, ZP1SFF, DXP1SF, DYP1SF, DZP1SF, XP2SFF, YP2SFF, ZP2SFF, DXP2SF, DYP2SF, DZP2SF, B1MAGR, B1MAGV, B2MAGR, B2MAGV, EALATP, EALONP, EAVELP, EAPTHP, EAAZIP, B1LATP, B1LONP, B1VELP, B1PTHP, B1AZIP, B2LATP, B2LONP, B2VELP, B2PTHP, B2AZIP

All data fields are in 24-byte ASCII, double precision format (D24.17). A comma follows the first 76 data fields. After the seventy-seventh data field there are 42 blanks to finish the 2048 byte record (a logical record). Each record can be read with the following FORTRAN format string: (4X,77(2X,D24.17),42X).

Field_Name: ETSPRF
Field_Mnemonic: ETSPRF
Field_Units: Seconds
Field_Resolution: 1 Second
Field_Range: not applicable
Field_Description: Time of record in Ephemeris Time (ET) seconds past the reference epoch
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: JULDAT
Field_Mnemonic: JULDAT
Field_Units: Days
Field_Resolution: 1 Day
Field_Range: not applicable
Field_Description: Julian date
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DOYDAT
Field_Mnemonic: DOYDAT
Field_Units: Days
Field_Resolution: 1 Day
Field_Range: 1 - 365 or 366 (leap year)
Field_Description: Days past the start of the year
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: TFLANC
Field_Mnemonic: TFLANC
Field_Units: Seconds
Field_Resolution: 1 Second
Field_Range: not applicable
Field_Description: Time from launch
Launch time was 01:49:03.6 UTC, 3 March 1972
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: TFINJE
Field_Mnemonic: TFINJE
Field_Units: Seconds
Field_Resolution: 1 Second
Field_Range: not applicable
Field_Description: Time from injection
Injection epoch is 02:03:18 UTC, 3 March 1972
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ETMUTC
Field_Mnemonic: ETMUTC
Field_Units: Seconds
Field_Resolution: 1 Second
Field_Range: not applicable
Field_Description: ET - Universal Time Coordinated (UTC)
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DEVENT
Field_Mnemonic: DEVENT
Field_Units: Integer
Field_Resolution: 1 Integer
Field_Range: not applicable
Field_Description: Flag which gives the type of event which caused the record to be written:
= 0.D0 for an absolute or TDT save tape event
= 1.D0 for some other type of TWIST geometric event
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: RANGRP
Field_Mnemonic: RANGRP
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Range rate of spacecraft (rate of change of REARPR below)
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: MAGVEL
Field_Mnemonic: MAGVEL
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Magnitude of spacecraft inertial velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: INPATH
Field_Mnemonic: INPATH
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Inertial path angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: INAZIM
Field_Mnemonic: INAZIM
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Inertial azimuth angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: REARPR
Field_Mnemonic: REARPR
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Earth-spacecraft range

Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DECPRO
Field_Mnemonic: DECPRO
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Declination of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: RTASCP
Field_Mnemonic: RTASCP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Right ascension of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: REARSU
Field_Mnemonic: REARSU
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Earth-Sun range
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DECSUN
Field_Mnemonic: DECSUN
Field_Units: Degress
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Declination of Sun
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: RTASCS
Field_Mnemonic: RTASCS
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Right ascension of Sun
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: REARMO
Field_Mnemonic: REARMO
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: Approximately 400,000 Km
Field_Description: Earth-Moon range
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DECMOO
Field_Mnemonic: DECMOO
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Declination of Moon
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: RTASCM
Field_Mnemonic: RTASCM

Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Right ascension of Moon
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: HRANGP
Field_Mnemonic: HRANGP
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Sun-spacecraft range
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: HMAGVP
Field_Mnemonic: HMAGVP
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Magnitude of spacecraft inertial velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: HINPTH
Field_Mnemonic: HINPTH
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Inertial path angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: CELLTP
Field_Mnemonic: CELLTP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Celestial latitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: CELLNP
Field_Mnemonic: CELLNP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Celestial longitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: CELLTE
Field_Mnemonic: CELLTE
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Celestial latitude of Earth
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: CELLNE
Field_Mnemonic: CELLNE
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Celestial longitude of Earth

Field_Representation: 24 ASCII characters (D24.17)

Field_Name: XSCSEL
Field_Mnemonic: XSCSEL
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of spacecraft in Sun-Earth-line coordinate system
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: YSCSEL
Field_Mnemonic: YSCSEL
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of spacecraft in Sun-Earth-line coordinate system
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ZSCSEL
Field_Mnemonic: ZSCSEL
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of spacecraft in Sun-Earth-line coordinate system
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: SPSEXY
Field_Mnemonic: SPSEXY
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Projection of Sun-spacecraft range vector into the XY-plane of the Sun-Earth-line coordinate system
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: LNPSEL
Field_Mnemonic: LNPSEL
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Longitude of spacecraft in Sun-Earth-line coordinate system
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ICBODY
Field_Mnemonic: ICBODY
Field_Units: Integer
Field_Resolution: 1 Integer
Field_Range: 1 - 5
Field_Description: Integration central body number
= 1 SUN
= 3 EARTH
= 5 JUPITER
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: FERPFL

Field_Mnemonic: FERPFL
Field_Units: Integer
Field_Resolution: 1 Integer
Field_Range: 11 - 32
Field_Description: FERP flag for equinox and reference plane for the nex
28 parameters:
= 12 means Earth mean equinox and orbit of B1950.0
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: XPGSFF
Field_Mnemonic: XPGSFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of geocentric spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: YPGSFF
Field_Mnemonic: YPGSFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of geocentric spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ZPGSFF
Field_Mnemonic: ZPGSFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of geocentric spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DXPGSF
Field_Mnemonic: DXPGSF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of geocentric spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DYPGSF
Field_Mnemonic: DYPGSF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of geocentric spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DZPGSF
Field_Mnemonic: DZPGSF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of geocentric spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: XPHSFF
Field_Mnemonic: XPHSFF
Field_Units: Km

Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of heliocentric spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: YPHSFF
Field_Mnemonic: YPHSFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of heliocentric spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ZPHSFF
Field_Mnemonic: ZPHSFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of heliocentric spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DXPHSF
Field_Mnemonic: DXPHSF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of heliocentric spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DYPHSF
Field_Mnemonic: DYPHSF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of heliocentric spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DZPHSF
Field_Mnemonic: DZPHSF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of heliocentric spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: XP1SFF
Field_Mnemonic: XP1SFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of Body-1 centered spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: YP1SFF
Field_Mnemonic: YP1SFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of Body-1 centered spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ZP1SFF
Field_Mnemonic: ZP1SFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of Body-1 centered spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DXP1SF
Field_Mnemonic: DXP1SF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of Body-1 centered spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DYP1SF
Field_Mnemonic: DYP1SF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of Body-1 centered spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DZP1SF
Field_Mnemonic: DZP1SF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of Body-1 centered spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: XP2SFF
Field_Mnemonic: XP2SFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of Body-2 centered spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: YP2SFF
Field_Mnemonic: YP2SFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of Body-2 centered spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ZP2SFF
Field_Mnemonic: ZP2SFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of Body-2 centered spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DXP2SF
Field_Mnemonic: DXP2SF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of Body-2 centered spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DYP2SF
Field_Mnemonic: DYP2SF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of Body-2 centered spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DZP2SF
Field_Mnemonic: DZP2SF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of Body-2 centered spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1MAGR
Field_Mnemonic: B1MAGR
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Body-1 centered spacecraft range.
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1MAGV
Field_Mnemonic: B1MAGV
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Body-1 centered magnitude of spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2MAGR
Field_Mnemonic: B2MAGR
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Body-2 centered spacecraft range
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2MAGV
Field_Mnemonic: B2MAGV
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Body-2 centered magnitude of spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: EALATP
Field_Mnemonic: EALATP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Earth centered latitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: EALONP
Field_Mnemonic: EALONP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Earth centered longitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: EAVELP
Field_Mnemonic: EAVELP
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Earth centered magnitude of spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: EAPTHP
Field_Mnemonic: EAPTHP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Earth centered path angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: EAAZIP
Field_Mnemonic: EAAZIP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Earth centered azimuth angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1LATP
Field_Mnemonic: B1LATP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Body-1 centered latitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1LONP
Field_Mnemonic: B1LONP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 -360
Field_Description: Body-1 centered longitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1VELP
Field_Mnemonic: B1VELP

Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Body-1 centered magnitude of spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1PTHP
Field_Mnemonic: B1PTHP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Body-1 centered path angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1AZIP
Field_Mnemonic: B1AZIP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Body-1 centered azimuth angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2LATP
Field_Mnemonic: B2LATP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Body-2 centered latitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2LONP
Field_Mnemonic: B2LONP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Body-2 centered longitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2VELP
Field_Mnemonic: B2VELP
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Body-2 centered magnitude of spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2PTHP
Field_Mnemonic: B2PTHP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Body-2 centered path angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2AZIP
Field_Mnemonic: B2AZIP
Field_Units: Degrees

```
Field_Resolution:        (D24.17)
Field_Range:             0 - 360
Field_Description:       Body-2 centered azimuth angle
Field_Representation:    24 ASCII characters (D24.17)

/* END OF FILE - FORMAT.SFD */
```

DUMP OF TAPE KM2001

Pioneer 10
D85883 / C29141
040673-010190
040673-

INPUT TAPE KM2001 ON FT0
DATA INPUT 15 NF 39 SR 2 1 2 SR 5 1 2 SR 35 1 2

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	4	4	80	0	0	0	0	0	0

FILE 2 RECORD 1 LENGTH 512BYTES

(0)	30303434	43435344	33544630	30303031	30303034	30303031	43435344	33565330	30303032	4D524B2A
(40)	2A303031	30303034	30303338	564F4C5F	49444454E	543A0955	53415F4E	4153415F	45535344	5F503130
(80)	5A5F3030	30313030	3333564F	4C5F4352	45415449	4F4E5F44	4154453A	09313939	312D3132	2D303630
(120)	3030354D	45444955	4D5F444E	53435249	5454494F	4E3A0931	2F322D69	6F63682C	20392D74	72616368
(160)	2C2030632	35302062	70692206D	61676E65	74696320	74617065	30303338	54454348	4E494341	4C5F434F
(200)	4E544143	543A0944	61766954	20572E2A	4C6F7A65	55723330	35310909	094E4153	4120416D	65732052
(240)	65736561	72636820	43656E74	65722028	4D61696C	2053746F	70203234	342D3134	29303033	3309J909
(280)	4D6F6666	6574742C	46696566C	642C2021	43412020	20393430	33353030	30370909	09303034	30090909
(320)	456C6563	74726F6E	69632204D	61696C3A	09537061	6E204F50	533A3A4C	4F5A4945	52303032	36090909
(360)	0909094E	4153414D	41494C2F	444C4F5A	49455234	30333169	09095465	6C657668	6F6E653A	09093431
(400)	352D3630	342D3331	34373130	32320909	09090909	46545320	3436342D	33313437	30303230	57524556
(440)	5F564F4C	533A0909	5E6F6E65	30303034	30303434	43435344	24244041	52454552	4D524B2A	2A303031
(480)	43435344	33535330	30303032	4D52432A	2A303032	30303034	5E5E5E5E	5E5E5E5E		

FILE 2 RECORD 2 LENGTH 512BYTES

(0)	30303539	44415441	5F534554	5F4E414D	453A0909	5349F4E	45455220	31302054	52414A45	43544F52
(40)	59204550	48454D45	52495320	41524348	49564530	30373044	4154415F	534F5552	43453A09	0950695F
(80)	6E656572	20313J24	7472616A	6563746F	72792064	61746120	77657265	20675556E	65726174	65642075
(120)	73696E67	20746865	20333037	39202020	20202020	20202020	20202020	20202020	20202020	204A6574
(160)	2050726F	70756C73	696F6E23	4C61626F	7261746F	72792773	20284A50	4C292022	446F7362	6C652050
(200)	72656369	73696F6E	30303738	20202020	20202020	20202020	20202020	20202020	20202020	5472616A
(240)	6563746F	7275222	28445954	52414A29	20636F6D	72757465	72207072	6F677261	6D2C2061	6E276560
(280)	656D656E	74203030	36300909	096F6620	74686520	4A504C20	4E617669	6F617469	6F6E2053	6F667477
(320)	61726520	53797374	656520203	72656665	72656E63	652J2841	292E3530	30343030	33390909	69445054
(360)	52414A20	63726561	74657320	61207370	61636563	72616674	20657068	656D6572	69732062	7920696E
(400)	7465C772	6174696E	673430J6	31050909	74686521	65717561	74696F6E	73206F66	206C6F74	696F6E20
(440)	666F7220	61206675	6C6C2073	6574206F	66206163	63656C65	72617469	6F6E5E5E	5E5E5E5E	5E5E5E5E
(480)	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E		

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
2	27	27	512	0	0	0	0	0	0

FILE 5 RECORD 1 LENGTH 512BYTES

(0)	30303434	43435344	33464630	30303035	30303030	30303031	43435344	33435330	30303034	4D524B2A
(40)	2A303431	31363232	41444944	4E414D45	3D4E5353	44333536	363F3030	34244343	53442424	4D415248
(80)	45524D52	4B2A2A30	32314343	53443343	53303030	30324D52	4B2A2A30	30323030	30343030	33305355
(120)	4248 5F4E	414D453A	09446176	69642057	2E204C6F	7A696572	30303539	53554240	5F414444	523A094E
(160)	41534120	416D6573	20526573	65617263	68204365	6E746572	20284D61	696C2053	746F7020	32343420
(200)	31342930	30333209	094D6F66	66657474	20466965	6C642C2A	20434120	20203934	30333530	30303609
(240)	09303033	39090945	6C656374	726F6E69	63206D61	696C3A09	5370616E	204F5053	3A3A4C4F	5A494552
(280)	30303235	39090909	494E4153	414D4149	4C2F444C	4F5A4945	52303033	30190954	656C6574	686F6E65
(320)	34090934	31352D36	30342D33	31343730	30323109	09090909	46545320	3436342D	33313437	30303235
(360)	53554240	5F444154	453A0931	39393123	30332D34	31303036	32544954	4C453A09	09454F52	4D415420
(400)	464F5220	50494F4E	45455220	31302054	52414A45	43544F52	59204550	48454D45	52495320	41524348
(440)	49564530	30353244	45534352	3A090946	6F726D61	74206F66	21746865	2150696F	6E656572	20313120
(480)	7472616A	6563746F	72792064	6174615E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E		

FILE 5 RECORD 2 LENGTH 512BYTES

(0)	30303234	52454C5F	44415445	3A093139	39312D31	322D3036	30303038	09090909	30303434	43435344
(40)	24244D41	524B4552	4D524B2A	2A303032	43435344	33444630	30303032	30303031	30303031	30303034
(80)	3030 3631	46494C45	5F434C41	53535F4E	414D453A	2020 5349	4F4E4545	52203130	20545241	4A454334
(120)	4F525920	45504845	4D455249	53204152	43484956	45303035	33524543	4F52445F	54595045	5F4E414D
(160)	453A2150	696F6E65	65722031	30207472	616A6563	746F7279	207J6172	616D6574	65723030	38335245

```
(   200)   434F5244  5F414C47  4F524954  484D533A  52656665  7220746F  20726566  6572656E  63657320  28412920
(   240)   616E6420  28422920  696E2053  75747060  6560656E  74617279  20496E66  6F726D61  74696F6E  2E303035
(   280)   33524543  4F52445F  53545255  43545552  453A2046  69786564  204C656E  6774682C  206E6F20  636F6E74
(   320)   726F6C2   6669656C  64733 30  37385245  434F5244  5F4C454E  4754483A  09202031  206C6F67  6963616C
(   360)   20726563  6F726420  3D2 3230  34382041  53434949  2 627974  6573203D  20342070  68797369  63616C20
(   400)   7265636F  7264732E  30303434  09092020  31207060  79736963  616C2072  65636F72  64203D20  35313220
(   440)   626C6F63  6B206279  7465732E  5E5E5E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E
(   480)   5E5E5E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E  5E5E5E5E

        FILE   INPUT    DATA RECORDS    MAX.          READ ERROR SUMMARY          INPUT RETRIES
               RECS.       INPUT        SIZE       PERM  ZERO B   SHORT  UNDEF.  #RECS.  TOTAL#
          5      47        47            512         0      0      0      0       0      0

FILE     39  RECORD      1  LENGTH      80BYTES
(     0)   454F4631  54524A50  31303737  412E4441  54202020  2054524A  50313030  30303130  30313330  30303130
(    40)   30203932  30353620  39323035  36203030  38373335  44454346  494C4531  31412020  20202020  20202020

FILE     39  RECORD      2  LENGTH      80BYTES
(     0)   454F4632  46303035  31323030  35313220  20202020  20202020  20202020  20202020  20202020  4D202020
(    40)   20202020  20202020  20203030  20202020  20202020  20202020  20202020  20202020  20202020  20202020

        FILE   INPUT    DATA RECORDS    MAX.          READ ERROR SUMMARY          INPUT RETRIES
               RECS.       INPUT        SIZE       PERM  ZERO B   SHORT  UNDEF.  #RECS.  TOTAL#
         39       3         3             80         0      0      0      0       0      0

EOJ        DUMP STOPPED AFTER FILE   39        # OF PERMANENT READ ERRORS  0

START TIME 05/01/92  00:03:36        STOP TIME 05/01/92  00:05:58
```

$$
$ASS IN HT1
$NOP

D85883-Vol label

```
$JOB     0:03:06
$ASS IN HT4
$NOP
$NOP
$NOP
$NOP
$NOP ========================================== LIST OF KM2J01
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=1 1 1 1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   8
VOL1TRJP10                          D%P44440010011                    3

***** JOB DONE.
$EXE TPDUMP BS
```

72-012A-00H - XXNO-00112
72-012A-00F - XXNO-00039
72-012A-00G - XXNO-00036
72-012A-13C - SPHE-00368
72-012A-13D - SPHE-00228
72-012A-13E - SPHE-00518
72-012A-13 I - SPHE-00450

73-019A-00G - XXNO-00330
73-019A-00E - XXNO-00041
73-019A-00F - XXNO-00557
73-019A-13B - SPHE-00095
73-019A-13C - SPHE-00007
73-019A-13D - SPHE-00595
73-019A-13H - SPHE-00443

PIONEER 10 & 11

PLASMA ANALYZER DATA

72-012A-00F, 00G, 13C, 13D, 13E, 13I, 13J, 13K

73-019A-00E, 00F, 13B, 13C, 13D, 13H , 13I, 13J

72-012A-13J - SPHE-00449
72-012A-13K - SPHE-00448

73-019A-13 I - SPHE-00094
73-019A-13J - SPHE-00006

THESE DATA SETS HAVE BEEN RESTORED. THERE WERE ORIGINALLY FOUR 9-TRACK, 1600 BPI TAPES, WRITTEN IN BINARY. THERE ARE FOUR RESTORED TAPES. DR005962 AND DR005964 CONTAIN FIVE FILES OF DATA AND WERE CREATED ON AN IBM 360 COMPUTER. THE FIRST FILE IS THE FULL SUMMARY DATA RECORD, THE SECOND AND THE THIRD FILES ARE THE HOURLY AND DAILY AVERAGES RECORDS, THE FOURTH FILE IS THE TRAJECTORY RECORD, AND THE FIFTH FILE IS THE ATTITUDE RECORD. THE FOLLOWING TWO TAPES CONTAIN STANDARD LABELS, DR005963 AND DR005965. THE DATA ON THE ORIGINAL TAPES WERE IN VAX BACKUP FORMAT. THE DR TAPES ARE 3480 CARTRIDGES AND THE DS TAPES ARE 9-TRACK, 6250 BPI. THE ORIGINAL TAPES WERE RESTORED ON AN IBM 9021 COMPUTER. THE DR AND DS NUMBERS ALONG WITH THE CORRESPONDING D NUMBERS AND TIME SPANS ARE AS FOLLOWS:

PIONEER 10

72-012A-00F, 00G, 13C, 13D, 13E, 13I, 13J, 13K

DR#	DS#	DD#	FILES	TIME SPAN
DR005962	DS005962	D063220	1	04/18/72 - 12/15/86 (13C)
			2	04/18/72 - 12/13/86 (13D)
			3	04/18/72 - 11/04/86 (13E)
			4	03/24/72 - 08/28/87 (00F)
			5	04/15/72 - 01/25/85 (00F)
DR005963	DS005963	D077876	1	04/15/72 - 09/07/88 (13I)
			2	04/18/72 - 07/26/88 (13J)
			3	04/18/72 - 08/05/88 (13K)
			4	03/24/72 - 01/13/89 (00G)
			5	04/18/72 - 08/08/88 (OOG)

PIONEER 11

73-019A-00E, 00F, 13B, 13C, 13D, 13H , 13I, 13J

DR#	DS#	DD#	FILES	TIME SPAN	
DR005964	DS005964	D063221	1	04/21/73 - 05/08/86	(13B)
			2	04/21/73 - 05/04/86	(13C)
			3	04/21/73 - 04/17/86	(13D)
			4	04/11/73 - 10/22/87	(00E)
			5	04/14/73 - 09/20/81	(00E)
DR005965	DS005965	D077877	1	04/14/73 - 09/28/87	(13H)
			2	04/21/73 - 08/08/88	(13I)
			3	04/21/73 - 08/08/88	(13J)
			4	04/11/73 - 01/20/89	(00F)
			5	04/21/73 - 08/08/88	(00F)

REQ. AGENT	RAND NO.	ACQ. AGENT
GLS	V0255	HKH
SAR	V0380	HKH
SAR		SEK

PIONEER 10 & 11

PLASMA ANALYZER DATA

72-012A-00F,00G,13C,13D,13E,13I,13J,13K

73-019A-00E,00F,13B,13C,13D,13H,13I,13J

THIS DATA SET CATALOG CONSISTS OF 4 MAGNETIC TAPES. THE TAPES ARE 9-TRACK, 1600 BPI, AND BINARY. D-63220 AND D-63221 CONTAIN FIVE FILES OF DATA AND WERE CREATED ON AN IBM 360 COMPUTER. THE FIRST FILE IS THE FULL SUMMARY DATA RECORD, THE SECOND AND THE THIRD FILES ARE THE HOURLY AND DAILY AVERAGES RECORDS, THE FOURTH FILE IS THE TRAJECTORY RECORD, AND THE FIFTH FILE IS THE ATTITUDE RECORD. D-77876 AND D-77877 HAVE THREE FILES OF DATA IN VAX BACKUP FORMAT, WHICH WHEN TAKEN OUT OF THAT FORMAT HAVE FIVE FILES OF DATA. THESE TAPES WERE CREATED ON A IBM [redacted]0 COMPUTER. THE FOLLOWING LISTS THE D AND C NUMBERS ALONG WITH THE TIME COVERAGE OF EACH DATA SET.

PIONEER 10

D#	C#	TIME COVERAGE OF EACH DATA SET
D-63220	C-24062	FILE 1: 04/18/72 - 12/15/86 (13C)
		FILE 2: 04/18/72 - 12/13/86 (13D)
		FILE 3: 04/18/72 - 11/04/86 (13E)
		FILE 4: 03/24/72 - 08/28/87 (00F)
		FILE 5: 04/15/72 - 01/25/85 (00F)
D-77876		FILE 1: 04/18/72 - 12/15/86 (13I)
		FILE 2: 04/18/72 - 12/13/86 (13J)
		FILE 3: 04/18/72 - 11/04/86 (13K)
		FILE 4: 03/24/72 - 08/28/87 (00G)
		FILE 5: 04/15/72 - 01/25/85 (00G)

PIONEER 11

D#	C#	TIME COVERAGE OF EACH DATA SET
D-63221	C-24063	FILE 1: 04/21/73 - 05/08/86 (13B)
		FILE 2: 04/21/73 - 05/04/86 (13C)
		FILE 3: 04/21/73 - 04/17/86 (13D)
		FILE 4: 04/11/73 - 10/22/87 (00E)
		FILE 5: 04/14/73 - 09/21/81 (00E)
D-77877		FILE 1: 04/21/73 - 05/08/86 (13H)
		FILE 2: 04/21/73 - 05/04/86 (13I)
		FILE 3: 04/21/73 - 04/17/86 (13J)
		FILE 4: 04/11/73 - 10/22/87 (00F)
		FILE 5: 04/14/73 - 09/21/81 (00F)

Temporary Update to the Pioneer-10 and -11 Plasma Data Documentation

Susan Kayser

November 11, 1987

1 Introduction

The Pioneer-10 and -11 Plasma Analyzer Experiment data sets have been expanded by the inclusion of more recent data—all the data available as of 30 June, 1987. This note updates the previous document, *The Plasma Data from the Pioneer-10 and -11 Plasma Analyzer Experiment*, Document ID number SAR 20/84-058-0096. In case of any questions, contact:

Dr. Susan Kayser
NASA/Ames Research Center
Mail Stop 245-3
Moffett Field, CA 94035
(415) 694-6001

SPAN Address: NSSDCA::KAYSER or HAL::KAYSER

2 The Data

The Pioneer-10 data sets now cover the interval from spacecraft launch on 24 April, 1972 through 1986, or 72109–86265. The Pioneer-11 data are from launch on 6 April, 1973 until 28 August, 1982 (the instrument was non-operational between 13 April, 1975 and 30 November, 1977), and from 1 January, 1984 until 9 May, 1986, or 73111–75012, 77335–82240, and 84001–86129. The rest of the 1982, 1983, and 1986 data for Pioneer-11 will be available soon.

At the large heliocentric distances to which the spacecraft have attained, the solar wind densities are very low, and the least-squares fits for the parameters have a higher percentage of bad fits in the recent data. The most frequent problem due to the scarcity of particles is that the instrumental noise overwhelms the signal, leading to spurious velocities over 800 km/s, or flow angles of more than 45° from the radial direction. Usually, more than one parameter is bad when such a spurious fit occurs. As with the earlier data sets, bad fits are retained but flagged with a value of 100.

The accuracy of the velocities is still about ±20 km/s. For Pioneer-10, the Sun has appeared too faint to trigger the Sun Sensors since 15 November, 1983, and the spacecraft attitude is now determined by alternative methods, leading to uncertainties of perhaps ±2°. Temperatures are good to about 15%, but have uncertainties of ±4000 K below 15,000 K. Densities are reliable to about 12%, with the uncertainty increasing to a factor of 2 below .005/cc (at which level, fits are often not possible).

corrected 11/14/94

Temporary Update to the Pioneer-10 and -11 Plasma Data Documentation

Susan Kayser

November 11, 1987

1 Introduction

The Pioneer-10 and -11 Plasma Analyzer Experiment data sets have been expanded by the inclusion of more recent data—all the data available as of 30 June, 1987. This note updates the previous document, *The Plasma Data from the Pioneer-10 and -11 Plasma Analyzer Experiment*, Document ID number SAR 20/84-058-0096. In case of any questions, contact:

~~Dr. Susan Kayser~~
~~NASA/Ames Research Center~~
~~Mail Stop 245-3~~
~~Moffett Field, CA 94035~~
~~(415) 694-6001~~

~~SPAN Address: NSSDCA::KAYSER or HAL::KAYSER~~

Dr. John F. Cooper
Hughes STX Corporation
Code 633.9
NASA/Goddard Space Flight Center
Greenbelt, MD 20771
(301)441-4188

internet: jcooper@nssdca.gsfc.nasa.gov

2 The Data

The Pioneer-10 data sets now cover the interval from spacecraft launch on 24 April, 1972 through 1986, or 72109–86265. The Pioneer-11 data are from launch on 6 April, 1973 until 28 August, 1982 (the instrument was non-operational between 13 April, 1975 and 30 November, 1977), and from 1 January, 1984 until 9 May, 1986, or 73111–75012, 77335–82240, and 84001–86129. The rest of the 1982, 1983, and 1986 data for Pioneer-11 will be available soon.

At the large heliocentric distances to which the spacecraft have attained, the solar wind densities are very low, and the least-squares fits for the parameters have a higher percentage of bad fits in the recent data. The most frequent problem due to the scarcity of particles is that the instrumental noise overwhelms the signal, leading to spurious velocities over 800 km/s, or flow angles of more than 45° from the radial direction. Usually, more than one parameter is bad when such a spurious fit occurs. As with the earlier data sets, bad fits are retained but flagged with a value of 100.

The accuracy of the velocities is still about ±20 km/s. For Pioneer-10, the Sun has appeared too faint to trigger the Sun Sensors since 15 November, 1983, and the spacecraft attitude is now determined by alternative methods, leading to uncertainties of perhaps ±2°. Temperatures are good to about 15%, but have uncertainties of ±4000 K below 15,000 K. Densities are reliable to about 12%, with the uncertainty increasing to a factor of 2 below .005/cc (at which level, fits are often not possible).

corrected 11/14/94

Temporary Update to the Pioneer-10 and -11 Plasma Data Documentation

Susan Kayser

November 11, 1987

1 Introduction

The Pioneer-10 and -11 Plasma Analyzer Experiment data sets have been expanded by the inclusion of more recent data—all the data available as of 30 June, 1987. This note updates the previous document, *The Plasma Data from the Pioneer-10 and -11 Plasma Analyzer Experiment*, Document ID number SAR 20/84-058-0096. In case of any questions, contact:

~~Dr. Susan Kayser~~
~~NASA/Ames Research Center~~
~~MailStop 245-3~~
~~Moffett Field, CA 94035~~
~~(415) 694-6001~~

~~SPAN Address: NSSDCA::KAYSER or HAL::KAYSER~~

Dr. John F. Cooper
Hughes STX Corporation
Code 633.9
NASA/Goddard Space Flight Center
Greenbelt, MD 20771
(301)441-4188

internet: jcooper@nssdca.gsfc.nasa.gov

2 The Data

The Pioneer-10 data sets now cover the interval from spacecraft launch on 24 April, 1972 through 1986, or 72109–86265. The Pioneer-11 data are from launch on 6 April, 1973 until 28 August, 1982 (the instrument was non-operational between 13 April, 1975 and 30 November, 1977), and from 1 January, 1984 until 9 May, 1986, or 73111–75012, 77335–82240, and 84001–86129. The rest of the 1982, 1983, and 1986 data for Pioneer-11 will be available soon.

At the large heliocentric distances to which the spacecraft have attained, the solar wind densities are very low, and the least-squares fits for the parameters have a higher percentage of bad fits in the recent data. The most frequent problem due to the scarcity of particles is that the instrumental noise overwhelms the signal, leading to spurious velocities over 800 km/s, or flow angles of more than 45° from the radial direction. Usually, more than one parameter is bad when such a spurious fit occurs. As with the earlier data sets, bad fits are retained but flagged with a value of 100.

The accuracy of the velocities is still about ±20 km/s. For Pioneer-10, the Sun has appeared too faint to trigger the Sun Sensors since 15 November, 1983, and the spacecraft attitude is now determined by alternative methods, leading to uncertainties of perhaps ±2°. Temperatures are good to about 15%, but have uncertainties of ±4000 K below 15,000 K. Densities are reliable to about 12%, with the uncertainty increasing to a factor of 2 below .005/cc (at which level, fits are often not possible).

3 The Tapes

The data tapes have the same format as described previously, except that they are now at a density of ~~6250~~ 1600 bpi.

Copies of the tapes suitable for use on a VAX have been created with the VAX BACKUP command on 6250 bpi tapes named PION10 and PION11. To unload the files, use the command:

```
$ BACKUP   MFA0:PION10   *
```

The five files are named P10DATA, P10HOUR, P10DAY, P10ORB, and P10CONE, all .DAT (and similarly for P-11), and occupy 33086 blocks for P-10 and 41188 blocks for P-11. To read the files, include in your program the following:

```
      OPEN(UNIT=20,FILE='P10DATA.DAT',STATUS='OLD',READONLY,
     . FORM='UNFORMATTED',RECORDTYPE='FIXED',RECL=35,END=300)
```

P10ORB has RECL=16 and P10CONE has RECL=5.

D 35697-0004

Document ID Number: SAR 20/84-058-0096

THE PLASMA DATA FROM THE PIONEER-10 AND -11 PLASMA ANALYZER EXPERIMENT

Prepared By:

Dr. Susan Kayser
Science Applications Research

Date:

April 25, 1984

TABLE OF CONTENTS

SECTION 1 INTRODUCTION 1

SECTION 2 THE DATA 2
- 2.1 The Time Intervals Covered by the Data 2
  - 2.1.1 Different Formats for the Date 2
  - 2.1.2 Pioneer-10 2
  - 2.1.3 Pioneer-11 2
- 2.2 The Least-Square Processing 4
- 2.3 Additional Processing 4
  - 2.3.1 Coordinate Systems 4
  - 2.3.2 Trajectory Data 5
  - 2.3.3 Attitude Data 5
- 2.4 Uncertainty of the Measurements 5
  - 2.4.1 Bulk Speed 7
  - 2.4.2 Density 7
  - 2.4.3 Temperature 7
  - 2.4.4 Angle of Flow 7
  - 2.4.5 Formal Uncertainties 8
  - 2.4.6 Quality Flags 8
- 2.5 Averaged Data Sets 9

SECTION 3 THE TAPES 10
- 3.1 The Contents of Each Tape 10
- 3.2 Job Control Language (JCL) 10
- 3.3 Sample Program 11

SECTION 4 RECORD CONTENTS 12
- 4.1 The Full Summary Data Record (File 1) 12
- 4.2 The Hourly and Daily Averages Records (Files 2, 3) 13
- 4.3 The Trajectory Record (File 4) 14
- 4.4 The Attitude Record (File 5) 14

APPENDIX 15

LIST OF FIGURES

FIGURE 2-1 Trajectories of Pioneer-10 and -11 3

FIGURE 2-2 The SES System 6

SECTION 1. INTRODUCTION

All the Pioneer-10 and -11 Plasma Analyzer Experiment data that were processed as of 10 September, 1983, have been collected onto two tapes, one for each spacecraft. This document provides the information necessary to use these tapes.

Section 2 describes the data, the processing they have undergone, and the resulting expected accuracy. The coordinate systems used in these tapes are explained in Section 2.3.1.

Section 3 gives information about the tapes, such as record size or tape density. A sample program to list items from the data records is included.

These tapes are available from the NSSDC. Microfiche plots of all parameters versus time have also been deposited with the NSSDC.

In case of questions about the tapes or the data records, contact:

Dr. Susan Kayser
NASA/Goddard Space Flight Center
Code 690/SAR
Greenbelt, Maryland 20771
(301) 344-8385

or at

SAR
6811 Kenilworth Avenue
Riverdale, Maryland 20840

SECTION 2. THE DATA

The NASA/Ames plasma analyzers on Pioneer-10 and -11 have been described by Wolfe, et al., J. G. R. 79, 3489, 1974 and McKibben et al., Space Sci. Inst, 3, 219, 1977. Only the proton component of the solar wind has been successfully measured beyond about 1.5 AU, so the electron or helium components will not be discussed further.

2.1 The Time Intervals Covered by the Data

Because of the very large computer time devoured by the least-squares processing program, for many years after launch, only one sample per hour was processed. Collection time of a sample in the most common data mode is about 5 minutes. After 1978, the data tracking rate for the spacecraft was fairly low, so all samples obtained from 1978 on have been processed. Some intervals of particular interest before 1978 have also been fully processed. All data processed by the least-squares program as of 10 September, 1983, are included in these data sets.

2.1.1 Different Formats for the Date

For convenience all dates will be represented in one of two forms. The first is denoted by YYMMDD, a 6 digit integer of which the first two are the year - 1900, the next two are the month number, 1-12, and the last two are the day-of-month, 1-31. For example, 14 February, 1976 is 760214.

The second form is denoted by YYDDD and is somteimes called the "Julian Day." The first two digits are the year - 1900; the last three are the day-of-year, 1-365. Thus 14 February, 1976 is 76045.

2.1.2 Pioneer-10

Pioneer-10 was launched on ~~24 April~~ 3 MARCH, 1972, and encountered Jupiter in December, 1973. The trajectory is shown in Figure 2-1. The plasma data cover the interval from launch until 25 June, 1983 or 72109-83176. There are occasional data gaps of a month or less.

2.1.3 Pioneer-11

Pioneer-11 was launched on 6 April, 1973, encountering Jupiter in December, 1974 and Saturn in September, 1979. The trajectory is shown in Figure 2-1. The instrument was non-operational between April 1975 and December, 1977. A change in the bit rate in December, 1981 has caused processing problems which were not resolved as of September, 1983. The plasma data are for 21 April, 1973 - 12 April, 1975 and for 1 December 1977 - 6 December 1981, or 73111-75012 and 77335-81340. There are occasional data gaps of a month or less.

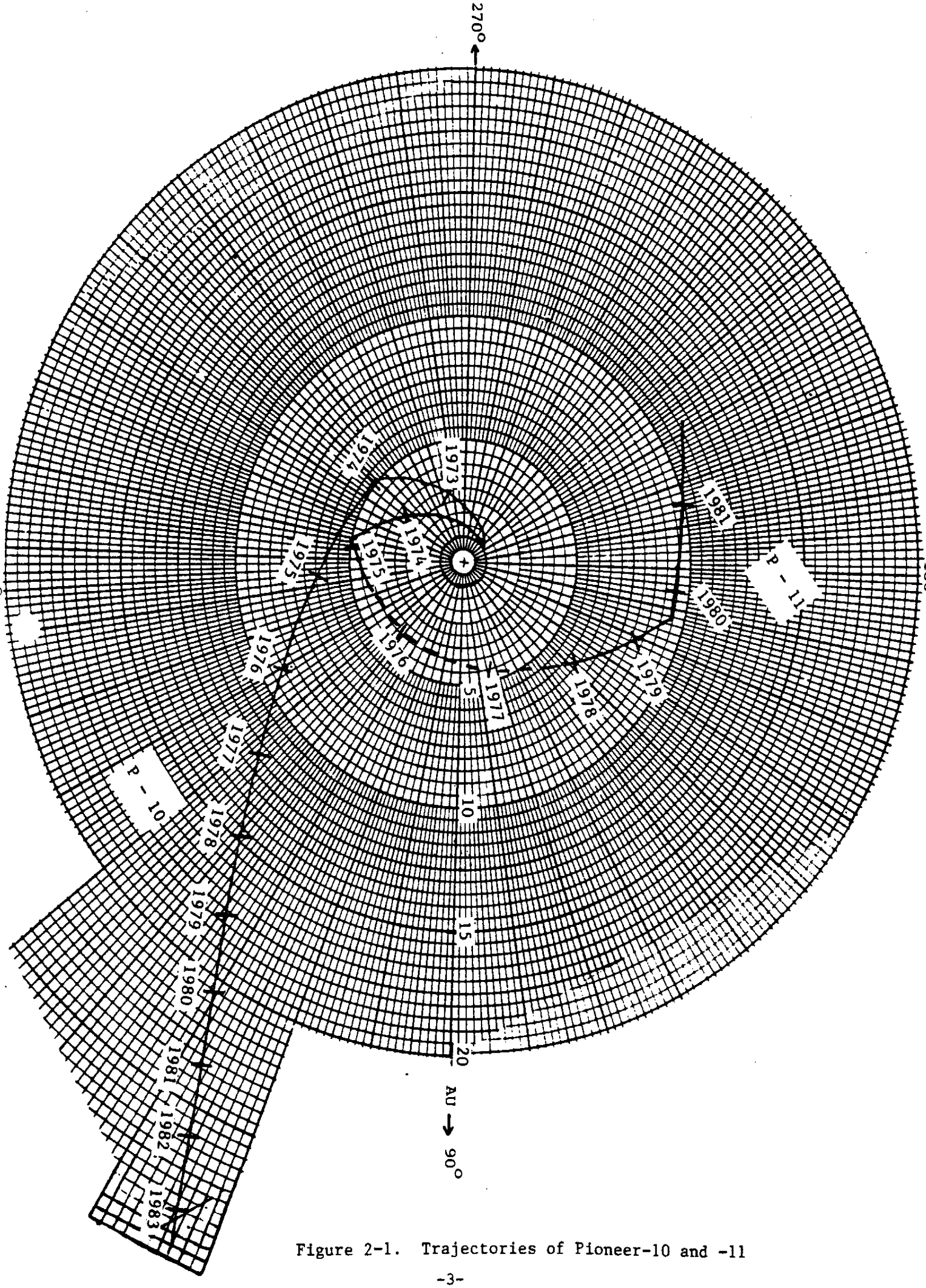

Figure 2-1. Trajectories of Pioneer-10 and -11

2.2 The Least-Square Processing

The raw data are fed into a computer program which fits them to a convecting isotropic Maxwellian distribution for protons. The output from this program are five parameters, the uncertainties associated with each parameter, and the "chi-square" of the fit. The five parameters are the proton bulk speed with respect to the spacecraft, temperature, density, and two angles oriented with respect to the spacecraft which give the direction of the bulk flow. The significance of the uncertainties is not entirely clear, since they are often negative. The "chi-square" ranges from 0. to over 1000., and very small values as well as very large values are obviously bad fits.

The algorithms in this program have been modified several times since inception of the program, especially to improve the ability to fit at low temperatures. No significant systematic differences were found in comparing parameters resulting from running identical input data with different versions of the program.

2.3 Additional Processing

The least-square parameters were collected into a single data set, sorted into chronological order, with duplicates removed. The bulk speed and instrument angles were corrected for the spacecraft velocity, and converted to the "inertial" coordinate system (SES) defined in Section 2.3.1.2, using the spacecraft attitude angles described in Section 2.3.3. Trajectory data were added from the trajectory tapes described in Section 2.3.2, linearly interpolated to the sample time. Solar equatorial coordinates were also computed, as defined in Section 2.3.1.3.

The resulting parameters were plotted against time, and obvious bad fits were flagged as described in Section 2.4. The final data set comprises File 1 of each data tape.

Two additional data sets for each spacecraft were generated from the full "summary" data set, one containing hourly averages and one containing daily averages. They are described in Section 2.5. These data sets are contained in Files 2 and 3 of each tape.

2.3.1 Coordinate Systems

Three coordinate systems are used on the data tape. They are defined below.

2.3.1.1 The Heliocentric Ecliptic Coordinates (HEC)

The HEC have their origin at the Sun. The X-axis points to the Vernal Equinox, the Z-axis to the North Ecliptic Pole, and the Y-axis forms a right-handed system. The X-Y plane is the ecliptic. All of the trajectory parameters are in this system.

2.3.1.2 The Pioneer Ecliptic System (PES)

The PES is centered at the spacecraft with the Z-axis pointing to the North Ecliptic Pole, the X-axis away from the Sun, and the Y-axis completes a right-handed system. The X-Y plane is parallel to the ecliptic. The bulk velocity is given in this system, as shown in Figure 2-2. The PES involves both a translation from the HEC and a rotation about the Z-axis.

2.3.1.3 The Solar Equatorial System (SES)

The SES system is centered on the Sun and is based on a tilt of the solar equator from the ecliptic of $7^{o}15'$. The Z-axis is the solar rotation axis. The X-axis, from which longitude is measured, is the ascending node of the solar equator on the ecliptic, which is taken to be $74^{o}22' + 84'T$ from the Vernal Equinox, where T is the epoch in centuries from 1900.

2.3.2 Trajectory Data

The trajectory data on these tapes were obtained from Trajectory Tapes containing smoothed, predicted orbit data. These data are therefore not identical to those obtained every 10 days or so in the process of determining spacecraft attitude, and a systematic variation in the bulk flow azimuth, described below, is probably due to this discrepancy. The Trajectory Tapes usually contain one record per day, with more frequent records during encounters. 16 items were selected from each record to create a trajectory data file for each spacecraft. Interpolation in this file provided the trajectory elements in each plasma data record. The trajectory file is supplied on each tape as File 4.

2.3.3 Attitude Data

The spacecraft attitude, necessary to correct the instrumental bulk velocity to an inertial system, was obtained from printouts of cone and clock angles supplied every 10 days or so, whenever commands to the spacecraft resulted in a determination of position and attitude. The cone and clock angles and the clock angle correction term relate the spacecraft-fixed rotating coordinate system to the PES system, and are described briefly in Section 4.4.

The table of cone and clock angles is supplied in File 5 on each tape. Linear interpolation in this table to the sample times provided the attitudes for correcting the instrumental velocities.

2.4 Uncertainty of the Measurements

The expected accuracy of the measurements is derived mostly from the internal consistency of the measurements, and partly from the formal uncertainties produced by the least-squares program. Comparison of

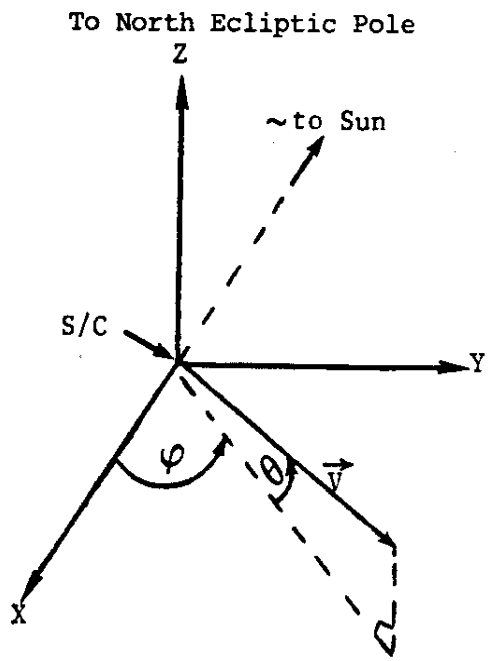

Figure 2-2. The SES System

parameters derived from different versions of the least-squares program operating on the same input data shows agreement to better than 0.5% in the speed, 12% in density, and 20% in temperature. Comparison of the flight data to the fitted Maxwellian distribution shows that about 10% of the data base contains forced fits for distributions that are substantially non-Maxwellian, anisotropic, or contain a strong He^{++} component. Extremely large formal errors usually correspond to questionable fits.

The absolute accuracy of the fitted parameters is difficult to obtain, but comparisons of Pioneer plasma data with data from IMP 6, 7, and 8 have not found significant systematic differences.

2.4.1 Bulk Speed

The bulk flow speed is the most accurately determined of the parameters, with respect to the spacecraft. Uncertainty in the attitude, however, leads to additional uncertainty in the bulk speed after subtraction of the spacecraft velocity. The final uncertainty is about $\pm$ 20 km/sec.

For some samples of low density, the least-squares program gets trapped in a set of parameters with velocities above 930 km/s. These are very easy to recognize in the plots, and are flagged with a value of 100 (see Section 2.4.6).

2.4.2 Density

The density is estimated to be relatively accurate to 12%, from internal consistency. For extremely low densities, such as have been encountered since 1982, the number of particles collected in a sample may be so low that no fit is possible. This lower cutoff is about 0.005/cc.

2.4.3 Temperature

This parameter is the one most sensitive to the fitting algorithms. The internal consistency is about $\pm$ 4000°K for temperatures below 15,000 K, about 15% for temperatures between 25,000 K and 100,000 K, and increases to an uncertainty of 50% or more for values over 10^6 K.

2.4.4 Angle of Flow

The angles of flow depend critically on the spacecraft attitude. Most of the time, this is quite well determined, to 0.3° or so. About 10% of the time, however, especially when the spacecraft is being precessed, the attitude may be uncertain by 30° or more. On the average, angles should be good to $\pm$ 0.7°, after the correction noted below.

A systematic error in the aximuthal angle has been found, with a period of one year and an amplitude very approximately equal to 1 AU subtended at the spacecraft. This may be due to inconsistencies between the actual spacecraft positions used in attitude determination, and the smoothed trajectories used to subtract the spacecraft velocity. A rough correction is to subtract

$$0^{o}.3 + [2^{o}.537 - 0^{o}.129\ (y - 1972.0)] * \cos\ (2\pi * \frac{d}{365}) \qquad \text{(Pioneer-10)}$$

from the azimuthal angle in the data record. Here y is the date, as year plus decimal fraction of a year, and d is the day of year.

2.4.5 Formal Uncertainties

The formal uncertainties of the least-squares program do not correspond very well to the true goodness of fit, as judged by a visual comparison of the flight data with the derived Maxwellian. Occasionally, the uncertainties are even negative. Consequently, only fits with extremely large (or negative) uncertainties are flagged as questionable.

The same is true of the "chi-square" of the fit. Fits with values over 1000 are flagged as bad, and flagged as questionable for chi-square between 200-1000.

2.4.6 Quality Flags

Each fit has been assigned a quality. A quality of 0 is a good fit, a quality of 10 or 20 is a questionable fit, and a quality of 100 is a bad fit.

A value of 100 is assigned if the velocity is greater than 1000 km/s, if the temperature is greater than 2 x 10^6 K, or if the density is greater than 100/cc at 1 AU (decreasing to 5/cc at 10 AU, etc.). A chi-square value over 1000. is considered a bad fit. Finally, on visually scanning the data plotted against time, individual fits may be considered spurious and assigned a quality of 100 by hand-editing.

From the visual scans, individual fits are also marked as of questionable quality and assigned a value of 10 or 20 (worse) by hand editing.

This quality value is stored in the data record and can be used as a flag to omit records when using the data set.

2.5 Averaged Data Sets

Two data sets have been generated from the full "summary" data set for each spacecraft, with bad records omitted, and questionable records given half weight. The first of these contains hourly averages, and the second contains daily averages. These averaged data sets have a format similar to that of the full set. The differences are described below.

- The time of each record in seconds-of-day is replaced by hour (0 to 23) for the hourly averages, and by 0 for the daily averages.

- The five formal parameter uncertainties are replaced by the root-mean-square dispersion of the parameter values. Chi-square is replaced by the number of records in the average.

- Four quantities are calculated and averaged: the proton flux NV, thermal pressure NkT, convective pressure Nm_pV^2 and kinetic energy flux, 1/2 Nm_pV^3. They fill the three blank items and the quality value in the full set.

- The processing date in the averages is that when the average was generated, compared to the least-squares processing date in the full set.

SECTION 3. THE TAPES

The following section describes the tapes and the Job Control Language necessary to read them.

3.1 The Contents of Each Tape

There is one tape for Pioneer-10 and one for Pioneer-11 . Each tape contains 5 files and was written in binary on an IBM 360 in 32-bit words. The files contain

1) the full summary "data set",
2) the hourly averages,
3) the daily averages,
4) the trajectory data, and
5) the attitude data.

3.2 Job Control Language (JCL)

The actual JCL used will depend on the particular installation conventions, but the following parameters will probably appear.

- The tapes are no-label: LABEL=(,NL)
- The tape density is 1600 bpi: DEN=3
- The record format is variable block, spanned; this is the preferred format for a unformatted FORTRAN READ: RECFM=VBS
- The logical record size and block size depend on the type of data, and are given below as LRECL and BLKSIZE:

  For files 1-3, LRECL=144,BLKSIZE=14404
  For file 4, LRECL=68,BLKSIZE=13604
  For file 5, LRECL=24,BLKSIZE=12004

As an example, the data definition statement suitable for reading the full data set on an IBM 360 might be;

```
//FT10F001   DD   UNIT=1600,DISP=SHR,LABEL=(1,NL),VOL=SER=123456,
//              DCB=(DEN=3,RECFM=VBS,LRECL=144,BLKSIZE=14404)
```

3.3 Sample Program

A FORTRAN program follows that will read the hourly averages data set and write out some parameters within a desired time interval.

```
      DIMENSION REC(35)
      COMMON /CREC/ JYDD, JYMD, JHR, TEMP, VEL, AZ, EL, DEN, RMS(6), ORBIT(16),
     +  FLUX, PRES, PCONV, ENERGY, KPROC
      EQUIVALENCE (REC(1), JYDD)
      DATA IU/6/, AU/1.497E8/
C
C..READ IN DESIRED START, STOP DATES AS YYMMDD.
      READ (5,1001) ISTART, ISTOP
 1001 FORMAT (I6, I7)
      WRITE (IU, 1003)
C
C..READ DATA RECORDS FROM FT10F001.  TEST FOR DESIRED INTERVAL
   20 READ (10, END=100) REC
      IF (JYMD. LT. ISTART) GO TO 20
      IF (JYMD. GT. ISTOP) GO TO 100
C..RECORD IS IN DESIRED INTERVAL
      R = ORBIT(1) / AU
      WRITE (IU, 1004) JYMD, JHR, VEL, DEN, TEMP, R
 1003 FORMAT ('1 YYMMDD  HR    VEL    DEN      TEMP   R(AU)'//)
 1004 FORMAT (I8, I4, F8.1, F8.3, F9.0, F7.2)
      GO TO 20
C
C..END OF LISTING
  100 STOP
      END
```

SECTION 4. RECORD CONTENTS

The contents of each of the five files is described below. Each item is a 32-bit word, with standard nomenclature to indicate fixed or floating point. Coordinate systems are described in Section 2.3.1.

4.1 The Full "Summary" Data Record (File 1)

WORD	VARIABLE	DESCRIPTION
1	JYDD	Julian date of record, YYDDD
2	JYMD	Date of record in form YYMMDD
3	NSEC	Time of record in seconds of day, at spacecraft at start of data
4	TEMP	Proton bulk temperature (K)
5	VEL	Average bulk flow speed (km/s)
6	AZIM	Azimuthal angle of flow, φ, in PES system (degrees)
7	ELEV	Elevation angle of flow, θ, in PES system (degrees)
8	DEN	Proton density (#/cc)
9	DT	Uncertainty in temperature
10	DV	Uncertainty in velocity
11	DANG1	Uncertainty in azimuth, in rotating instrument coordinates
12	DANG2	Undertainty in elevation, in rotating instrument coordinates
13	DN	Uncertainty in density
14	CHISQ	Chi-square of fit
15-30	ORBIT(16)	14 trajectory parameters and 2 SES coords. All angles are in degrees, distances are in km, and velocities are km/s. Coordinate system is HEC except as indicated.
15	(1)	Distance of spacecraft from Sun
16	(2)	Longitude of spacecraft
17	(3)	Latitude of spacecraft
18-20	(4-6)	X,Y,Z coordinates of spacecraft
21-23	(7-9)	X,Y,Z components of spacecraft velocity
24	(10)	Speed of spacecraft
25	(11)	Distance of Earth from Sun
26	(12)	Latitude of Earth
27	(13)	Longitude of Earth
28	(14)	Distance between spacecraft and Earth
29	(15)	Solar equatorial latitude of spacecraft in SES system

30		(16)	Solar equatorial longitude of spacecraft in SES system
31-33	SPARE(3)		Three blank words
34	BADREC		Record quality. 0. is good, 10.-20. is doubtful, 100. is bad fit
35	JPROC		Julian date of the least-square processing

4.2 The Hourly and Daily Averages Records (Files 2, 3)

WORD	VARIABLE		DESCRIPTION
1	JYDD		Julian date of record, YYDDD
2	JYMD		Date of record in form YYMMDD
3	NHR		Hour of record, 0-23. (0 for daily averages)
4	TEMP		Average proton temperature (K)
5	VEL		Average bulk flow speed (km/s)
6	AZIM		Average azimuthal angle of flow (degrees, PES system)
7	ELEV		Average elevation angle of flow (degrees, PES system)
8	DEN		Average density (#/cc)
9-13	RMS(5)		Root-mean-square dispersion of preceding 5 parameters
14	AREC		Number of records in average (questionable records counted as 1/2)
15-30	ORBIT(16)		Average trajectory parameters
15		(1)	Distance of spacecraft from Sun (km)
16-17		(2-3)	Longitude and latitude of spacecraft in HEC system (degrees)
18-20		(4-6)	X, Y, Z coordinates of spacecraft in HEC system (km)
21-23		(7-9)	X, Y, Z components of spacecraft velocity (km/s)
24		(10)	Speed of spacecraft (km/s)
25-27		(11-13)	Distance, latitude, longitude of Earth
28		(14)	Distance of spacecraft from Earth (km)
29-30		(15-16)	Solar equatorial latitude and longitude of spacecraft in SES (degrees)
31	FLUX		Average proton flux, $\langle NV \rangle$, (#/cm^2-s)
32	PRES		Average thermal pressure, $\langle NkT \rangle$, (dynes/cm^2)
33	PCONV		Average convective pressure, $\langle Nm_pV^2 \rangle$, (dynes/cm^2)
34	ERG		Average kinetic energy flux, $\langle 1/2Nm_pV^3 \rangle$, (ergs/cm^2-s)
35	KPROC		Julian date on which data set was produced.

4.3 The Trajectory Record (File 4)

All coordinates are in the HEC system, expressed in km, or degrees

WORD	VARIABLE	DESCRIPTION
1	JYMD	Date of record as YYMMDD.
2	MSEC	Time of record in msec at spacecraft
3-5	XYZ(3)	X, Y, Z coordinates of spacecraft
6-8	XYZDOT(3)	X, Y, Z components of spacecraft velocity (km/s)
9	R	Distance of spacecraft from Sun
10	V	Speed of spacecraft (km/s)
11	RE	Distance of Earth from Sun
12-13	ANGL(2)	Latitude and longitude of spacecraft
14-15	EANGL(2)	Latitude and longitude of Earth
16	REP	Distance of spacecraft from Earth

4.4 The Attitude Record (File 5)

The cone and clock angle coordinate system has its Z-axis along the spacecraft spin axis, which points roughly toward Earth, the X-axis is the projection in the spin plane of the South Ecliptic pole and Y forms a right-handed system. The cone angle is the polar angle of the Sun measured from the Z-axis. The clock angle is the meridian roll angle of the Sun, measured counterclockwise from the Y-axis.

WORD	VARIABLE	DESCRIPTION
1	JYDD	Julian date of record, YYDDD
2	NSEC	The GMT time of record, in seconds of day
3	CONE	Cone angle of Sun
4	CLOCK	Clock angle of Sun
5	CLOCKC	Roll angle at Sun pulse

APPENDIX

A set of five tapes containing these data sets is available at NASA/Ames, through the Plasma Experiment personnel. These tapes differ from the NSSDC format. Each Ames tape contains one of the five data sets, with Pioneer-11 data stacked after Pioneer-10 data, in the same file. Furthermore, all variables in all data sets are expressed in floating point (REAL*4).

The data is blocked on these tapes, with blocksizes as given below. All the Pioneer-10 data is written first, with the last Pioneer-10 block zero-filled. The Pioneer-11 data begins in the next block, and again the last block is zero-filled. (The choice of blocksize for the orbit and attitude tapes was 8 bytes too small, so that on these tapes each full block is followed by a block containing the last two data words). A FORTRAN 77 program is attached which reads these tapes and rewrites them in the NSSDC format.

All the tapes are no-label with 32-bit words. The density is 1600 bpi, and the record format is VBS. There is one file on a tape. Logical record length = blocksize - 4.

Tape 90645D contains the attitude data. Blocksize = 9000 bytes.
Tape 90646B contains the trajectory data. Blocksize = 9600 bytes.
Tape 90647D contains the full data set. Blocksize = 14010 bytes.
Tape 90648D contains hourly averages. Blocksize = 14010 bytes.
Tape 90649D contains daily averages. Blocksize = 14010 bytes.

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=XRSEK.PIONEER.CNTL                                    (DAYJCL   )

//XRSEKPRD JOB (SB001,BF2,05),PIONEER.TAPE.READ,TIME=(01,00),CLASS=A
//*COPY AMES PIONEER DATA TAPE TO LOCAL TAPES
//*PROGRAM IS WRITTEN IN IBM VSFORTRAN (FORTRAN 77)
    EXEC FORTRANV
//FORT.SYSIN  DD  *
      PROGRAM PIONRD
C..READS AMES CDC-IBM PIONEER DATA TAPE AND REWRITES IT FOR GSFC.
C..PIONEER-10 DATA IS OUTPUT ON UNIT 10. PIONEER-11 DATA ON UNIT 11.
C..NR IS # WORDS PER RECORD; NB IS BLOCKING FACTOR.
C..FOR NR = 35,16,5. USE NB = 100,150,450 (DATA,ORBIT,ATTITUDE).
      PARAMETER (NR=35, NB=100)
      DIMENSION REC(35),NREC(10:11),BLOCK(NR,NB)
      EQUIVALENCE (REC(1),IYDD),(REC(2),IYMD),(REC(3),NSEC),
     .  (REC(35),KPROC)
      DATA NREC,NERR/3*0/, IU/10/
C
   20 READ(15,END=100,ERR=90) BLOCK
      DO 50 I = 1,NB
        IF(BLOCK(1,I) .NE. 0.) THEN
          DO 40 J = 1,NR
   40     REC(J) = BLOCK(J,I)
          NREC(IU) = NREC(IU) + 1
          IYDD = REC(1)
          IYMD = REC(2)
C..OMIT NEXT TWO LINES FOR ORBIT OR ATTITUDE DATA FILES.
          NSEC = REC(3)
          KPROC = REC(35)
          WRITE(IU) (REC(M),M=1,NR)
        ELSE
          IU = 11
          GO TO 20
        END IF
   50 CONTINUE
      GO TO 20
C
   90 NERR = NERR + 1
      GO TO 20

  100 WRITE(6,1002) NREC,NERR
 1002 FORMAT(////I15,' RECORDS OF PIONEER-10 DATA'/
     1  I15,' RECORDS OF PIONEER-11 DATA'/
     2  I15,' TAPE-READ ERRORS'//)
      STOP
      END
/*
//  EXEC  LOADER,REGION=600K,PARM='SIZE=600K'
//SYSLIB DD DSN=SYS1.VFORTLIB,DISP=SHR
//SYSLIN DD DSN=&LOADSET
//*FT10 AND FT11 ARE OUTPUT TAPES; FT15 IS THE AMES INPUT TAPE
//FT10F001 DD UNIT=6250,DSN=PIONER10,LABEL=(1,NL),VOL=SER=SEK001,
//         DCB=(DEN=1,RECFM=VSB,LRECL=144,BLKSIZE=14404),DISP=NEW
//FT11F001 DD UNIT=6250,DSN=PIONER11,LABEL=(1,NL),VOL=SER=SEK002,
//         DCB=(DEN=3,RECFM=VSB,LRECL=144,BLKSIZE=14404),DISP=NEW
//FT15F001 DD UNIT=6250,DSN=P10DATA,LABEL=(1,NL),VOL=SER=SEK003,
//         DCB=(DEN=3,RECFM=VSB,LRECL=14006,BLKSIZE=14010),DISP=OLD
//*FOR ORBIT(OR ATTITUDE) TAPE, LRECL=9596(8996),BLKSIZE=9600(9000)
```

DUMP OF TAPE SOUT2

Pioneer 10
D163220
04/18/72 - 12/15/86

INPUT TAPE SOUT2 ON HT0
DATA INPUT H9 NF 5 FL 5 1 1

FILE 1 RECORD 1 LENGTH 14404BYTES 7204R

(0)	3844CCCC	C09C0000	00C119AC	00CAFE22	00CCC8E7	449EAFA3	43142996	C11B3AC9	41497583	4152C291
(40)	436C34FD	40C78ED8	42C86174	40ADF235	404211E8	41524EEE	47ABAFE6	42D6ACA2	C11A3D76	C78DAA6B
(80)	C76DB9A	C64E878F	4173A391	C22215E1	C1118F2E	4222DCFE	478F46D9	BDA69675	42D01735	4721EFE3
(120)	C1661A4E	428B5DF0	CCCCCCCC	00CC0000	CCCC0000	0CCC0000	00012530	00900000	000119AC	000AFE22
(160)	0000153E	44A7FF0C	4313B3A7	C14C38CB	4139FB0D	415CABDC	43835736	40CE6AF4	42C8CDB6	408F6A62
(200)	405477CE	41DE60E0	47ABBA9E	42D6B550	C11A408F	C78DA499	C760F718	C64E95B9	4173D14F	C22213ED
(240)	C1118D98	4222DBAC	478F473A	BDA553AA	42DC20C6	4721F7A6	C1661019	428B66A3	00000000	00000000
(280)	CCCCCCCC	CCCC0000	00012530	00900000	000119AD	000AFE22	00002300	447C5E4E	43146907	41315ABD
(320)	C05BA049	41510E1E	432E1FD7	407B2E20	42C83653	4094D51B	4027A09C	412B61F8	47ABC60C	42C6BE90
(360)	C11A43DC	C78D9E63	C7611467	C64EA4D3	41740214	C22211D8	C1118BE8	4222DA43	478F47A2	BDA3FB79
(400)	42DC2AF9	4721FFED	C166C538	428B6FE9	CCCC0000	0CCCCCC0	0000CCCC	00000CC0	0001253C	00900000
(440)	000119AD	000AFE22	00003132	4497C17A	431447FB	411EB73C	C113A7CF	415477C6	43603A51	40D118D7
(480)	42C83E2A	408388CB	404197C1	4125DC15	47ABD1D7	42D6C81C	C11A4745	C78D97FB	C76132A6	C64EB468
(520)	41743467	C2220FB1	C1118A2A	4222D8CF	478F480D	BDA29855	42D0357F	47220878	C165FA00	428B7979
(560)	CCCCCCCC	CCCC0000	CCCCCCC0	CCCC0000	00012530	0C900000	000119AC	000AFE22	00003F01	448B8D50
(600)	43146618	411FB487	C1411B85	414F7AC6	4342DF69	406589F5	42C844DD	404E250A	40260C3C	40F78F5E
(640)	47ABDD50	42D6D165	C11A4A96	C78D91BF	C7615011	C64EC390	4174655A	C2220D9A	C1118878	4222D765
(680)	478F4875	BDA13EDE	42D03FBC	472210C7	C165EF18	428B82C5	00000000	00000000	00000000	00000000
(720)	00012530	00900000	000119AC	00CAFE22	000C4D91	44CAF414	4313D1FF	405C43CC	C11EE55A	415E3BB6
(760)	43919237	41133645	42C88079	412164F6	404837A7	41292F73	47ABE969	42D6DB30	C11A4E15	C78D8B2D
(800)	C7616F18	C64ED38C	417498FA	C2220B66	C11186AE	4222D5E8	478F48E3	BD9FD28B	42D04A88	4722198B
(840)	C165E399	428B8C91	CCCCCCC0	00CC0000	00CC0000	00000000	00012530	00900000	000119AC	000AFE22
(880)	00005B45	44B35A52	43134698	40811BF2	C0DD17B3	41601B14	43A5A45C	40CC5BCB	42C8A78	41145D5C
(920)	405B20FE	42183330	47ABF4CC	42D6E467	C11A515F	C78D84FE	C7618C4A	C64EE296	4174C98E	C2220953
(960)	C11184FF	4222D480	478F494A	BD9E7BB7	42DC54B1	472221C9	C165D8C9	428B95C8	00000000	00000000
(1000)	CCCCCCCC	CCCC0000	00012530	00900000	000119AD	000AFE22	00007CD1	449101C7	43137253	411371FA
(1040)	C1426E97	41575D87	433D9CEA	40968BD8	42C84255	4071AB58	402EAEC2	404480F8	47AC06B4	42D6F2E5
(1080)	C11A568B	C78D7B44	C761BA34	C64EFA3E	417515F4	C2220610	C111825A	4222D24B	478F49EC	BD9C608E
(1120)	42D64AB	47222EC1	C165C7CB	428BA444	00000000	00000000	00000000	00000000	0001253C	00900000
(1160)	000119AD	000AFE22	00007C5A	4510B3CC	431359FA	C0C5B9C8	C158D0F6	41799725	4413638D	411324AE
(1200)	42C876BF	40D0B78F	40904664	421329DD	47AC1049	42D6FAA7	C11A5950	C78D760F	C761D2C8	C64F06E7
(1240)	41753ED8	C2220451	C11180EF	4222D11D	478F4A43	BD9B3FF8	42D06D39	472235B2	C165BEB5	428BAC03
(1280)	CCCCCCCC	CCCC0000	CCCCCCC0	00CC0000	00012530	0C900000	000119AC	000AFE22	00008B67	4475AC0C
(1320)	43136E12	41170C42	C1509475	4150CEFA	434915CA	40A48A4A	42C85541	40B31E6E	403E678B	4113024F
(1360)	47AC1CCA	42D704C6	C11A5CED	C78D6F44	C761F2D9	C64F176D	41757433	C222020A	C1117F16	4222CF92
(1400)	478F4AB4	BD99C76D	42DC7861	47223EC1	C165B2DA	428BB61E	0000CCCC	00000000	00000000	00000000
(1440)	00012530	00900000	000119AC	000AFE22	00009389	44831594	431303B8	4111CEB1	C14201D0	415058B9
(1480)	436EC9A0	40E5954D	42C8B736	40897BC0	404F5EB4	421ED03A	47AC238C	42D70A3E	C11A5EE1	C78D6B98
(1520)	C762042D	C64F205A	41759108	C22200CF	C1117E16	4222CEBD	478F4AF2	BD98FBF6	42D07E69	472243A6
(1560)	C165AC73	428BBB93	00000000	00000000	00000000	00000000	00012530	00900000	000119AC	000AFE22
(1600)	0000A1AF	446E597E	431364D7	4112852A	C19041DF	414F8204	4369E1DE	40B25412	42C86C2F	40A14B38
(1640)	4056A183	417E214A	47AC2F4D	42D713C2	C11A6247	C78D6535	C7622252	C64F2FE2	4175C330	C221FEAA
(1680)	C1117C5A	4222CD4A	478F4B5C	BD9799FE	42CC88E6	47224C29	C165A151	428BC510	00000000	00000000
(1720)	CCCCCCCC	CCCC0000	00012530	00900000	000119AD	0C0AFE22	0000AF65	446B19BF	43134250	412CF41A
(1760)	C19063C1	414B04CE	435A8FF1	4085A256	42C82ACB	40629CA6	40474AF0	41190957	47AC3ABE	42C71CEE
(1800)	C11A6586	C78D5EEB	C7623F76	C64F3EDF	4175F353	C221FC95	C1117AAB	4222CBE2	478F4BC3	BD96303A
(1840)	42DC9310	47225474	C165966E	428BCE41	00000000	0000CCCC	0000CCCC	00000000	00012530	00900000
(1880)	000119AD	000AFE22	0000BE07	4470C228	4313CFC8	412F5A51	C1A66173	41551B0C	435A55A7	40BC7DFD
(1920)	42C83F15	40AA51CE	404CB467	414C08C9	47AC4708	42D726A5	C11A68EC	C78D580C	C7625E74	C64F4EC9
(1960)	417625FE	C221FA59	C11178DF	4222CA61	478F4C31	BD949216	42D09DE7	47225D5E	C1658AA9	428BD80E
(2000)	CCCCCCCC	CCCC0000	CCCCCCC0	00CC0000	00012530	0C900000	000119AD	000AFE22	0000CBC3	446C3D51
(2040)	4312CBDF	41215FEB	C18EE874	4155BC60	43271D59	409ACEB4	42C83FAB	40795106	4031C8B5	415F1D8F
(2080)	47AC5290	42D72FC3	C11A6C1D	C78D519A	C7627B8B	C64F5DB9	4176558D	C221F83F	C1117730	4222C8F8
(2120)	478F4C97	BD930D5E	42DCA814	472265BB	C1657F9E	428BE140	00000000	00000000	00000000	00000000
(2160)	00012530	00900000	000119AD	000AFE22	0000D984	444FA384	431352F9	4130913B	C19D040E	414F61E6
(2200)	4328D252	4074FAFD	42C823EA	40537965	40319F32	40F0886B	47AC5E1D	42D738E5	C11A6F4F	C78D4B25
(2240)	C7E298AC	C64F6CAE	4176852E	C221F625	C1117580	4222C78E	478F4CFE	BD91881A	42D0B245	47226E1C
(2280)	C1657492	428BEA75	CCCCCCCC	00CC0000	00CC0000	0CCC00C0	00012530	00900000	000119AC	000AFE22

PRINTED IN U.S.A.

(12880)	47AC3521	42D7E2EB	C11AAACC	C78CD2F5	C764B703	C6508327	4179FBD9	C221CF06	C1115617	4222AD3E
(12920)	478F5479	BD753906	42D16FFC	47230A15	C164A7EB	428C94EB	00000000	00000000	00000000	00000000
(12960)	00012530	00900000	000119AE	000AFE23	00009341	4432CDF2	43159FC4	401A0B89	C18A772F	418C545D
(13000)	43164907	408DA6F6	42C82F5C	40710AF8	407141AF	41DADCB5	47AD3E87	42D7EA56	C11AAD66	C78CCDB4
(13040)	C764CEB7	C65C8F53	417A2299	C221CD50	C11154B8	4222AC17	478F54CC	BD73FC48	42D17848	472310E6
(13080)	C1649F04	428C9C55	00000000	00000000	00000000	00012530	00900000	000119AE	000AFE23	0000A2B8
(13120)	0000A2B8	4458F7F9	4315C2A9	40F43159	C1C0AD50	4161F566	432683B1	40F18A3A	42C8813E	40E1DA64
(13160)	4C45F474	415D9098	47AD4B83	42D7F49A	C11AB0FE	C78CC672	C764EF78	C650A024	417A5826	C221CAF3
(13200)	C11152D2	4222AA81	478F554C	BD724696	42D183BD	47231A52	C16452BA	428CA691	00000000	00000000
(13240)	00000000	00000000	00012530	00900000	000119AE	000AFE23	0000AF92	446F57C6	43157621	40F8CB1D
(13280)	C1EB4707	416723F3	43399D2D	40921174	42C84ED3	408C58BF	40403F61	413F2F23	47AD565B	42D7FD16
(13320)	C11AB3EF	C78CC04F	C765CA9E	C650AE0F	417A842D	C221C8FB	C111513F	4222A92F	478F55AC	BD70D122
(13360)	42D18D42	47232232	C164886A	428CAF12	00000000	00000000	00000000	00000000	00012530	00900000
(13400)	000119AE	000AFE23	0000BE22	448D52C4	4313AED7	C11140AE	C1E37395	414EFC78	439B9F3F	4118C949
(13440)	42C90034	40D2EB4C	406A861F	422C76D4	47AD62B5	42D806A2	C11AB734	C78CB938	C7652946	C650BDC0
(13480)	417AB56B	C221C6BC	C1114F76	4222A7AE	478F560C	BD6F1CEA	42D1580A	47232B2F	C1647C98	428CB8B3
(13520)	00000000	00000000	00000000	00000000	00012530	00900000	000119AE	000AFE23	0000CD35	44A73E4D
(13560)	4314F049	4074E34A	C1CDE4A5	41793270	4359213B	40BF6859	42C8594E	40D80B61	404413D4	416409FB
(13600)	47ADEF7F	42D81083	C11ABA98	C78CB1E0	C7654903	C65CCDFD	417AE864	C221C46A	C1114D9E	4222A621
(13640)	478F567C	BD6D595E	42D1A334	4723347B	C1647C5E	428CC2A9	00000000	00000000	00000000	00000000
(13680)	00012530	00900000	000119AE	000AFE23	0000DA0F	4488DFB3	43153EE9	40EB899E	C1C55F89	415AA973
(13720)	4337DB0B	407B770F	42C84839	4088D535	402C91C5	4139ECC7	47AD7A66	42D818F0	C11ABD7B	C78CAB9E
(13760)	C7656412	C65CDBD6	417B13D9	C221C26F	C1114C0B	4222A4CE	478F56DB	BD6BD867	42D1ACB8	47233C68
(13800)	C16465F3	428CCB27	00000000	00000000	00000000	00012530	00900000	000119AE	000AFE23	0000E7C4
(13840)	0000E7C4	446DD594	4314CA6B	412BDEF1	C2140926	415A96D5	4349C961	40B11804	42C85BFE	408A5FA5
(13880)	4C484F6B	4194EF1C	47AD86C6	42D821EC	C11AC090	C78CA4F1	C76580EE	C650EA9B	417B4233	C221C052
(13920)	C1114A5D	4222A365	478F5741	BD6A3DCF	42D1B6CE	472344DC	C1645AD7	428CD433	00000000	00000000
(13960)	00000000	00000000	00012530	00900000	000119AE	000AFE23	0000F654	448530BF	4314793C	411F1112
(14000)	411E1E37	415F56DD	433A51BF	40CBE104	42C83A8F	409DE538	403989DB	412F7A31	47AD9261	42D82B77
(14040)	C11AC3D5	C78C9DDA	C7659F96	C650FA4C	417B7371	C221BE14	C1114894	4222A1E5	478F57AD	BD688997
(14080)	42D1C1A6	47234DD9	C1644F0C	428CDDCF	00000000	00000000	00000000	00000000	00012530	00900000
(14120)	000119AE	000AFE23	0001041A	44637F09	43140CD9	4123D577	412556BD	4157C8EF	432C8A79	40542C25
(14160)	42C82715	40621F38	40325E99	40A657A8	47AD9E11	42D8347F	C11AC6EE	C78C9724	C765BC98	C6510924
(14200)	417BA208	C221BBF5	C11146E4	4222A079	478F5814	BD66ECE4	42D1CBDA	47235659	C16443F6	428CF6E5
(14240)	00000000	00000000	00000000	00000000	00012530	00900000	000119AE	000AFE23	00011321	447CAA0A
(14280)	4314BE4F	41133993	4115C2D2	41661C66	435793BC	407BB622	42C83994	4052431F	4045C33C	4182CF1E
(14320)	47ACAAC0	42D83E59	C11ACA4F	C78C8FD3	C765DC3C	C6511955	417BD4D9	C221B9A4	C111450D	42229EED
(14360)	478F5883	BD652ABF	42D1D6FB	47235F9E	C16437BE	428CF0CC	00000000	00000000	00000000	00000000
(14400)	00012536									

86349 861215

FILE 1 RECORD 740 LENGTH 9652BYTES

(0)	25840000	00900000	0001514C	000D241F	00014C91	43641FC7	4319E4C7	C0292627	4136A63E	3E4FC977
(40)	43194749	40BAC32C	401D8D1F	402A283F	3F1B47CC	4236A1CF	49163AE4	4246C457	4131A7C9	48780017
(80)	4914E461	48133A2A	411B8A85	41D04DB7	40AB8187	41D2B5A8	478C67EB	BDF75BE7	4253BA3F	4915B25B
(120)	41397C57	431644F2	00000000	00000000	00000000	00000000	0001544A	00900000	0001514E	000D2420
(160)	00000591	4411D40C	4319EEB0	403CF323	412E3C27	3F558598	435CE523	411A2CC3	4068F27C	40515A18
(200)	3EBDF76E	401B60A6	49163AE4	4246C457	4131A7C9	48780017	4914E461	48133A2A	411B8A85	41D04DB7
(240)	40AB8187	41D2B5A8	478C67EB	BDF75BD5	4253BA3E	4915B25B	41397C57	431644F2	00000000	00000000
(280)	00000000	00000000	0001544A	00900000	0001514E	000D2420	00001372	4429E297	4319804B	408DF823
(320)	41215B75	3F116EAB	441154C5	41430DF0	40B2A7B2	40AF2195	3E8E995C	4211B2C7	49163AE4	4246C457
(360)	4131A7C9	48780017	4914E461	48133A2A	411B8A85	41D04DB7	40AB8187	41D2B5A8	478C67EB	BDF75BC9
(400)	4253BA3D	4915B25B	41397C57	431644F2	00000000	00000000	00000000	00000000	0001544A	00900000
(440)	0001514E	000D2420	00004F3	442DC1FD	4318CF7E	4C27A250	4121321F	3F75C2CD	43C0464A	C08353F1
(480)	C118D0CC	408023A2	3F12924F	3F1B0FBF	49163AE4	4246C457	4131A7C9	48780017	4914E461	48133A2A
(520)	411B8A85	41D04DB7	40AB8187	41D2B5A8	478C67EB	BDF75BC0	4253BA3D	4915B25B	41397C57	431644F2
(560)	00000000	00000000	00000000	00000000	0001544A	00900000	0001514E	000D2420	00004613	442D0BBB
(600)	4318EF61	C019D75C	411E63D1	3E478814	443EA69A	42124637	412EA145	4120CAB5	3E8624DD	42142660
(640)	49163AE4	4246C457	4131A7C9	48780017	4914E461	48133A2A	411B8A85	41D04DB7	40AB8187	41D2B5A8
(680)	478C67EB	BDF75BB9	4253BA3D	4915B25B	41397C57	431644F2	00000000	00000000	00000000	00000000
(720)	0001544A	00900000	0001514E	000D2420	00005393	442C1DB9	43195AFD	C0976CBB	4118B923	3E6BF262
(760)	44183F96	418381B5	41197BBD	4111BB35	3F4F0785	41168FE6	49163AE4	4246C457	4131A7C9	48780017
(800)	4914E461	48133A2A	411B8A85	41D04DB7	40AB8187	41D2B5A8	478C67EB	BDF75BB3	4253BA3C	4915B25B
(840)	41397C57	431644F2	00000000	00000000	00000000	00000000	0001544A	00900000	0001514E	000D2420
(880)	00007ECC	44144527	43196D53	C114BCD1	41137D64	3F2096E1	43795B7D	4123581A	4057ECBB	404E6ECD
(920)	3EA8A8B8	4218F249	49163AE4	4246C457	4131A7C9	48780017	4914E461	48133A2A	411B8A85	41D04DB7
(960)	40AB8187	41D2B5A8	478C67EB	BDF75BAE	4253BA3C	4915B25B	41397C57	431644F2	00000000	00000000

PRINTED IN U.S.A.

(8520)	00000000	00000000	0001544A	00900000	0001515A	000D242C	000123C2	44117D41	4317D62A	403FBF12
(8960)	413CB43C	3F1CE745	4116D67A	3EC172C0	3E41D943	3E2D8B9D	3D131374	3F2674E7	491648A8	4246CC2E
(9000)	4131A6B6	48781D94	4914F253	481345A5	411B83C9	41D03D93	40AB72FA	41D2B1F6	478C4C80	3CE45B27
(9040)	426[illegible]F77C	4915CB45	41396BCE	4316456C	00000000	00000000	00000000	00000000	0001544A	00900000
(9080)	0001515A	000D242C	000133E2	44352CC5	43206916	4210E6C8	C212BF43	401F926E	438A6D33	41168C2A
(9120)	402E7E9F	4026A6B3	3F3F58F9	421583B3	491648A8	4246CC2E	4131A6B6	48781D94	4914F252	481345A5
(9160)	411B83C9	41D03D93	40AB72FB	41D2B1F6	478C4C80	3CE4468F	4260F764	4915CB45	41396BD2	4316456C
(9200)	00000000	00000000	00000000	42640000	0001544A	00900000	0001515B	000D242D	00004C25	442B88CD
(9240)	4324E145	4159039E	C11D92DB	3F8A30A3	442F7738	41754838	41199524	40E3EB25	3F1DC899	41C0434C
(9280)	491648A8	4246CC2E	4131A6B6	48781D94	4914F252	481345A5	411B83C9	41D03D93	40AB72FB	41D2B1F5
(9320)	478C4C80	3CE43FB4	4260F76C	4915CB45	41396BD2	4316456C	00000000	00000000	00000000	42640000
(9360)	0001544A	00900000	0001515B	000D242D	000074A5	442715BD	4347C885	4184AF24	C1676BDB	3D1D98F3
(9400)	44163AAB	414EA3FA	40410D2A	40456AA1	3D11728E	4364BEC5	491648A8	4246CC2E	4131A6B6	48781D94
(9440)	4914F252	481345A5	411B83C9	41D03D93	40AB72FB	41D2B1F5	478C4C80	3CE43C46	4260F75E	4915CB45
(9480)	41396BD2	4316456C	00000000	00000000	00000000	42640000	0001544A	00900000	0001515C	000D242E
(9520)	000050A5	442427A2	431EADEB	C1D54360	4218AD40	3F227AC4	44198D43	414AEF55	40CBE489	409E5AAB
(9560)	3F113144	426C228F	491649B7	4246CCCB	4131A6A1	48781FD8	4914F365	48134687	411B8346	41D03C56
(9600)	40AB71DD	41D2BF8D	478C4B9B	3D22D6E1	4261FC74	4915CD79	41396A8C	43164575	00000000	00000000
(9640)	00000000	42640000	0001544A							

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	740	741	14404	0	0	0	0	0	0

72109 720418 04/18/72-12/13/86

FILE 2 RECORD 1 LENGTH 14404BYTES

(0)	38440000	00900000	000119AD	000AFE22	00000000	449BAFA3	43142996	C11B3A09	41497583	4152C291
(40)	00000000	00000000	00000000	00000000	41100000	47ABAFE6	42D6ACA2	C11A3D76	C78DAA6B	
(80)	C76[illegible]DB9A	C64E878F	4173A391	C22215E1	C1118F2E	4222DCFE	478F46D9	BCA69675	42D01735	4721EFE3
(120)	C1661A4E	428B5DF0	479F2261	381F4B91	3A26ABE6	40252DF7	000154D6	00900000	000119AD	000AFE22
(160)	00000001	44A7FF0C	4313B3A7	C14C380B	4139FB0D	415CABDC	00000000	00000000	00000000	00000000
(200)	00000000	41100000	47ABBA9E	42D6B550	C11A408F	C78DA499	C760F718	C64E95B9	4173D14F	C22213ED
(240)	C1118D98	4222DBAC	478F473A	BDA553AA	42D020C6	4721F7A6	C1661019	428B66A3	47AE1EE8	3825D05F
(280)	3A2958BB	4026D7DB	000154D6	00900000	000119AD	000AFE22	00000002	447C5E4E	43146907	41315ABD
(320)	CC5BA049	41510E1E	00000000	00000000	00000000	00000000	00000000	41100000	47ABC60C	42D6BE90
(360)	C11A43DC	C78D9E63	C7611467	C64EA4D3	41740214	C22211D8	C1118BE8	4222DA43	478F47A2	BDA3FB79
(400)	42D02AF9	4721FFED	C1660538	428B6FE9	479DC590	38187C1F	3A26CFC7	4025C5DF	000154D6	00900000
(440)	000119AD	000AFE22	00000003	4497C17A	431447FB	411EB73C	C113A7CF	41547706	00000000	00000000
(480)	00000000	00000000	00000000	41100000	47ABD1D7	42D6C81C	C11A4745	C78D97FB	C76132A6	C64FB468
(520)	41743467	C2220FB1	C1118A2A	4222D8CF	478F480D	BDA29855	42D0357F	47220878	C165FA0C	428B7979
(560)	47A35E74	381F2230	3A27EF33	40269EAA	000154D6	00900000	000119AD	000AFE22	00000004	448B8D50
(600)	43146618	411FB487	C1411B85	414F7AC6	00000000	00000000	00000000	00000000	00000000	41100000
(640)	47ABDD5C	42D6D165	C11A4A96	C78D91BF	C7615011	C64EC350	4174E55A	C2220D9A	C1118878	4222D765
(680)	478F4875	BDA13EDE	42D03FBC	472210C7	C165EF18	428B82C5	479A9E3A	381AF0A8	3A2603B6	4024F9F1
(720)	000154D6	00900000	000119AD	000AFE22	00000005	44CAF414	4313D1FF	405C43CC	C11EE95A	415E3BB6
(760)	00000000	00000000	00000000	00000000	00000000	41100000	47ABE969	42D6DB30	C11A4E15	C78D8B2D
(800)	C7616F18	C64ED38C	417498FA	C2220B66	C11186AE	4222D5E8	478F48E3	BD9FD28B	42D04A8E	4722198B
(840)	C165E399	428B8C91	47B21EE2	382E73CC	3A2A8D06	4028370D	000154D6	00900000	000119AD	000AFE22
(880)	00000006	44B35A52	43134698	40811BF2	C0DD17B3	41601B14	00000000	00000000	00000000	00000000
(920)	00000000	41100000	47ABF4CC	42D6E467	C11A515F	C78D84FE	C7618C4A	C64EE296	4174C98E	C2220953
(960)	C11184FF	4222D480	478F494A	BD9E7BB7	42D054B1	472221C9	C165D8C9	428B95C8	47B0AB5C	3829DDC7
(1000)	3A290B6D	4025B9CA	000154D6	00900000	000119AD	000AFE22	00000008	44CE1EE0	43136626	4038B2EC
(1040)	C14D9FC6	41687A56	44566EA8	4112548E	41167CF8	4CFD4038	41183363	41200000	47AC0B78	42D6F6C0
(1080)	C11A57ED	C78D78A8	C761C67E	C64F0092	41752A66	C2220530	C111E1A4	4222D1B4	478F4A1C	BD9BD040
(1120)	42D[illegible]68F0	47223239	C165C340	428BA820	47C135C8	3836D8B1	3A2D281B	4029C122	000154D6	00900000
(1160)	000119AD	000AFE22	00000009	4475AC0C	43136E12	41170C42	C1509475	4150CEFA	00000000	00000000
(1200)	00000000	00000000	00000000	41100000	47AC1CCA	42D704C6	C11A5CED	C78D6F44	C761F2D9	C64F176D
(1240)	41757433	C222020A	C1117F16	4222CF92	478F4AB4	BD99C76D	42D07861	47223EC1	C165B2DA	428BB61E
(1280)	4795BCAA	38171896	3A2310DF	40207D02	000154D6	00900000	000119AD	000AFE22	0000000A	44831594
(1320)	431303B8	4111CEB1	C142C1D0	415058B9	00000000	00000000	00000000	00000000	00000000	41100000
(1360)	47AC238C	42D70A3E	C11A5EE1	C78D6B98	C762042D	C64F2C5A	4175510B	C2220DCF	C1117F16	4222CFBD
(1400)	478F4AF2	BD98FBF6	42D[illegible]7E69	472243A6	C165AC73	428BBB93	4791B29E	381994D9	3A2163F4	401E464A
(1440)	000154D6	00900000	000119AD	000AFE22	0000000B	446E597E	431364D7	4112852A	C19041DF	414F8204
(1480)	00000000	00000000	00000000	00000000	00000000	41100000	47AC2F4D	42D713C2	C11A6247	C78D6535
(1520)	C7622252	C64F2FE2	4175C330	C221FEAA	C1117C5A	4222CD4A	478F4B5C	BD9799FE	42D08EE6	4722AC29
(1560)	C165A151	428BC510	47930DB2	38154F6A	3A225FA3	401FC9AB	000154D6	00900000	000119AD	000AFE22
(1600)	0000000C	446B19BF	4313425C	412CF41A	C19063C1	414B04CE	00000000	00000000	00000000	00000000

(12200)	478F6992	BD2025E7	42D38B99	4724CEAE	C16259B5	428E710B	48185ED4	382362CB	3A6A6E80	4072EED1
(12240)	000154D6	00900000	000119B0	000AFE25	00000000	444F8FF6	4316C1C1	411FE95F	414A625B	41A0EFFB
(12280)	00000000	00000000	00000000	00000000	00000000	41100000	47AFAEF7	42D9C72B	C11B4F21	C78B626F
(12320)	C76ACFBE	C653A088	4183B05B	C2215C0D	C110FB20	422260A2	478F69FD	BD1E842D	42D39662	4724D7EC
(12360)	C1624DB3	428E7A6E	4815D46C	381F19CF	3A5FCCD0	4067F4A4	000154D6	00900000	000119B0	000AFE25
(12400)	00000000	44719CE1	43168E42	41256953	41461309	41907242	00000000	00000000	00000000	00000000
(12440)	00000000	41100000	47AFBB37	42D9D038	C11B521B	C78B5B0E	C76AED35	C653AF82	4183DE02	C22159D7
(12480)	C110F966	42225F2D	478F6A65	BD1CEE4F	42D3A0DC	4724E0E6	C162420A	428E838B	48136B72	3827DC3E
(12520)	3A54785A	405AD9D7	000154D6	00900000	000119B0	000AFE25	00000010	4467F03E	4316A7CA	41251EDB
(12560)	41320838	41F11BCE	00000000	00000000	00000000	00000000	00000000	41100000	47AFC65E	42D9D876
(12600)	C11B54D0	C78B5455	C76B08DB	C653BD27	41840796	C22157D3	C110F7D3	42225DD8	478F6AC4	BD1B7CB2
(12640)	42D3AA67	4724E914	C162376D	428E8BD7	48208EFC	383CDE76	3A8E3F15	4099AB00	000154D6	00900000
(12680)	000119B0	000AFE25	00000011	443B0997	4316A2F3	4126B43C	412773CD	41885C3C	00000000	00000000
(12720)	00000000	00000000	00000000	41100000	47AFD2F5	42D9E1C3	C11B57DF	C78B4CBF	C76B2654	C653CC8C
(12760)	41843683	C221558C	C110F60D	42225C58	478F6B2F	BD19DB87	42D3B52C	4724F24F	C1622B74	428E9533
(12800)	48126458	38138BF4	3A504954	4056A921	000154D6	00900000	000119B0	000AFE25	00000012	4436A797
(12840)	4316EF05	412AA20F	411F2655	4152F508	00000000	00000000	00000000	00000000	00000000	41100000
(12880)	47AFDED4	42D9EA89	C11B5AC1	C78B4597	C76B42E3	C653DB11	418462C1	C2215367	C110F461	42225AEE
(12920)	478F6B94	BD185231	42D3BF53	4724FB02	C162202C	428E9E05	4813A67F	38138230	3A5502D9	405AF02C
(12960)	000154D6	00900000	000119B0	000AFE25	00000013	44776680	43161480	411D5B56	C048A5E9	41863EDC
(13000)	441735E6	414137B3	411118AF	40CB39D2	411CAA9F	41D00000	47AFEC58	42D9F483	C11B5E08	C78B3D68
(13040)	C76B6371	C653EB99	41849533	C22150F2	C110F277	4222594C	478F6BFE	BD169176	42D3CAE1	472504EC
(13080)	C1621348	428EA80B	4811AAC6	38275CC9	3A4B3BC0	404F3A5E	000154D6	00900000	000119B0	000AFE25
(13120)	00000014	4474FEB1	43162EDF	C01CCE38	4072DCF8	4192F30C	441BE45C	41295555	40FEC08D	408C6EA1
(13160)	40E9317B	41A00000	47AFF7D3	42D9FD00	C11B60D4	C78B3679	C76B7F11	C653F9A4	4184C000	C2214EDE
(13200)	C110F0D9	422257EE	478F6C60	BD1514FD	42D3D4B1	47250D58	C1620864	428EB091	48136E35	3829EE1B
(13240)	3A532085	4057F0A4	000154D6	00900000	000119B0	000AFE25	00000015	44D5E478	4317CE5C	C1194502
(13280)	C1116414	41C7B689	443B60BC	41C48E99	40F59BB8	41158D6E	4122E49F	41A00000	47B0038C	42DA059E
(13320)	C11B63A9	C78B2F73	C76B9B23	C65407EC	4184EB7E	C2214CC3	C110EF34	4222568C	478F6CC4	BD139241
(13360)	42D3DEB1	472515E6	C161FD51	428EB939	481C669C	386868D3	3A82C993	40950D5C	000154D6	00900000
(13400)	000119B0	000AFE25	00000016	44C4BA54	431863D0	C1193BA8	C124C2C4	41A62A9B	441D3EBD	4181530B
(13440)	409C3A97	40FDBAE5	40D6B419	41B00000	47B00E90	42DA0DCB	C11B6658	C78B28C7	C76BB5C2	C6541574
(13480)	418514BE	C2214AC2	C110EDA4	42225538	478F6D22	BD122397	42D3E825	47251E02	C161F2D1	428EC16B
(13520)	4818280E	384F50F2	3A71A9A2	40844AF8	000154D6	00900000	000119B0	000AFE25	00000017	4511DCBF
(13560)	43177F0F	C11DBC20	C11ECE4C	41D09CB5	00000000	00000000	00000000	00000000	00000000	41100000
(13600)	47B01C14	42DA17C9	C11B69A2	C78B20AE	C76BD63A	C65425F8	41854709	C2214857	C110EBBE	422253A0
(13640)	478F6D9C	BD1C64BF	42D3F3B6	472527E9	C161E60F	428ECB73	481D3746	3890CFCF	3A846162	40945160
(13680)	000154D6	00900000	000119B1	000AFE26	00000000	44CA8F8E	431736DC	C0487651	C13DD177	42102F9C
(13720)	00000000	00000000	00000000	00000000	00000000	41100000	47B027F2	42DA208E	C11B6C84	C78B1987
(13760)	C76BF2C7	C654347B	41857344	C2214632	C110EA12	42225236	478F6E01	BCEDB866	42D3FDDD	4725309C
(13800)	C161DAD5	428ED43A	4823D57B	387F6A4B	3AAC6B18	4CB192F0	000154D6	00900000	000119B1	000AFE26
(13840)	00000001	44B914E5	43166383	C05A7182	C16699BB	41D2478F	00000000	00000000	00000000	00000000
(13880)	00000000	41100000	47B033D7	42DA2958	C11B6F67	C78B125C	C76C0F64	C6544307	41859F99	C221440C
(13920)	C110E864	422250CB	478F6E66	BCD51685	42D4080A	47253954	C161CF93	428EDD08	481C0FAA	385E878E
(13960)	3A75278D	40815778	000154D6	00900000	000119B1	000AFE26	00000002	44A72513	4316CEE6	40191DAD
(14000)	C15B249C	4211BBB1	00000000	00000000	00000000	00000000	00000000	41100000	47B040D9	42DA32F5
(14040)	C11B7290	C78B0A85	C76C2EAF	C65452EF	4185D015	C22141B2	C110E68F	42224F3E	478F6ED5	BCBA25CD
(14080)	42D4132A	472542DE	C161C343	428EE6A7	4826928C	387332D4	3AA9A842	40B88400	000154D6	00900000
(14120)	000119B1	000AFE26	00000003	449C588B	4317067B	CC6B3966	C16E0037	41A03DE3	00000000	00000000
(14160)	00000000	00000000	00000000	41100000	47B04C00	42DA3B32	C11B7546	C78B03CD	C76C4583	C6546093
(14200)	4185F9A5	C2213FAE	C110E4FC	42224DEA	478F6F34	BCA30DD1	42D41CB4	47254B0A	C161B8B7	428EEEE6
(14240)	4815FDE8	38382E42	3A61A655	406B367A	000154D6	00900000	000119B1	000AFE26	00000004	44C54014
(14280)	43167A71	C03CD05A	C1979317	41888EF1	00000000	00000000	00000000	00000000	00000000	41100000
(14320)	47B05959	42DA450F	C11B7884	C78AFBC2	C76C69A0	C65470E6	41862B67	C2213D45	C110E31A	42224C52
(14360)	478F6FA5	BC876843	42D4281F	472554D4	C161AC19	428EF8C3	48124BD5	38416CC6	3A4F4F67	4055022A
(14400)	000154D6									

FILE 2 RECORD 394 LENGTH 8644BYTES

8U1213

(0)	21C40000	00900000	0001514B	000D241D	00000002	44233E49	43193FB5	C0B9E3F9	41336824	3F331F6F
(40)	00000000	00000000	00000000	00000000	00000000	41100000	491637B6	4246C284	4131A809	4877F948
(80)	4914E129	48133784	411B8C16	41D05174	40AB84E6	41D29C4F	478C7344	BDA37E4E	4250AD52	4915AD9F
(120)	41398030	431644D6	457B1977	354604F5	38257613	3E2D1A0F	000154D6	00900000	0001514B	000D241D
(160)	00000005	44139385	431938A4	401F8E19	4126C1F3	3F4065AE	00000000	00000000	00000000	00000000
(200)	00000000	41100000	491637B6	4246C284	4131A809	4877F948	4914E129	48133784	411B8C16	41D05174
(240)	40AB84E6	41D29C4F	478C7344	BDA37E3A	4250AD51	4915AD9F	41398030	431644D6	459AE4C5	3530FDE7
(280)	382F15CF	3E38A06E	000154D6	00900000	0001514B	000D241D	00000006	442FA5F8	43191B40	402C2428

```
( 8240)  41246ECD  3F2174BA  00000000  00000000  00000000  00000000  00000000  41100000  49164798  4246CB92
( 8280)  4131A6CB  48781B4F  4914F140  481344C3  411B844D  41D03ED0  40AB7418  41D29D26  478C4D88  BCDE4FCE
( 8320)  425FF260  4915C91B  41396D18  43164562  454E917E  3522F578  3817519B  3E1B618A  000154D6  00900000
( 8360)  0001515A  000D242C  00000000  43F3B60C  43182081  C119FC1C  412BCEF8  3F20E3E5  00000000  00000000
( 8400)  00000000  00000000  00000000  41100000  49164798  4246CB92  4131A6CB  48781B4F  4914F140  481344C3
( 8440)  411B844D  41D03ED0  40AB7418  41D29D26  478C4D88  BCDE50FA  425FF260  4915C91B  41396D18  43164562
( 8480)  454BACD8E  35137820  3816C1BB  3E195166  000154D6  00900000  0001515A  000D242C  00000014  44117D41
( 8520)  4317D62A  403FBF12  413CB43C  3F1CE745  00000000  00000000  00000000  00000000  00000000  41100000
( 8560)  491648A8  4246CC2E  4131A6B6  48781D94  4914F253  481345A5  411B83C9  41D03D93  40AB72FA  41D2B1F6
( 8600)  478C4C80  3CE45B27  4260F770  4915CB45  41396BCE  4316456C  4541B442  3513A511  3812E060  3E15748F
( 8640)  000154D6
```

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
2	394	395	14404	0	0	0	0	0	0

720418

FILE 3 RECORD 1 LENGTH 14404BYTES

```
(    0)  38440000  00900000  000119AC  000AFE22  00000000  447371F2  431399D2  4122912E  C12C22CA  41619FC4
(   40)  4437C982  417ECA5C  4125DCAA  414DB913  411D1FE5  42180000  47AC3620  42D71895  C11A63D1  C78D60E2
(   80)  C762327C  C64F380C  4175DB8A  C221FD65  C1117B61  4222CC73  478F4B8E  BD964CA8  42D08E95  4722512B
(  120)  C1659A7E  428BCA2E  47B6E6D5  381A5C5C  3A2B5542  4028A41C  000154D6  00900000  000119AE  000AFE23
(  160)  00000000  4456031B  43152771  4118A44B  C122B6DB  419B9EFE  44278A37  42139187  412588DC  414A294A
(  200)  41384627  424F8000  47AD0E16  42D7C3B2  C11A9FF0  C78CE819  C76454C4  C650509A  41795A80  C221D60A
(  240)  C1115BBC  4222B1F5  478F52CA  BD7A3F58  42D14D5E  4722EEG3  C164CC50  428C75E6  48136595  381EC719
(  280)  3A4E7992  404EC4B4  000154D6  00900000  000119AF  000AFE24  00000000  44A61368  4314F36F  C0C1BC55
(  320)  C144025B  41B83CE0  44427B1F  41B8BD52  411C90C8  41596265  413C8F66  42180000  47AE6F4A  42D8D580
(  360)  C11AFDF3  C78C1E71  C767C29C  C6521214  417EDF8C  C22195F1  C11128B9  42228714  478F5F30  BD4A1794
(  400)  42D2820A  4723EEA0  C1637CF5  428D8858  48171386  3849C8F1  3A5DA648  405E1CCC  000154D6  00900000
(  440)  000119B0  000AFE25  00000000  448B4BC8  4316E5DD  C026196E  C1130E67  41A38B68  443DF17C  41FEC761
(  480)  411CE039  412C20AC  41247199  42400000  47AFD3DC  42D9E200  C11B57FC  C78B4B8C  C76B2874  C653CD88
(  520)  41E438E8  C2215550  C110F5E1  42225C31  478F6AF8  BC19CEB4  42D3B5B0  4724F330  C1622A20  428E959C
(  560)  48166819  38391CF5  3A63821C  406D7B7C  000154D6  00900000  000119B1  000AFE26  00000000  44CB6F3E
(  600)  43177608  C13ED075  C1257D9A  41890B51  4450E1C7  41CB9621  413C9F78  41610B2E  4148659C  42168000
(  640)  47B0ADC3  42DA82CC  C11B8CAA  C78AC868  C76D3390  C654D769  41876220  C2212E02  C110D73D  42224246
(  680)  478F7268  3C2CAF61  42D47000  472592D5  C1615C42  428F36AC  48131F0E  38450F6B  3A5669AB  4060AAA7
(  720)  000154D6  00900000  000119B2  000AFE27  00000000  44C4996F  43179C00  C0A64762  C0E43B4D  415E6C5D
(  760)  446488D4  42103436  411ACC7B  414E60AA  4140B48B  42170000  47B1E0A4  42DB60A6  C11BD413  C78A0B5B
(  800)  C770ADCC  C65647EC  418BB4BE  C220F6BF  C11CAC7D  42221ECB  478F7C76  3D2598EF  42D5740B  47267506
(  840)  C163A6C  429C14FB  481676FF  384E4B5A  3A673994  4075763B  000154D6  00900000  000119B3  000AFE28
(  880)  00000000  445D1BBB  431669B4  40A19EF2  C0C2C659  4153782A  4445C993  41D89C39  4114BB89  413B5F48
(  920)  413CD491  42170000  47B306D3  42DC30BD  C11C158A  C7895239  C772B995  C657A2B6  418FB623  C220C1FA
(  960)  C118400  4221FBAB  478F85FB  3D426C54  42D66BC0  47274F34  C15F2562  4290E569  47B25264  3816A6C9
( 1000)  3A3359E  4033A1DD  000154D6  00900000  000119B4  000AFE29  00000000  4480E1C5  43167398  407AE90C
( 1040)  C12FBAAC  412B6A34  4445C0A6  41E3E273  412629B2  411D82C1  411162FB  42178000  47B42B93  42DCFB9D
( 1080)  C11C53FB  C7889668  C7755B6B  C658F5E7  41939239  C2208DA8  C1105C30  4221D9CC  478F8F5B  3D591B46
( 1120)  42D75EAE  472829CC  C15E12B0  4291B08B  475DC1B1  37C48CE4  3A19A1F5  401BC5A8  000154D6  00900000
( 1160)  000119B5  000AFE2A  00000000  444483DA  4315435D  411252AF  C12F88A9  4153BC3B  443329E6  4190D705
( 1200)  4115B15C  41257B53  41195F6E  42168000  47B560FC  42DDCDA4  C11C9322  C787CC26  C7781976  C65A5624
( 1240)  41578487  C220569F  C11032AC  4221B65D  478F9927  3D69CBC4  42D85E1E  47291296  C15CF188  429282C0
( 1280)  47A93593  37DAC0D8  3A2B3DF6  402BBFBD  000154D6  00900000  000119B7  000AFE2C  00000000  442D7772
( 1320)  431195F5  4063D75C  C1183E8E  4181BBF1  43F304B2  4188041B  40D97C10  412FA94B  411673EE  42170000
( 1360)  47B788C8  42DF5885  C11DC5E1  C78639A9  C77D4ED7  C65CEFE2  419ECE32  C21FECB2  C0FE37C8  422172AD
( 1400)  478FABD5  3D73C139  42DA4785  472ADBB1  C15AC49D  42940DF2  47D8A66F  37E53D0B  3A2DC356  40264690
( 1440)  000154D6  00900000  000119B8  000AFE2D  00000000  4514810B  431434F7  414ABC81  C1580183  41564693
( 1480)  4510CF6C  4219120F  41472067  4145C346  411FE447  42378000  47B94ECA  42E05B42  C11D4E34  C7852191
( 1520)  C780C229  C65EA693  41A37C57  C21FA58C  C0FAEEEF  42214583  478FB804  3D6A22CA  42DB8EE2  472C160C
( 1560)  C1594E37  429510C6  47A525D1  38405588  3A2832A8  4026F039  000154D6  00900000  000119B9  000AFE2E
( 1600)  00000000  4519B4F6  43153776  412BA956  C14A8DCF  41982828  449EA3D1  41B7C280  41875395  4155FBAA
( 1640)  413601B8  42180000  47BA27F5  42E0E300  C11D7315  C78489EF  C78293BD  C65F8D08  41A5E721  C21F7FCC
( 1680)  CCF9340A  42212DA1  478FBEDE  3D5FC85E  42CC3CB5  472CBFB2  C15887AB  42959872  48133A77  3894BFE6
( 1720)  3A4EAF14  404FAE5F  000154D6  00900000  000119BA  000AFE75  00000000  44C3B421  4317EFF8  C117A43D
( 1760)  C11EFA3A  414A2599  449B96B6  41DC332D  412BD23E  41411C3B  41124AD2  42170000  47BB5985  42E19EE9
( 1800)  C11DA538  C783B17C  C7851CB6  C660CD70  41A93871  C21F4AD6  C0F6C9C8  42210C31  478FC80D  3D4C3389
( 1840)  42DD3016  472DB0D1  C15770E5  42565460  47A93A14  3825B819  3A30DED7  4037E688  000154D6  00900000
( 1880)  000119BB  000AFE76  00000000  44C6FE95  4316F757  41247000  C12059AA  41555074  44B98F25  41FD2821
( 1920)  41247E0E  41377635  412A53D7  42180000  47BC99C0  42E2602A  C11DD772  C782CB80  C787BC08  C66217C8
```

04/18/72 - 11/04/86

(12520)	39B287CA	3FBC1952	000154D6	00900000	00011A07	000AFF4D	00000000	44579DCA	43145B38	C12A852A
(12560)	C123AB18	409824B0	442A0147	41921288	412650E1	4114AFCA	4049B9A4	42160000	481209E7	43106FF5
(12600)	C123B91B	C724C0C7	C811E154	C6A490DD	4210FF42	C21222C7	C0704F08	4218DC61	4790FFAF	3E135BA0
(12640)	43126FEC	47B6BA10	C111B96A	42BB7EA2	471245B9	371C840E	3947CB9B	3F4458DD	000154D6	00900000
(12680)	00011A08	000AFF4E	00000000	442DDB25	4313E9CC	411D0561	C12AE88C	4122429A	43C50208	4154F372
(12720)	41156DF9	4112A2FF	40D219D0	42190000	48121EA0	431074EE	C120B0AE	C7235C2A	C811F904	C6A52347
(12760)	42110335	C2120353	C06F2DBF	4218C842	479CFD19	3E13A543	43127F1A	47B9433D	C11111FB	42BBCD5C
(12800)	47415329	373BA2DF	39FBEF33	3FFC5066	000154D6	00900000	00011A09	000AFF4F	00000000	4468E2A0
(12840)	43143FD0	41257EA8	C13D7714	4143A6A8	4456BF09	418C80BB	41333A49	41162275	411381A0	42140000
(12880)	4812348C	43107A24	C120A791	C721E25B	C81211EC	C6A5BCB9	4211072F	C211E255	C06DFE9C	4218B326
(12920)	479CFA3C	3E136754	43128F2C	47BBF6AE	C11C623A	42BC20C4	4782C7C8	37F6D440	3A1F5B18	401E698C
(12960)	000154D6	00900000	00011A0A	000AFF50	00000000	44AC5894	43162616	4114657E	C0F1C06A	41287416
(13000)	4435C1A6	4196B68C	41234EA9	41184C1A	4067DB34	42180000	481248A6	43107EE2	C1209F08	C72086FE
(13040)	C81228A3	C6A6483B	42110AA0	C211C444	C06CEAF2	42189FE4	4790F75E	3E12B223	43129DEC	47BE756A
(13080)	CCFC21AA	42BC6B35	4755AADC	37F6EB8A	3A16F135	4C1852A7	000154D6	00900000	00011A0B	000AFF51
(13120)	00000000	44D92DF4	43188D40	C124AAD6	C116860D	41215701	44451008	41C70EFD	41277B60	4116538E
(13160)	406716C5	42170000	48125D98	431083CA	C12095F9	C71F1C5E	C812402B	C6A6D849	42110E06	C211A528
(13200)	CC6BCE36	42188BED	479CF441	3E117F6B	4312AD53	47C1137A	C0F1C6DE	42BCB8F9	474FC0BA	3812331F
(13240)	3A17176B	401B1382	000154D6	00900000	00011A0C	000AFF52	00000000	4483068B	43192389	C11551A4
(13280)	C1223D39	41110BE3	4432646A	4191579C	411AF2CF	4117CF50	4050BA86	42170000	48127242	43108898
(13320)	C12C8CE0	C71DB5C4	C8125746	C6A76532	42111133	C21186AB	C06AB7A0	42187852	4790F10F	3DFE802C
(13360)	4312BC8B	47C3AD42	C0E7ACE9	42ED0516	4728B559	375AC5D1	39C4AB64	3FEB0BDE	000154D6	00900000
(13400)	00011A0D	000AFF53	00000000	44726F30	43190B7D	C07A903D	C12F0FB3	40CFA585	441B1EE6	418EC1DC
(13440)	4112B0D2	4110ACB0	401B172D	42170000	48128730	43108D6D	C1208380	C71C49E0	C8126E8A	C6A7E29B
(13480)	42111437	C2116805	C0699FED	42186487	479CEDAB	3DDF35DE	4312CBF9	47C654CB	C0DD6BF4	42BD51A6
(13520)	471F0306	373A71BF	3995EAD2	3FB34859	00C154D6	00900000	00011A0E	000AFF54	00000000	44542856
(13560)	43187AE0	411D6716	C12F9B47	41176E66	4416EBE0	417E72AE	411236A9	41184868	40A107D1	42170000
(13600)	48129B97	4310921A	C1207A34	C71AE67F	C8128519	C6A87B40	421116FE	C2114A58	C068919B	4218514B
(13640)	479 EA3D	3DBCCAC8	4312DB0B	47C8EDF4	C0D38A59	42BD9BB2	4736EBD6	374E2BC4	3A1046E9	4013181E
(13680)	000154D6	00900000	00011A0F	000AFF55	00000000	44D110AA	4319C875	40B133DD	C15A521C	4121FFFD
(13720)	44566AD9	41A501B4	4115F16A	41167262	4080D7CE	42150000	4812B0B6	431096E9	C120706D	C71975BF
(13760)	C8129C54	C6A9077C	421119B0	C2112BD3	C0677C03	42183D6C	4790E690	3D96B75E	4312EAAA	47CBA424
(13800)	CCC96086	42BDE7DB	4753BAC4	38123E67	3A1A1FB0	4C20445B	000154D6	00900000	00011A10	000AFF56
(13840)	00000000	45109AEC	431A0D40	C11458A0	C14C57D5	4122E8A0	4465EE9E	4171F584	41176375	4119438E
(13880)	40AC46D3	42160000	4812C4C0	43109B6D	C1206702	C718173B	C812B23F	C6A98B60	42111C12	C2110F12
(13920)	CC6676E8	42182AA2	479CE2F3	3D72194A	4312F982	47CE3ADC	C0BFCCF4	42BE2F8B	4756BBF2	3818ACA7
(13960)	3A1B202B	4021A543	000154D6	00900000	00011A11	000AFF57	00000000	44A9D224	431C410A	405F34E5
(14000)	C136CBB8	41172162	44265BEF	419B8C2D	40DF9184	41105AD6	406C5297	42160000	4812D9DD	4310A02A
(14040)	C12C5CF0	C716A515	C812C938	C6AA1525	42111E6C	C210F0F8	C06565FD	421816EC	4790DF06	3D4D1601
(14080)	4313092E	47DCF9DD	C0B5C61B	42EE7A8B	473E47B8	37AC5823	3A1533F8	401C924F	000154D6	00900000
(14120)	00011A12	000AFF58	00000000	44B048BA	431C17AD	C118732D	C1177E6B	40CFA82E	441D38FC	413CAE8D
(14160)	40A5AC80	408D3531	40313C6C	41800000	4812E7F7	4310A350	C120562A	C715ADCD	C812D880	C6AA706A
(14200)	42111FE9	C21CDD01	C064B122	42180906	479CDC58	3D361C34	4313139A9	47D2D13C	C0AF1EE4	42BEAC58
(14240)	4722D286	375A1E20	39BCF010	3FFD7EAA	000154D6	00900000	00011A13	000AFF59	00000000	444B3F5E
(14280)	431915D6	C088C317	C07E59C3	40A3A9E7	4418BC0F	415ED718	40E4BEE1	41100075	4023A46F	41D00000
(14320)	4813074A	4310AA3D	C12046CD	C71386AC	C812FA3C	C6AB3951	421122EB	C210B0EE	C06322C2	4217ECF8
(14360)	479CD629	3CC7F132	43132AFB	47D6F0C6	C0AC706C	42BF1A19	47187881	371E5E17	397666BE	3F8DAF4C
(14400)	000154D6									

861104

FILE 3 RECORD 44 LENGTH 5620BYTES

(0)	15F40000	00900000	00015124	000D23B0	00000000	441ED932	431959E4	40EC25FC	412D0046	3F24A282
(40)	43D90B95	418A553B	40C4E167	403CC2CA	3F19182A	4148000C	4916CEBF	4246AAF8	4131AB4C	4877A160
(80)	4914B7A8	48131557	411BA0C6	41D081E0	40ABB080	41D2EB8A	478D7E15	3D654538	42295C4F	491593AE
(120)	4139B1D8	43164368	455812F8	353275C5	381AC4EE	3E20333F	000154D6	00900000	00015125	000D23B1
(160)	00000000	442F6A39	43198411	40A34E08	411E41F5	3F1F4C2E	4418EE5C	4197CA11	4116AD2A	40AAAEE5
(200)	3F1623F0	41200000	4916CF74	4246AB67	4131AB32	4877A2E8	4914EE60	481315EF	411BA065	41C08110
(240)	40ABAFC0	41D2F3C8	478D77E0	3D75A005	422A475D	49159399	4139B0FE	4316436F	454B889D	352EF1DC
(280)	38170B11	3E1BD15C	000154D6	00900000	00015126	000D23B2	00000000	44169EEF	43194CBE	41107F9B
(320)	412A69BE	3F1A820F	431B0ECC	41411D83	40FC0A36	4C1C874B	3EE2BDD0	41200000	49161193	4246ACA5
(360)	4131AB07	4877A775	4914BA86	481317B4	411B9F51	41DC7E8E	40ABAD80	41D2E988	478D656B	3D8B0F60
(400)	422C4903	49159376	4139AE67	43164382	453FC997	3517C4CB	38136655	3E1757DD	000154D6	00900000
(440)	00015127	000D23B3	00000000	441F6915	4319D68B	4C4B50FA	411FDA4A	3F24836A	43A59E7E	417E6445
(480)	4CFAF365	40D6E110	3EEE6A0B	41800000	491611D6	4246ACCA	4131AB00	4877A800	4914BACA	481317EB
(520)	411B9F2E	41D07E32	40ABAD38	41D2E4E2	478D631A	3D89FEA2	422C8934	49159375	4139AE0E	43164384
(560)	4559D7D6	352B4936	381BF30F	3E226996	000154D6	00900000	00015128	000D23B4	00000000	44179779
(600)	431966AA	411E33AA	412C007C	3F23838B	43BDF792	4179EE5E	40BB1770	41139E17	3F10A594	41600000

PRINTED IN U.S.A.

```
(  3280)  424C00C3  4915A720  41398609  431644AA  458C8E3C  3560C2C6  382C0D19  3E36A4A6  000154D6  00900000
(  3320)  0C015147  C0CD2419  00000000  4431AB75  4319F0A7  408B0F50  411ED1F3  3F3D102D  4367DEE7  41B35504
(  3360)  4111E25D  402673BB  3EBA45AC  412C0000  4916337A  4246C01E  4131A85E  4877F034  4914DCDE  481333FB
(  3400)  411B8E2E  41D05670  40AB8960  41D28390  478C8548  BCB7B028  424C9CC8  4915A7EB  41398547  431644B0
(  3440)  4596ABF0  35775657  382F00BA  3E3A07E9  000154D6  00900000  00015148  000D241A  00000000  4423C938
(  3480)  4319C043  3F2542C9  414F5C72  3F35F376  43534570  416BDDD8  404E6D58  41121909  3F29124F  41380000
(  3520)  49163488  4246C0B6  4131A848  4877F272  4914DDF0  481334DC  411B8DA8  41D0552D  40AB884C  41D28292
(  3560)  478C8072  BD30B8EC  424DA0DB  4915A946  413983FE  431644BA  4583E19B  3547D56B  3828BFE6  3E31D276
(  3600)  000154D6  00900000  00015149  000D241B  00000000  441B0BE2  4319B192  C026BDE6  412C4147  3F3E76CE
(  3640)  435944CA  417502A8  40584777  40638CA1  3F1C4852  41480000  491635F2  4246C180  4131A82C  4877F57C
(  3680)  4914DF5F  4813360A  411B8CF5  41D05383  40AB86C0  41D28ACE  478C7A63  BD64AEC7  424EFBB5  4915AB2A
(  3720)  4139824A  431644C6  45989EA0  35401327  382F2403  3E399F3C  00015 4D6  00900000  0001514A  000D241C
(  3760)  C0000000  444EB34D  4319824F  41124AF7  41306D50  3F2A852B  4426B7DB  4136D861  40F1E48B  40E23DA6
(  3800)  3F25DA93  41600000  491637 5B  4246C24D  4131A810  4877F880  4914EC0D  48133738  411B8C42  41C051DA
(  3840)  40AB8540  41D2988D  478C74A8  BD97315A  42505698  4915AD1F  4139809A  431644D3  4567B5B5  359661B5
(  3880)  381FF89A  3E26FEBB  000154D6  00900000  0001514B  000D241D  00000000  4420AC1E  4319753A  C027B7D8
(  3920)  412B0D2A  3F39F09B  43BDCFE4  4188F519  4069C3EC  407FDFF1  3ECB2BA5  41400000  491637B6  4246C284
(  3960)  4131A809  4877F944  4914E129  48133784  411B8C16  41DC5170  40AB84E0  41D29C44  478C7340  BDA37F40
(  4000)  425 AD50  4915AD9F  41398030  431644D6  458C48B0  354B3F78  382AF02D  3E3402A3  000154D6  00900000
(  4040)  0C01514C  000D241E  00000000  4418B1F5  431A3A35  BF8AB904  4127B894  3F40DF46  43F24903  409CC470
(  4080)  402 90D3  4016EA65  3F4C0563  41180000  491639D4  4246C3BA  4131A7DE  4877FDD2  4914E34E  48133948
(  4120)  411B8B0A  41D04EF5  40AB82A0  41D2B060  478C6B7B  BCE12F40  4252B5F2  4515B0BC  41397D9E  431644E8
(  4160)  45A22E63  352F588F  38333DFA  3E400D8E  000154D6  00900000  0001514D  000D241F  00000000  4422763B
(  4200)  43196D5D  C058A9E8  412DDD48  3F5415C2  4415FB83  418E1C1C  4061666B  40BBF6AE  3F2C8769  41600000
(  4240)  49163AB6  4246C43A  4131A7CA  4877FFB2  4914E433  48133AC4  411B8A9B  41D04DE5  40AB81B0  41D2B4C0
(  4280)  478C687A  BDF3A9F5  42538EDA  4915B215  41397C8A  431644F0  45CB4D75  356FFC1D  383E267A  3E4B3345
(  4320)  000154D6  00900000  0001514E  000D2420  00000000  44220490  43195F3E  C015234D  411E3003  3F462852
(  4360)  43B622F6  41642584  40A85A57  408C20EB  3F32CDA8  41700000  49163AE4  4246C452  4131A7C6  48780012
(  4400)  4914E461  48133A2A  411B8A85  41DC4DB0  40AB8180  41D2B5A2  478C67E2  BDF75BB4  4253BA36  4915B25B
(  4440)  41397C54  431644F2  45A9F9E2  355AFBB9  38340ED9  3E3F1780  000154D6  00900000  0001514F  000D2421
(  4480)  00000000  44277663  4318F361  C113D35B  4148D2B8  3F77ED98  44134856  4180DB00  41169DB1  4120175F
(  4520)  3FCC1592  41880000  49163BF2  4246C4F0  4131A7B0  48780252  4914E574  48133B0C  411B8A0C  41C04C70
(  4560)  40AB8061  41D2B641  478C648F  BE106796  4254BEA5  4915B404  41397B0F  431644FC  4611A7C3  35C18BA1
(  4600)  385420E9  3E632AD4  000154D6  00900000  00015150  000D2422  00000000  442EDD4D  4319CC02  C0C86EC0
(  4640)  4123F4F6  3F4F28B8  441B66B8  41100000  404E1C2C  40502A34  3F2C5D85  41300000  49163D02  4246C590
(  4680)  4131A79F  487804A0  4914E686  48133BEE  411B897A  41DC4B35  40AB7F45  41C2B200  478C617C  BF10DFB4
(  4720)  4255C325  4915B5BA  413979CB  43164505  45C2EB80  35AEFE05  383CA8C8  3E4AAEFF  000154D6  00900000
(  4760)  00015151  000D2423  00000000  443E7E73  431997D2  C02A331E  4132B753  3F54DAA0  441073A8  41508814
(  4800)  41155D0E  40EE4E0E  3F1CF31A  41A00000  49163E62  4246C654  4131A780  4878078E  4914E7EB  48133D13
(  4840)  411B88CC  41DC4991  40AB7DCB  41D2A5D0  478C5DB3  BE1CADA9  425715C4  4915B8C3  41397821  43164511
(  4880)  45CEEE9C  35C7F808  383FC949  3E4DCC71  000154D6  00900000  00015152  000D2424  00000000  44280D28
(  4920)  4319227B  C05F32CC  41306568  3F350AA0  43F8AB65  41348923  40937830  4073D786  3F1947A0  41500000
(  4960)  49163FF8  4246C740  4131A763  48780AF3  4914E987  48133E67  411B8E06  41C047BC  40AB7C1C  41D292A6
(  5000)  478C59DC  BDF810E6  42589CA9  4915BABC  41397639  4316451F  457EED53  355B4DB3  3826639F  3E2DF054
(  5040)  000154D6  00900000  00015153  000D2425  00000000  443861D6  4318CC52  C0480E2C  4128EFB3  3F4733CC
(  5080)  441 B117  41E4CB3F  40BACA2B  403244D4  3F13282C  41400000  49164C2F  4246C760  4131A75F  48780B68
(  5120)  4914E98E  48133E95  411B87EC  41DC4780  40AB7BE4  41D28FF4  478C5960  BDF4DA64  4258D0C4  4915BB1A
(  5160)  413975FA  43164521  45A739F4  35A4C33C  3831AE85  3E3A72EC  000154D6  00900000  00015156  000D2428
(  5200)  00000000  4422FF4D  4318FEAC  3F9CAED0  41303A1E  3F29951D  43B6A759  413B76DA  4075DB75  40E95134
(  5240)  3F1E6F04  41400000  49164468  4246C9C4  4131A70A  48781480  4914EE08  4813421D  411B85D9  41C04284
(  5280)  40AB7770  41D27120  478C5184  BD7A70FC  425CE3B4  4915C2DB  413970E6  43164546  456356FC  3534B102
(  5320)  381DFEBA  3E23D563  000154D6  00900000  00015159  000D242B  00000000  441F5A6A  43193262  C01E2229
(  5360)  41219876  3F2F417E  43847B4A  41AD1F93  40643C36  4115FA27  3F1E7A7A  41E00000  491646F2  4246CB2E
(  5400)  4131A6D3  487819E6  4914F098  48134439  411B8498  41DC3F89  40AB74BC  41D29074  478C4E38  BD2594F
(  5440)  425F53F0  4915C7CE  41396DD4  4316455B  45722484  3539BA4A  3822E0BB  3E2A34A0  000154D6  00900000
(  5480)  0001515A  000D242C  00000000  44105C50  4317FB55  C0B00150  4133E19A  3F1EE595  43198B34  413510E5
(  5520)  411530F5  40C7A33C  3E2D1B2A  412C0000  49164820  4246CBE0  4131A6C0  48781C71  4914F1C9  48134534
(  5560)  411B840B  41DC3E30  40AB7388  41D2A788  478C4D00  3B3C5168  426074E8  4915CA30  41396C73  43164567
(  5600)  4546B0E8  35138E98  381471 0D  3E1762FA  000154D6
```

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
3	44	45	14404	0	0	0	0	0	0

720324

03/24/72-08/28/87

FILE 4 RECORD 1 LENGTH 13604BYTES

```
(    0)  35240000  00440000  000AFDC4  0296D780  C7939BF3  C717BC22  C6272B8F  C120CEBC  C225C9A7  C1153ED5
```

PRINTED IN U.S.A.

```
( 13240)  478F1421  C11DA3D9  43117A3D  BD2310A0  41189117  4817D129  00440000  000B001D  0296D780  473DD33B
( 13280)  C8171BB2  C6C15E18  4210DEFA  C1B75646  C03593CE  481770F2  42146599  478F09E4  C11D973A  43117D09
( 13320)  BD21888C  41283DE6  4818C0FF  00440000  00CBC01E  0296D780  473F36F9  C8172AC1  C6C1A454  4210DBD4
( 13360)  C1B62C2D  C034F7B5  4817837F  421458CA  478EFFAB  C11D8A9B  43117FFF  BD167120  4137ED3F  481830C7
( 13400)  00440000  000B001F  0296D780  47409A75  C81739B7  C6C1E9C2  4210D8A4  C1B50412  C0345CD2  48179603
( 13440)  42144CC2  478EF575  C11D7DFB  431182F1  BC2A21FF  41479F36  48186C80  00440000  000B0020  0296D780
( 13480)  4741FDAC  C8174896  C6C22E65  4210D56A  C1B3DDF1  C033C324  4817A87E  42143F32  478EEB4C  C11D715B
( 13520)  431185DF  3D187380  41753D3  4818902A  00440000  000B0021  0296D780  474360A0  C817575C  C6C2723E
( 13560)  4210D227  C1B2B9C5  C0332AA5  4817BAF0  42143255  478EE109  C11D64BB  431188C8  3D38F040  41670B19
( 13600)  4818BFC4
```

870828

```
FILE        4  RECORD        34  LENGTH   10680BYTES
(     0)  29B80000  00440000  000D49AC  00000000  487A3D7E  4915F523  48141AE9  411B0BFC  41CF1D9B  40AA8CE0
(    40)  4917485E  41D129A8  479C2335  413193AB  42475730  3C8E897F  4314E2DF  49175C05  00440000  000D49AD
(    80)  00000000  487A3FB9  4915F634  48141BCA  411B0B86  41CF1C72  40AA8BD9  4917456C  41D131C5  47901AC1
(   120)  41319398  424757BB  3DB1E3DF  4314F254  49175AAC  00440000  000D49AE  00000000  487A41F3  4915F745
(   160)  48141CAB  411B0B0F  41CF1B4A  40AA8AD3  49174A7A  41D13F23  47901229  41319384  42475846  3DD1A93F
(   200)  431501CA  49175951  00440000  00CD49AF  00000000  487A442D  4915F856  48141D8C  411B0A98  41CF1A22
(   240)  40AA89CD  49174B88  41D14F9C  47900970  41319370  424758D2  3DEC073F  43151142  491757F6  00440000
(   280)  000D49F5  00000000  487A4668  4915F967  48141E6D  411B0A21  41CF18FA  40AA88C7  49174C96  41D15FDA
(   320)  47900099  4131935C  42475960  3DFF551F  431520BB  49175699  00440000  000D49F6  00000000  487A48A2
(   360)  4915FA78  48141F4E  411B09AA  41CF17D3  40AA87C1  45174DA3  41D16BBD  478FF7A8  4131934B  424759EE
(   400)  3E1CA30C  43153036  4917553C  00440000  000D49F7  00000000  487A4ADC  4915FB89  4814202E  411B0933
(   440)  41CF16AB  40AA86BC  49174EB1  41D16F3E  478FEE9F  41319334  42475A7D  3E10B9F8  43153FB3  491753DE
(   480)  00440000  000D49F8  00000000  487A4D17  4915FC9A  481421CF  411B0BBD  41CF1584  40AA85B6  49174FBF
(   520)  41D167E4  478FE584  41319320  42475B0B  3E1C32FC  43154F31  49175280  00440000  000D49F9  00000000
(   560)  487A4F51  4915FDAB  481421F0  411B0846  41CF145C  40AA84B1  491750CD  41D15648  478FDC5A  4131930C
(   600)  42475B99  3DF1157F  43155EB1  49175121  00440000  000D49FA  00000000  487A518B  4915FEBC  481422D1
(   640)  411B07CF  41CF1335  40AA83AC  491751DB  41D13EBA  478FD324  413192F8  42475C26  3DD63A3F  43156E32
(   680)  49174FC3  00440000  000D49FB  00000000  487A53C5  4915FFCD  481423B2  411B0759  41CF120F  40AA82A7
(   720)  491752E9  41D127F8  478FC9E5  413192E4  42475CB1  3DB4359F  43157DB5  49174E64  00440000  000D49FC
(   760)  00000000  487A55FF  491600DE  48142492  411B06E2  41CF10E7  40AA81A2  491753F7  41D11872  478FC09E
(   800)  413192D0  42475D3B  3D8D2B9F  43158D3A  49174D06  00440000  000D49FD  00000000  487A583A  491601EF
(   840)  48142573  411B066C  41CF0FC1  40AA809D  49175505  41D113A0  478FB751  413192BC  42475DC5  3D6393BF
(   880)  43159CC1  49174BA7  00440000  000D49FE  00000000  487A5A74  49160300  48142654  411B05F5  41CF0E9A
(   920)  40AA7F99  49175613  41D118F3  478FADFD  413192A8  42475E4E  3D39F73F  4315AC4A  49174A4A  00440000
(   960)  000D49FF  00000000  487A5CAE  49160411  48142735  411B057F  41CF0D73  40AA7E94  49175721  41D124E1
(  1000)  478FA4A1  41319294  42475ED8  3D12B3FF  4315BBD5  491748ED  00440000  000D4A00  00000000  487A5EF8
(  1040)  49160522  48142816  411B0508  41CF0C4D  40AA7D90  4917582F  41D132E4  478F9B3B  41319280  42475F63
(  1080)  BD12DFF  4315CB63  49174791  00440000  000D4A01  00000000  487A6121  49160633  48142BF6  411B0492
(  1120)  41CF0B27  40AA7C8C  4917593D  41D13F3D  478F91CA  4131926C  42475FEF  BD2D131F  4315DAF3  49174636
(  1160)  00440000  000D4A02  00000000  487A635B  49160744  481429D7  411B041C  41CF0A01  40AA7B88  49175A4B
(  1200)  41D1479F  478F884C  41319258  4247607C  BD42D0BF  4315EA86  491744DD  00440000  000D4A03  00000000
(  1240)  487A6595  49160855  48142AB8  411B03A5  41CF08DB  40AA7A85  49175B5B  41D14BC6  478F7EBF  41319244
(  1280)  42476108  BD50A7DF  4315FA1B  49174384  00440000  000D4A04  00000000  487A67CF  49160966  48142B99
(  1320)  411B032F  41CF07B5  40AA7981  49175C66  41D14949  478F7522  41319230  42476195  BD563B3F  43160982
(  1360)  4917422E  00440000  000D4A05  00000000  487A6A09  49160A76  48142C79  411B02B9  41CF068F  40AA787E
(  1400)  49175D74  41D142DD  478F6B72  413921C1  42476222  BD5384DF  4316194C  49174D09  00440000  000D4A06
(  1440)  00000000  487A6C43  49160B87  48142D5A  411B0243  41CF0569  40AA777A  49175E82  41D138AE  478F61AF
(  1480)  41319208  424762AE  BD48CECC  431628E8  49173F86  00440000  000D4A07  00000000  487A6E7C  49160C98
(  1520)  48142E3B  411B01CC  41CF0444  40AA7677  49175F90  41D12BFB  478F57D7  413191F4  4247633A  BD36ACFF
(  1560)  43163887  49173E35  00440000  000D4A08  00000000  487A70B6  49160DA9  48142F1B  411B015E  41CF031E
(  1600)  40AA7574  4917609E  41D11E4E  478F4DEA  413191E1  424763C5  BD1DFABF  43164828  49173CE6  00440000
(  1640)  000D4A09  00000000  487A72EF  49160EBA  48142FFC  411B00E0  41CF01F9  40AA7471  491761AC  41D11176
(  1680)  478F43E6  413191CD  4247644E  3B27DFFF  431657CB  49173B9B  00440000  000D4ACA  00000000  487A7529
(  1720)  49160FCB  481430DD  411B006A  41CF00D4  40AA736F  491762BA  41D10771  478F39CB  413191B9  424764D8
(  1760)  3D2259BF  43166771  49173A51  00440000  000D4A0B  00000000  487A7763  491610DC  481431BE  411AFFF4
(  1800)  41CEFFAF  40AA726C  491763C7  41D10220  478F2F99  413191A5  42476560  3D46FF1F  43167719  4917390B
(  1840)  00440000  000D4A0C  00000000  487A799C  491611ED  4814329E  411AFF7D  41CEFE8A  40AA716A  491764D5
(  1880)  41D102DE  478F2551  41319191  424765E9  3D6C4C7F  406C3CC3  491737C8  00440000  000D4A0D  00000000
(  1920)  487A7BC6  491612FE  4814337F  411AFF07  41CEFD65  4CAA7068  491765E3  41D10A12  478F1AF2  4131917D
(  1960)  42476672  3D9C56DF  41167034  49173688  00440000  000D4ACE  00000000  487A7ECF  4916140F  48143460
(  2000)  411AFE91  41CEFC40  40AA6F66  491766F1  41D116E7  478F107E  41319169  424766FC  3DB129FF  41261ECB
(  2040)  4917354C  00440000  000D4A0F  00000000  487A8048  49161520  48143540  411AFE1B  41CEFB1B  40AA6E64
(  2080)  491767FF  41D12730  478F05F7  41319155  42476786  3DCCE25F  4135CF88  49173413  00440000  000D4A10
(  2120)  00000000  487A8282  49161630  48143621  411AFDA5  41CEF9F7  40AA6D62  491769DD  41D13794  478EFB60
```

PRINTED IN U.S.A.

(10080)	487B85B3	491692BE	48149CAE	411AC845	41CE7575	4CA9FB2A	4917E442	41D08546	478C6AA1	41318844
(10120)	4247A6B5	BD81AAFF	427A3174	49178C21	00440000	000D6DFC	00000000	487B87E8	491693CE	48149D8F
(10160)	411AC7D4	41CE7454	40A9FA36	4917E54F	41D08598	478C6DFF	41318831	4247A73A	BDAACADF	427B35EF
(10200)	49178F22	00440000	000D6DFD	00000000	487B8A1D	491694DE	48149E6F	411AC762	41CE7332	40A9F942
(10240)	4917E65D	41D08E24	478C7184	4131881D	4247A7BE	BDD1697F	427C3A57	4917922A	00440000	000D6DFE
(10280)	00000000	487B8C52	491695EF	48149F4F	411AC6F1	41CE7211	40A9F84E	4917E76A	41D09AF3	478C7533
(10320)	4131880A	4247A843	BDF37D7F	427D3EAC	49179539	00440000	000D6DFF	00000000	487B8E87	491696FF
(10360)	4814A02F	411AC67F	41CE70EF	40A9F759	4917E877	41DCA838	478C750E	413187F6	4247A8C9	BE10F68F
(10400)	427E42ED	4917984E	00440000	000D6E00	00000000	487B90BC	4916980F	4814A10F	411AC60E	41CE6FCD
(10440)	4CA9F665	4917E985	41D0B2FF	478C7D18	413187E3	4247A950	BE123FEF	427F471B	49179B69	00440000
(10480)	000D6E01	00000000	487B92F0	4916991F	4814A1EF	411AC59D	41CE6EAC	40A9F570	4917EA92	41D0B958
(10520)	478C8152	413187CF	4247A9D8	BE130803	42804B35	49179E8A	00440000	000D6E02	00000000	487B9525
(10560)	49169A2F	4814A2CF	411AC52D	41CE6D8A	40A9F47B	4917EB9F	41D0BA51	478C85BE	413187BC	4247AA5F
(10600)	BE134947	42814F3A	4917A1B1	00440000	000D6E03	00000000	487B975A	49169B3F	4814A3AF	411AC4BD
(10640)	41CE6C68	40A9F386	4917ECAC	41D0B5E0	478C8A5E	413187A9	4247AAE7	BE13043E	4282532A	4917A4DF

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
4	34	35	13604	0	0	0	0	0	0

72103

04/15/72-01/25/85

FILE 5 RECORD 1 LENGTH 12004 BYTES

(0)	2EE40000	00180000	000119A9	0000A9B0	421BD999	42BEAB85	41A39062	00180000	000119AF	0000A9B0
(40)	4216A147	42C26E14	41D61E83	00180000	000119B6	000C690C	421276AA	42C9FA4A	42147375	00180000
(80)	000119B6	000C690A	421276AA	42C9FA4A	00000000	00180000	000119B6	00007F44	42126C54	42CA0D03
(120)	00000000	00180000	000119B6	00007F4E	42126C54	42CA0D03	421484FE	00180000	000119B8	00000000
(160)	42116E14	42CBD999	42163456	00180000	000119B8	00007D28	42115370	42C93463	42138C10	00180000
(200)	000119B8	00007D32	42115370	42C93463	00000000	00180000	000119B8	00008994	421150CB	42C8F12C
(240)	00000000	00180000	000119B8	0000899E	421150CB	42C8F12C	42134E8C	00180000	000119B8	0000E484
(280)	42113D70	42C7051E	42115A43	00180000	000119BF	00001770	41C6B851	42D0B0A3	421A71FE	00180000
(320)	000119BF	0000C41A0	41900000	42D4F851	421E371A	00180000	000119BF	00004AC4	418FCB34	42D50BB8
(360)	421E4ACE	00180000	000119BF	0000C4CE	418FCB34	42D50BB8	00000000	00180000	000119BF	00007ECC
(400)	418E9EAA	42D57A26	00000000	00180000	000119BF	00007ED6	418E9EAA	42D57A26	421E85F0	00180000
(440)	000119C1	00014BA4	417AC4A4	42DCC583	4225D497	00180000	000119C1	00014BAE	417AC4A4	42DCC583
(480)	00000000	00180000	000119C4	00013A10	416451EB	42E5051E	00000000	00180000	000119C8	00010B30
(520)	414F0A3D	42FB1EB8	00000000	00180000	000119C9	0000F168	414BAE14	43102428	00000000	00180000
(560)	000119CA	0000FD20	414970A3	43109F5C	00000000	00180000	000119CB	00011238	41473333	431119FB
(600)	00000000	00180000	000119CB	00014CD0	4143851E	C230E3D7	00000000	00180000	000119CF	0000A8C0
(640)	415EE147	C21E6666	00000000	00180000	000119D1	00008CA0	416E3D70	C218D1EB	00000000	00180000
(680)	000119D3	00012048	417DC28F	C214D47A	00000000	00180000	000119D7	0000A8C0	419CCCCC	C1F87AE1
(720)	00000000	00180000	000119D9	00007080	41ACA3D7	C1DBAE14	00000000	00180000	000119DB	000049D4
(760)	41BBD70A	C1C23D70	00000000	00180000	000119DD	0000043F8	41CA8F5C	C1B07AE1	00000000	00180000
(800)	000119DF	00003840	41D947AE	C19F851E	00000000	00180000	000119E1	00003F48	41E7AE14	C1907AE1
(840)	00000000	00180000	000119E3	00004650	41F5C28F	C18428F5	00000000	00180000	000119E5	00003138
(880)	42103AE1	C178A3D7	00000000	00180000	000119E6	00002DB4	4210A9A8	C1742EF6	00000000	00180000
(920)	000119E6	00002DBE	4210A9A8	C1742EF6	C18FEC8E	00180000	000119E7	00002DB4	42111999	C16FAE14
(960)	C18A9DB2	00180000	000119E9	00004650	4211E8F5	C1670A3D	C1807C50	00180000	000119EB	00003BC4
(1000)	4212BD70	C15F851E	C177703A	00180000	000119ED	00002A30	4213851E	C159C28F	C1703E42	00180000
(1040)	000119EF	00012750	4214428F	C1528F5C	C167AE7D	00180000	000119F0	00009AB0	4216C28F	C157D70A
(1080)	C1685C91	00180000	000119F0	0000A8C0	42130F5C	C14051EB	C157A64C	00180000	000119F1	00003840
(1120)	42137851	C13FD70A	C1566A4A	00180000	000119F3	00001C20	42144000	C13C51EB	C15175C2	00180000
(1160)	000119F5	00003840	4214F5C2	C13851EB	C14C2752	00180000	000119F7	00003840	4215B0A3	C133AE14
(1200)	C1462B9F	00180000	000119F9	00009AB0	42166B85	C13147AE	C1426D5C	00180000	000119FA	00009AB0
(1240)	4216C7AE	C130F5C2	C14171DE	00180000	000119FB	00007E90	4217170A	C12FAE14	C13F982A	00180000
(1280)	00011A01	00008CA0	42192E14	C12970A3	C1358240	00180000	00011A03	00008CA0	4219D47A	C12851EB
(1320)	C133315B	00180000	00011A03	00011AA8	4219F7AC	C1281876	C132B724	00180000	00011A03	00011AB2
(1360)	4219F7AC	C1281876	00000000	00180000	00011A03	00014730	421AC2B4	C1280672	00000000	00180000
(1400)	00011A03	0001473A	421AC2B4	C1280672	C13290D3	00180000	00011A04	00002B20	421A0FF2	C127F0D4
(1440)	C13262D8	00180000	00011A04	00002B2A	421A0FF2	C127F0D4	00000000	00180000	00011A04	000041DC
(1480)	421A1594	C127E7A1	00000000	00180000	00011A04	000041E6	421A1594	C127E7A1	C1324F48	00180000
(1520)	00011A04	000113DC	421A499D	C12792AD	C1319A96	00180000	00011A04	000113E6	421A499D	C12792AD
(1560)	00000000	00180000	00011A04	000133F8	421A5192	C12785B0	00000000	00180000	00011A04	00013402
(1600)	421A5192	C12785B0	C1317EF5	00180000	00011A04	00013560	421A51EB	C127851E	C1317DBF	00180000
(1640)	00011A04	00014370	4216C28F	C11FAE14	C130339C	00180000	00011A05	000011D0	4216CD9E	C11F920D
(1680)	C13[illegible]C33C	00180000	00011A05	000C11DA	4216CD9E	C11F920D	00000000	00180000	00011A05	000033CC
(1720)	4216D968	C11F742B	00000000	00180000	00011A05	000033D6	4216D968	C11F742B	C12FCFA8	00180000
(1760)	00011A07	00003840	4217C51E	C11D1EB8	C12BC87F	00180000	00011A09	00005460	42185C28	C11CF5C2

PRINTED IN U.S.A.

(9720)	00000000	00180000	0001214E	000131DC	41307AE1	42B33AE1	00000000	00180000	0001214E	00013EC0
(9760)	41307AE1	42B34000	00000000	00180000	0001214E	00014A00	41306AB4	42B361AC	00000000	00180000
(9800)	0001214E	00014A0A	41306AB4	42B361AC	42AE1E7C	00180000	0001214F	00013830	412E8F5C	42B71EB8
(9840)	42B1B333	00180000	0001214F	0001383A	412E8F5C	42B71EB8	C124CCCC	00180000	00012150	00000E10
(9880)	412E6666	42B7947A	C11DAC3B	00180000	00012150	00014118	412C5FB5	42B7150B	C1289660	00180000
(9920)	00012150	00014122	412C5FB5	42B7150B	00000000	00180000	00012150	00014B68	412C4E49	42B710C3
(9960)	00000000	00180000	00012150	00014B72	412C4E49	42B710C3	C128F513	00180000	00012151	000001A4
(10000)	412C4138	42B70D8D	C1293C22	00180000	00012151	000001AE	412C4138	42B70D8D	00000000	00180000
(10040)	00012152	00002A30	4129C28F	42B670A3	00000000	00180000	00012155	00003840	412028F5	42B9F333
(10080)	00000000	00180000	00012156	0000E628	411D2C0A	42B707E4	00000000	00180000	00012156	0000E632
(10120)	411D2C0A	42B707E4	C14692F8	00180000	00012156	0000EF10	411D1EB8	42B6FAE1	C147831D	00180000
(10160)	00012156	00010B30	411CF5C2	42B6D1EB	C14A74E8	00180000	00012156	00012750	413FAE14	42B55999
(10200)	C12EB1CF	00180000	00012156	00014370	413F851E	42B563D7	C12E2EE5	00180000	00012158	00005460
(10240)	413DC28F	42B60000	C125E259	00180000	0001215A	00001C20	413851EB	42B72E14	C118154A	00180000
(10280)	0001215C	00001518	41326666	42B6F851	C12223B1	00180000	0001215E	00000E10	412E3D70	42B6F333
(10320)	C127FA99	00180000	0001215E	00001E78	412E147A	42B6F333	C12834C7	00180000	0001215F	00003840
(10360)	414F3333	42B1D70A	C15D28B6	00180000	0001215E	00004650	414FCA3D	42B1D7CA	C15D3B94	00180000
(10400)	00012160	00000000	414AB851	42B20F5C	C15BF00D	00180000	00012162	00005460	41440000	42B22666
(10440)	C15EAB80	00180000	00012164	0000EF10	413DC28F	42B23D70	C1620B4E	00180000	00012164	00010B30
(10480)	413D9999	42B23D70	C1622E68	00180000	00012164	00013560	415C51EB	42B275C2	C14E29F1	00180000
(10520)	00012166	00000000	415947AE	42B2B851	C14AFEB8	00180000	00012167	00000000	4154A3D7	42B2C000
(10560)	C14C3A23	00180000	0001216A	00000000	414DEB85	42B2CA3D	C14E9438	00180000	0001216C	0000F100
(10600)	4147C70A	42B32666	C14C2BC6	00180000	0001216C	00012750	416F851E	42B3147A	C13FA7E0	00180000
(10640)	0001216E	00000000	416CA3D7	42B37AE1	C139CE7B	00180000	00012170	00000000	4167AE14	42B3A8F5
(10680)	C137F7F3	00180000	00012172	00000000	416170A3	42B3C000	C1380CF0	00180000	00012174	000079E0
(10720)	415B3333	42B3F0A3	C136D67D	00180000	00012174	000087F0	415B0A3D	42B3F0A3	C136E3B5	00180000
(10760)	00012174	0000A668	417D70A3	42B4451E	C12A564C	00180000	00012174	0000B220	417D47AE	42B447AE
(10800)	C12A3364	00180000	00012176	00000000	417970A3	42B47851	C127BDF9	00180000	0001217B	00001518
(10840)	4174A3D7	42B4B5C2	C124ACCF	00180000	00012179	00001518	41711EB8	42B52E14	C11DC3AE	00180000
(10880)	0001217B	00001518	416C0000	42B53AE1	C11DEF19	00180000	0001217C	0000EC88	4168CCCC	42B5428F
(10920)	C11E1F2A	00180000	0001217C	00010B30	41887AE1	42B41C28	C12B56A3	00180000	0001217C	00011940
(10960)	418851EB	42B41C28	C12B5C3F	00180000	0001217F	00005460	4183851E	42B46147	C127B454	00180000
(11000)	00012181	00000000	417EE147	42B4FAE1	C11EC41D	00180000	00012184	00000E10	4177AE14	42B51C28
(11040)	C11DC75C	00180000	00012185	00007080	4174F5C2	42B5428F	C11BD253	00180000	00012185	00007B0C
(11080)	4174F5C2	42B5428F	C11BD253	00180000	00012185	0000972C	419828F5	42B51C28	C1193340	00180000
(11120)	00012185	00009AB0	419828F5	42B51C28	C1193340	00180000	00012187	00000000	41951EB8	42B58000
(11160)	C11360E1	00180000	00012188	000140A0	419070A3	42B5D4DD	C0EB655D	00180000	00012188	000140AA
(11200)	419070A3	42B5D4DD	00000000	00180000	00012188	00014D48	41905999	42B5D67E	00000000	00180000
(11240)	00012188	00014D52	41905999	42B5D67E	C0E9F5A1	00180000	00012189	00000000	419051EB	42B5D70A
(11280)	C0E97B0C	00180000	0001218B	00005460	418A3D70	42B663D7	C069E3F3	00180000	0001218D	00000000
(11320)	4185C28F	42B663D7	C073B8BA	00180000	0001218E	0000D2F0	4181EB85	42B6BAE1	C0254708	00180000
(11360)	0001218E	0000DC50	4181EB85	42B6BAE1	C0254708	00180000	0001218F	000115BC	41A51EB8	42B4428F
(11400)	C124F527	00180000	0001218E	00012750	41A4F5C2	42B4428F	C124FB28	00180000	00012190	00000000
(11440)	41A147AE	42B46E14	C122CB97	00180000	00012192	00004650	419CA3D7	42B4C51E	C11E03F2	00180000
(11480)	00012194	00000A8C	4197AE14	42B51C28	C1194439	00180000	00012196	00001518	4192E147	42B53851
(11520)	C1182A17	00180000	00012199	00000000	418C7AE1	42B5851E	C1143BCC	00180000	00012199	00001518
(11560)	418C51EB	42B587AE	C1141866	00180000	00012199	000050DC	41AFAE14	42B575C2	C1102B6B	00180000
(11600)	00012199	00006270	41AF851E	42B57851	C11008C3	00180000	0001219B	00000000	41AA8F5C	42B5947A
(11640)	CCFC7804	00180000	0001219D	00000000	41A66666	42B5E8F5	C0A5E8F9	00180000	0001219F	00000000
(11680)	41A147AE	42B58000	C111ACDF	00180000	000121A1	00003840	419CCCCC	42B5F333	C0B1CE5E	00180000
(11720)	000121A3	00000000	4198A3D7	42B60F5C	C09EF0BB	00180000	000121A3	0000189C	41987AE1	42B60F5C
(11760)	C09F4B79	00180000	000121A3	00003138	41B9EB85	42B1C000	C149ED7F	00180000	000121A3	00003840
(11800)	41B9EB85	42B1C000	C149ED7F	00180000	000121A5	00000000	41B4A3D7	42B22E14	C143E116	00180000
(11840)	000121A7	00000000	41B028F5	42B29C28	C13DB216	00180000	000121A9	00000000	41AC28F5	42B2D70A
(11880)	C13AA0A5	00180000	000121AB	00000000	41A6B851	42B34000	C134E1D3	00180000	000121AD	00000000
(11920)	41A28F5C	42B3A666	C12F1730	00180000	000121B0	00013560	419A6666	42B44A3D	C126025B	00180000
(11960)	000121B0	00014820	419A3D70	42B44CCC	C125DF1B	00180000	000121B1	00000E10	418D1EB8	42B18CCC
(12000)	C14C9EFD									

FILE 5 RECORD 4 LENGTH 3556BYTES

(0)	0DE40000	00180000	00014C21	00001518	405C28F6	C21B199A	C22787AE	00180000	00014C21	00003840
(40)	40851EB8	C1AE6666	C2169EB8	00180000	00014C27	00006270	408A3D71	C19BD70A	C2155C29	00180000
(80)	00014C2B	00000000	4091EB85	C18D70A4	C2145C29	00180000	00014C32	00000000	40947AE1	C17DEB85
(120)	C213570A	00180000	00014C39	00000000	4095999A	C17F851F	C213547B	00180000	00014C4C	00000000
(160)	40A147AE	C17E147B	C2132148	00180000	00014C47	00000000	40A3D70A	C1735C29	C2126885	00180000
(200)	00014C4E	00000000	40A8F5C3	C17C28F6	C212E148	00180000	00014C55	00000000	40B0A3D7	C174F5C3

PRINTED IN U.S.A.

DUMP OF TAPE SOUT3

Pioneer 11
D63221
04/21/73 · 05/08/86

INPUT TAPE SOUT3 ON FT0
DATA INPUT H9 NF=5 FL=5=1=1

730421

FILE 1 RECORD 1 LENGTH 14404BYTES

(0)	38440000	00900000	00011D97	000B2535	000C0822	452E1BC2	4330EF45	421EA7B6	C12778D2	4113159A
(40)	43F4A709	4053F269	42C8A353	402803C4	4010309 5	411AA3C3	47926540	42D70AF5	C0FCFCFC	C778524C
(80)	C7535AC0	C6285156	42111F75	C22254D5	C12030D8	42266B34	478F6149	BD151642	42D2C7BE	46B76D6E
(120)	C15B341B	428BA46F	00000000	00000000	00000000	00000000	000121A0	00900000	00011D97	000B2535
(160)	000015 7C	453721DD	432EA3C7	421DAE6A	C121FCA9	4115B3C2	441AAC3B	412ADCFA	42C8B35C	408511BD
(200)	40120435	4279828C	475269DA	42D7174C	C0FD9D45	C7784401	C7537765	C6286C32	42112381	C2225206
(240)	C1202F7A	42266A7F	478F61B0	BD16408D	42D2D19E	46B7E775	C15B2AFD	428BB0E6	00000000	00000000
(280)	00000000	00000000	000121A0	00900000	00011D97	000B2535	000023F3	455363ED	433135FC	421DAAEB
(320)	C042BCF1	41156A85	442A5A1B	411DB63B	42C88BE1	4CA1B4CD	401214CF	4226D59D	47926ED7	42D724BB
(360)	C0FE4B0A	C7783485	C753966D	C628894B	421127F4	C2224FEB	C1202DFF	42266988	478F621F	BD1783B8
(400)	42D2DC52	46B86BA8	C15B211D	428BBE66	00000000	00000000	00000000	00000000	000121A0	00900000
(440)	00011D97	000B2535	0000313B	453AF01D	4330A6D7	421FA5F6	C157AB9B	4115BF14	44116SAC	40FD59C6
(480)	42C8515F	409761CB	3FCE5304	41ED2950	47927371	42D73110	C0FEEA66	C7782645	C753B2E6	C628A401
(520)	42112BE9	C2224C2E	C1202CA1	42266906	478F6285	BD18AFF2	42D2E625	46B8E501	C15B1803	428BCACA
(560)	00000000	00000000	00000000	00000000	000121A0	00900000	00011D97	000B2535	00003F98	4539A6A1
(600)	432E78A2	421CC08F	C14B9B5F	41175605	44455895	411CC026	42C96190	405D7826	402A26FB	4223FEB6
(640)	47927871	42D73E65	C0FF969A	C77816D4	C753D1AE	C628C0E2	42113040	C2224925	C1202B25	42266841
(680)	478F62F3	BD19F7E5	42D2F0C6	46B9683B	C15B0E21	428BD830	00000000	00000000	00000000	00000000
(720)	000121A0	00900000	00011D97	000B2535	000C4D4F	452EF096	432E35AB	421EC5B0	C1249E52	4118266F
(760)	4411DC8B	41179017	42C8B579	404D3CC3	4010 3CC4	41BF85DC	47927D37	42D74B1F	C11003AF	C7780817
(800)	C753EF10	C628DC75	42113465	C222463F	C12029BB	42266785	478F635D	BD1B3102	42D2FAEC	46B9E581
(840)	C15B04B4	428BE4FB	00000000	00000000	00000000	00000000	000121A0	00900000	00011D97	000B2535
(880)	000 5BAD	453B15C7	432E46B8	422F2506	C17C376D	428E0129	4427C15C	4137201F	42C8D472	406E4F84
(920)	4288E00D	4291C292	47928237	42D75873	C11C0E73	C777F8A6	C7540DD8	C628F557	421138BC	C2224336
(960)	C120283F	422666C0	478F63CB	BD1C7905	42D3058D	46BA68BB	C15AFAD4	428BF25F	00000000	00000000
(1000)	00000000	42640000	000121A0	00900000	00011D97	000B2535	00006A0B	453B6471	432DFB43	421E3DFC
(1040)	C17A392B	4119882C	442106D6	41159039	42C872FB	407CE6C7	401686BC	422787A2	4792873E	42D765C6
(1080)	C1101933	C777E92D	C7542C9B	C6291636	42113D11	C222402C	C12026C1	422665EA	478F6435	BD1DCA87
(1120)	42D3102D	46BAEBEB	C15AF0EB	428BFFC3	00000000	00000000	00000000	00000000	000121A0	00900000
(1160)	00011D97	000B2535	000077F9	452D07DA	432EC3FC	421E30BB	C163E9D4	4115FDB6	43DA6AA6	40FAAB93
(1200)	42C861D3	40522157	3FBEC9FD	4218E01D	47928C23	42D772B0	C110239C	C777DA26	C7544A68	C6293231
(1240)	42114143	C2223D37	C120254D	4226653A	478F64A4	BD1F08F4	42D31A7B	46BB6B13	C15AF747	428C0CBE
(1280)	00000000	00000000	00000000	00000000	000121A0	00900000	00011D97	000B2535	000086D4	453C29CF
(1320)	432BD398	421D1859	C1839E0B	411E35C4	43FF0F11	41165973	42C8551F	407F01C9	40185FAB	42112DB5
(1360)	4792915C	42D78075	C1102EB6	C777CA1F	C7546A31	C6295009	421145BB	C2223A11	C12023C0	4226646C
(1400)	478F6516	BD2062F1	42D32578	46BBF2AF	C15ADCFF	428C1A94	00000000	00000000	00000000	00000000
(1440)	000121A0	00900000	00011D97	000B2535	000093B8	45261772	432DC8BE	421D1FB4	C1368EB1	411AF692
(1480)	43A3132A	4111AFB3	42C86018	403672F1	4011F68D	42133188	47925SF3	42D78C68	C1103859	C777BC36
(1520)	C75485C5	C62969EE	4211499D	C2223755	C1202268	422663BA	478F6579	BD218F2C	42D32F01	46BC6859
(1560)	C15AD414	428C2696	00000000	00000000	00000000	00000000	000121A0	00900000	00011D97	000B2535
(1600)	0000A1F0	452DA260	432B44CC	421A6F28	C14DAA0B	4117A83E	4427FBDB	411F0DC2	42C9517C	40E7B7B5
(1640)	402A4070	429D7330	47929AE9	42D79994	C11042F6	C777ACD7	C754A42C	C629867C	42114DE3	C222344F
(1680)	C12020EB	422662F4	478F65E6	BD22DD6D	42D33986	46BCEA1A	C15ACA35	428C33D2	00000000	00000000
(1720)	00000000	00000000	000121A0	00900000	00011D97	000B2535	0000AFA7	451E0747	432AF942	42201152
(1760)	C16C62C3	411C26FD	43C3CB85	412C7F36	42C8A344	4CA4E0F9	401A818D	42534BCE	47929FC7	42D7A647
(1800)	C1104D30	C7779DFD	C754C17A	C629A204	42115200	C2223163	C1201F7A	42266235	478F664F	BD2422B3
(1840)	42D343AB	46BD6738	C15AC0A7	428C4096	00000000	00000000	00000000	00000000	000121A0	00900000
(1880)	00011D97	000B2535	0000BEAC	4527C238	432C9886	41C28344	C1BCC866	4118EDA6	4327503B	40A00BEC
(1920)	42C82C33	401AEDF6	3F8DEF61	411CAE17	4792A51C	42D7B431	C1105864	C7778DB8	C754E193	C629C02D
(1960)	42115682	C2222E30	C1201DE5	42266164	478F66C2	BD258703	42D34EC7	46BDF046	C15AB630	428C4E91
(2000)	00000000	00000000	00000000	00000000	000121A0	00900000	00011D97	000B2535	0000C8F3	452B7BBE
(2040)	432C4579	41B15238	C1650D5	411901E2	434E6002	411141F1	42C84779	403B12FC	3FF1C75F	421B5B58
(2080)	4792A9D2	42D7C07C	C110624B	C7777F57	C754FDF1	C629DAD4	42115A7D	C2222B5D	C1201C8C	422660AA
(2120)	478F6728	BD26C1E9	42D3589A	46BE6966	C15AACF2	428C5AEB	00000000	00000000	00000000	00000000
(2160)	000121A0	00900000	00011D97	000B2535	0000DA51	4540F4E1	432C847A	42123780	C1902BDA	41165294
(2200)	441F581B	411DA87D	42C8D8C3	409946CB	40120533	424551F6	4792AEF1	42D7CDC8	C1106CFF	C7776FC0
(2240)	C7551C9E	C629F7A9	42115ECB	C222284C	C1201AFB	42265FE1	478F6796	BD28199C	42D3633A	46BEEC6C
(2280)	C15AA2E8	428C6847	00000000	00000000	00000000	00000000	000121A0	00900000	00011D97	000B2535

(12880)	47947249	42DBED9E	C113B2DE	C7725B35	C75E9918	C632F181	4212AB37	C22128B3	C11F5663	42261B0D
(12920)	478F89F1	BD5BC98D	42D6B83E	46E7C661	C1574983	429C8CC2	00000000	00000000	00000000	00000000
(12960)	000121C0	00900000	00011D9B	000B2539	00002457	4510FC46	431F9384	421EDC18	C153031F	411354A4
(13000)	4333044D	41143B86	42C863CE	405BDEB3	40137BEB	424733E3	47947823	42DBFA17	C113BC9F	C7724B1D
(13040)	C75EB5B3	C6330CC1	4212AF08	C221258B	C11F94AF	42261A2A	478F8A5A	BC9D2239	42D6C26F	46E8429D
(13080)	C1573EB4	42909947	00000000	00000000	00000000	000121C0	00900000	00011D9B	000B2539	
(13120)	0000322A	44ECFDC3	431F4A89	421EDACB	C166E9C0	4112939B	434244C9	411E5CBF	42C86E2C	40611AE9
(13160)	40156415	42794F80	47947E06	42DC0693	C113C660	C7723AF6	C75ED254	C6332809	4212B2D9	C2212260
(13200)	C11F92F8	42261946	478F8AC2	BD9E78E0	42D6CCA4	46E8BFC4	C15733D7	4290A5D0	00000000	00000000
(13240)	00000000	00000000	000121C0	00900000	00011D9B	000B2539	00003F2C	4518670E	431F380A	421D1549
(13280)	C175706F	4110F57D	43A375C6	41167460	42C8ACD7	40738A62	401172A8	4244B28C	47948394	42DC1251
(13320)	C113CF8B	C7722BBE	C75EED41	C63341B2	4212B66E	C2211F64	C11F515A	4226186F	478F8B24	BD9FB97E
(13360)	42D6D63F	46E9340A	C1572998	4290B19B	00000000	00000000	00000000	00000000	000121C0	00900000
(13400)	00011D9B	000B2539	00004DF1	44B3B516	431F38BC	421C63AD	C17927EA	411767DD	42D61CEF	40B32C99
(13440)	42C82931	40181211	3FE9BC6C	421D9A78	479489E3	42DC1FA6	C113D9F3	C7721A76	C75F0BD2	C6335ED5
(13480)	4212BA80	C2211C01	C11F8F84	4226177A	478F8B94	BCA12588	42D6E127	46E9B8EA	C1571DF7	4290BEFD
(13520)	00000000	00000000	00000000	00000000	000121C0	00900000	00011D9B	000B2539	00005C46	44CBB830
(13560)	431E863A	421D0B70	C19F81DF	4116CFAB	43248531	40F058CD	42C84848	404A825F	4011C17F	422888AF
(13600)	47949003	42DC2C95	C113E40C	C77209B1	C75F297C	C6337B1A	4212BE73	C22118B7	C11F8DBD	4226168D
(13640)	478F8CC0	BDA286CB	42D6EBBC	46EA39DA	C15712B0	429CCBF9	00000000	00000000	00000000	00000000
(13680)	000121C0	00900000	00011D9B	000B2539	000069C9	4510E8DE	431F826E	421BAB68	C1A86194	411955F2
(13720)	431A4E4F	40B4D207	42C838FD	403727E6	3FC4751E	41CFCC30	479495CE	42DC38C6	C113ED8F	C771F9DB
(13760)	C75F456D	C63395BF	4212C22A	C221159C	C11F8CCD	422615AD	478F8C66	BCA3D138	42D6F5B6	46EAB35E
(13800)	C1570805	4290D836	00000000	00000000	00000000	00000000	000121C0	00900000	00011D9B	000B2539
(13840)	0000781E	44F5C4AB	431EA3D9	421B0CA7	C1D07141	4116721C	432349ED	4112B381	42C8541B	403A1693
(13880)	4010FDCA	4225931D	47949BF9	42DC45B1	C113F7A2	C771E909	C75F630B	C633B1FE	4212C619	C2211250
(13920)	C11F8A42	422614BE	478F8CD2	BDA52D61	42D7004A	46EB3439	C156FCAE	4290E52F	00000000	00000000
(13960)	00000000	00000000	000121C0	00900000	00011D9B	000B2539	000085A0	4514E804	431ECEDC	421B240B
(14000)	C2107863	411B5B80	4359C556	40E0862E	42C87FA5	40487ED3	40139CC7	421D9C28	4794A1CA	42DC51DF
(14040)	C1140121	C771D92D	C75F7EF7	C633CCA0	4212C9CE	C2210F34	C11F8892	422613DD	478F8D38	BDA6759D
(14080)	42D70A44	46EBADB4	C156F1FE	4290F16A	00000000	00000000	00000000	00000000	000121C0	00900000
(14120)	00011D9B	000B2539	000093F5	44FFB690	431E3747	421C1FB4	C214B37A	41123F4B	43485243	411FC3CE
(14160)	42C87C76	4061EE1B	401238A3	425B823D	4794A7F5	42DC5ECB	C1140B34	C771C85A	C75F9C96	C633E8E0
(14200)	4212CDBC	C2210BE8	C11F86C7	422612EE	478F8DA4	BCA7D1C7	42D714D9	46EC2E8F	C156E6A8	4290FE62
(14240)	00000000	00000000	00000000	00000000	000121C0	00900000	00011D9B	000B2539	0000A191	44F13F82
(14280)	431EA60C	4214A76B	C215B981	411DC0DD	433FB102	4114143E	42C8E820	40596820	401E5492	424A59D3
(14320)	4794ADD6	42DC6B0E	C11414C1	C771B85A	C75FB8B0	C63403B0	4212D176	C22108C6	C11F8512	4226120B
(14360)	478F8E0A	BDA919AA	42D71EE5	46ECA8E0	C156DBDD	42910AB1	00000000	00000000	00000000	00000000
(14400)	000121C6									

860508

FILE 1 RECORD 1106 LENGTH 2596BYTES

(0)	0A240000	00900000	00015070	000D215C	00004B21	43B40B7D	43237609	40ED3A43	421147E1	3FBFCB42
(40)	434FDE19	4122A3C6	40257544	402D0AE7	3F377273	42A25CE7	48B973A3	42FBE27B	42109E42	C838BD6C
(80)	C8A86643	48350D5F	413D2497	C1D0161D	4133FF6F	41DF2ECF	478FFDFA	BD3C9609	42E31F63	48B1AD26
(120)	42101C24	42AEE2CD	00000000	00000000	00000000	00000000	00015479	00900000	00015070	000D215C
(160)	00005781	4429E152	43226743	4118D5E7	421CB228	3F78B650	434264B8	40990AF8	403BAC53	4020948B
(200)	3EA48093	416B5BDC	48B973A3	42FBE27B	42109E42	C838BD6C	C8A86643	48350D5F	413D2497	C1D0161D
(240)	4133FF6F	41DF2ECF	478FFDFA	BD3C95FF	42E31F63	48B1AD26	42101C24	42AEE2CD	00000000	00000000
(280)	00000000	42140000	00015479	00900000	00015070	000D215C	00006381	4373CCD5	432310B5	4112F045
(320)	421[illegible]D728	3FC2289C	43C58EB4	41358366	40745633	4051CAEA	3F4BAB09	41E2257A	48B973A3	42FBE27B
(360)	42109E42	C838BD6C	C8A86643	48350D5F	413D2497	C1D0161D	4133FF6F	41DF2ECF	478FFDFA	BD3C95F7
(400)	42E31F62	48B1AD26	42101C24	42AEE2CD	00000000	00000000	00000000	00000000	00015479	00900000
(440)	00015070	000D215C	000CA462	44276EF6	43231209	41138174	4210CBBC	3F197342	43F731B6	413B556A
(480)	4063D77E	404944DE	3E4A97E5	4145F942	48B573A3	42FBE27B	42105E42	C838BD6C	C8A86643	48350D5F
(520)	413D2497	C1D0161D	4133FF6F	41DF2ECF	478FFDFA	BD3C95F1	42E31F62	48B1AD26	42101C24	42AEE2CD
(560)	00000000	00000000	00000000	00000000	00015479	00900000	00015070	000D215C	0000AD62	4428EFF3
(600)	43234F83	4112C21A	4210CE64	3F2011FA	4335F109	40B9789A	401F2EF7	401B349C	3E723FD7	425B398C
(640)	48B973A3	42FBE27B	42109E42	C838BD6C	C8A86643	48350D5F	413D2497	C1D0161D	4133FF6F	41DF2ECF
(680)	478FFDFA	BD3C95EC	42E31F62	48B1AD26	42101C24	42AEE2CD	00000000	00000000	42140000	
(720)	00015479	00900000	00015070	000D215C	0000B602	4429C448	432331FC	4114F28C	421015F7	3F195C47
(760)	43261B0C	40A5E757	401167FF	3FF3C3C7	3DEA1196	40AC96C7	48B973A3	42FBE27B	42109E42	C838BD6C
(800)	C8A86643	48350D5F	413D2497	C1D0161D	4133FF6F	41DF2ECF	478FFDFA	BD3C95E8	42E31F62	48B1AD26
(840)	42101C24	42AEE2CD	00000000	00000000	00000000	42140000	00015479	00900000	00015070	000D215C
(880)	00000BC2	4434D861	43222445	4115A730	42105DF6	3F52E375	432CDC24	403B84DA	401B39C9	3FE46E44
(920)	3E5D7DA3	41151A21	48B973A3	42FBE27B	42109E42	C838BD6C	C8A86643	48350D5F	413D2497	C1D0161D
(960)	4133FF6F	41DF2ECF	478FFDFA	BD3C95E4	42E31F62	48B1AD26	42101C24	42AEE2CD	00000000	00000000

(1000)	00000000	42140000	0001547A	00900000	00015070	000D215C	00013EE2	43AD02C9	43228C43	BFF31C87
(1040)	42111CA2	3FE28276	434BA7DB	41199C5E	402FC70E	40334B80	3F35D85F	418F317D	48B982E5	42FBE5CB
(1080)	421 9E3C	C838B862	C8A87769	483511A8	413D2604	C1D011AB	4133FE0B	41DF3B22	4790069F	BD60CC4E
(1120)	42E41724	48B1AC23	42101C88	42AEE613	00000000	00000000	00000000	00000000	0001547A	00900000
(1160)	00015070	000D215C	000142A2	4425A9A9	43362C47	41589A78	423ECFDE	3F6919BA	4439E317	42155C41
(1200)	4115E23E	411486A3	3F728096	42AB97A8	48B982E5	42FBE5CB	42109E3C	C838B862	C8A87768	483511A7
(1240)	413D2604	C1D011AB	4133FE0B	41DF3B22	4790069F	BD60CB77	42E4171E	48B1AC23	42101C88	42AEE613
(1280)	00000000	00000000	00000000	42640000	0001547A	00900000	00015070	000D215C	00014BA2	447E9BC3
(1320)	4321F98D	4118F6B9	42109594	3F4D7A04	44197C4E	4117CFCA	405CE7A3	40A2EC97	3E770C4A	405A95DB
(1360)	48B982E5	42FBE5CB	42109E3C	C838B862	C8A87768	483511A7	413D2604	C1D011AB	4133FE0B	41DF3B21
(1400)	4790069F	BD60CB2F	42E4171C	48B1AC23	42101C88	42AEE613	00000000	00000000	00000000	42140000
(1440)	0001547A	00900000	00015071	000D215D	00009DFC	441B0EA5	42FE7B00	C0697B1F	41E09005	3E149A52
(1480)	441D071B	4183D70D	41149423	411351CF	3F1D9CC4	43130B31	48B982E4	42FBE5CB	42109E3C	C838B862
(1520)	C8A87768	483511A7	413D2604	C1D011AB	4133FE0B	41DF3B21	4790069F	BD60CB0B	42E4171B	48B1AC23
(1560)	42101C88	42AEE613	00000000	00000000	00000000	42640000	0001547A	00900000	00015071	000D215D
(1600)	0000AC2A	44A6C94A	4321F0B7	411AD22D	4210C6AB	3F7C1B39	4416CB3F	40E414C0	404C677F	4088CE4F
(1640)	3E854D98	41258224	48B982E4	42FBE5CB	42109E3C	C838B862	C8A87768	483511A7	413D2604	C1D011AB
(1680)	4133FE0B	41DF3B21	4790069F	BD60CAF6	42E4171B	48B1AC23	42101C88	42AEE613	00000000	00000000
(1720)	00000000	00000000	0001547A	00900000	00015071	000D215D	0000BA16	448D1576	4321DC70	4115018C
(1760)	4210D1E5	3F6797C7	43F00A62	40712717	4037F940	4084142A	3E5CC6FF	4046527F	48B982E4	42FBE5CB
(1800)	421 9E3C	C838B862	C8A87768	483511A7	413D2604	C1D011AB	4133FE0B	41DF3B21	4790069F	BD60CAE7
(1840)	42E4171A	48B1AC23	42101C88	42AEE613	00000000	00000000	00000000	00000000	0001547A	00900000
(1880)	00015071	000D215D	0000D1CE	443017E1	432377C0	4123F29C	42115512	3F381835	4415C49C	41338EA4
(1920)	40B2E634	40F897EA	3F1C1C60	42112C89	48B982E4	42FBE5CB	42109E3C	C838B862	C8A87768	483511A7
(1960)	413D2604	C1D011AB	4133FE0B	41DF3B21	4790069F	BD60CADD	42E4171A	48B1AC23	42101C88	42AEE613
(2000)	00000000	00000000	00000000	00000000	0001547A	00900000	00015071	000D215D	0000E104	44275D4A
(2040)	42A226C0	41AAFCF3	C215E74C	415568D6	C1100000	C1100000	C1100000	C1100000	C1100000	43407B3B
(2080)	48B982E4	42FBE5CB	42109E3C	C838B862	C8A87768	483511A7	413D2604	C1D011AB	4133FE0B	41DF3B21
(2120)	4790069F	BD60CAD5	42E4171A	48B1AC23	42101C88	42AEE613	00000000	00000000	00000000	42640000
(2160)	0001547A	00900000	00015071	000D215D	0001093C	44472FF8	4322C1C7	4112BA21	42118A36	3FFFA702
(2200)	4417A10A	41255719	411CE158	408AE6A6	3F779012	4115AB96	48B982E4	42FBE5CB	42109E3C	C838B862
(2240)	C8A87768	483511A7	413D2604	C1D011AB	4133FE0B	41DF3B21	4790069F	BD60CACF	42E4171A	48B1AC23
(2280)	42101C88	42AEE613	00000000	00000000	00000000	0001547A	00900000	00015071	000D215D	
(2320)	000115EA	444E4705	4322D300	41144742	42118B48	3F560781	43D31AD5	412FFC5C	4059E05A	408C9A71
(2360)	3EAF5558	4071B175	48B982E4	42FBE5CB	42109E3C	C838B862	C8A87768	483511A7	413D2604	C1D011AB
(2400)	4133FE0B	41DF3B21	4790069F	BD60CACB	42E4171A	48B1AC23	42101C88	42AEE613	00000000	00000000
(2440)	00000000	00000000	0001547A	00900000	00015071	000D215D	00012184	444E471A	4322E32C	4115B74C
(2480)	42110B24	3F645110	4310F848	402A04BF	3F3ED8DF	3F67001A	3F1365F0	41446B59	48B982E4	42FBE5CB
(2520)	421 9E3C	C838B862	C8A87768	483511A7	413D2604	C1D011AB	4133FE0B	41DF3B21	4790069F	BD60CAC7
(2560)	42E41719	48B1AC23	42101C88	42AEE613	00000000	00000000	00000000	00000000	0001547A	

FILE	INPUT RECS.	DATA RECORDS INPUT SIZE	MAX.	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	1106	1107	14404	0	0	0	0	0	0

FILE 2 RECORD 1 LENGTH *14404BYTES 720421

04/21/73-05/04/86

(0)	38440000	00900000	00011D97	000B2535	00000000	452E1BC2	4330EF45	421EA7B6	C12778D2	4113159A
(40)	00000000	00000000	00000000	00000000	00000000	41100000	47926540	42D70AE5	C0FCFCE0	C77852AC
(80)	C7535AC0	C6285156	42111F75	C22254D5	C12030D8	42266B34	478F6149	BD151642	42D2C7BE	46B76D6E
(120)	C15B341B	428BA46F	47590FFB	38223261	3A34874D	407A91BF	000154CF	00900000	00011D97	000B2535
(160)	00000001	453721DD	432EA3C7	421DAE6A	C121FCA9	4115B3C2	00000000	00000000	00000000	00000000
(200)	00000000	41100000	479269DA	42D7174C	C0FD9D45	C7784401	C7537765	C6286C32	42112381	C2225206
(240)	C1202F7A	42266A7F	478F61B0	BD16408D	42D2D19E	46B7E775	C15B2AFD	428BB0E6	47608787	382E7F8B
(280)	3A364334	4078AD70	000154CF	00900000	00011D97	000B2535	00000002	455363FD	433135EC	421DAAFB
(320)	C042BCF1	41156A85	00000000	00000000	00000000	00000000	00000000	41100000	47926ED7	42D724BB
(360)	C0FE4B0A	C7783485	C753966D	C628894B	421127E4	C2224EFB	C1202DFF	422669BB	478F621F	BD1783B8
(400)	42D2DC52	46B86BA8	C15B211D	428BBE66	47648217	3845675D	3A3B9D20	408BE318	000154CF	00900000
(440)	00011D97	000B2535	00000003	453AF01D	433CA6D7	421FA5F6	C157AB9B	4115BF14	00000000	00000000
(480)	00000000	00000000	00000000	41100000	47927371	42D73110	C0FEEA66	C7782645	C753B2E6	C628A401
(520)	42112BE9	C2224C2E	C1202CA1	42266906	478F6285	BD18AFF2	42D2F625	46B8F501	C15B1803	428BCACA
(560)	4764E610	3831CF27	3A3B2A59	408941E8	000154CF	00900000	00011D97	000B2535	00000004	4539A6A1
(600)	432E78A2	421CC08F	C14B9B5E	41175605	00000000	00000000	00000000	00000000	00000000	41100000
(640)	47927871	42D73E65	C0FF969A	C77816D4	C753D1AE	C628C0E2	42113040	C2224525	C1202B25	42266841
(680)	478F62F3	BD19F7E5	42D2F0C6	46B9683B	C15B0E21	428BD830	47676BE7	3834486D	3A39ED3F	40805C68
(720)	000154CF	00900000	00011D97	000B2535	00000005	452EF096	432E35AB	421EC5B0	C1249E52	4118266F
(760)	00000000	00000000	00000000	00000000	00000000	41100000	47927D37	42D74B1E	C11003AF	C7780817

```
( 4760) 00015070 000D215C 00000006 4429E152 43226742 4118D5E7 4210B228 3F78B650 00000000 00000000
( 4800) 00000000 00000000 00000000 408C0000 48B973A2 42FBE27A 42109E42 C838BD6C C8A86642 48350D5F
( 4840) 413D2496 C1D0161C 4133FF6E 41DF2ECE 478FFDFA BD3C95FE 42E31F62 48B1AD26 42101C24 42AEE2CC
( 4880) 4618C0D4 35C4772E 38A43964 3F10D681 000154CF 00900000 00015070 000D215C 00000007 4373CCD5
( 4920) 432310B5 4112F045 4210D728 3FC2289C 00000000 00000000 00000000 00000000 0000000C 41100000
( 4960) 48B973A3 42FBE27B 42109E42 C838BD6C C8A86643 48350D5F 413D2497 C1D0161D 4133FF6F 41DF2ECF
( 5000) 478FFDFA BD3C95F7 42E31F62 48B1AD26 42101C24 42AEE2CD 46289486 35369C2E 39112683 3F1CAD1E
( 5040) 000154CF 00900000 00015070 000D215C 0000000B 44276FF6 43231209 41138174 4210CBBC 3F197342
( 5080) 00000000 00000000 00000000 00000000 00000000 41100000 48B973A3 42FBE27B 42109E42 C838BD6C
( 5120) C8A86643 48350D5F 413D2497 C1D0161D 4133FF6F 41DF2ECF 478FFDFA BD3C95F1 42E31F62 48B1AD26
( 5160) 42101C24 42AEE2CD 45551EC9 3527006E 3823FAD2 3E3C2B28 000154CF 00900000 00015070 000D215C
( 5200) 0000000C 44295A1D 432340BF 4113D253 4210122D 3F1CB720 00000000 00000000 00000000 00000000
( 5240) 00000000 41100000 48B973A2 42FBE27A 42109E42 C838BD6C C8A86642 48350D5E 413D2496 C1D0161C
( 5280) 4133FF6E 41DF2ECE 478FFDFA BD3C95EA 42E31F62 48B1AD26 42101C24 42AEE2CC 45608F10 352E17A1
( 5320) 382908FE 3E44FE40 000154CF 00900000 00015070 000D215C 0000000E 4434D860 43222444 4115A730
( 5360) 4210DDF6 3F52E374 00000000 00000000 00000000 00000000 00000000 40800000 48B973A2 42FBE27A
( 5400) 42109E42 C838BD6C C8A86642 48350D5E 413D2496 C1D0161C 4133FF6E 41DF2ECE 478FFDFA BD3C95E4
( 5440) 42E31F62 48B1AD26 42101C24 42AEE2CC 4610DE29 35AA39FA 386E0FBF 3FB4CD4A 000154CF 00900000
( 5480) 00015070 000D215C 00000016 43AD02C9 43228C43 BFF31C87 42111CA2 3FE28276 00000000 00000000
( 5520) 00000000 00000000 00000000 41100000 48B982E5 42FBE5CB 42109E3C C838B862 C8A87769 483511A8
( 5560) 413D2604 C1D011AB 4133FE0B 41DF3B22 4790069F BD60CC4E 42E41724 48B1AC23 42101C88 42AEE613
( 5600) 462EA4A8 355F2F49 39136C08 3F1FFEC9 000154CF 00900000 00015070 000D215C 00000017 447E9BC2
( 5640) 4321F98C 4118F6B9 42109594 3F4D7A04 00000000 00000000 00000000 00000000 00000000 40800000
( 5680) 48B982E4 42FBE5CA 42109E3C C838B862 C8A87768 483511A6 413D2604 C1D011AA 4133FE0A 41DF3B20
( 5720) 4790069E BD60CB2E 42E4171C 48B1AC22 42101C88 42AEE612 45FB07FA 3617D34D 3866CB54 3EA68804
( 5760) 000154CF 00900000 00015071 000D215D 0000000C 44A6C94A 4321F0B7 411AD22D 4210C6AB 3F701B39
( 5800) 00000000 00000000 00000000 00000000 41100000 48B982E4 42FBE5CB 42109E3C C838B862
( 5840) C8A87768 483511A7 413D2604 C1D011AB 4133FE0B 41DF3B21 4790069F BD60CAF6 42E4171B 48B1AC23
( 5880) 42101C88 42AEE613 4616ADD9 362D6A31 38947030 3EF03B70 000154CF 00900000 00015071 000D215D
( 5920) 0000000D 448C1576 4321DC70 4115018C 4210D1F5 3F6797C7 00000000 00000000 00000000 00000000
( 5960) 00000000 41100000 48B982E4 42FBE5CB 42109E3C C838B862 C8A87768 483511A7 413D2604 C1D011AB
( 6000) 4133FE0B 41DF3B21 4790069F BD60CAE7 42E4171A 48B1AC23 42101C88 42AEE613 4614E86D 36237FB4
( 6040) 388886B5 3EDC7028 000154CF 00900000 00015071 000D215D 0000000E 443017E1 432377C0 4123F29C
( 6080) 42115512 3F381835 00000000 00000000 00000000 00000000 00000000 41100000 48B982E4 42FBE5CB
( 6120) 42109E3C C838B862 C8A87768 483511A7 413D2604 C1D011AB 4133FE0B 41DF3B21 4790069F BD60CADD
( 6160) 42E4171A 48B1AC23 42101C88 42AEE613 45BDBCF8 3568D75C 38511C16 3E892CF0 000154CF 00900000
( 6200) 00015071 000D215D 00000012 44472FF8 4322C1C7 41128A21 42118A36 3FFFA702 00000000 00000000
( 6240) 00000000 00000000 00000000 41100000 48B982E4 42FBE5CB 42109E3C C838B862 C8A87768 483511A7
( 6280) 413D2604 C1D011AB 4133FE0B 41DF3B21 4790069F BD60CACF 42E4171A 48B1AC23 42101C88 42AEE613
( 6320) 4634F67E 362C342E 39162FDB 3F24C574 000154CF 00900000 00015071 000D215D 00000013 444E4705
( 6360) 4322D300 41144742 42118B48 3F560781 00000000 00000000 00000000 00000000 00000000 41100000
( 6400) 48B982E4 42FBE5CB 42109E3C C838B862 C8A87768 483511A7 413D2604 C1D011AB 4133FE0B 41DF3B21
( 6440) 4790069F BD60CACB 42E4171A 48B1AC23 42101C88 42AEE613 4611DB62 36105B42 3877EBA7 3EC72238
( 6480) 000154CF 00900000 00015071 000D215D 00000014 444E471A 4322E32C 4115B74C 42110B24 3F645110
( 6520) 00000000 00000000 00000000 00000000 00000000 41100000 48B982E4 42FBE5CB 42109E3C C838B862
( 6560) C8A87768 483511A7 413D2604 C1D011AB 4133FE0B 41DF3B21 4790069F BD60CAC7 42E4171B 48B1AC23
( 6600) 42101C88 42AEE613 4614DC3F 361312AE 388C581D 3EE97898 000154CF
```

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
2	337	338	14404	0	0	0	0	0	0

730421

04/21/73-04/17/86

```
FILE 3 RECORD 1 LENGTH 14404BYTES
( 0) 38440000 00900000 00011D97 000B2535 00000000 4533DDE0 432D83F7 421B3DC0 C15ABAAE 4116E7C0
( 40) 44B9C176 421F5C8B 416072C5 41321C5A 4030A7CA 42168000 47925E00 42D7A0C1 C11048C1 C777A3D4
( 80) C754B4F1 C629965A 4211502D C2223284 C1201FFB 42266276 478F661B BD23BDDB 42D33F49 46BD325B
( 120) C15AC440 428C3B22 47632F78 382DED9D 3A365FDB 40762364 000154CF 00900000 00011D98 000B2536
( 160) 00000000 4532AC6D 432C334C 42186F15 C158E6FC 41208EC5 44DA7767 421AAC51 4191404B 414F1102
( 200) 4208B017 42108000 479318D0 42D8D5EC C11140BE C7763559 C7577D7F C62C35CF 4211B396 C221EA73
( 240) C11FFBE5 42264FC2 478F7020 BD43FC44 42D436FA 46C91B52 C159D6F1 428D71A8 47887F34 383F24AF
( 280) 3A48696F 40982B47 000154CF 00900000 00011D99 000B2537 00000000 452AB4F1 432A9D91 421D6AF2
( 320) C163A78C 4118E04C 44A96DE2 422CD018 4177578F 41631B4D 407AEC39 42150000 4793562C 42DA03B6
( 360) C1123112 C774C590 C75A342C C62EC563 42121336 C221A222 C11FD6BE 42263C79 478F79F0 BD655509
( 400) 42D52A24 46D4C518 C158E583 428EA0DE 476560B0 3829F226 3A345113 406B050B 000154CF 00900000
( 440) 00011D9A 000B2538 00000000 451F9022 4324C7AF 421C4334 C14D3C09 4115CEA6 44DDEA99 4225B6B7
( 480) 4123DB29 413F9D15 408CD201 42180000 479422C3 42DE4115 C1132B98 C77337B8 C75D0D58 C631790C
```

(13720)	44547C7C	421A4A84	418A9B4E	416C9734	40ECA481	42168000	47FD1355	4311FE39	C130E0C8	474C3ACE
(13760)	C7F0F199	C6D797D2	4219DAD1	C18D02F1	C0D45A00	421B54CE	4790E88E	BD25A2D5	4312F6A9	4776F099
(13800)	40D12A5B	42D44760	475EBF40	3816EB7E	3A1E08E3	4025CA6C	000154CF	00900000	00011DF7	000B2666
(13840)	00000000	44EF09BB	431A4DDE	C15A2638	C1698C5D	411C9E82	4449017A	41A49423	4159642B	41861F48
(13880)	405FFE91	42168000	47FE7133	431204E9	C13CDDC2	474E67E9	C7F1ADF4	C6D8B488	4219CDEA	C18A7DF3
(13920)	C0D2182D	421B3BB6	4790E500	3C15E2CC	4312F64D	477902FB	40DCBCCC	42D4B199	4747A6AA	38112347
(13960)	3A16AEA2	401C6BF5	000154CF	00900000	00011DF8	000B2667	00000000	44ED30E7	431B340B	C15D081D
(14000)	C19D01F8	412183B5	4446F435	41D79EBA	41B2F39F	4194F136	411C8311	42150000	47FFAFAA	43120AFB
(14040)	C130DA76	475060CD	C7F2560C	C6D9B46D	4219C20F	C1883B99	C0D01118	421B24FF	4790E194	3D27CDE3
(14080)	4313047F	477AE9B0	40E72092	42D5110C	4757C153	38166106	3A1D1179	40262189	000154CF	00900000
(14120)	00011DF9	000B2668	00000000	4529C0BF	432CEFFA	C1487E64	C177BD51	4139F32C	4518F0B2	4236B547
(14160)	41855EB8	418C4747	41172206	42130000	481010A7	43121171	C130D64A	47528508	C7F30E35	C6CACA0D
(14200)	4219B4F0	C185C9A8	C0CDDE1F	421B0C30	4790DDA1	3D52CC02	43131410	477D048C	40F262BC	42D5789E
(14240)	47B2EF46	3858714A	3A46B8C6	406FE199	000154CF	00900000	00011DFA	000B2669	00000000	452D4B93
(14280)	4328B8C6	C152D7AD	C15D0621	41161035	45152A9F	422DE6F6	41741C3D	418F9C88	41118F67	42150000
(14320)	481025B0	431217AE	C130D1B2	47549E8D	C7F3B761	C6DBD3F3	4219AB18	C1837367	C0CBC2F3	421AF447
(14360)	4790D999	3D7AC77F	43132323	477F13A1	40FD2979	42D5DBC3	47516A07	3832D2CB	3A263160	40475066
(14400)	000154CF									

FILE 3 RECORD 31 LENGTH 2884 BYTES

(0)	0B440000	00900000	0001505B	000D2101	00000000	4491B72E	43225DF4	41295A39	4210FA86	3FD1FF54
(40)	4466C842	417AC0EB	408D71A9	4046ADE2	3FB51CF5	41580000	48B8336F	42FB9C62	42109EC0	C839271A
(80)	C8A6FDE0	4834B348	413D0640	C1D0740B	41341CDA	41DFA8E0	478F34A5	BDDCFE82	42CEB2E2	48B23FA0
(120)	421013DA	42AE9DA0	462B4A10	36389971	39120C0A	3E1DC4E6	000154CF	00900000	0001505C	000D2102
(160)	00000000	4425010D	43218C46	41249F57	4210DB51	3F56E326	00000000	00000000	00000000	00000000
(200)	00000000	41100000	48B851F1	42FBA325	42109EB6	C8391D10	C8A7203C	4834BBE2	413D092F	C1D06B13
(240)	41341A0C	41DF851D	478F4887	BDD29DC7	42D0A76D	48B22837	421014A6	42AEA449	46115FC4	357CF2FB
(280)	38700CCF	3EB3CEC8	000154CF	00900000	0001505D	000D2103	00000000	4472A5F0	432056D4	4122EEF1
(320)	4210DF9F	3F2876E8	447C6DE5	421BE9AD	404B4492	40700000	3E25C2C1	41180000	48B851EA	42FBA320
(360)	421C9EB6	C8391D10	C8A7203C	4834BBE2	413D092F	C1D06B0A	41341A0C	41DF8515	478F4886	BDD29DD5
(400)	42D0A760	48B22835	421014A6	42AEA440	457CED6F	35B07C20	3830CA61	3E4B74EA	000154CF	00900000
(440)	0001505E	000D2104	00000000	444DCDA0	4321627A	40BEEEF7	4214E8EC	3F343528	43F7DBBD	4120876B
(480)	411E7576	40FC14C3	3EADC06A	41580000	48B866AE	42FBA7AB	42109EAE	C8391631	C8A737A2	4834C1BA
(520)	413D0B28	C1D064EB	41341820	41DF678B	478F55F1	BCB707A5	42D1FC40	48B21957	42101531	42AEA8C5
(560)	45A65F40	359FF954	3842FC9A	3E6AB4E5	000154CF	00900000	0001505F	000D2105	00000000	44C2422C
(600)	43211A5A	C1181A33	4212C962	3F4EFFAC	446BF5F8	418C1BFA	4120785B	412B47C0	3F1E91A2	41680000
(640)	48B872BB	42FBAA51	42109EA9	C8391236	C8A7452C	4834C51D	413D0C4E	C1D0615B	413416FD	41DF5864
(680)	478F5DB3	BDA15929	42D2C1A7	48B21111	42101581	42AEA860	45F8E29D	362B2E13	3862F7AE	3E9BD79B
(720)	000154CF	00900000	00015060	000D2106	00000000	445613FB	4320F865	C11DC96E	4214F684	3F3169F1
(760)	44264C4E	41627179	41196726	41191FC5	3F1D8462	41780000	48B881AA	42FBAD95	42109EA4	C8390D48
(800)	C8A755F9	4834C951	413D0DBB	C1D05CF5	41341590	41DF4C8E	478F6751	BD804EDB	42D3B633	48B20744
(840)	421015E5	42AEAE9D	459B0430	35C071F9	383D7846	3F6073A8	000154CF	00900000	00015061	000D2107
(880)	00000000	44ADB087	432CC728	C11640BE	42141205	3F389016	446D4F09	417699F3	4138CA51	411E3590
(920)	3F142E76	41480000	48B88EE3	42FBB080	42109E9E	C83908FE	C8A764E3	4834CD0C	413D0F00	C1D05911
(960)	4134146A	41DF4AF1	478F6FD1	BD5F1A51	42D48E71	48B1FEEE	4210163C	42AEB180	45B1575C	361AE697
(1000)	384647F5	3E6E35A0	000154CF	00900000	00015065	000D21CB	00000000	44206DB1	4325A6C5	40EC8C2D
(1040)	4210A538	3F7275E0	43926605	418FD827	4114AC4A	40F44B49	3F5371C2	41380000	48B8D03B	42FBBECD
(1080)	421C9E86	C838F35F	C8A7AE6D	4834DF70	413D1538	C1D045DB	41340E66	41DF9E80	478F99CD	3D487788
(1120)	42D8BA6D	48B1DB76	421017EF	42AEBF92	4619B12D	3588494C	38BA9D20	3F14F380	000154CF	00900000
(1160)	00015066	000D210C	00000000	442A21E6	4324A75C	41147550	42100BC6	3F5BE2AD	4416DDF8	418ADD2C
(1200)	4054ED70	402A90B3	3F3D26A1	41600000	48B8E035	42FBC245	42109E7F	C838EE10	C8A7C068	4834E3EA
(1240)	413D16B5	C1D04125	4134CCEC	41CFA08A	478FA3F8	3D63C4A2	42D9BF1D	48B1D42A	42101859	42AEC305
(1280)	4614312F	3587CD60	388F97E5	3EFC87F2	000154CF	00900000	00015067	000D21CD	00000000	44388718
(1320)	4324049C	40C53DB0	4210654B	3F24693F	4418B2E3	4181BCFA	403AD4F5	409CCF3C	3F10C9B2	41200000
(1360)	48B8EE30	42FBC560	42109E79	C838E97C	C8A7D028	4834E7DC	413D180E	C1D03D18	41340BA6	41DF95D0
(1400)	478FACE8	3D740BAF	42DAA338	48B1CE48	421C18B6	42AEC610	457D6396	355039FF	383693F9	3E5DFEBA
(1440)	000154CF	00900000	00015068	000D210E	00000000	441AF3D0	43246093	4114EED8	41FFAD53	3F7B53E0
(1480)	43EAAAD6	417F7509	41187903	40449C29	3E7214F3	41280000	48B8F9A0	42FBC7E6	42109E74	C838E5B6
(1520)	C8A7CD06	4834EB14	413D1922	C1D039C0	41340A9A	41DF8660	478FB426	3D7C3F4C	42DB5DAC	48B1C9C0
(1560)	421019C0	42AEC886	461ABFE4	3582972C	38BBBC40	3F145D44	000154CF	00900000	00015069	000D2155
(1600)	00000000	442A1360	4323D3C0	4111BFE4	41FF556C	3F56B92C	4430F7FA	418FDECC	40D3FBA0	403BA791
(1640)	3F324B30	41400000	48B90CB0	42FBCC10	42109E6C	C838DF6A	C8A7F270	4834F070	413D1AEE	C1D03424
(1680)	413408D8	41DF6448	478FC020	3D7B838C	42DC9468	48B1C300	4210197F	42AECCA0	4612A101	35632988
(1720)	38817D48	3EDE9890	000154CF	00900000	0001506A	000D2156	00000000	444ABA34	43245AB7	41210D6B
(1760)	41FB69A5	3F51F6BA	00000000	00000000	00000000	00000000	00000000	41100000	48B91820	42FBCE96
(1800)	421C9E69	C838DBA4	C8A7FF5C	4834F3A8	413D1C02	C1D030D8	413407CC	41DF4F7E	478FC744	3D75790C

(1840)	42DD4ECD	48B1BF48	421019CB	42AECF26	4611ED2D	35CFEC19	387EDAD9	3EDDF8FE	000154CF	00900000
(1880)	0001506B	000D2157	00000000	45111A8B	4325E29A	4115785F	42104C54	3F3ED9FC	00000000	00000000
(1920)	00000000	00000000	00000000	40800000	48B936A2	42FBD53A	42109E5C	C838D192	C8A821AA	4834FC3A
(1960)	413D1EEC	C1DC27EC	41340502	41DF272E	478FDA00	3D4CF962	42DF3F76	48B1B6FA	42101A94	42AED5B4
(2000)	45E31546	3629C6CA	3867B0BA	3EBB5130	00C154CF	009C0000	0001506C	000D2158	00000000	44295BBB
(2040)	4325C63C	41118A02	4210BC7D	3F7B5239	434D9D6E	4118DF7D	40393716	40715F5E	3F4F3D0B	41280000
(2080)	48B93FC6	42FBD733	42109E58	C838CE8C	C8A82BEC	4834FECC	413D1FBC	C1D02533	4134042B	41DF2220
(2120)	478FDF8C	3D3B19D3	42DFD446	48B1B4F3	42101ACF	42AED7A0	461BC796	35BFE4CC	38CA7613	3F16CDBC
(2160)	000154CF	00900000	0001506D	000D2159	00000000	4431BAC0	4324A69E	411B503D	42104FBE	3FAC2E02
(2200)	44263B92	419C78E3	407D4A9C	4111F2E9	3FA191EB	41580000	48B94A08	42FBD968	42109E54	C838CB25
(2240)	C8A83777	483501AB	413D20AE	C1D02237	41340337	41DF1EA0	478FE5A5	3D25E7D6	42E07B31	48B1B2E0
(2280)	4210B13	42AED9D4	4625F202	35E3B5B4	391CEA20	3F1DD689	000154CF	00900000	0001506E	000D215A
(2320)	00000000	44431A1C	432408DC	41114E4A	4211493E	3F68BC76	442E1B61	415570A6	40645221	408358CC
(2360)	3F4AED17	41500000	48B959B3	42FBDCD0	42109E4D	C838C5F9	C8A84913	48350613	413D2229	C1D01DA9
(2400)	413401CC	41DF2019	478FEEEC	3C234583	42E179F9	48B1B039	42101B7A	42AEDD39	46168BD5	35CE2AB9
(2440)	389D0939	3F1CE779	000154CF	00900000	0001506F	0C0D215B	00000000	441E46DE	43237CB8	4117BD19
(2480)	4210D6BF	3F7011F9	43BC4C68	41683D31	407FF43B	40570273	3F300650	41A00000	48B96523	42FBDF4B
(2520)	42109E48	C838C22C	C8A855E9	48350943	413D2336	C1D01A50	413400B9	41DF24D1	478FF59B	BD193779
(2560)	42E233E6	48B1AE98	42101BC5	42AEDFA9	4617AD31	357E0698	38A1DBC9	3F111ACE	000154CF	00900000
(2600)	00015070	000D215C	00000000	44226F74	4322E3D6	411163CE	4210C2D1	3F73CD38	441D2828	417BFEE6
(2640)	40823E00	405DB058	3F521B15	41880000	48B97650	42FBE303	42109E40	C838BC85	C8A86945	48350E18
(2680)	413D24DC	C1D01545	4133FF2B	41DF30F0	478FFF72	BD42F9DE	42E34B16	48B1ACF2	42101C35	42AEE356
(2720)	46180F18	356CF8E3	38A1BEB8	3F10CEAC	000154CF	00900000	00015071	000D215D	00000000	446148C5
(2760)	43229F79	41180D2B	42112D3B	3F76F720	442DFBBB	419DA1EA	4067549E	405878B1	3F45C9CC	41600000
(2800)	48B982E0	42FBE5C2	42109E3C	C838B860	C8A87762	483511A5	413D2602	C1D011A2	4133FE08	41DF3B20
(2840)	4750692	BD60CAD2	42E41712	48B1AC20	42101C88	42AEE610	4618855E	361BD994	38A38E0D	3F10DCC6
(2880)	000154CF									

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
3	31	32	14404	0	0	0	0	0	0

73041

04/11/73-10/22/87

FILE 4 RECORD 1 LENGTH 13604BYTES

(0)	35240000	00440000	000B252B	0338A610	C7840995	C737D868	C5EFCEB8	41D075D4	C224972D	C1211ADF
(40)	478F5D62	4226E59F	478F01EC	C0603660	42CB416A	BD2B65C0	42C956DF	4644881A	00440000	000B252B
(80)	03A68310	C783F2A5	C73818B6	C5F371BA	41D11515	C22492EB	C121159A	478F6166	4226E4F1	478F02C5
(120)	C061A811	42CB5CA7	BD2876C0	42C9ABCB	46458FB7	00440000	000B252B	04146010	C783DBA4	C73858FC
(160)	C5F71499	41D1B42E	C2248EA4	C1211853	478F6576	4226E441	478F039E	C0631995	42CB77E2	BD258FA0
(200)	42C9C0B6	4646974B	00440000	000B252B	04823D10	C783C491	C738993B	C5FAB753	41D2532C	C2248A5A
(240)	C1211708	478F6994	4226E38F	478F0476	C0648AEC	42CB931C	BD22BCE0	42C9D5A1	46479ED6	00440000
(280)	000B252B	04F01A10	C783AD6D	C738D972	C5FE59E8	41D2F1E8	C224860B	C12115B9	478F6DBF	4226E2DC
(320)	478F054F	C065FC16	42CBAE54	BD1FDA9F	42C9EA8C	4648A659	00440000	000B252C	00379B1A	C7839638
(360)	C73919A2	C6101FC5	41D39088	C2248IB7	C1211467	478F71F8	4226E226	478F0627	C0676D12	42CBC98B
(400)	BD1D0D1F	42C9FF77	4649ADD3	00440000	000B252C	00A5781A	C7837EF1	C73959CA	C61059EA	41D42EFF
(440)	C2247D60	C1211312	478F763F	4226E16F	478F0700	C068DDE0	42CBE4C0	BD1A489F	42CA1461	464AB544
(480)	00440000	000B252C	01135510	C7836798	C73999EB	C610940C	41D4CD4C	C2247904	C12111B9	478F7A92
(520)	4226E0B6	478F07D8	C06A4E7F	42CBFFF4	BD178D80	42CA294B	464BBCAC	00440000	000B252C	01813210
(560)	C783502F	C739DA04	C610CE2C	41D56B70	C22474A4	C121105C	478F7EF3	4226DFFB	478F08B1	C06BBFEF
(600)	42CC1B25	BD14DBE0	42CA3E34	464CC40B	00440000	000B252C	01EF0F10	C78338B3	C73A1A15	C611084A
(640)	41D6096A	C2247040	C1210EFC	478F8362	4226DF3E	478F0989	C06D2F2D	42CC3655	BD1233E0	42CA531F
(680)	464DCB60	00440000	000B252C	025CEC10	C7832127	C73A5A1F	C6114265	41D6A73A	C2246BD7	C1210D98
(720)	478F87DE	4226DE7F	478F0A61	C06E9F3C	42CC5184	BCF95FFF	42CA6BD7	464ED2AC	00440000	000B252C
(760)	02CAC910	C7830989	C73A9A20	C6117C7D	41D744CF	C224676B	C1210C31	478F8C67	4226DDBF	478F0B3A
(800)	C0730F19	42CC6CB0	BCD023FF	42CA7CF0	464FD9EF	00440000	000B252C	0338A610	C782F1DA	C73ADA1A
(840)	C611B694	41D7E25A	C22462FA	C1210AC6	478F90FE	4226DCFC	478F0C12	C0717EC5	42CC87DB	BCA78DFF
(880)	42CA91D8	4650E127	00440000	000B252C	03A68310	C782DA1A	C73B1A0C	C611F0A7	41D87FAA	C2245E85
(920)	C1210958	478F95A2	4226DC38	478F0CEB	C072EE3F	42CCA3C4	BC7FA3FF	42CAA6C0	4651E856	00440000
(960)	000B252C	04146010	C782C248	C73B59F6	C6122AB8	41D51CCE	C2245A0B	C12107E6	478F5A53	4226DB72
(1000)	478F0DC3	C0745D86	42CCBE2C	BC5865FF	42CABBA8	4652EF7C	00440000	000B252C	04823D10	C782AA65
(1040)	C73B99D9	C61264C7	41D9B9C8	C224558E	C1210670	478F9F12	4226DAAA	478F0E9C	C075CC99	42CCD951
(1080)	BC31D9FF	42CAD090	4653F697	00440000	000B252C	04F01A10	C7829271	C73BD9B3	C6129ED3	41DA5695
(1120)	C224510C	C12104F6	478FA3DE	4226D9E0	478F0F74	C0773B79	42CCF475	BBC01FFF	42CAE577	4654FDA8
(1160)	00440000	000B252D	00379B1A	C7827A6C	C73C1986	C612D8DC	41DAF337	C2244C86	C1210379	478FA8B8
(1200)	4226D915	478F104C	C078AA25	42CD0F97	3C191DFF	42CAFA5E	4656C4AE	00440000	000B252C	00A5781A
(1240)	C7826255	C73C5950	C61312E3	41DB8FAC	C22447FC	C12101F8	478FAD9F	4226D847	478F1125	C07A189C
(1280)	42CD2AB7	3C3D83FF	42CB0F45	46570BAA	00440000	000B252D	01135510	C7824A2D	C73C9913	C6134CE7

(11880)	4791CCEB	C1309BAC	43117EC4	3DC1C880	4311DA39	4756FCE8	00440000	000B2654	04CF6260	47286150
(11920)	C7E30276	C6C3C873	421A8F76	C1BAE7C5	C0FCAB2A	47E6E5C2	421D08BF	47910C03	C130A707	43118686
(11960)	3DB7D420	4311E979	47589D2E	00440000	000B2655	04CF6260	472A9135	C7E3F6DA	C6C513D1	421A868C
(12000)	C1B7D938	C0FA0761	47E83B38	421CED0A	47910AF2	C130B156	43118E90	3DA65BC0	4311F8BA	475A436A
(12040)	00440000	000B2656	04CF6260	472CC05A	C7E4E73D	C6C65BB8	421A7D54	C1B4D4D8	C0F76ACA	47E990E7
(12080)	421CD184	479109BB	C130BAAC	43119653	3D8E7200	431207FB	475BEF98	00440000	000B2657	04CF6260
(12120)	472EEEBA	C7E5D3AC	C6C7A032	421A73CF	C1B1DA82	C0F4D554	47EAE6C7	421CB62A	4791085E	C130C2F0
(12160)	43119E00	3D715E20	4312173C	475DA1B4	00440000	000B2658	04CF6260	47311C4E	C7E6BC34	C6C8E149
(12200)	421A6A02	C1AEEA13	C0F246F0	47EC3CD2	421C9AFA	479106DF	C130CA4B	4311A596	3D50914C	4312267D
(12240)	475F59BB	00440000	000B2659	04CF6260	47334910	C7E7A0E3	C6CA1F06	421A5FEF	C1AC0365	C0FFBF8D
(12280)	47ED9302	421C7FF1	4791053D	C130D0BA	4311AD17	3D2D9C40	431235BE	476117A7	00440000	000B265A
(12320)	04CF6260	473574FB	C7E881C5	C6CB5973	421A5599	C1A92661	C0FD3F1A	47FFF94F	421C6511	4791037B
(12360)	C130D645	4311B482	3CA25BFF	431244FF	4762DB76	00440000	000B265B	04CF6260	4737A009	C7E95EE7
(12400)	C6CC9097	421A4B04	C1A652DB	C0EAC585	47F03FB5	421C4A5A	4791019B	C130DAF2	4311BBD8	BD18219F
(12440)	43125441	4764A521	00440000	000B265C	04CF6260	4739CA36	C7EA3856	C6CDC47C	421A4031	C1A388B3
(12480)	C0E852BC	47F1962D	421C2FCF	479CFF95	C130DEC8	4311C319	BD378DC0	43126383	476674A5	00440000
(12520)	000B265D	04CF6260	473BF37C	C7EB0E1D	C6CEF52C	421A3525	C1A0C7C8	C0E5E6B1	47F2ECB3	421C1574
(12560)	4790FD71	C130E1CF	4311CA46	BD5284E0	431272C6	476849FE	00440000	000B265E	04CF6260	473E1BD7
(12600)	C7EBE049	C6D022AF	421A29E0	C19E0FF8	C0E3814E	47F4433F	421BFB4C	4790FB2D	C130E40D	4311D15E
(12640)	BD679100	43128209	476A2528	00440000	000B265F	04CF6260	47404341	C7ECAFE5	C6D14D0C	421A1E67
(12680)	C19B6122	C0E12282	47F599CD	421BE15F	479CF8C8	C130E588	4311D863	BD757140	4312514D	476C061D
(12720)	00440000	000B2660	04CF6260	474269B8	C7ED79FE	C6D2744F	421A12BA	C198BB26	C0DECA3C	47E6E058
(12760)	421BC7AE	4790F63F	C130E646	4311DF54	BD7B2AA0	4312A092	476DECDA	00440000	000B2661	04CF6260
(12800)	47448F36	C7EE419E	C6D3987F	421A06DD	C1961DE2	C0DC7868	47F846DC	421BAE3D	4790F390	C130E6AE
(12840)	4311E632	BD781B00	4312AFD7	476FD959	00440000	000B2662	04CF6260	4746B3B8	C7EF05D2	C6D4B9A4
(12880)	4219FAD2	C1938935	C0DA2CF6	47F99D52	421B950B	4790F0BB	C130E5A6	4311ECFD	BD6C09A0	4312BF1E
(12920)	4771CB97	00440000	000B2663	04CF6260	4748D73A	C7EFC6A5	C6D5D7C6	4219EE9B	C190FD01	C0D7E7D2
(12960)	47FAF3B7	421B7C14	479CEDBC	C130E452	4311F3B6	BD5739A0	4312CF65	4773C3BF	00440000	000B2664
(13000)	04CF6260	474AF9B9	C7F08421	C6D6F2EF	4219E239	C18E7924	C0D5A8E9	47FC4A05	421B6350	4790EA90
(13040)	C130E258	4311FA5D	BD3A76C0	4312DDAF	4775C139	00440000	000B2665	04CF6260	47AD1B31	C7E13E52
(13080)	C6D80B25	4219D5B0	C18BFD80	C0D3702B	47FDA03A	421B4AB4	4790E734	C130DFBF	431200F1	BD171D20
(13120)	4312ECF8	4777C491	00440000	000B2666	04CF6260	474F3B9F	C7F1F542	C6D92072	4219C500	C18989F5
(13160)	C0D13D83	47FEF650	421B3233	4790E3A6	C130DC8A	43120774	3D10ED5F	4312FC43	4779CD8D	00440000
(13200)	000B2667	04CF6260	47515B00	C7F2A8FC	C6DA32DD	4219BC2D	C1871E65	C0CF10E1	48100AC4	421B19C6
(13240)	479CDFE2	C130D8BF	43120DE6	3D3B52A0	43130B8F	477BDC26	00440000	000B2668	04CF6260	47537951
(13280)	C7F3598B	C6DB426E	4219AF36	C184BAB0	C0CCEA31	48101A21	421B016E	4790DBE8	C130DA62	43121447
(13320)	3D657A80	43131ADC	477DF051	00440000	000B2669	04CF6260	4755968F	C7F406F8	C6DC4F2D	4219A21F
(13360)	C1825EBA	C0CAC962	48102F7B	421AE934	4790D7B5	C130CF79	43121A96	3D8CCB80	43132A2A	47800A02
(13400)	00440000	000B266A	04CF6260	4757B2B8	C7F4B14E	C6DD5922	421994E9	C1800A64	C0C8AE60	481044D2
(13440)	421AD128	4790D34B	C130CA08	431220D5	3DAEEE00	43133978	4782292C	00440000	000B266B	04CF6260
(13480)	475CDC9	C7F55896	C6DE6054	42198796	C17DBD91	C0C6991B	48105A26	421AB954	4790CEAB	C130C413
(13520)	43122704	3DCA04A0	431348C8	47844DBF	00440000	000B26B1	04CF6260	475BE7BF	C7E5ECDC	C6CE64CA
(13560)	42197A27	C17B7824	C0C48981	48106F77	421AA1C0	4790C9D6	C130BD9F	43122D23	3DDCCC80	43135818
(13600)	478677AD									

871022

FILE 4 RECORD 36 LENGTH 6940BYTES

(0)	1B1C0000	00440000	000D4A6E	00000000	C82E1218	C8CB506B	483DBBD4	413F382F	C1C81FF6	41318978
(40)	48D96AC7	41D7B026	478E01C8	42107D9C	43101C29	3D566C3F	421C0DF8	48DF0792	00440000	000D4A6F
(80)	00000000	C82E0CE3	C8CB60E8	483DBFE9	413F38DB	C1C81CAE	41318877	48D97A41	41D7BF1D	478DF7AA
(120)	42107D86	43101C4F	3D77E5BF	421D0CBD	48DF324B	00440000	000D4A70	00000000	C82E07AD	C8CB7165
(160)	483DC3FE	413F3987	C1C81966	41318776	48D989BA	41D7D424	478DED8C	42107D70	43101C76	3D94C2BF
(200)	421E0BB5	48DF5C96	00440000	000D4A71	00000000	C82E0278	C8CB81E2	483DC813	413F3A33	C1C8161F
(240)	41318675	48D99934	41D7EA69	478DE370	42107D5A	43101C9C	3DAB2F5F	421F0AD0	48DF8672	00440000
(280)	000D4A72	00000000	C82DFD42	C8CB925E	483DCC27	413F3ADE	C1C812D8	41318575	48D9A8AE	41D7EC05
(320)	478DD956	42107D44	43101CC3	3DB9A31F	42200A0E	48DFAFDD	00440000	000D4A73	00000000	C82DF80C
(360)	C8CBA2DA	483DD03C	413F3B89	C1C80F91	41318474	48D9B828	41D803AC	478DCF41	42107D2F	43101CE9
(400)	3DBF039F	4221096D	48DFD8C4	00440000	000D4A74	00000000	C82DF2D6	C8CBB356	483DD450	413F3C33
(440)	C1C80C4C	41318374	48D9C7A2	41D7FE6C	478DC535	42107D18	43101D10	3DBABF3F	422208EA	48E00157
(480)	00440000	000D4A75	00000000	C82DEDA0	C8CBC3D2	483DD865	413F3CDE	C1C80906	41318274	48D9D71C
(520)	41D7ECB3	478DBB34	42107D02	43101D36	3DACDD3F	42230885	48E02962	00440000	000D4A76	00000000
(560)	C82DE86A	C8CBD44D	483DDC79	413F3D88	C1C805C2	41318174	48D9E696	41D7D242	478DB142	42107CEC
(600)	43101D5D	3D96009F	4224083D	48E050F4	00440000	000D4A77	00000000	C82DE334	C8CBE4C8	483DE08D
(640)	413F3E32	C1C8027E	41318074	48D9F610	41D7B524	478DA765	42107CD6	43101D83	3D775F1F	42250811
(680)	48E078CD	00440000	000D4ABC	00000000	C82DDDFE	C8CBF543	483DE4A1	413F3EDC	C1C7FF3A	41317F74
(720)	48DA058B	41D79C05	478D9D9E	42107CC0	43101DA9	3D52ABFF	42260800	48E09EA9	00440000	000D4ABE
(760)	00000000	C82DD8C8	C8CC05BD	483DE8B5	413F3F85	C1C7FBF7	41317E75	48DA1505	41D78C62	478D93F3

```
( 6080)  413F7C67  C1C70351  413132FC  48DECCFE  41D71209  478C5E80  421075BD  4310293F  3CAC13FF  42761EE2
( 6120)  48E55D69  00440000  000D6DF8  00000000  C82C3C6F  C8D1184B  483F29E6  413F70FF  C1C70035  41313168
( 6160)  48DEDC7D  41D6F1D3  478C6159  421075A6  43102963  BCFD41FF  4277239D  48E55550  00440000  000D6DF9
( 6200)  00000000  C82C3735  C8D128B0  483F2DF3  413F7197  C1C6FD1A  41313C74  48DEEBFC  41D6CE15  478C6450
( 6240)  421 758F  431C2988  BD31A0DF  4278284A  48E54CB8  00440000  000D6DFA  00000000  C82C31FB  C8C13915
( 6280)  483F3201  413F722E  C1C6F9FF  41312F80  48DEFB7B  41D6B12A  478C6768  42107577  431029AD  BD586BBF
( 6320)  42792CE7  48E543A3  00440000  000D6DFB  00000000  C82C2CC0  C8D1497A  483F360E  413F72C6  C1C6F6E4
( 6360)  41312E8D  48DF0AFA  41D6A1C2  478C6AA1  42107560  431029D1  BD81AAFF  427A3174  48E53A12  00440000
( 6400)  000D6DFC  00000000  C82C2786  C8D159DF  483F3A1C  413F735D  C1C6F3CB  41312D99  48DF1A75  41D6A0DC
( 6440)  478C6DFF  42107549  431029F6  BDAACADF  427B35EF  48E53008  00440000  000D6DFD  00000000  C82C224B
( 6480)  C8D16A44  483F3E29  413F73F4  C1C6F0B2  41312CA6  48DF29F8  41D6AB03  478C7184  42107531  43102A1A
( 6520)  BDD1697F  427C3A57  48E52587  00440000  000D6DFE  00000000  C82C1D11  C8D17AA8  483F4236  413F748C
( 6560)  C1C6ED99  41312BB2  48DF3977  41D6BAD1  478C7533  4210751A  43102A3F  BDF37D7F  427D3EAC  48E51A91
( 6600)  00440000  000D6DFF  00000000  C82C17D6  C8D18B0C  483F4643  413F7523  C1C6EA81  41312ABF  48DF48F6
( 6640)  41D6CB23  478C790E  42107503  43102A63  BE10F68F  427E42ED  48E50F27  00440000  000D6E00  00000000
( 6680)  C82C129C  C8D19B70  483F4A50  413F75BA  C1C6E769  413129CC  48DF5876  41D6D813  478C7D18  421074EB
( 6720)  43102A88  BE123FEF  427F471B  48E5034D  00440000  000D6E01  00000000  C82C0D61  C8D1ABD3  483F4E5D
( 6760)  413F7650  C1C6E452  413128D9  48DF67F5  41D6DF1C  478C8152  421074D4  43102AAC  BE130803  42804B35
( 6800)  48E4F7C5  00440000  000D6E02  00000000  C82C0826  C8D1BC37  483F526A  413F76E7  C1C6E13C  413127E6
( 6840)  48DF7774  41D6DF0C  478C85BE  421074BD  43102AD1  BE134947  42814F3A  48E4EA4F  00440000  000D6E03
( 6880)  00000000  C82C02EC  C8D1CC9A  483F5677  413F777E  C1C6DE26  413126F3  48DF86F4  41D6D7D8  478C8A5E
( 6920)  421074A5  43102AF6  BE13043E  4282532A  48E4DD2F
```

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
4	36	37	13604	0	0	0	0	0	0

Bay

04/14/73 - 09/20/81

```
FILE      5  RECORD      1  LENGTH  12004BYTES
(    0)  2EE40000  00180000  00011D90  00000834  423C2147  42B8970A  414970A3  00180000  00011D95  0000FD20
(   40)  423C51EB  42B7AB85  413AB851  00180000  00011D9B  00011238  4239C000  42B81C28  4141C28F  00180000
(   80)  00011DA0  00001C20  4235428F  42B8E147  414E147A  00180000  00011DA0  00001C20  42350CCC  42B95EB8
(  120)  4155EB85  00180000  00011DA2  00000E10  4232D1EB  42BA170A  41617CA3  00180000  00011DA6  00000E10
(  160)  422E6B85  42BB68F5  41768F5C  00180000  00011DA8  00001518  422C51EB  42BC4000  41840000  00180000
(  200)  00011DAA  00000E10  422A3851  42BCFD70  418FD70A  00180000  00011DAC  00003840  422807AE  42BDE3D7
(  240)  419E3D70  00180000  00011DAE  00000E10  42262B85  42BECF5C  41ACF5C2  00180000  00011DB2  00001C20
(  280)  422230A3  42CCD1EB  41CD1EB8  00180000  00011DB3  00000000  4224DC28  42BFE8F5  41BE8F5C  00180000
(  320)  00011DB4  00000E10  42240F5C  42C07851  41C7851E  00180000  00011DB6  00000000  4222451E  42C19EB8
(  360)  41D9EB85  00180000  00011DB8  00001518  4220828F  42C30A3D  41F0A3D7  00180000  00011DB8  00001C20
(  400)  422C2666  42C1D47A  41DD47AE  00180000  00011DBA  00000E10  421D8F5C  42C31EB8  41F1EB85  00180000
(  440)  00011DBC  00000E10  421BE8F5  42C470A3  421070A3  00180000  00011DBE  00000E10  421A63D7  42C61999
(  480)  42121999  00180000  00011DC1  00001C20  42180000  42C8C7AE  4214C7AE  00180000  00011DC1  00003840
(  520)  4215F851  42C81999  42141999  00180000  00011DC2  00000000  42155C28  42C8D70A  4214D70A  00180000
(  560)  00011DC4  00000E10  4213E8F5  42CAF5C2  4216F5C2  00180000  00011DC6  00000E10  4212851E  42CD75C2
(  600)  421975C2  00180000  00011DC8  00000E10  42112E14  42D02666  421C2666  00180000  00011DC8  00001C20
(  640)  41E9C28F  42CF6147  421B6147  00180000  00011DCA  00000E10  41D5EB85  42D27AE1  421E7AE1  00180000
(  680)  00011DCC  00001C20  41C26666  42D64F5C  42224F5C  00180000  00011DCE  00004650  41AF851E  42DB1EB8
(  720)  42271EB8  00180000  00011DCF  00003840  41A80000  42DDC51E  4229C51E  00180000  00011DCF  00004650
(  760)  418CA3D7  42DEE3D7  422AE3D7  00180000  00011DD0  00000000  4186BF5C  42E187AE  422D87AE  00180000
(  800)  00011DD2  00000E10  4175EB85  42EA6E14  42366E14  00180000  00011DD4  00006978  416CF5C2  42F31C28
(  840)  423F1C28  00180000  00011DD5  00010D10  4167063C  42FB4580  42474580  00180000  00011DD5  00010D1A
(  880)  4167063C  42FB4580  00000000  00180000  00011DD5  00011940  4166E147  42FB7851  00000000  00180000
(  920)  00011DD5  00012750  415D47AE  4310B23D  00000000  00180000  00011DD7  00000000  415D1EB8  C255E333
(  960)  00000000  00180000  00011DD7  000004B0  415D2413  C255DE22  00000000  00180000  00011DD7  000004BA
( 1000)  415D2413  C255DE22  C255DE22  00180000  00011DD7  00000B40  415D2B91  C255C0A4  C255C0A4  00180000
( 1040)  00011DD7  00000B4A  415D2B91  C255C0A4  00000000  00180000  00011DD7  00000EC4  415D2F95  C255B0D7
( 1080)  00000000  00180000  00011DD7  00000ECE  415D2F95  C255B0D7  C255B0D7  00180000  00011DD7  00007F80
( 1120)  415DB05B  C253B637  C253B637  00180000  00011DD7  0000 7F8A  415DBC5B  C253B637  00000000  00180000
( 1160)  00011DD8  00006810  415F1717  C24E32D1  00000000  00180000  00011DD8  0000681A  415F1717  C24E32D1
( 1200)  4265CD2E  00180000  00011DD8  0000DB24  415F9A89  C24C2DA8  4267D257  00180000  00011DD8  0000DB2E
( 1240)  415F9A89  C24C2DA8  42B40000  00180000  00011DD8  0000DFD4  415F9FE4  C24C1897  42B40000  00180000
( 1280)  00011DD8  0000DFDE  415F9FE4  C24C1897  4267E768  00180000  00011DD8  0000F3B6  415FB6A5  C24BBF10
( 1320)  426840EF  00180000  00011DD8  0000F3C0  415FB6A5  C24BBF10  C24BBF10  00180000  00011DD8  0000F3CA
( 1360)  415FB6A5  C24BBF10  00000000  00180000  00011DD9  00002A30  416051EB  C2495C28  00000000  00180000
( 1400)  00011DDB  00005460  4167851E  C23EF333  00000000  00180000  00011DDD  00000000  41700000  C23768F5
( 1440)  00000000  00180000  00011DDD  00001C20  4168F5C2  C22E4CCC  00000000  00180000  00011DDF  00000E10
( 1480)  41759999  C227B851  00000000  00180000  00011DE1  00001C20  41830A3D  C222851E  00000000  00180000
```

FILE 5 RECORD 3 LENGTH 61208356BYTES

(0)	20A40000	00180000	00013D6F	00008CA0	412170A3	C2254CCC	C22375C2	00180000	00013D76	0000C4E0
(40)	41268F5C	C222C7AE	C221C000	00180000	00013D7C	0000AC44	412A6666	C220947A	C2200A3D	00180000
(80)	00013D7C	0000FD20	411D1EB8	C2422E14	C23F87AE	00180000	00013D82	00003840	412147AE	C23A6B85
(120)	C2388F5C	00180000	00013D87	00007E90	4121EB85	C238947A	C236D47A	00180000	00013D8B	000053B6
(160)	41247AE1	C2377333	C2361C28	00180000	00013D8B	000053C0	411851EB	42F3F851	4243A8F5	00180000
(200)	00013D8F	0000C864	411D1EB8	43104F0A	4253970A	00180000	00013D95	0000B6D0	411D1EB8	43109CCC
(240)	42587333	00180000	00013D9C	0000E100	411E6666	43100000	425A6666	00180000	00013D9E	00000000
(280)	412CCCCC	42E1947A	422DDC28	00180000	00013DA2	0000B6D0	412AE147	42E3B0A3	42302E14	00180000
(320)	00013DA7	00002A30	412970A3	42E5B333	42325C28	00180000	00013DA7	00006270	4130CCCC	42CA28F5
(360)	421628F5	00180000	00013DA9	0000B6D0	412F5C28	42C9B851	4215C51E	00180000	00013DB0	00009AB0
(400)	412B0A3D	42CDF333	421A6B85	00180000	00013DB4	0000A8C0	412828F5	42CFF5C2	421CC7AE	00180000
(440)	00013DB4	00014370	411AB851	42E8028F	423728F5	00180000	00013DB8	00000708	41199999	42EB0000
(480)	423A6666	00180000	00013DB8	00001518	411D47AE	42D8CCCC	42276B85	00180000	00013DB8	0000A8C0
(520)	411D47AE	42D8CCCC	42276B85	00180000	00013DB8	0000D674	413970A3	42B9B851	415B851E	00180000
(560)	00013DBB	0000C4E0	4136E147	42B8F0A3	414F0A3D	00180000	00013DBF	00007F90	4133AE14	42B92147
(600)	4152147A	00180000	00013DC4	00011940	4130F5C2	42BD5EB8	4195EB85	00180000	00013DC7	00007E90
(640)	412F0A3D	42BB75C2	4178A3D7	00180000	00013DC7	0000B6D0	414947AE	42C22147	41E2147A	00180000
(680)	00013DCB	0001368C	4146147A	42C3A147	41FA147A	00180000	00013DD1	0000FD20	414147AE	42C5B333
(720)	4211B333	00180000	00013DD1	00013FEC	4150A3D7	42BB2B85	4172B851	00180000	00013DD3	00007080
(760)	414FAE14	42BAF851	416F851E	00180000	00014055	00003F48	414AB851	42BCA3D7	418A3D70	00180000
(800)	0001405B	0000C4E0	4145C28F	42BD47AE	41547AE1	00180000	00014C5B	0000E8C8	4142B851	42C5D999
(840)	4211D999	00180000	00014064	00011940	414C28F5	42AA7AE1	C19851EB	00180000	0001406B	0000C4E0
(880)	41475C28	42AA35C2	C19CA3D7	00180000	00014072	00010B30	41440000	42AA0000	C1A00000	00180000
(920)	00014078	00011940	413E6666	42A9F5C2	C1A0A3D7	00180000	0001407F	0000FD20	413A147A	42A9E3D7
(960)	C1A1C28F	00180000	00014086	000108D8	41351EB8	42A9AB85	C1A547AE	00180000	0001408D	0000D2F0
(1000)	41328F5C	42AA147A	C19EB851	00180000	00014094	0000AFC8	412D1EB8	42AA4CCC	C1973333	00180000
(1040)	0001409A	00009AB0	412851EB	42A97333	C19C0000	00180000	000140A2	000093A8	41235C28	42A97851
(1080)	C19C51EB	00180000	000140A9	0000A8C0	411EE147	42A9A3D7	C180F5C2	00180000	000140B0	0000E888
(1120)	411B0A3D	42A9570A	C17947AE	00180000	000140B5	0000C4E0	41187AE1	42A8EB85	C1768851	00180000
(1160)	000140B5	00014370	412170A3	4269F333	C24835C2	00180000	000140B8	00010B30	412051EB	42652E14
(1200)	C24CC7AE	00180000	000140BE	00006A68	411FAE14	42604CCC	C2518000	00180000	000140BE	00006A72
(1240)	411FAE14	42604CCC	42628000	00180000	000140BF	00012048	411FAE14	425E6B85	426051EB	00180000
(1280)	000140CC	0000CBE8	411EE147	424F1EB8	42516B85	00180000	000140D0	00000000	411EB851	424A9EB8
(1320)	424CF333	00180000	000140D0	00005460	412147AE	421F028F	4220DEB8	00180000	000140D3	0000BDD8
(1360)	41233333	4218C7AE	421A51EB	00180000	000140DB	00000000	41266666	4213AE14	4214BD70	00180000
(1400)	000140E3	00012E58	412B3333	421C3333	421CA666	00180000	000140E8	00010B30	412DC28F	41E9EB85
(1440)	41ECF5C2	00180000	000140EF	0000AFC8	4130A3D7	41D570A3	41D570A3	00180000	000140F8	00012750
(1480)	4134F5C2	41BC51EB	41BC51EB	00180000	000140FF	00013560	4139C28F	41A6147A	41A6147A	00180000
(1520)	00014104	00011940	413C51EB	41559999	41959999	00180000	0001410B	00014370	414051EB	418A147A
(1560)	418A147A	00180000	00014112	00008CA0	4143D70A	41763D70	41763D70	00180000	00014119	00011940
(1600)	414851EB	416D9999	416D9999	00180000	00014120	00010B30	414CCCCC	415F0A3D	415F0A3D	00180000
(1640)	0001412A	0000CBE8	4152147A	414FD70A	414FD70A	00180000	0001412E	00010B30	41547AE1	4145EB85
(1680)	4145EB85	00180000	00014135	0000B6D0	4158A3D7	41370A3D	41370A3D	00180000	00014135	0000E100
(1720)	413D47AE	C1CC0000	C1CC0000	00180000	0001413C	00010B30	414147AE	C1CCF5C2	C1CCF5C2	00180000
(1760)	00014143	00001FA4	414570A3	C1C6E147	C1C6E147	00180000	0001414C	00006978	414A6666	C1B59999
(1800)	C1B59999	00180000	00014158	000026AC	412C51EB	C219851E	C21930A3	00180000	00014161	000027D8
(1840)	41323D70	C216C51E	C216C51E	00180000	00014166	00001518	413451EB	C216E333	C216E333	00180000
(1880)	00014166	00007080	411F0A3D	C23511EB	C232CCCC	00180000	00014174	00013560	4126147A	C22BF851
(1920)	C22ADEB8	00180000	00014178	00012048	41270A3D	C22C5EB8	C22B6666	00180000	0001418A	00011238
(1960)	4117AE14	C24E0F5C	C24A3851	00180000	0001418E	000111CC	40599999	42CD91EB	42FA4F5C	00180000
(2000)	0001418E	00011116	4120F5C2	42D9F0A3	4227DC28	00180000	00014193	00002328	411F3333	42DDC28F
(2040)	422C0000	00180000	000141A3	00009AB0	4113D70A	42BBB851	41C851EB	00180000	000141A3	0000D2F0
(2080)	412D9999	42C74F5C	4213851E	00180000	000141AA	00014370	412FB851	42D53333	42214E5C	00180000
(2120)	000141B0	00008340	412D70A3	42D75C28	4223947A	00180000	000141B5	0000A1B8	412BAE14	42C93333
(2160)	42259999	00180000	000141B5	0000E808	412EB851	42D275C2	421E91EB	00180000	000141BC	00000000
(2200)	412C28F5	42D42B85	4220851E	00180000	0001443F	0000C4E0	41299999	42D5E666	42228A3D	00180000
(2240)	0001443F	0000EF10	414147AE	42B55999	41159999	00180000	00014444	00010B30	413E3D70	42B523D7
(2280)	41123D70	00180000	00014444	00007080	413B0A3D	42B4D70A	40D70A3D	00180000	00014453	0000CD14
(2320)	4135EB85	42B61999	41219999	00180000	00014455	0000F100	41357 0A3	42B6D999	412D9999	00180000
(2360)	00014455	00012F84	413E6666	42A9EB85	C1A147AE	00180000	0001445A	0000EF10	413C28F5	42A92147
(2400)	C1ADEB85	00180000	00014460	00005460	41357AE	42A8E8F5	C1B170A3	00180000	00014466	000057E4
(2440)	41363D70	42A85EB8	C1BA147A	00180000	0001446E	0000B928	4131C28F	42A80F5C	C1BF0A3D	00180000
(2480)	00014475	000049D4	412E6666	42A78F5C	C1C4F5C2	00180000	0001447B	00003BC4	412BAE14	42A7451F
(2520)	C1C547AE	00180000	00014489	000050DC	4124F5C2	42A5CA3D	C1CF0A3D	00180000	0001448F	00004D58
(2560)	41223D70	42A687AE	C1BC51EB	00180000	00014497	00002A30	411E8F5C	42A4FAE1	C1CA8F5C	00180000

PRINTED IN U.S.A.

Pioneer 10
D77876

DUMP OF TAPE SIN1

INPUT TAPE SIN1 ON TB0
DATA INPUT H9 NF 3 FL=3=1=1

FILE 1 RECORD 1 LENGTH 80BYTES

(0)	564F4C31	50494F4E	31302020	20202020	20202020	20202020	20202020	20202020	20202020	20202020
(40)	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202033

FILE 1 RECORD 3 LENGTH 80BYTES

(0)	48445232	46303831	39323038	31393220	20202020	20202020	20202020	20202020	20202020	4D202020
(40)	20202020	20202020	20203030	20202020	20202020	20202020	20202020	20202020	20202020	20202020

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	3	4	80	0	0	0	0	0	0

FILE 2 RECORD 1 LENGTH 8192BYTES

(0)	00010004	01000100	01000000	00000000	00000000	00000000	00000000	00000000	01010100	ED6BD05D
(40)	00200000	00000000	0A50494F	4E31302E	42434B00	00000000	00000000	00000000	00000000	00000000
(80)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(240)	00000000	00000000	00000010	00008C95	B0000100	00000000	00000000	00000000	01010A00	01005049
(280)	4F4E3130	2E42434B	2A000200	42414343	55502F56	45524946	592F4C4F	47205031	302A2E44	41542040
(320)	4641313A	50494F4E	31302E42	434B0C00	04004B41	59534552	20202020	20200400	05000800	A8000800
(360)	0600E066	F98BAF70	90000200	07000004	04000800	56342E35	08000500	5F4E5353	44433A3A	04000A00
(400)	ED8D3801	0C000B00	5F4E5353	44432440	4641313A	04000C00	56342E35	04000D00	00200000	02000E00
(440)	0A000200	0F000300	F0000300	00000000	00000000	00000000	01011500	2A005B4B	41595345	525D5031
(480)	30434F4E	452E4441	543B3102	002B0001	0206002C	00D9392B	00010004	002E0042	00000004	002F0008
(520)	00A8002C	00340001	00140000	00420000	004100C0	00000014	00000000	00000000	00000000	00000006
(560)	C02D00DF	3B030000	00020030	0000AA02	00310000	00010032	00000400	33000000	00000200	4B00FF7F
(600)	01005000	00010057	00000400	4F004300	00000200	35000200	08003600	80C1C297	67709000	08003700
(640)	60AA9123	A8709000	08003800	606AA335	E1BC9000	08003900	00000000	00000000	04004700	0800A800
(680)	02004800	88AA0200	4A000000	00000000	00000000	00000000	001C0400	00000000	01000000	00000000
(720)	A9190100	B0A90000	DE42C8CC	3E4485AB	23426290	AF190100	B0A90000	B542380A	4244146E	5642831E
(760)	B6190100	00690000	934250B5	49444AFA	A342A89B	B6190100	0A690000	934250B5	49444AFA	00000000
(800)	B6190100	447F0000	9342A062	4A44030D	00000000	B6190100	4E7F0000	9342A062	4A44030D	A442F027
(840)	B8190100	00000000	8B42A070	4B4499D9	B142B0A2	B8190100	287D0000	8A428093	49446334	9C428060
(880)	B8190100	327D0000	8A42809B	49446334	00000000	B8190100	94890000	8A425886	48442CF1	00000000
(920)	B8190100	9E890000	8A425886	48442CF1	9A426044	B8190100	84E40000	894280EB	47441E05	8A4218D2
(960)	BF190100	70170000	46425188	5044A3B0	D342F08F	BF190100	A0410000	10420000	544451F8	F142D0B8
(1000)	BF190100	C44A0000	0F4234CB	5544B80B	F2427050	BF190100	CE4A0000	0F4234CB	5544B80B	00000000
(1040)	BF190100	CC7E0000	0E42AA9E	5544267A	00000000	BF190100	D67E0000	0E42AA9E	5544267A	F54280AF
(1080)	C1190100	A44B0100	F5414889	5C4483C5	17435C52	C1190100	AE4B0100	F5414889	5C4483C5	00000000
(1120)	C4190100	103A0100	C841D6A3	65441E05	00000000	C8190100	300B0100	9E417A14	7B44B81E	00000000
(1160)	C9190100	68F10000	9741285C	81444021	00000000	CA190100	20FD0000	924146E1	8444E0FA	00000000
(1200)	CB190100	38120100	8E416666	884458CF	00000000	CB190100	D04C0100	87413C0A	43C35C8F	00000000
(1240)	CF190100	C0A80000	BD418EC2	F3C23033	00000000	D1190100	A08C0000	DC41E07A	C6C2588F	00000000
(1280)	D3190100	48200100	FB411E85	A6C2D0A3	00000000	D7190100	C0A80000	1C42CCCC	78C2E17A	00000000
(1320)	D9190100	80700000	2C42D7A3	5BC214AE	00000000	DB190100	D4490000	3B420AD7	42C2703D	00000000
(1360)	DD190100	F8430000	4A425C8F	30C2E17A	00000000	DF190100	40380000	5942AE47	1FC21E85	00000000
(1400)	E1190100	483F0000	674214AE	10C2E17A	00000000	E3190100	50460000	75428FC2	04C2F528	00000000
(1440)	E5190100	38310000	814208D7	F1C1AE47	00000000	E6190100	B42D0000	85424040	E8C1EC5D	00000000
(1480)	E6190100	BE2D0000	8542404D	E8C1EC5D	0FC28EEC	E7190100	B42D0000	8842C8CC	DFC1285C	0AC2B29D
(1520)	E9190100	50460000	8F42A847	CEC17A14	00C2507C	EB190100	C43B0000	954280EB	BFC13C0A	EEC174E0
(1560)	ED190100	302A0000	9C42F028	B3C11E85	E0C1847C	EF190100	50270100	A2427814	A5C1B81E	CFC1FA5C
(1600)	F0190100	B09A0000	B6427814	AFC114AE	D0C122B9	F0190100	C0A80000	9842E07A	80C1D6A3	AFC1984C
(1640)	F1190100	40380000	9B4288C2	7FC1285C	ACC194D4	F3190100	201C0000	A2420000	71C1AC47	A2C184EB
(1680)	F5190100	4038C000	A74210AE	61C1AC47	98C1A44E	F7190100	40380000	AD421885	4EC150B8	8CC13E57
(1720)	F9190100	B09A0000	B342285C	45C1B81E	84C1B8DA	FA190100	B09A0000	B6427030	43C108D7	82C1BCE3
(1760)	FB190100	907E0000	B84250B8	3EC150B8	7EC1A860	011A0100	A08C0000	C942A070	25C18CC2	56C10009
(1800)	031A0100	A08C0000	CE42D0A3	21C1AC47	4CC16CC5	031A0100	A81A0100	CF4260BD	20C1D861	4AC190DC

PRINTED IN U.S.A.

```
( 7120) 311E0100 50460000 17423333 00C10000 96C1762F 331E0100 40380000 1942B81E EBC0188E 90C1D288
( 7160) 351E0100 784A0100 1B421E85 E6C06066 8EC1D895 381E0100 28230000 1C42C2F5 CFC0285C 88C1B06B
( 7200) 3B1E0100 38310000 1F421E85 C3C008D7 84C192D0 3D1E0100 201C0000 2142B81E B4C0E07A 80C13E84
( 7240) 3F1E0100 201C0000 23423D0A B7C0380A 80C11E9A 411E0100 00000000 2542AE47 94C0E07A 6EC1DC9D
( 7280) 431E0100 201C0000 26426666 91C080EB 6CC170AD 451E0100 60540000 2842C2F5 ACC0C8CC 78C1D898
( 7320) 451E0100 60540000 29428FC2 09C19899 95C1B6A8 471E0100 100E0000 2A425C8F 9EC050B8 70C1E098
( 7360) 491E0100 100E0000 2B4214AE ABC01885 76C12C52 4D1E0100 302A0000 2E4251B8 CAC0703D 81C108EA
( 7400) 4F1E0100 100E0000 32427A14 FCC0F028 8DC1625B 511E0100 100E0000 32425C8F CAC0703D 80C14CBA
( 7440) 521E0100 28230000 3442EB51 CEC07814 81C17E23 551E0100 100E0000 3642703D EFC0285C 88C142DB
( 7480) 561E0100 201C0000 3842EB51 FDC0A070 8BC19C88 591E0100 201C0000 3B423D0A FEC050B8 8BC1522E
( 7520) 5B1E0100 40380000 3D42B81E F8C0E851 88C10EEC 631E0100 00E10000 4442EB51 D1C080EB 7AC1B41B
( 7560) 631E0100 10EF0000 4442EB51 D1C080EB 7AC1B41B 631E0100 50270100 2442C2F5 66406666 D5C0B8ED
( 7600) 641E0100 80700000 2542AE47 63400AD7 D6C050D5 661E0100 80700000 26425C8F 5440E17A DDC08801
( 7640) 671E0100 48200100 27420AD7 4F40285C DEC0980C 671E0100 50270100 2742285C 4C3ECCCC 1FC118F3
( 7680) 6E1E0100 300B0100 2E4247E1 F5BD8EC2 20C1BC87 721E0100 E0C40000 3142B81E 8FBF285C 2FC13826
( 7720) 721E0100 00E10000 3142B81E 94BFE07A 2FC10CCA 721E0100 40190100 134214AE 7A4047E1 DFC09829
( 7760) 731E0100 5CC10000 1442D7A3 8B401885 D0C07808 741E0100 80700000 1442C2F5 7840EB51 DFC0F00A
( 7800) 771E0100 80700000 16425188 4C40CCCC F2C0D0DE 7C1E0100 E0C40000 2042C2F5 F5BD8EC2 28C118CE
( 7840) 7C1E0100 48200100 21429999 A3BE08D7 2BC108A3 7D1E0100 100E0000 06427A14 0C40CCCC 12C16C83
( 7880) 7F1E0100 80700000 20010000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
( 7920) 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
( 7960) 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
( 8000) 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
( 8040) 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
( 8080) 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
( 8120) 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
( 8160) 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

FILE      2  RECORD    2567  LENGTH    8192BYTES
(    0) 00010004 01000200 7C090000 00000000 00000000 00000000 00000000 00000000 01010100 46B2F672
(   40) 00200000 00000000 0A50494F 4E31302E 42434B00 00000000 00000000 00000000 00000000 00000000
(   80) F6243100 0100DF3B 03000100 145B4841 59534552 5D503130 4F52422E 4441543B 31000000 00000000
(  120) 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
(  160) 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
(  200) 00000000 00000000 00000000 00000000 00000000 01004000 00004000 4E030000 00000000 00000000
(  240) 00000000 00000000 00000000 00008FBE 00020400 00000000 9C020000 00000000 C20A0D00 00000000
(  280) E84FEC6C 9850A08E 934EC858 E0406009 4F420329 29403D58 A350F844 57429735 0C4EA562 4741BCFF
(  320) 88433444 51B93927 7F405E30 A85048DF 3F090D00 00000000 E84F1C4F 9850F0CA 934EA09F E040883B
(  360) 4F42644F 2940805E A350586D 5742463C 0C4EB273 47411 8C1 88438A5C 953B9E9C 0840A340 A850A8FF
(  400) 16090D00 00000000 E84F6853 985000DB 934EF0FE E0400048 4F429B4E 29405958 A350E855 5742B045
(  440) 0C4E80A3 4741BCC3 8843A059 083A5A15 5A4760DE A850B02F 17090D00 00000000 E84F3A0B 9850C8A3
(  480) 934E703D E0403876 4F421054 29409C5F A35080BF 57425569 0C4EAAC1 4741ECDA 8843E85E FD39BB06
(  520) A2445890 B550E026 08090D00 00000000 E94F82C3 985090A0 934E9045 E040F882 4F42CBAC 2940F546
(  560) A3503866 564291C5 0C4EDCC8 474110D4 88437843 8338D08C 8744E86B B25098DC D4210D00 00000000
(  600) EE4FDCBE 8B5000E0 AC4E506F EA40B850 51425DF5 2B4086DE AE504061 54426919 0C4EB50A 47418051
(  640) 8D43324A 4EB83A7C 7F43240D A1506811 D5210D00 00000000 EE4F229F 8B50A0C8 AC4EA046 ED40609C
(  680) 514285FC 2B40B6D9 AE50308F 5542A3FB 0C4E51CF 47419450 8D434C46 BEBA5D7D 98431619 A150502C
(  720) B6210D00 00000000 EE4F8A53 8B5018F5 AC4EB855 ED40C88A 514230F4 2B4052E2 AE506089 5442E517
(  760) 0C4E33C0 47414853 8D43787B B3BBEE12 1B43F4E0 A35070C4 8B7B0000 00000000 1E00AE2C 2C000006
(  800) 390008E9 3600709E 0100FFE1 0000DA92 1C00001E 06C0F4B3 0000B497 010050C4 0000DAD8 2581D31D
(  840) D9001F12 0C00B8C7 55670000 00000000 1E006633 2D00D8E2 390030D3 360098B9 010067E7 00004B93
(  880) 1C005840 060045C3 00000DD8 0100F0C6 000060D8 CB0E88A3 E400EF35 0D006846 57670000 00000000
(  920) 1F0048E3 2C00E803 39000891 360010A9 0100FFEF 0000719D 1C00A862 0700B108 00006AC7 010058C6
(  960) 0000F8DF 66005D47 CB00AE52 0D00504B 55670000 00000000 1F007AAD 2D0070E5 3A002877 3600C090
( 1000) 0100C0E4 00005B97 1C007802 07005645 0000F83C 010028C0 0000E8D8 7F00F5BB 370087BC 0D006846
( 1040) 5B670000 00000000 1F009CA6 2C00A006 3A00E02A 3600C0E0 01007AFC 0000F69C 1C002062 07008402
( 1080) 0000BD71 0100F4C6 000040D8 2B0225CA 260037AF 0C00D05D 5D670000 00000000 1F0070DF 2C007026
( 1120) 3A0020D0 360080D3 010014FA 000068A3 1C00C042 0700D2F5 0100859C 010060C6 0000A4C9 09834639
( 1160) 2B0000FE 0C00B87D 5F670000 00000000 1F003CFD 2C00680A 3A005830 3600B021 0100D1EB 0000E5A5
( 1200) 1C00D82F 0700E1D1 0100A482 01001CC4 00007C8C 4302A583 59008627 0C006042 5D670000 00000000
( 1240) 1F0018ED 2C00D032 3A006020 36009833 01006BE4 0000AFB6 1C00B81E 07008CCB 010021A4 01002CC5
( 1280) 0000B68B 7D03A336 6200E132 0C00F806 5B670000 00000000 1F0094F3 2C002813 3A00A038 3600F0E6
( 1320) 0100FE4 000039B5 1C00302E 070073DD 0100A8BE 010044BA 0000B48F 3000C036 7300FBFD 0C0060C3
( 1360) 55670000 00000000 1E00F622 2C00A011 3A003877 3600B0FE 1E00E11A 000051AD 14000006 0700D9EC
( 1400) 010015EF 0100D8B9 00005693 CC03611F 660026F8 0D00C035 37670000 00000000 1E00526E 2C00A86E
( 1440) 3A009852 360028E1 1E00370A 000068EB 0B00D0E2 0700CCE5 0200A212 0100D4BA 0000CAA9 7C03FDDF
```

PRINTED IN U.S.A.

```
( 6760)  1F0061A0  06005D68  0400A068  0200E873  0000B4BF  00000CD3  03001C7A  49805584  3C003EA0  1600F8F4
( 6800)  11290000  00000000  0200AC0C  04008824  0600B07F  0E00806C  1F00AFDF  06004C64  0400A811  0300779F
( 6840)  0000BCB0  000040D2  03005A86  0C826018  2D0036EF  17004820  E32A0000  00000000  0200AE1B  0400880B
( 6880)  0100A8CD  0E00D84A  1F00D7D1  0600A068  04006050  00003545  00000D8B  00005CCE  0300988E  F8013900
( 6920)  24008ADC  1700101C  E12A0000  00000000  02006E18  04006039  010078D3  0E008857  1F0009D0  0600206C
( 6960)  04004070  00009980  0000B48C  000004CD  030038F0  F2005FCB  27001CE8  1700A80F  FF2A0000  00000000
( 7000)  0200E004  04005004  02004000  0E00905F  1F00C8D7  0600696C  0400E830  000086FF  00003CEA  000050CE
( 7040)  0300EC8D  88011994  300098D1  1700E00C  F12A0000  00000000  0200400A  04004064  02002007  0E005076
( 7080)  1F004AD0  0600DB6B  04000013  0300D025  00003E06  0000ACCE  0300E290  9181A136  0A00E127  1700907A
( 7120)  F32A0000  00000000  02001E28  04001078  02003845  0E00F04D  1F00C820  06002F75  050078D3  0300435A
( 7160)  0000616E  000014CF  0300E094  098FE656  13001428  08004007  F12A0000  00000000  02003632  04009068
( 7200)  0200084C  0E00B079  1F003C20  06008277  04002831  0300883E  0000EF4F  0000B0CE  0300E6A4  F581C48F
( 7240)  14000EBC  080028F9  F72A0000  00000000  0200208C  0400B013  0200E843  0E00C03B  1F007131  06000664
( 7280)  050018F9  03006B31  00008599  00009CCA  0300D0A7  69831D64  0F002A6A  0B00A827  F12A0000  00000000
( 7320)  0200AA96  0400700F  0200F08D  0E00804A  1F00B00F  06009358  0400380F  020041E4  00002EAD  000034C5
( 7360)  030078DC  568040EB  8604B64A  0B00E801  E32A0000  00000000  0200869F  04006838  0200F8FF  0E00284C
( 7400)  1F007711  05003BBC  050038DF  020025BA  00008B88  000028C2  03008CD0  43804003  7A04300C  0B00C8D6
( 7440)  E12A0000  00000000  02009C86  0400F80B  020050B2  0E00C845  1F000713  0500B3B8  04003031  0200DEBA
( 7480)  00007C90  0000F0C2  030000DC  750E459B  8A0544EB  0C00C8F4  EF2A0000  00000000  0200B28D  0400E81C
( 7520)  02004052  0E005041  1F00CC10  05009AB8  04000011  020012F3  000044C9  000038C3  030078D1  F98D8452
( 7560)  C80525CC  0C00E00F  112B0000  00000000  03008069  0400B009  02007806  010020C0  1E0057E1  05004FB9
( 7600)  04002813  0300FE99  0100B3E5  0000F8C2  03008AC4  EF827BF5  26058CE2  0C00D05C  DE2B0000  00000000
( 7640)  0300227B  040000F9  02005806  0100B0C0  1E001FF3  050067BF  04006833  03006645  010008F2  0000A4C6
( 7680)  03C050C2  B383C1D3  697E35DB  0C00B832  3E2B0000  00000000  0300B83A  0400B80F  0300D0C1  010028CD
( 7720)  1E00EEF1  0500CAB9  04007071  03008F45  010052CF  0000B4C4  030084C2  2E82C52E  64015988  0C003038
( 7760)  702B0000  00000000  0300C609  0400B026  030078C2  0100C8C6  1E0052FF  050066A3  0400E011  0300525C
( 7800)  01003809  0000A4C6  0300B8C9  CC0E6259  15071F47  0C00286E  742B0000  00000000  0200941E  0400C009
( 7840)  03000C2  0100F0D8  1E0014F0  050087AE  04003829  03006A67  0100B611  000024C7  030000CF  BD0124D5
( 7880)  A3045AE1  0D007058  682B0000  00000000  02005406  0400B03A  0300E08F  0100D0C9  1E00BBF2  0500F1A6
( 7920)  04000877  0300076D  00001142  000068C9  03003CCD  130FE397  63043C04  0000E074  00000000  00000000
( 7960)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 8000)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 8040)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 8080)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 8120)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 8160)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
```

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
2	2567	2568	8192	0	0	0	0	0	0

```
FILE      3  RECORD      1  LENGTH      80BYTES
(    0)  454F4631  50494F4E  31302E42  434B2020  20202020  2050494F  4E313030  30303130  30303130  30303130
(   40)  30203837  32363020  30303030  30203030  32353637  44454356  4D534241  434B5550  20202020  20202020

FILE      3  RECORD      2  LENGTH      80BYTES
(    0)  454F4632  46303831  39323038  31393220  20202020  20202020  20202020  20202020  20202020  4D202020
(   40)  20202020  20202020  20203030  20202020  20202020  20202020  20202020  20202020  20202020  20202020
```

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
3	2	3	80	0	0	0	0	0	0

```
EOJ        DUMP STOPPED AFTER FILE   3          # OF PERMANENT READ ERRORS  0

START TIME 12/10/87  16:17:15          STOP TIME 12/10/87  16:20:40
```

```
$$
$ASS IN TAI
$EXE TPDUMP BS
```

PRINTED IN U.S.A.

Pioneer 11
D77877

DUMP OF TAPE SIN2

INPUT TAPE SIN2 ON TA1
DATA INPUT H9 NF 3 FL=3=1 1

FILE 1 RECORD 1 LENGTH 80BYTES

(0)	564F4C31	50494F4E	31312020	20202020	20202020	20202020	20202020	20202020	20202020	20202020
(40)	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202033

FILE 1 RECORD 3 LENGTH 80BYTES

(0)	48445232	46303831	39323038	31393220	20202020	20202020	20202020	20202020	20202020	4D202020
(40)	20202020	20202020	20203030	20202020	20202020	20202020	20202020	20202020	20202020	20202020

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHCRT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	3	4	80	0	0	0	0	0	0

FILE 2 RECORD 1 LENGTH 8192BYTES

(0)	00010004	01000100	01000000	00000000	00000000	00000000	00000000	00000000	01010100	A4BCE6CC
(40)	00200000	00000000	0A50494F	4E31312E	42434B00	00000000	00000000	00000000	00000000	00000000
(80)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(240)	00000000	00000000	00000000	0000A5D8	B0000100	00000000	00000000	00000000	01010A00	01005049
(280)	4F4E3131	2E42434B	2A000200	4241434B	55502F56	45524946	592F4C4F	47205031	312A2E44	4154204D
(320)	4641313A	50494F4E	31312E42	434B0C00	04004B41	59534552	20202020	20200400	05000800	A8000800
(360)	060060D1	83E1AD70	90000200	07000004	04000800	56342E35	08000900	5F4E5353	44433A3A	04000A00
(400)	ED8D3801	0C000B00	5F4E5353	4443244D	4641313A	04000C00	56342E35	04000D00	00200000	02000E00
(440)	0A000200	0F000300	F0000300	00000000	00000000	00000000	01011500	2A005B4B	41595345	525D5031
(480)	31434F4E	452E4441	543B3102	00280001	0206002C	00883124	00010004	002E0036	00000004	002F0008
(520)	00A80020	00340001	00140000	00360000	00350050	01000014	00000000	00000000	00000000	00000006
(560)	002D00DF	3B030000	00020030	0000AA02	00310000	00010032	00000400	33000000	00000200	4B00FF7F
(600)	01005000	00010057	00000400	4F004300	00000200	35000200	08003600	404C3852	6A709000	08003700
(640)	80F3FA23	A8709000	08003800	80B30C36	E1BC9000	08003900	00000000	00000000	04004700	0800A800
(680)	02004800	88AA0200	4A000000	00000000	00000000	001C0400	00000000	01000000	00000000	00000000
(720)	901D0100	34080000	70431C85	38440A97	924146E1	991D0100	20FD0000	7143AC47	374485AB	6A4144E1
(760)	9B1D0100	38120100	67430000	3844281C	83411E85	A01D0100	201C0000	55433C0A	384447E1	9C41F428
(800)	A01D0100	201C0000	54433033	3944B85E	AB410AD7	A21D0100	100E0000	4B43AC47	3A440A17	C24146E1
(840)	A61D0100	100E0000	394314AE	3B44F568	ED41B81E	A81D0100	18150000	3143AC47	3C440040	04420000
(880)	AA1D0100	100E0000	284344E1	3C4470FD	0F420AD7	AC1D0100	40380000	2043B81E	3D44D7E3	1E42703D
(920)	AE1D0100	100E0000	184314AE	3E445CCF	2C42C2F5	B21D0100	201C0000	08438CC2	4044EBD1	4D42B81E
(960)	B31D0100	00000000	1343A070	3F44F5E8	3E425C8F	B41D0100	100E0000	10437030	40445178	47421E85
(1000)	B61D0100	00000000	09437814	4144B89E	594285EB	B81D0100	18150000	02433C0A	43443D0A	7042D7A3
(1040)	B81D0100	201C0000	00439899	41447AD4	5D42AE47	BA1D0100	100E0000	EC42E07A	4344B81E	714285EB
(1080)	BC1D0100	100E0000	DF42A847	4444A370	83421885	BE1D0100	100E0000	D342B81E	46449919	9042C8CC
(1120)	C11D0100	201C0000	C0420000	4844AEC7	A642703D	C11D0100	40380000	AF4288C2	48449919	A042C8CC
(1160)	C21D0100	00000000	AA4240E1	48440AD7	A64250B8	C41D0100	100E0000	9F42A847	4A44C2F5	B74210AE
(1200)	C61D0100	100E0000	9442F028	4D44C275	CB4210AE	C81D0100	100E0000	8942A070	50446626	E1423033
(1240)	C81D0100	201C0000	69428FC2	4F444761	DB42380A	CA1D0100	100E0000	554285EB	5244E17A	F34208D7
(1280)	CC1D0100	201C0000	42426666	56445C4F	0943703D	CE1D0100	50460000	2F421E85	5B44B81E	1C43E07A
(1320)	CF1D0100	40380000	28420000	5D441EC5	27437814	CF1D0100	50460000	0C42D7A3	5E44D7E3	2B435C8F
(1360)	D01D0100	00000000	06425C8F	6144AE87	3643B81E	D21D0100	100E0000	EB410AD7	6A44146E	594350B8
(1400)	D41D0100	78690000	D94184EB	7344281C	7C43A070	D51D0100	100D0100	CE41780C	7B448045	8E43008B
(1440)	D51D0100	1A0D0100	CE41780C	7B448045	00000000	D51D0100	40190100	CD418EC2	7B445178	00000000
(1480)	D51D0100	50270100	BA415C8F	8544E891	00000000	D71D0100	00000000	BA41703D	ABC366E6	00000000
(1520)	D71D0100	B0040000	BA412648	ABC344BC	00000000	D71D0100	BA040000	BA412648	ABC344BC	ABC344BC
(1560)	D71D0100	400B0000	BA412257	ABC34881	ABC34881	D71D0100	4A0B0000	BA412257	ABC34881	00000000
(1600)	D71D0100	C40E0000	BA412A5F	ABC3AE61	00000000	D71D0100	CE0E0000	BA412A5F	ABC3AE61	ABC3AE61
(1640)	D71D0100	807F0000	BB41B660	A7C36E6C	A7C36E6C	D71D0100	8A7F0000	BB41B660	A7C36E6C	00000000
(1680)	D81D0100	10680000	BE412E2E	9CC3A265	00000000	D81D0100	1A680000	BE412E2E	9CC3A265	CB435C9A
(1720)	D81D0100	24DB0000	BF411235	98C3505B	CF43AEA4	D81D0100	2EDB0000	BF411235	98C3505B	34440000
(1760)	D81D0100	D4DF0000	BF41C83F	98C32E31	34440000	D81D0100	DEDF0000	BF41C83F	98C32E31	CF43D0CE
(1800)	D81D0100	B6F30000	BF414A6D	97C3207E	D043DE81	D81D0100	C0F30000	BF414A6D	97C3207E	97C3207E

PRINTED IN U.S.A.

(7120)	64210100	B8A10000	F3413233	3044C2B5	52C15C8F	65210100	CC240000	F141ECDF	3044ACA2	57C1C054
(7160)	65210100	D6240000	F141ECDF	3044ACA2	00000000	66210100	00000000	F0410000	3044AE87	00000000
(7200)	67210100	00000000	E6417A14	3044281C	00000000	6A210100	00000000	E3411E85	2F447AD4	00000000
(7240)	6B210100	00E10000	DF41285C	2F445CCF	00000000	6B210100	10EF0000	DF41285C	2F445CCF	00000000
(7280)	6B210100	28040100	0A42703D	31445C4F	00000000	6B210100	40190100	0A42703D	31445C4F	00000000
(7320)	6E210100	00000000	08420000	3144142E	00000000	70210100	00000000	0442C2F5	304447A1	00000000
(7360)	71210100	10EF0000	02427A14	304485AB	00000000	71210100	18F60000	02427A14	304485AB	00000000
(7400)	71210100	300B0100	0942A370	3244CC0C	00000000	71210100	40190100	09429999	32443D0A	00000000
(7440)	73210100	201C0000	1842D7A3	31442BDC	00000000	75210100	00000000	164251B8	314470BD	00000000
(7480)	77210100	00000000	12426666	31440A57	00000000	79210100	100E0000	1042F528	31444761	00000000
(7520)	7A210100	5CCF0000	0E4251B8	3144EB51	00000000	7A210100	300B0100	2D428FC2	3244D7A3	00000000
(7560)	7B210100	40380000	2C42F528	31445178	00000000	7B210100	A08C0000	2C420000	3644285C	00000000
(7600)	7C210100	685B0000	2B420AD7	32445138	00000000	7C210100	70620000	2C42F528	314451F8	00000000
(7640)	7C210100	A08C0000	2C420000	314433F3	00000000	7D210100	E8CB0000	2A425C8F	31448FC2	00000000
(7680)	7D210100	20FD0000	2D42B81E	324470BD	00000000	7E210100	60540000	2742285C	3244AE07	00000000
(7720)	81210100	00000000	23423D0A	32443DCA	00000000	81210100	44070000	2342D405	32444DC9	00000000
(7760)	81210100	4E070000	2342D405	32444DC9	9BC03059	82210100	00000000	22427030	3244B89E	B0C0D0A3
(7800)	84210100	F0D20000	1E4247E1	32448F82	BEC05088	84210100	20FD0000	3D4285EB	33448FC2	75BF8CC2
(7840)	86210100	00000000	3C42EB51	334400C0	80BF0000	88210100	00000000	39428FC2	334414EE	8FBE285C
(7880)	8A210100	00000000	20010000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(7920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(7960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(8000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(8040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(8080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(8120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(8160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000		

FILE 2 RECORD 3024 LENGTH 8192BYTES

(0)	00010004	01000200	CE0B0000	00000000	00000000	00000000	00000000	00000000	01010100	18E7AC7A
(40)	00200000	00000000	0A50494F	4E31312E	42434B00	00000000	00000000	00000000	00000000	00000000
(80)	33252600	0100DF3B	03000100	145B4B41	59534552	5D503131	4F52422E	4441543B	31000000	00000000
(120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(200)	00000000	00000000	00000000	00000000	00000000	01004000	00004000	78030000	00000000	00000000
(240)	00000000	00000000	00000000	00001550	00060400	00000000	0D030000	00000000	3B350D00	00000000
(280)	50CFA009	58D08700	454F8C03	70410877	59C221C5	504140E4	4750C281	6D424EDA	0C4E64EA	834258A0
(320)	8444419C	5DB8475C	CB439C98	7050C35F	38350D00	00000000	53CFB0F5	59D08454	454F1829	7241C006
(360)	5EC25005	50417CE0	4650745C	6C426826	0C4EEDE8	8342B0A9	8444B2F4	1BB9E17C	D64306A5	7050DCCA
(400)	25350D00	00000000	53CF90DC	59D0A121	454FA0B9	72412827	5DC228B2	5041B4A4	4650542C	6D425F3A
(440)	0C4E418D	8342A8A9	844414EE	9BBB26BC	C3439887	705022B5	2A350D00	00000000	53CFE0C9	59D06B76
(480)	444F7055	72413427	5DC22DB6	5041BCE6	46504BF0	6D42061F	0C4EE86C	8342B8AB	844491E5	BD3BDE1E
(520)	FF432779	70507558	2F350D00	00000000	52CFECB5	59D09A49	444F541A	7241343A	5DC281B3	5041B8D6
(560)	4650D5CB	6E42B9EA	0C4E0700	834220AF	8444EEE7	373599C8	E443784F	7E502C21	2C350D00	00000000
(600)	52CF7CA0	58D02597	444F2067	72412C24	5DC244A9	50411CFE	5950EB9A	6E423C83	0C4EC23D	8342D0AE
(640)	84447E16	BC3B3B08	ED43FED3	795030A1	29350D00	00000000	53CFEC8E	58D08A95	454FA4B5	7241B4FC
(680)	5DC224B6	504104C5	5950446E	6E427FFC	0C4EA8EF	834278AE	84446519	2539C254	F4437C12	79508D37
(720)	2E350D00	00000000	5DCF9477	58D0E3A9	454F5C8B	724148FA	5DC28BA2	5041C0D5	59507E3E	6F42FE00
(760)	0C4E4BD7	834248AA	84449B16	103A3FAE	7B472ACA	7A50B1B5	03350D00	00000000	5DCF7C54	58D04DC4
(800)	454FA85C	7341901D	5DC218A3	5041BCA9	5850AF0A	6F42C51A	0C4E5EF6	8342F8A6	8444AF1B	743A7FE1
(840)	8547F284	7B505FC2	00350D00	00000000	5DCFC843	59D0D7D5	454F5CAA	73410C61	5DC28C99	5041D8BB
(880)	5850C3DD	6E42D6DB	0C4E0113	834250A7	85441BD8	54B45A05	8A412123	7B5067A4	0D350D00	00000000
(920)	5CCF6409	59D05CEB	444F10FE	73416467	5DC213AA	504108DD	58509285	6F428E8C	0C4E1E41	834230A5
(960)	85442ACD	FD37B8DE	C9417E00	7A50AD4C	F2340D00	00000000	5CCFC827	59D0C1D0	444F2CCC	7341E030
(1000)	5CC2BA96	5041AC26	5850809B	6042010B	0D4ED968	8342A8A5	854470CD	2B3B0590	2441CF32	7A50448E
(1040)	F70B0D00	00000000	5FCF8810	5AD008EE	444F9893	7341742B	5CC2BD86	514160AC	5B50B129	60428203
(1080)	0D4EA360	8442D843	85449DDD	D33ABDBD	6A3A150F	7A508FA9	140B0D00	00000000	5ECF20FF	5AD016FC
(1120)	444FE431	73410037	5CC2EE8D	5141389E	5A507939	6E429B75	0D4E4B57	84421843	8544E8A9	A63A3D91
(1160)	6045B65F	7950A195	5B0B0D00	00000000	5ECF30CF	59D02E08	444F500E	7341940F	5CC2F09F	5141C89B
(1200)	5B5044C8	6E422FCC	0D4E8A94	84423046	85445A83	6A36622F	1043AE9C	795038D2	580B0D00	00000000
(1240)	5ECF10DF	59D0A61D	474FE0DE	7341DCF1	5CC22BC7	5141D891	5B505CC8	6E4285F7	0D4EC6B2	8442A047
(1280)	85444C85	E038D8E6	A5403C3E	79505377	450B0D00	00000000	59CFECCA	59D0CD5B	464F742F	7341543F
(1320)	5CC27BF2	5141008D	5B503DA6	6E42FBF7	0C4E400B	84423843	8544008D	BB36DD1C	644031E7	7A50073C
(1360)	C20A0D00	00000000	59CF3887	5AD03729	464F9C7E	73417015	5CC2BBF6	51412475	53509F76	6E42B1FE
(1400)	0C4EA562	8442C841	854459FF	51B93927	7F405E30	7A506EED	3F090D00	00000000	59CFBC64	5AD05577
(1440)	454FDC4A	7341B81B	5CC22B80	51411881	53508F49	6E4274F2	0C4EB273	84420848	854493F2	953B9E9C

PRINTED IN U.S.A.

```
(  6760)  1700EB61  1D00ACCC  7800C602  0F0051D6  0000E275  07008837  0600CA7B  8B8301C2  0700C71A  3F001277
(  6800)  616D0000  00000000  23007481  080040F5  09008410  01000C1F  1700AC6E  1D006CF1  7800AF41  0F00FAFA
(  6840)  0000867C  07003830  0600C47D  A0822204  0200D62A  3F00F77F  6B6D0000  00000000  23004CA3  1800B9DA
(  6880)  090050E9  0100C01C  17004946  1D009483  7800BD8D  0C000727  00001562  07001032  F9007B84  8003C194
(  6920)  7F005A61  3F0030D5  1C6D0000  00000000  230038F2  17003639  08008435  0000848A  170090B0  1D00D88C
(  6960)  7B00D04E  0B000F0F  1F00E68E  0700C04F  F900788A  7E82450C  70007D1E  38008C4B  186D0000  00000000
(  7000)  22000CDB  1700EF58  0F00E8D4  0000C079  1700BFE0  1D00E898  7B00EF0C  0B000709  1F00239D  0700504D
(  7040)  F9001B8F  9383A109  480015CA  47004DC9  9B0F0000  00000000  2200F4A1  6800D660  0800A074  0000C87C
(  7080)  1700A8D1  1D008C85  7B00953E  0D00603B  1F0098A5  0700704D  F900D08A  9882223C  450069E8  470070D8
(  7120)  910F0000  00000000  3D00EC7F  68001C20  0F00A06C  0100AC95  170056D1  1C0018B5  7B00599D  0D001F7D
(  7160)  1F003CC5  07003857  F900D3D5  20020589  48001FD4  4800004A  970F0000  00000000  3C003864  6800FB24
(  7200)  0F00202C  0100D492  17002FCE  02008CBD  7A00BBF5  0C00D817  1F00AEE1  0700904F  F90014D1  04026527
(  7240)  33001908  48007ECE  CC0F0000  00000000  3C0070AE  670066E6  0F00302F  01006C9C  170039D5  02008CB7
(  7280)  7A002315  0C00AA17  00007F02  0700D04C  F9007BDE  52806323  3400EFCF  49004278  CC0F0000  00000000
(  7320)  3C008CE1  67008CF7  08005CE8  01005C93  1700FEBD  0200688E  7A006B24  0C00E564  1F0050EF  07006849
(  7360)  F90005DE  078E3D8A  2A00FBC9  480065DD  11290000  00000000  3F004CE2  6700C41C  080060E1  0100F8B7
(  7400)  17006CB4  0200A09D  7A007E66  0F003B9D  1F00F6AF  0700D848  F9003D00  7801E6A1  1600C839  4800145A
(  7440)  23290000  00000000  3F00A4AE  6700CA3F  08006C2F  0100CCB2  170029C3  0200B49A  75003562  0F0067D5
(  7480)  1F0095B1  07007049  F90093CF  8B03D94F  1D004FBC  48006C5A  21290000  00000000  3F00FC67  7800AB92
(  7520)  0800442F  010070B4  0B0054CA  0200548A  75000358  0F0045D3  1F00FBA7  07000048  F90072C1  CC003707
(  7560)  1F003D94  4800A6FC  2F290000  00000000  3E00401D  78003669  0800D46E  0100D496  0B0067C9  0200948F
(  7600)  7500963B  0F006039  00002D52  07002846  F90002CA  8603A419  1800404A  4B005F43  31290000  00000000
(  7640)  390058A1  7800732E  0F00286C  0100049C  0B0058D9  0300447B  74003AD8  0F003A4B  0000B960  0700B841
(  7680)  F9001AD5  1C00F611  1D001E72  48002C8E  33290000  00000000  390068E3  78007420  0F001021  01002090
(  7720)  0B004BDA  0300787A  770008FB  0F006502  00009468  0700B040  F9001FDE  6A83E3DE  0000CE25  4800941B
(  7760)  11290000  00000000  3900FC90  7900901C  0F009C36  010014FD  0B0038C5  0200BC83  7700C5DE  0E00CCF7
(  7800)  0000BE6A  07005042  FE009920  958037FD  0300AC37  4800F977  17290000  00000000  3A004CA6  780095FF
(  7840)  0F00F0AA  010024FF  0B00C3C6  02004084  74003031  0F00515B  0000B4BF  07005058  FE0021E5  49805584
(  7880)  3C003EA0  48006B83  11290000  00000000  3A00889D  79009123  0F0098EB  0100F4E3  0B00A4C2  0200489C
(  7920)  74001754  0C00A794  0000BCB0  0700A85B  FE009EE6  0C826018  2D0036EF  49002B54  00000000  00000000
(  7960)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  8000)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  8040)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  8080)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  8120)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  8160)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
```

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
2	3024	3025	8192	0	0	0	0	0	0

```
FILE      3  RECORD      1  LENGTH      80BYTES
(     0)  454F4631  50494F4E  31312E42  434B2020  20202020  2050494F  4E313130  30303130  30303130  30303130
(    40)  30203837  32363020  30303030  30203030  33303234  44454356  4D534241  434B5550  20202020  20202020

FILE      3  RECORD      2  LENGTH      80BYTES
(     0)  454F4632  46303831  39323038  31393220  20202020  20202020  20202020  20202020  20202020  4D202020
(    40)  20202020  20202020  20203030  20202020  20202020  20202020  20202020  20202020  20202020  20202020
```

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO 3	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
3	2	3	80	0	0	0	0	0	0

```
EOJ        DUMP STOPPED AFTER FILE   3          # OF PERMANENT READ ERRORS  0

START TIME 12/10/87  16:24:18          STOP TIME 12/10/87  16:28:02

$$
```

PRINTED IN U.S.A.

PIONEER 11

TRAJECTORY EPHEMERIS

73-019A-00G XXNO-00330

THIS DATA SET CONSISTS OF ONE MAGNETIC TAPE. THE TAPE IS 9-TRACK, 6250 BPI, ASCII, WITH A VAX STANDARD LABEL, AND 37 FILES OF DATA. THE TAPE WAS CREATED ON AN IBM 360 COMPUTER. THE D AND C NUMBER ALONG WITH ITS TIME SPAN IS AS FOLLOWS:

D#	C#	TIME SPAN
D-85884	C-29142	04/06/73-01/01/90

VOL LABEL=TRJP11

73-019A-00G

CCSD3ZF0000100000001CCSD3VS00002MRK**001

VOL_IDENT: USA_NASA_NSSD_P11Z_0001
VOL_CREATION_DATE: 1991-12-06
MEDIUM_DESCRIPTION: 1/2-inch, 9-track, 6250 bpi magnetic tape
TECHNICAL_CONTACT: David W. Lozier
NASA Ames Research Center (Mail Stop 244-14)
Moffett Field, CA 94035

Electronic Mail: Span OPS::LOZIER
NASAMAIL/DLOZIER
Telephone: 415-604-3147
FTS 464-3147

PREV_VOLS: none

CCSD$$MARKERMRK**001CCSD3SS00002MRK**002

DATA_SET_NAME: PIONEER 11 TRAJECTORY EPHEMERIS ARCHIVE
DATA_SOURCE: Pioneer 11 trajectory data were generated using the Jet Propulsion Laboratory's (JPL) "Double Precision Trajectory" (DPTRAJ) computer program, an element of the JPL Navigation Software System, reference (A).

DPTRAJ creates a spacecraft ephemeris by integrating the equations of motion for a full set of acceleration models. For the Pioneer 11 trajectory ephemeris, DPTRAJ integration was limited to the N-body gravitational terms (planets, Sun and Moon) with Earth oblateness, Jupiter oblateness (J2 and J4), Saturn oblateness (J2), and a simple solar pressure model included.

Initial conditions for the DPTRAJ runs were obtained from various Orbit Determination (OD) solutions performed during the mission. A set of eleven spacecraft initial state vectors (position, velocity and epoch) was compiled to cover all phases of the mission from launch to 1 January 1990.

(1) Launch to first midcourse maneuver
(2) First midcourse maneuver to second midcourse maneuver
(3) Second midcourse maneuver to "Saturn" retargeting maneuver
(4) "Saturn" retargeting maneuver to Jupiter phase
(5) Jupiter encounter OD
(6) Jupiter encounter to "interim Saturn" targeting maneuver
(7) "Interim Saturn" targeting maneuver to "modified option-7" targeting maneuver
(8) "Modified option-7" targeting maneuver to Saturn phase
(9) Saturn encounter OD
(10) Saturn encounter to 1 January 1985
(11) 1 January 1985 to 1 January 1990

A complete set of input for the DPTRAJ runs is provided in reference (B).

SCIENTIFIC_CONTACT: none
SPACECRAFT_CHARACTERISTICS: Pioneer 11 is a 550 pound spin stabilized

spacecraft powered by four RTGs. Communications with the Earth is provided by a 9 ft. diameter parabolic high gain antenna located on the spin axis of the spacecraft. Periodic precession maneuvers are performed to maintain Earth pointing of the high gain antenna. The spacecraft possesses a complete complement of particles and fields instruments as well as a UV spectrometer, IR radiometer and an imaging device (IPP). The primary mission objective was the exploration of the plant Jupiter with a secondary objective of exploring the interplanetary environment between Earth and Jupiter and beyond Jupiter. After the successful encounter of Jupiter by Pioneer 10, Pioneer 11 was retargeted for a subsequent encounter with Saturn. Pioneer 11 was launched on April 6, 1973, encountered Jupiter on December 3, 1974 and encountered Saturn on September 1, 1979. After passing Saturn, Pioneer 11's trajectory became escape with respect to the Sun and is moving away from the Sun at about 2.4 AU per year.

INSTRUMENT_ATTRIBUTES: not applicable

DATA_SET_PARAMETERS: Following is a description of the seventy-seven trajectory parameters found in each output record.
Julian Date of reference epoch = 2433282.5 (J1950.0)
Body-1 is JUPITER, Body-2 is SATURN

MNEMONIC	DESCRIPTION
ETSPRF	Time of record in Ephemeris Time (ET) seconds past the reference epoch
JULDAT	Julian date (days)
DOYDAT	Days past the start of the year
TFLANC	Time from launch (sec) Launch time was 02:11:00.1 UTC 6 April 1973
TFINJE	Time from injection (sec) Injection epoch is 02:24:58.6 UTC 6 April 1973
ETMUTC	ET - Universal Time Coordinated (UTC) (sec)
DEVENT	Flag which gives the type of event which caused the record to be written: = 0.D0 for an absolute or TDT save tape event = 1.D0 for some other type of TWIST geometric event

The next 13 parameters are defined in a geocentric space-fixed coordinate system referenced to Earth's true equinox and equator plane of date. The X-axis is in the direction of the Vernal Equinox, the Z-axis is normal to the equatorial plane and the Y-axis lies in the equatorial plane completing the right-handed coordinate sytem.

RANGRP	Range rate of spacecraft (rate of change of REARPR below, km/sec)
MAGVEL	Magnitude of spacecraft inertial velocity vector (km/sec)
INPATH	Inertial path angle (deg)
INAZIM	Inertial azimuth angle (deg)

REARPR	Earth-spacecraft range (km)
DECPRO	Declination of spacecraft (deg)
RTASCP	Right ascension of spacecraft (deg)
REARSU	Earth-Sun range (km)
DECSUN	Declination of Sun (deg)
RTASCS	Right ascension of Sun (deg)
REARMO	Earth-Moon range (km)
DECMOO	Declination of Moon (deg)
RTASCM	Right ascension of Moon (deg)

The next 7 parameters are defined in a heliocentric space-fixed coordinate system referenced to Earth's true equinox and orbit plane (Ecliptic) of date. The X-axis is in the direction of the Vernal Equinox, the Z-axis is normal to the orbit plane and the Y-axis lies in the orbit plane completing the right-handed coordinate system.

HRANGP	Sun-spacecraft range (km)
HMAGVP	Magnitude of spacecraft inertial velocity vector (km/sec)
HINPTH	Inertial path angle (deg)
CELLTP	Celestial latitude of spacecraft (deg)
CELLNP	Celestial longitude of spacecraft (deg)
CELLTE	Celestial latitude of Earth (deg)
CELLNE	Celestial longitude of Earth (deg)

The next 5 parameters are defined in a heliocentric rotating coordinate system referenced to the direction of Earth and Earth's true orbit of date. In the Sun-Earth-line coordinate system the X-axis points to the Earth, the Z-axis is normal to the Earth's orbit plane (Ecliptic) and the Y-axis lies in the orbit plane completing the right-handed coordinate sytem.

XSCSEL	X-component of spacecraft position in Sun-Earth-line coordinate system (km)
YSCSEL	Y-component of spacecraft position in Sun-Earth-line coordinate system (km)
ZSCSEL	Z-component of spacecraft position in Sun-Earth-line coordinate system (km)
SPSEXY	Projection of Sun-spacecraft range vector into the XY-plane of the Sun-Earth-line coordinate system (km)
LNPSEL	Longitude of spacecraft in Sun-Earth-line coordinate system (deg)
ICBODY	Integration central body number. = 1 for SUN = 3 for EARTH = 5 for JUPITER = 6 for SATURN
FERPFL	FERP flag for equinox and reference plane for the next 28 parameters: = 12 is the Earth's mean equinox and orbit of B1950.0

The next 28 parameters are defined in a space-fixed coordinate system referenced to the equinox and plane specified above in FERPFL. The X-axis is in the direction of the mean 1950.0 Vernal Equinox, the Z-axis is normal to the mean 1950.0 Earth's orbit plane (Ecliptic) and the Y-axis lies in the orbit plane completing the right-handed coordinate sytem.

XPGSFF	X-component of geocentric spacecraft position (km)
YPGSFF	Y-component of geocentric spacecraft position (km)
ZPGSFF	Z-component of geocentric spacecraft position (km)
DXPGSF	X-component of geocentric spacecraft velocity vector (km/sec)
DYPGSF	Y-component of geocentric spacecraft velocity vector (km/sec)
DZPGSF	Z-component of geocentric spacecraft velocity vector (km/sec)
XPHSFF	X-component of heliocentric spacecraft position (km)
YPHSFF	Y-component of heliocentric spacecraft position (km)
ZPHSFF	Z-component of heliocentric spacecraft position (km)
DXPHSF	X-component of heliocentric spacecraft velocity vector (km/sec)
DYPHSF	Y-component of heliocentric spacecraft velocity vector (km/sec)
DZPHSF	Z-component of heliocentric spacecraft velocity vector (km/sec)
XP1SFF	X-component of Body-1 centered spacecraft position (km)
YP1SFF	Y-component of Body-1 centered spacecraft position (km)
ZP1SFF	Z-component of Body-1 centered spacecraft position (km)
DXP1SF	X-component of Body-1 centered spacecraft velocity vector (km/sec)
DYP1SF	Y-component of Body-1 centered spacecraft velocity vector (km/sec)
DZP1SF	Z-component of Body-1 centered spacecraft velocity vector (km/sec)
XP2SFF	X-component of Body-2 centered spacecraft position (km)
YP2SFF	Y-component of Body-2 centered spacecraft position (km)
ZP2SFF	Z-component of Body-2 centered spacecraft position (km)
DXP2SF	X-component of Body-2 centered spacecraft velocity vector (km/sec)
DYP2SF	Y-component of Body-2 centered spacecraft velocity vector (km/sec)
DZP2SF	Z-component of Body-2 centered spacecraft velocity vector (km/sec)
B1MAGR	Body-1 centered spacecraft range (km)
B1MAGV	Body-1 centered magnitude of spacecraft

	velocity vector (km/sec)
B2MAGR	Body-2 centered spacecraft range (km)
B2MAGV	Body-2 centered magnitude of spacecraft velocity vector (km/sec)

The next 15 parameters are defined in a body centered, body-fixed rotating coordinate system. The XY-plane is the true-of-date equatorial plane of the body where the X-axis points towards the prime meridian of the body, the Z-axis is normal to the equatorial plane and the Y-axis completes the right-handed coordinate system. Definition of the direction to the north pole, the prime meridian and the rotational rate is per reference (C).

EALATP	Earth centered latitude of spacecraft (deg)
EALONP	Earth centered longitude of spacecraft (deg)
EAVELP	Earth centered magnitude of spacecraft velocity vector (km/sec)
EAPTHP	Earth centered path angle (deg)
EAAZIP	Earth centered azimuth angle (deg)
B1LATP	Body-1 centered latitude of spacecraft (deg)
B1LONP	Body-1 centered longitude of spacecraft (deg)
B1VELP	Body-1 centered magnitude of spacecraft velocity vector (km/sec)
B1PTHP	Body-1 centered path angle (deg)
B1AZIP	Body-1 centered azimuth angle (deg)
B2LATP	Body-2 centered latitude of spacecraft (deg)
B2LONP	Body-2 centered longitude of spacecraft (deg)
B2VELP	Body-2 centered magnitude of spacecraft velocity vector (km/sec)
B2PTHP	Body-2 centered path angle (deg)
B2AZIP	Body-2 centered azimuth (deg)

DATA_PROCESSING_OVERVIEW: not applicable

LIT_REFERENCE:

(A) NOCC NAVIGATION SUBSYSTEM
Software Operators Manual - Vol. 1
Overview of DPTRAJ and ODP Software
Doc. No. SOM-NVI-5241-OP, Rev. D
18 April 1989 Jet Propulsion Laboratory

(B) Pioneer Project Technical Coordination Memorandum,titled: DPTRAJ inputs for the Pioneer 10/11 NSSDC Trajectory Ephemeris Archive; 28 January 1992 NASA/ARC David W. Lozier.

(C) IAU "Report of the IAU Working Group on Cartographic Coordinates and Rotational Elements of the Planets and Satellites: 1982", M.E. Davies, et.al., published in Celestial Mechanics vol. 29 (1983) pp. 309-321.

```
VOL_TIME_COVERAGE:       1973-04-06 02:25:00.000 UTC to
                         1990-01-01 00:00:00.000 UTC
FILE_NAMING_CONVENTION: PIONEER 11 TRAJECTORY files are named according to ea
                         data record contained on the tape as follows:
                                 TRJP11YYA.DAT
                                 TRJP11YYB.DAT
                                      TRJ for Trajectory.
                                      P11 for PIONEER 11.
                                      YY  for year 73, 74, ... 89, 90.
                                      A   for 1st six months of the year.
                                      B   for 2nd six months of the year.
FILE_TIME_COVERAGE:      TRJP1173A.DAT
                         TRJP1173B.DAT
                         TRJP1174A.DAT
                         TRJP1174B.DAT
                         TRJP1175A.DAT
                         TRJP1175B.DAT
                             (etc.)
                         TRJP1189A.DAT
                         TRJP1189B.DAT
                         TRJP1190A.DAT

CCSD$$MARKERMRK**003CCSD3RF0000300000001

REFERENCETYPE=$VMS;
LABEL=ATTACHED;
REFERENCE=FORMAT.SFD;

LABEL=NSSD3IF0006700000001;
REFERENCE=TRJP11*.*
/* end of file */
/* format.sfd starts here */
CCSD3FF0000500000001CCSD3CS00004MRK**001
ADIDNAME=NSSD0067;
CCSD$$MARKERMRK**001CCSD3KS00002MRK**002

SUBM_NAME:       David W. Lozier
SUBM_ADDR:       NASA Ames Research Center (Mail Stop 244-14)
                 Moffett Field,  CA   94035

                 Electronic mail:        Span OPS::LOZIER
                                         NASAMAIL/DLOZIER
                 Telephone:              415-604-3147
                                         FTS 464-3147
SUBM_DATE:       1991-03-01
TITLE:           FORMAT FOR PIONEER 11 TRAJECTORY EPHEMERIS ARCHIVE
DESCR:           Format of the Pioneer 11 trajectory data
REL_DATE:        1991-12-06

CCSD$$MARKERMRK**002CCSD3DF0000200000001

FILE_CLASS_NAME:  PIONEER 11 TRAJECTORY EPHEMERIS ARCHIVE
RECORD_TYPE_NAME: Pioneer 11 trajectory parameter
RECORD_ALGORITHMS:Refer to references (A) and (B).
RECORD_STRUCTURE: Fixed Length, no control fields
RECORD_LENGTH:    1 logical record = 2048 ASCII bytes = 4 physical records.
                  1 physical record = 512 block bytes.
RECORD_FIELD_MNEMONICS: ETSPRF, JULDAT, DOYDAT, TFLANC, TFINJE, ETMUTC, DEVENT,
                 RANGRP, MAGVEL, INPATH, INAZIM, REARPR, DECPRO, RTASCP, REARSU,
                 DECSUN, RTASCS, REARMO, DECMOO, RTASCM, HRANGP, HMAGVP, HINPTH,
```

CELLTP, CELLNP, CELLTE, CELLNE, XSCSEL, YSCSEL, ZSCSEL, SPSEXY, LNPSEL, ICBODY, FERPFL, XPGSFF, YPGSFF, ZPGSFF, DXPGSF, DYPGSF, DZPGSF, XPHSFF, YPHSFF, ZPHSFF, DXPHSF, DYPHSF, DZPHSF, XP1SFF, YP1SFF, ZP1SFF, DXP1SF, DYP1SF, DZP1SF, XP2SFF, YP2SFF, ZP2SFF, DXP2SF, DYP2SF, DZP2SF, B1MAGR, B1MAGV, B2MAGR, B2MAGV, EALATP, EALONP, EAVELP, EAPTHP, EAAZIP, B1LATP, B1LONP, B1VELP, B1PTHP, B1AZIP, B2LATP, B2LONP, B2VELP, B2PTHP, B2AZIP

RECORD_SYNTAX: 77 fields per record, in the following order:
ETSPRF, JULDAT, DOYDAT, TFLANC, TFINJE, ETMUTC, DEVENT, RANGRP, MAGVEL, INPATH, INAZIM, REARPR, DECPRO, RTASCP, REARSU, DECSUN, RTASCS, REARMO, DECMOO, RTASCM, HRANGP, HMAGVP, HINPTH, CELLTP, CELLNP, CELLTE, CELLNE, XSCSEL, YSCSEL, ZSCSEL, SPSEXY, LNPSEL, ICBODY, FERPFL, XPGSFF, YPGSFF, ZPGSFF, DXPGSF, DYPGSF, DZPGSF, XPHSFF, YPHSFF, ZPHSFF, DXPHSF, DYPHSF, DZPHSF, XP1SFF, YP1SFF, ZP1SFF, DXP1SF, DYP1SF, DZP1SF, XP2SFF, YP2SFF, ZP2SFF, DXP2SF, DYP2SF, DZP2SF, B1MAGR, B1MAGV, B2MAGR, B2MAGV, EALATP, EALONP, EAVELP, EAPTHP, EAAZIP, B1LATP, B1LONP, B1VELP, B1PTHP, B1AZIP, B2LATP, B2LONP, B2VELP, B2PTHP, B2AZIP

All data fields are in 24-byte ASCII, double precision format (D24.17). A comma follows the first 76 data fields. After the seventy-seventh data field there are 42 blanks to finish the 2048 byte record (a logical record). Each record can be read with the following FORTRAN format string:
(4X,77(2X,D24.17),42X).

Field_Name: ETSPRF
Field_Mnemonic: ETSPRF
Field_Units: Seconds
Field_Resolution: 1 Second
Field_Range: not applicable
Field_Description: Time of record in Ephemeris Time (ET) seconds past the reference epoch
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: JULDAT
Field_Mnemonic: JULDAT
Field_Units: Days
Field_Resolution: 1 Day
Field_Range: not applicable
Field_Description: Julian date
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DOYDAT
Field_Mnemonic: DOYDAT
Field_Units: Days
Field_Resolution: 1 Day
Field_Range: 1 - 365 or 366 (leap year)
Field_Description: Days past the start of the year
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: TFLANC
Field_Mnemonic: TFLANC
Field_Units: Seconds
Field_Resolution: 1 Second
Field_Range: not applicable
Field_Description: Time from launch
Launch time was 02:11:00.1 UTC, 6 April 1973
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: TFINJE
Field_Mnemonic: TFINJE
Field_Units: Seconds
Field_Resolution: 1 Second
Field_Range: not applicable
Field_Description: Time from injection
Injection epoch is 02:24:58.6 UTC, 6 April 1973
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ETMUTC
Field_Mnemonic: ETMUTC
Field_Units: Seconds
Field_Resolution: 1 Second
Field_Range: not applicable
Field_Description: ET - Universal Time Coordinated (UTC)
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DEVENT
Field_Mnemonic: DEVENT
Field_Units: Integer
Field_Resolution: 1 Integer
Field_Range: not applicable
Field_Description: Flag which gives the type of event which caused the record to be written:
= 0.D0 for an absolute or TDT save tape event
= 1.D0 for some other type of TWIST geometric event
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: RANGRP
Field_Mnemonic: RANGRP
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Range rate of spacecraft
(rate of change of REARPR below)
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: MAGVEL
Field_Mnemonic: MAGVEL
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Magnitude of spacecraft inertial velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: INPATH
Field_Mnemonic: INPATH
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Inertial path angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: INAZIM
Field_Mnemonic: INAZIM
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Inertial azimuth angle

Field_Representation: 24 ASCII characters (D24.17)

Field_Name: REARPR
Field_Mnemonic: REARPR
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Earth-spacecraft range
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DECPRO
Field_Mnemonic: DECPRO
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Declination of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: RTASCP
Field_Mnemonic: RTASCP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Right ascension of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: REARSU
Field_Mnemonic: REARSU
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Earth-Sun range
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DECSUN
Field_Mnemonic: DECSUN
Field_Units: Degress
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Declination of Sun
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: RTASCS
Field_Mnemonic: RTASCS
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Right ascension of Sun
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: REARMO
Field_Mnemonic: REARMO
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: Approximately 400,000 Km
Field_Description: Earth-Moon range
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DECMOO
Field_Mnemonic: DECMOO

Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Declination of Moon
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: RTASCM
Field_Mnemonic: RTASCM
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Right ascension of Moon
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: HRANGP
Field_Mnemonic: HRANGP
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Sun-spacecraft range
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: HMAGVP
Field_Mnemonic: HMAGVP
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Magnitude of spacecraft inertial velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: HINPTH
Field_Mnemonic: HINPTH
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Inertial path angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: CELLTP
Field_Mnemonic: CELLTP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Celestial latitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: CELLNP
Field_Mnemonic: CELLNP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Celestial longitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: CELLTE
Field_Mnemonic: CELLTE
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Celestial latitude of Earth

Field_Representation: 24 ASCII characters (D24.17)

Field_Name: CELLNE
Field_Mnemonic: CELLNE
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Celestial longitude of Earth
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: XSCSEL
Field_Mnemonic: XSCSEL
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of spacecraft in Sun-Earth-line coordinate system
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: YSCSEL
Field_Mnemonic: YSCSEL
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of spacecraft in Sun-Earth-line coordinate system
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ZSCSEL
Field_Mnemonic: ZSCSEL
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of spacecraft in Sun-Earth-line coordinate system
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: SPSEXY
Field_Mnemonic: SPSEXY
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Projection of Sun-spacecraft range vector into the XY-plane of the Sun-Earth-line coordinate system
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: LNPSEL
Field_Mnemonic: LNPSEL
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Longitude of spacecraft in Sun-Earth-line coordinate system
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ICBODY
Field_Mnemonic: ICBODY
Field_Units: Integer
Field_Resolution: 1 Integer

Field_Range: 1 - 5
Field_Description: Integration central body number
= 1 SUN
= 3 EARTH
= 5 JUPITER
= 6 SATURN
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: FERPFL
Field_Mnemonic: FERPFL
Field_Units: Integer
Field_Resolution: 1 Integer
Field_Range: 11 - 32
Field_Description: FERP flag for equinox and reference plane for the next 28 parameters:
= 12 means Earth mean equinox and orbit of B1950.0
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: XPGSFF
Field_Mnemonic: XPGSFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of geocentric spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: YPGSFF
Field_Mnemonic: YPGSFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of geocentric spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ZPGSFF
Field_Mnemonic: ZPGSFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of geocentric spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DXPGSF
Field_Mnemonic: DXPGSF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of geocentric spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DYPGSF
Field_Mnemonic: DYPGSF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of geocentric spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DZPGSF
Field_Mnemonic: DZPGSF

Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of geocentric spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: XPHSFF
Field_Mnemonic: XPHSFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of heliocentric spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: YPHSFF
Field_Mnemonic: YPHSFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of heliocentric spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ZPHSFF
Field_Mnemonic: ZPHSFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of heliocentric spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DXPHSF
Field_Mnemonic: DXPHSF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of heliocentric spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DYPHSF
Field_Mnemonic: DYPHSF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of heliocentric spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DZPHSF
Field_Mnemonic: DZPHSF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of heliocentric spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: XP1SFF
Field_Mnemonic: XP1SFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of Body-1 centered spacecraft position

'ield_Representation: 24 ASCII characters (D24.17)

'ield_Name: YP1SFF
'ield_Mnemonic: YP1SFF
'ield_Units: Km
'ield_Resolution: (D24.17)
'ield_Range: not applicable
'ield_Description: Y-component of Body-1 centered spacecraft position
'ield_Representation: 24 ASCII characters (D24.17)

'ield_Name: ZP1SFF
'ield_Mnemonic: ZP1SFF
'ield_Units: Km
'ield_Resolution: (D24.17)
'ield_Range: not applicable
'ield_Description: Z-component of Body-1 centered spacecraft position
'ield_Representation: 24 ASCII characters (D24.17)

'ield_Name: DXP1SF
'ield_Mnemonic: DXP1SF
'ield_Units: Km/Sec
'ield_Resolution: (D24.17)
'ield_Range: not applicable
'ield_Description: X-component of Body-1 centered spacecraft velocity vector
'ield_Representation: 24 ASCII characters (D24.17)

Field_Name: DYP1SF
Field_Mnemonic: DYP1SF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of Body-1 centered spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DZP1SF
Field_Mnemonic: DZP1SF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of Body-1 centered spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: XP2SFF
Field_Mnemonic: XP2SFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of Body-2 centered spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: YP2SFF
Field_Mnemonic: YP2SFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of Body-2 centered spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: ZP2SFF
Field_Mnemonic: ZP2SFF
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of Body-2 centered spacecraft position
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DXP2SF
Field_Mnemonic: DXP2SF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: X-component of Body-2 centered spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DYP2SF
Field_Mnemonic: DYP2SF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Y-component of Body-2 centered spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: DZP2SF
Field_Mnemonic: DZP2SF
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Z-component of Body-2 centered spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1MAGR
Field_Mnemonic: B1MAGR
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Body-1 centered spacecraft range.
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1MAGV
Field_Mnemonic: B1MAGV
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Body-1 centered magnitude of spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2MAGR
Field_Mnemonic: B2MAGR
Field_Units: Km
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Body-2 centered spacecraft range
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2MAGV
Field_Mnemonic: B2MAGV
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Body-2 centered magnitude of spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: EALATP
Field_Mnemonic: EALATP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Earth centered latitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: EALONP
Field_Mnemonic: EALONP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Earth centered longitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: EAVELP
Field_Mnemonic: EAVELP
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Earth centered magnitude of spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: EAPTHP
Field_Mnemonic: EAPTHP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Earth centered path angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: EAAZIP
Field_Mnemonic: EAAZIP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Earth centered azimuth angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1LATP
Field_Mnemonic: B1LATP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Body-1 centered latitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1LONP

Field_Mnemonic: B1LONP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 -360
Field_Description: Body-1 centered longitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1VELP
Field_Mnemonic: B1VELP
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Body-1 centered magnitude of spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1PTHP
Field_Mnemonic: B1PTHP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Body-1 centered path angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B1AZIP
Field_Mnemonic: B1AZIP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Body-1 centered azimuth angle
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2LATP
Field_Mnemonic: B2LATP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: +/- 90
Field_Description: Body-2 centered latitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2LONP
Field_Mnemonic: B2LONP
Field_Units: Degrees
Field_Resolution: (D24.17)
Field_Range: 0 - 360
Field_Description: Body-2 centered longitude of spacecraft
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2VELP
Field_Mnemonic: B2VELP
Field_Units: Km/Sec
Field_Resolution: (D24.17)
Field_Range: not applicable
Field_Description: Body-2 centered magnitude of spacecraft velocity vector
Field_Representation: 24 ASCII characters (D24.17)

Field_Name: B2PTHP
Field_Mnemonic: B2PTHP

```
Field_Units:              Degrees
Field_Resolution:         (D24.17)
Field_Range:              +/- 90
Field_Description:        Body-2 centered path angle
Field_Representation:     24 ASCII characters (D24.17)

Field_Name:               B2AZIP
Field_Mnemonic:           B2AZIP
Field_Units:              Degrees
Field_Resolution:         (D24.17)
Field_Range:              0 - 360
Field_Description:        Body-2 centered azimuth angle
Field_Representation:     24 ASCII characters (D24.17)

/* end of file goes here */
```

Pioneer 11
D85884 / C29142
04/06/73-01/01/90

DUMP OF TAPE KM2002

INPUT TAPE KM2002 ON HT1
DATA INPUT H9 NF 110 FL 2 2 0 SR 110 1 2

FILE 1 RECORD 1 LENGTH 80BYTES

(0)	564F4C31	54524A50	31312020	20202020	20202020	20202020	20202020	20202020	20202020	20442542
(40)	34343434	3030313[illegible]	30303130	20202020	20202020	20202020	20202020	20202020	20202020	20202033

FILE 1 RECORD 2 LENGTH 80BYTES

(0)	48445231	564F4C44	4553432E	53464420	20202020	2054524A	50313130	30303130	30303130	30303130
(40)	3020393[illegible]	30353720	39323135	37203030	30303030	44454346	494C4531	31412020	20202020	20202020

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	4	4	80	0	0	0	0	0	0

FILE 2 RECORD 1 LENGTH 512BYTES

(0)	30303434	43435344	333A4630	30303031	30303030	30303031	43435344	33565330	30303032	4D524B2A
(40)	2A303031	34303034	34303338	564F4C5F	49444454	543A0955	53415F4E	4153415F	4E535344	5F503131
(80)	5A5F3030	31313030	3333564F	4C5F4352	45415449	4F4E5F44	4154453A	09313939	312D3132	2D303630
(120)	303035[illegible]	45444955	4D5F44[illegible]5	53435243	5054494F	453A0931	2F322D69	6E636020	20392074	72616355
(160)	2C203632	35302062	70692036	61676E65	74696320	74617065	30303338	54454348	4E494341	4C5F434F
(200)	4E544143	543A0944	61766964	20572E20	4C6F7A69	65723030	35310509	094E4153	41204160	65732052
(240)	65736561	72636820	43656E74	65722028	4D61696C	2053746F	70203234	34203134	29303033	30900909
(280)	4D6F6666	65747420	46696656	642C2020	43412029	20393430	33353030	30370909	09303034	30090909
(320)	456C6563	74726F6E	69632040	61696C3A	09537061	6F204F50	533A3A4C	4F5A4945	52303032	36090909
(360)	65656[illegible]4E	4153414D	4149[illegible]6F	444C4F5A	49455234	30333316	09095465	6C657[illegible]68	6F6E653A	09093431
(400)	352D3630	342D3331	34373[illegible]30	323209[illegible]9	09090909	46545320	3436342D	33313437	30303230	50524556
(440)	5F564F4C	533A0909	6E6F6E65	30303034	30303434	43435344	24244D41	524B4552	4D524B2A	2A303031
(480)	43435344	33535330	30303032	4D524B2A	2A303032	30303034	5E5E5E5E	5E5E5E5E		

FILE 2 RECORD 2 LENGTH 512BYTES

(0)	30303539	44415441	5F564554	5F4E4143	453A0909	50494F4E	45455220	31312054	52414A45	43544F52
(40)	592045[illegible]	48454D45	52495320	41524348	49564530	30363944	4154415F	534F5552	43453A09	0950696F
(80)	6E656572	2030312[illegible]	7472616A	6563746F	72752064	61746120	77657265	20676560	65726174	65642075
(120)	73696E67	20746865	39303739	2020202[illegible]	20202020	20202020	20202020	20202020	20202020	4A657420
(160)	50726F70	756C7369	6F6E2040	61626F72	61746F72	79277320	284A504C	29202244	6F756260	65205072
(200)	65636973	696F6E30	30373720	20202020	20202020	20202020	20202020	20202020	20202054	72616A65
(240)	63746F72	79222020	445[illegible]52	414420[illegible]	636F6D74	75746572	2474726F	67726160	20206160	20656C65
(280)	6D656E74	30303831	20202020	20202020	20202020	20202020	20202020	20202020	6F662074	6865204A
(320)	5040204E	61766967	6174696F	6E20536F	66747761	72652053	79737465	6D2C2072	65666572	656E6365
(360)	20284129	2E303031	34303028	30202020	20202020	20202020	20202020	20202020	20445054	
(400)	52414A20	63726561	74657324	61207374	61636563	72616674	20657168	656D6572	69732062	792069[illegible]E
(440)	74656772	6174696E	675E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E
(480)	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E	5E5E5E5E		

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
2	29	29	512	0	0	0	0	0	0

FILE 110 RECORD 1 LENGTH 512BYTES

(0)	20202020	20202031	2E313236	32333034	30353431	38333936	3736442B	31302C20	20302E32	34343738
(40)	39323530	30363237	31323933	442B3037	2C202030	2E313030	30363237	31323932	35353230	3736442B
(80)	30312C20	20302E35	32383234	31373439	38393833	31313531	442B3039	2C202030	2E353238	32343039
(120)	31313339	37393637	3636442B	30392C20	2030 2E35	37313833	39333030	33313337	30383330	442B3032
(160)	2C202031	2E303032	30303030	30303730	30303030	3030442B	30302C20	20302E33	38353938	35333836
(200)	30302739	39373039	442B3331	2C202030	2E333437	39363830	38323131	37343732	3835442B	30322C20
(240)	20302E36	33383135	34363234	38373235	32353731	442B3031	2C202030	2E383839	37353737	37383835
(280)	35363839	3637442B	30322C20	2030 2E34	35393539	30333039	36323931	31303232	442B3130	2C202030
(320)	2E373634	39303834	33313437	35373533	3439442B	3[illegible]312C20	20302E32	36343631	37323331	36313936
(360)	33393237	442B3433	2C202030	2E313437	31303439	38313638	31383435	39304423	30392C20	20302E32
(400)	33303431	38313530	31363836	33383135	442B3032	2C202030	2E373837	38353033	38333931	38343138
(440)	333[illegible]442B	30322C20	2030 2E33	38303730	32313733	30343737	35333633	442B3036	2C202030	2E313138

```
(   480)   33393838  37343132  33393330  33374423  30322C20  2D302E33  31353138  34353731

FILE     110  RECORD        2  LENGTH      512BYTES
(     0)   39333435  38343231  442B3032  2C202030  2E343436  34303930  30393331  35323935  3032442B  31302C20
(    40)   20302E31  32393936  33373330  32343431  38363636  442B3032  2C202030  2E363532  35323430  38353333
(    80)   31393835  36344429  30322C20  20302E31  36313830  32393631  37303938  39303737  442B3032  2C202030
(   120)   2E323633  39323131  36333937  30303832  3330442B  30332C20  2D302E37  36323334  36383231  30323537
(   160)   36343339  442D3035  2C202030  2E313030  33313030  30303530  36383537  3738442B  30332C20  2D302E34
(   200)   31313330  36393535  31343331  32343035  442B3130  2C202030  2E313230  39363731  34343531  31373531
(   240)   3638442B  31302C20  20302E31  32343339  36373132  39363837  34343738  442B3130  2C202030  2E343238
(   280)   37323635  35373834  33363135  3337442B  31302C20  20302E31  36333631  31313633  34363332  32343531
(   320)   442B3033  2C202030  2E313030  30303030  30303030  30303030  3030442B  30322C20  20302E31  32303030
(   360)   30303030  30303030  30303030  442B3032  2C202D30  2E343730  38373337  36383839  39333332  3331442B
(   400)   30392C20  2D302E34  34303333  36393634  39323032  34343139  442B3130  2C202030  2E313234  34333731
(   440)   333 3830  39313934  3339442B  31302C20  20302E33  33383837  33323231  32363634  32333533  442B3032
(   480)   2C202D30  2E363832  35383631  31393337  31393638  3634442B  30312C20  20302E32

        FILE   INPUT    DATA RECORDS    MAX.          READ ERROR SUMMARY          INPUT RETRIES
               RECS.      INPUT         SIZE       PERM  ZERO B   SHORT  UNDEF.  #RECS.  TOTAL#
         110      11       11            512         0      0       0      0       0       0

EOJ        DUMP STOPPED AFTER FILE   110        # OF PERMANENT READ ERRORS  0

START TIME 05/01/92  00:06:55        STOP TIME 05/01/92  00:12:04
```

$$

```
$NOP
$NOP
$NOP
$NOP ================================================ LIST OF KM2002
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS SR=1=1 1 1 1

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   80
VOL1TRJP11                          D%B44440610011                    3

***** JOB DONE.
$EXE TPDUMP BS
```