#484

VOYAGER 1 AND 2

MAGNETOMETER & PLASMA JUPITER & CRUISE DATA

HG COOR.	S-3 COOR.
77-084A-05A	77-084A-05B
77-084A-06A	77-084A-06B
77-076A-05A	77-076A-05B
77-076A-06A	77-076A-06B

SATURN & PLASMA ENCOUNTER DATA (HG COOR)

77-084A-05D
77-084A-06D
77-076A-05D
77-076A-06D

VOYAGER 1 & 2 SATURN ENCOUNTER DATA

L1 COORD.

77-084A-05E,06E
77-076A-05E,06E

VOYAGER 2

MAGNETOMETER JUPITER SUMMARY TAPES (HG COORDINATES)

JUPITER PLASMA SUMMARY TAPES (HG COORDINATES)

77-076A-05A,06A

This data set has been restored. There were originally 15 9-track, 6250 BPI tapes written in Binary. There are five restored tapes. The DR tapes are 3480 cartridges and the DS tapes are 9-track, 6250 BPI. The original tapes were created on an IBM 360 computer. The DR and DS numbers along with the corresponding D numbers and the time spans are as follows:

DR#	DS#	DD#	FILES	TIME SPAN
DR03788	DS03788	D41959	1	06/19/79 - 06/24/79 *
		D41960	2	06/24/79 - 06/29/79 *
		D41961	3	06/29/79 - 07/04/79 *
DR03789	DS03789	D41962	1	07/04/79 - 07/08/79 *
		D45768	2	07/04/79 - 07/09/79 **
		D45769	3	07/10/79 - 07/14/79 **
DR03790	DS03790	D41963	1	07/12/79 - 07/14/79 *
		D41964	2	07/14/79 - 07/19/79 *
		D41965	3	07/19/79 - 07/25/79 *
DR03791	DS03791	D41966	1	07/24/79 - 07/29/79 *
		D41967	2	07/28/79 - 08/04/79 *
		D41968	3	08/04/79 - 08/08/79 *
DR03792	DS03792	D41969	1	08/08/79 - 08/12/79 *
		D45770	2	08/08/79 - 08/13/79 **
		D45771	3	08/14/79 - 08/18/79 **

* These files are Cruise Data
** These files are Encounter Data

VOYAGER 1

MAGNETOMETER JUPITER SUMMARY TAPES (HG COORDINATES)

JUPITER PLASMA SUMMARY TAPES (HG COORDINATES)

77-084A-05A,06A

This data set has been restored. There were originally eight 9-track, 6250 BPI tapes written in Binary. There are three restored tapes. The DR tapes are 3480 cartridges and the DS tapes are 9-track, 6250 BPI. The original tapes were created on an IBM 360 computer. The DR and DS numbers along with the corresponding D numbers and the time spans are as follows:

DR#	DS#	DD#	FILES	TIME SPAN
DR03808	DS03808	D41954	1	02/25/79 - 03/02/79 *
		D41949	2	03/02/79 - 03/07/79 *
		D41950	3	03/07/79 - 03/12/79 *
		D41951	4	03/12/79 - 03/16/79 *
		D41952	5	03/16/79 - 03/18/79 *
DR03809	DS03809	D41953	1	03/18/79 - 03/20/79 *
		D41955	2	03/20/79 - 03/24/79 *
DR03810	DS03810	D46723	1	03/02/79 - 03/07/79 **

* These tapes are Cruise Data
** This tape is Encounter Data

VOYAGER 2

MAGNETOMETER JUPITER SUMMARY TAPES (S3 COORDINATES)

JUPITER PLASMA SUMMARY TAPES (S3 COORDINATES)

77-076A-05B,06B

This data set has been restored. There were originally ten 9-track, 6250 BPI tapes written in Binary. There are ten restored tapes. The DR tapes are 3480 cartridges and the DS tapes are 9-track, 6250 BPI. The original tapes were created on an IBM 360 computer. The DR and DS numbers along with the corresponding D numbers and the time spans are as follows:

DR#	DS#	DD#	FILES	TIME SPAN
DR03774	DS03774	D43083	1	07/04/79 - 07/08/79 *
DR03775	DS03775	D43084	1	07/12/79 - 07/14/79 *
DR03776	DS03776	D43085	1	07/14/79 - 07/19/79 *
DR03777	DS03777	D43086	1	07/19/79 - 07/24/79 *
DR03778	DS03778	D43087	1	07/24/79 - 07/29/79 *
DR03779	DS03779	D43088	1	07/28/79 - 08/04/79 *
DR03780	DS03780	D43089	1	08/04/79 - 08/08/79 *
DR03781	DS03781	D43090	1	08/08/79 - 08/12/79 *
DR03782	DS03782	D45772	1	07/04/79 - 07/09/79 **
DR03783	DS03783	D46640	1	07/10/79 - 07/14/79 **

* These tapes are Cruise Data
** These tapes are Encounter Data

VOYAGER 1

MAGNETOMETER JUPITER SUMMARY TAPES (S3 COORDINATES)

JUPITER PLASMA SUMMARY TAPES (S3 COORDINATES)

77-084A-05B,06B

This data set has been restored. There were originally four 9-track, 6250 BPI tapes written in Binary. There are four restored tapes. The DR tapes are 3480 cartridges and the DS tapes are 9-track, 6250 BPI. The tapes were created on an IBM 360 computer. The DR and DS numbers along with the corresponding D numbers and the time spans are as follows:

DR#	DS#	DD#	FILES	TIME SPAN
DR03811	DS03811	D41956	1	03/02/79 - 03/07/79 *
DR03812	DS03812	D41957	1	03/07/79 - 03/12/79 *
DR03813	DS03813	D41958	1	03/12/79 - 03/16/79 *
DR03814	DS03814	D46724	1	03/02/79 - 03/07/79 **

* These tapes are Cruise Data
** This tape is Encounter Data

VOYAGER 2

MAGNETOMETER SATURN ENCOUNTER (HG COORDINATES)

PLASMA SATURN ENCOUNTER (HG COORDINATES)

77-076A-05D,06D

This data set has been restored. There were originally two 9-track, 1600 BPI tapes written in Binary. There is one restored tape. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The original tapes were created on an IBM 360 computer. The DR and DS numbers along with the corresponding D numbers and the time spans are as follows:

DR#	DS#	DD#	FILES	TIME SPAN
DR03850	DS03850	D60880	1	08/23/81 - 08/28/81
		D60881	2	08/28/81 - 09/02/81

VOYAGER 1

SATURN ENCOUNTER DATA (HG COORDINATES)

PLASMA SATURN ENCOUNTER (HG COORDINATES)

77-084A-05D,06D

This data set has been restored. There were originally two 9-track, 1600 BPI tapes written in Binary. There is one restored tape. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The original tapes were created on an IBM 360 computer. The DR and DS numbers along with the corresponding D numbers and the time spans are as follows:

DR#	DS#	DD#	FILES	TIME SPAN
DR03849	DS03849	D60882	1	11/09/80 - 11/14/80
		D60883	2	11/14/80 - 11/20/80

VOYAGER 2

SATURN ENCOUNTER L1 COORDINATES

77-076A-05E,06E

This data set has been restored. There were originally two 9-track, 6250 BPI tapes written in Binary. There is one restored tape. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The original tapes were created on an IBM 360 computer. The DR and DS numbers along with the corresponding D numbers and the time spans are as follows:

DR#	DS#	DD#	FILES	TIME SPAN
DR03851	DS03851	D61727	1	08/23/81 - 08/25/81
		D61728	2	08/24/81 - 08/29/81

VOYAGER 1

SATURN ENCOUNTER L1 COORDINATES

77-084A-05E,06E

This data set has been restored. There were originally two 9-track, 6250 BPI tapes written in Binary. There is one restored tape. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The original tapes were created on an IBM 360 computer. The DR and DS numbers along with the corresponding D numbers and the time spans are as follows:

DR#	DS#	DD#	FILES	TIME SPAN
DR03856	DS03856	D61729	1	11/09/80 - 11/14/80
		D61730	2	11/14/80 - 11/18/80

REQ. AGENT	RAND NO.	ACQ. AGENT
BER	V0067	RWV
GLS	V0236	WSC
DAD	V0238	

VOYAGER 1 & 2

MAGNETOMETER & PLASMA JUPITER SUMMARY DATA TAPES

HG COORDINATES		S-3 COORDINATES	
77-084A-05A	77-084A-06A	77-076A-05B	77-076A-06B
77-076A-05A	77-076A-06A	77-084A-05B	77-084A-06B

SATURN & PLASMA ENCOUNTER DATA (HG COORDS.)

77-084A-05D 77-084A-06D
77-076A-05D 77-076A-06D

This data set catalog consists of Voyager 1 and 2 data. They are 6250 BPI, 9 track, single filed, and binary formatted. They were created on the IBM 360 computer. The D tapes are standard labeled.

DATA SETS AND TIME SPANS ARE AS FOLLOWS:

77-084A-05A (HG COORDS.) CRUISE DATA
77-084A-06A

D#	C#	TIME SPANS
D-41949	C-21334	03/02/79 - 03/07/79
D-41950	C-21335	03/07/79 - 03/12/79
D-41951	C-21336	03/12/79 - 03/16/79
D-41952	C-21337	03/16/79 - 03/18/79
D-41953	C-21338	03/18/79 - 03/20/79
D-41954*	C-21339	02/25/79 - 03/02/79
D-41955	C-21340	03/20/79 - 03/24/79

VOYAGER 1 (S-3 COORDS.) CRUISE DATA
77-084A-05B 77-084A-06B

D#	C#	TIME SPANS
D-41956	C-21341	03/02/79 - 03/07/79
D-41957	C-21342	03/07/79 - 03/12/79
D-41958	C-21343	03/12/79 - 03/16/79

VOYAGER 2 77-076A-05A (HG COORD.) CRUISE DATA
77-076A-06A

D#	C#	TIME SPANS
D-41959	C-21344	06/19/79 - 06/24/79
D-41960	C-21345	06/24/79 - 06/29/79
D-41961	C-21346	06/29/79 - 07/04/79
D-41962	C-21347	07/04/79 - 07/08/79
D-41963	C-21348	07/12/79 - 07/14/79
D-41964	C-21349	07/14/79 - 07/19/79
D-41965	C-21350	07/19/79 - 07/24/79
D-41966	C-21351	07/24/79 - 07/29/79
D-41967	C-21352	07/28/79 - 08/04/79
D-41968	C-21353	08/04/79 - 08/08/79
D-41969	C-21354	08/08/79 - 08/12/79

VOYAGER 2 77-076A-05B (S-3 COORD.) CRUISE DATA
77-076A-06B

D#	C#	TIME SPANS
D-43083	C-21368	07/04/79 - 07/08/79
D-43084	C-21369	07/12/79 - 07/14/79
D-43085	C-21370	07/14/79 - 07/19/79
D-43086	C-21371	07/19/79 - 07/24/79
D-43087	C-21372	07/24/79 - 07/29/79
D-43088	C-21373	07/28/79 - 08/04/79
D-43089	C-21374	08/04/79 - 08/08/79
D-43090	C-21375	08/08/79 - 08/12/79

VOYAGER 1 ENCOUNTER DATA

77-084A-05A,06A HG COOR.

D#	C#	TIME SPAN
D-46723	C-21807	03/02/79 - 03/07/79

77-084A-05B,06B S-3 COOR.

D#	C#	TIME SPAN
D-46724	C-21808	03/02/79 - 03/07/79

VOYAGER 2 ENCOUNTER DATA

77-076A-05A,06A HG COOR.

D#	C#	TIME SPAN
D-45768	C-21802	07/04/79 - 07/09/79
D-45769*	C-22340	07/10/79 - 07/14/79
D-45770	C-21803	08/08/79 - 08/13/79
D-45771	C-21804	08/14/79 - 08/18/79

77-076A-05B,06B S-3 COOR.

D-45772	C-21805	07/04/79 - 07/09/79
D-46640	C-21806	07/10/79 - 07/14/79

VOYAGER 2 SATURN & PLASMA ENCOUNTER DATA (HG COOR)

77-076A-05D,06D

D#	C#	TIME SPAN
D-60880	C-23725	08/23/81 - 08/28/81
D-60881	C-23726	08/28/81 - 09/02/81

VOYAGER 1 SATURN & PLASMA ENCOUNTER DATA (HG COOR)

77-084A-05D,06D

D#	C#	TIME SPAN
D-60882	C-23727	11/09/80 - 11/14/80
D-60883	C-23728	11/14/80 - 11/19/80
	C-23729	11/19/80 -11/20/80

* THESE D-TAPES ARE NOT STANDARD LABELED.

VOYAGER 1 ENCOUNTER DATA

77-084A-05E,06E L1 COORD.

D#	C#	TIME SPAN
D-61729	C-23858*	11/09/80 - 11/14/80
D-61730	C-23859*	11/14/80 - 11/18/80

VOYAGER 2 ENCOUNTER DATA

77-076A-05E,06E L1 COORD.

D#	C#	TIME SPAN
D-61727	C-23856*	08/23/81 - 08/25/81
D-61728	C-23857*	08/24/81 - 08/29/81

Proposed Plan for

Submission of Data from the Voyager Plasma Science Experiment to the NSSDC

A. INTRODUCTION

Data from the Voyager Plasma Experiment consists of two basic types:

a. Data on the solar wind obtained during the cruise phase of the mission

b. Data obtained in the magnetosheath and magnetosphere of Jupiter during the encounter phase of the mission.

Both of these sets of data have been subject to an extensive but basically a preliminary analysis and a final more sophisticated analysis remains to be done on both sets. In the following sections we discuss the status of the data analysis for both sets of data and summarize what we expect to deposit in the NSSDC by October 1, 1980.

B. CRUISE DATA

Data has been obtained from both Voyager 1 and Voyager 2 from launch up until the present time. The coverage is essentially complete (tracking is between 50 and 75% for each spacecraft) and has been analyzed to give hourly averages of plasma velocity, number density, and temperature between 1 and 7 AU. These data refer primarily to protons. The analysis of the helium component is not yet in final form.

Higher time resolution data will, of course, be ultimately available. That availability is contingent on a more sophisticated analysis of the alpha particle component which depends in turn on the availability of final values for the interplanetary magnetic field. Depending upon the effort devoted to this analysis, it will be one or two years before a final high time resolution cruise data set is

available. In the meantime we are willing to entertain proposals which require limited amounts of high time resolution data.

As of October 1980, we intend to deposit an hourly average tape which for Voyager 1 contains data obtained between 1 and 7 AU and for Voyager 2 between 1 and 5 AU. The data on these tapes will include plasma flow velocity (speed and two angles), proton number density and temperature. At this point, it is not practical to include data on the helium component.

C. ENCOUNTER DATA

Current State of the Analysis of PLS Data during Jupiter Encounter

The following brief description should make apparent the limitations of the present analysis and define more clearly the data set which we propose to submit to NSSDC.

Figure 1 shows the Voyager 1 trajectory projected onto the Jovian equatorial plane. Also shown is the projection of the symmetry axis of the main sensor cluster (S), which consists of three modulated-grid Faraday cups (the A, B, and C cups). The projection of the normal of the side-looking sensor, or the D cup, is also indicated (D). The prime field of view of the main cluster is roughly a cone of half-angle 45° about the symmetry axis (Bridge et al., 1977), and the field of view of the side sensor is a cone of half-angle 30° about the cup normal. It is apparent from this figure that plasma corotating with Jupiter will flow into the D sensor over most of the inbound leg of the trajectory. Cold corotating flow moves out of the D sensor and into the field of view of the main cluster near closest approach, and out of the field of view of all sensors on the outbound leg. This behavior is shown quantitatively for Voyager 1 in Figure 2, which gives the response of the A, C, and D sensors to cold, rigidly corotating plasma as a function of time along the spacecraft trajectory.

Up until the present, the bulk of the plasma data has been analyzed using only one sensor at a time, the cup of choice being the one looking most nearly into corotating flow at a given point along the trajectory. No analysis has been carried out for highly oblique flows, i.e., when the flow is more than ~30° from any sensor normal. Thus, we have done very little analysis on the outbound legs of either Voyager 1 or Voyager 2. Examples of our inbound analysis of individual cups is shown in Figures 3 and 4. Figure 3 shows the positive ion charge and mass densities from ~45 R_J to closest approach (CA) on Voyager 1. The analysis up to day 64 0300 is of D sensor data; analysis after that time is either A, B, and C sensor data. Figure 4 shows the component of plasma velocity into the D sensor on the inbound leg, derived from the low resolution (L-mode) positive ion spectra. When we analyze only one sensor at a time, we obtain only the component of plasma flow along that sensor normal (e.g., see Belcher et al., 1980). Also shown is the expected component of flow along the D sensor normal assuming rigid corotation. The fact that the plasma is moving at less than the expected corotation velocity as close as 10 R_J to the planet has been one of the most novel results of the PLS analysis (McNutt, et al., 1979; Hill, 1980). An example of one of the best M-mode spectra from the D sensor is shown in Figure 5; we also show Maxwellian fits to varicus heavy ion species present in the spectra.

The analysis used to obtain the results discussed above uses one sensor at a time. If the flow is reasonably supersonic (Mach four or greater) and is flowing into the sensor at a small angle to the normal ($\lesssim$20°), one can sensibly take the response function of the detector (see Vasyliunas, 1971; Belcher et al., 1980) to be constant. With this assumption, our present analysis provides good estimates of the densities and temperatures of the various ions, as well as their common velocity component along the sensor normal. In some cases, when the flow is close to the symmetry axis of the main cluster, the response function of all

of the sensors in the main cluster can be taken as unity, and the three velocity components from the A, B, and C sensors can be combined to yield a vector velocity. This is, of course, the normal procedure in the analysis of solar wind data. In the Jovian magnetosphere, we can use this procedure only for a limited time around closest approach (cf. Figure 2) and during one spacecraft maneuver near 35 R_J on Voyager 1 inbound. Most of the time the flow is oblique to two or more sensor normals, the response function is very different from unity, and we cannot combine the simple solar wind analysis from two or more cups to obtain vector velocities. However, we still have significant signals in the cups which are oblique to the flow, and there is a large amount of information to be gained from the analysis of that data if we properly account for the effects of the finite response of the sensors. This type of analysis will be done in the future.

Encounter Data to be Submitted to NSSDC

For the Jupiter encounter we plan to submit two sets of data. The first will contain results of the analysis of encounter data performed to date which are discussed above; that is, they will be the data sets which form the basis for the plots of charge density and mass density shown in Figure 3 and for the analysis of plasma velocity shown in Figure 4. It should be possible for outside users to utilize these data with little additional effort.

We also intend to deposit in NSSDC a more basic data set which includes all of the encounter results but which will require a good deal more experience and investment of time on the part of potential users. The basic encounter data set exists in a form which the PLS and MAG experimenters have called "summary tapes." Basically, this data set is only one step removed from the Experiment Data Records (EDR) furnished by JPL. They have been processed to remove bad data, to arrange the data sequentially, etc. In addition they contain the results

of a crude moment analysis to derive plasma parameters. This analysis is usually not valid in the Jovian magnetosphere but it furnishes a useful basis for a qualitative evaluation of the data. We normally use this tape in conjunction with an SEDR (Supplemental Experiment Data Record) tape as a basis for analysis of the encounter data; i.e., the summary tapes, the SEDR, and an appropriate software package form the basis for most analyses which are currently being carried out at MIT.

We feel that it is important that these summary tapes together with adequate documentation be available as a primary data base especially for work which may take place sometime in the future. For example, it may be especially important to have the primary data available for future comparisons with results from Galileo or ISPM.

D. DOCUMENTATION

Adequate documentation exists for most of the material described above. There are significant gaps which we intend to fill by October and although the task is not negligible, it appears to be feasible to submit the data described above and the appropriate documentation by about October 1, 1980.

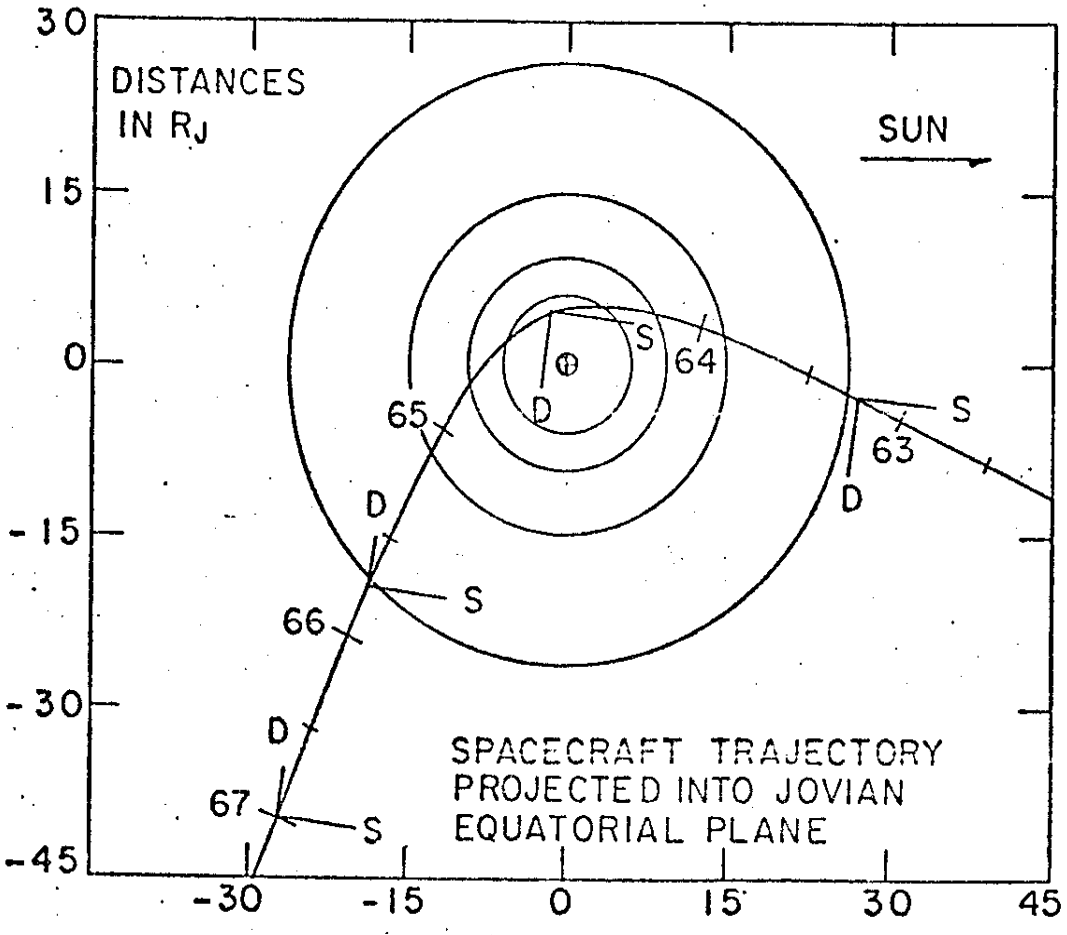

Figure 1: The Voyager 1 trajectory projected onto the Jovian equatorial plane. The line labeled S is the projection of the symmetry axis of the main cluster of Faraday cups, and the line labeled D is the projection of the D cup normal.

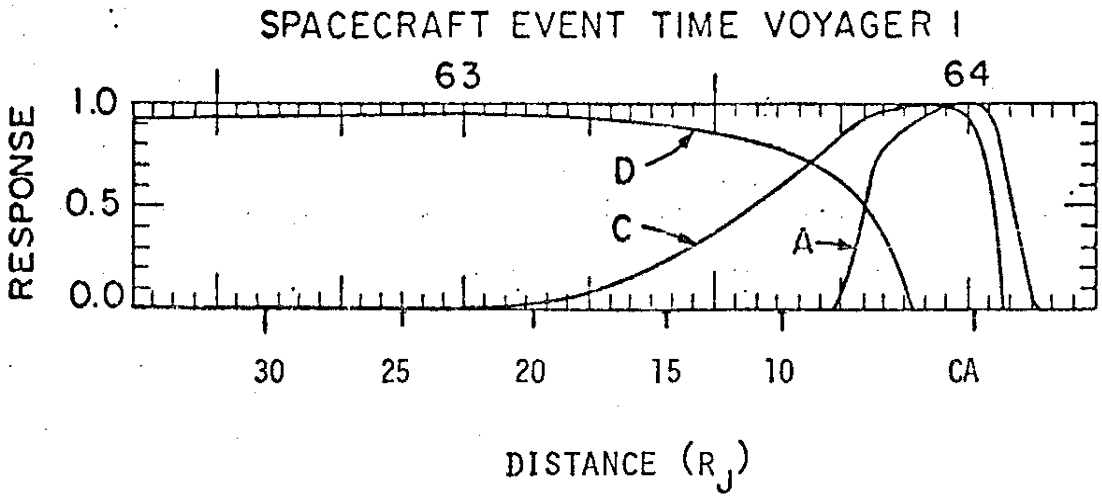

Figure 2: The response of the A, C, and D cups to a cold, corotating beam as a function of time along the Voyager 1 trajectory. The response of the B cup is almost identical to that of the C cup. The response is that fraction of the flux of an incident beam which is measured at the collector plate of the instrument.

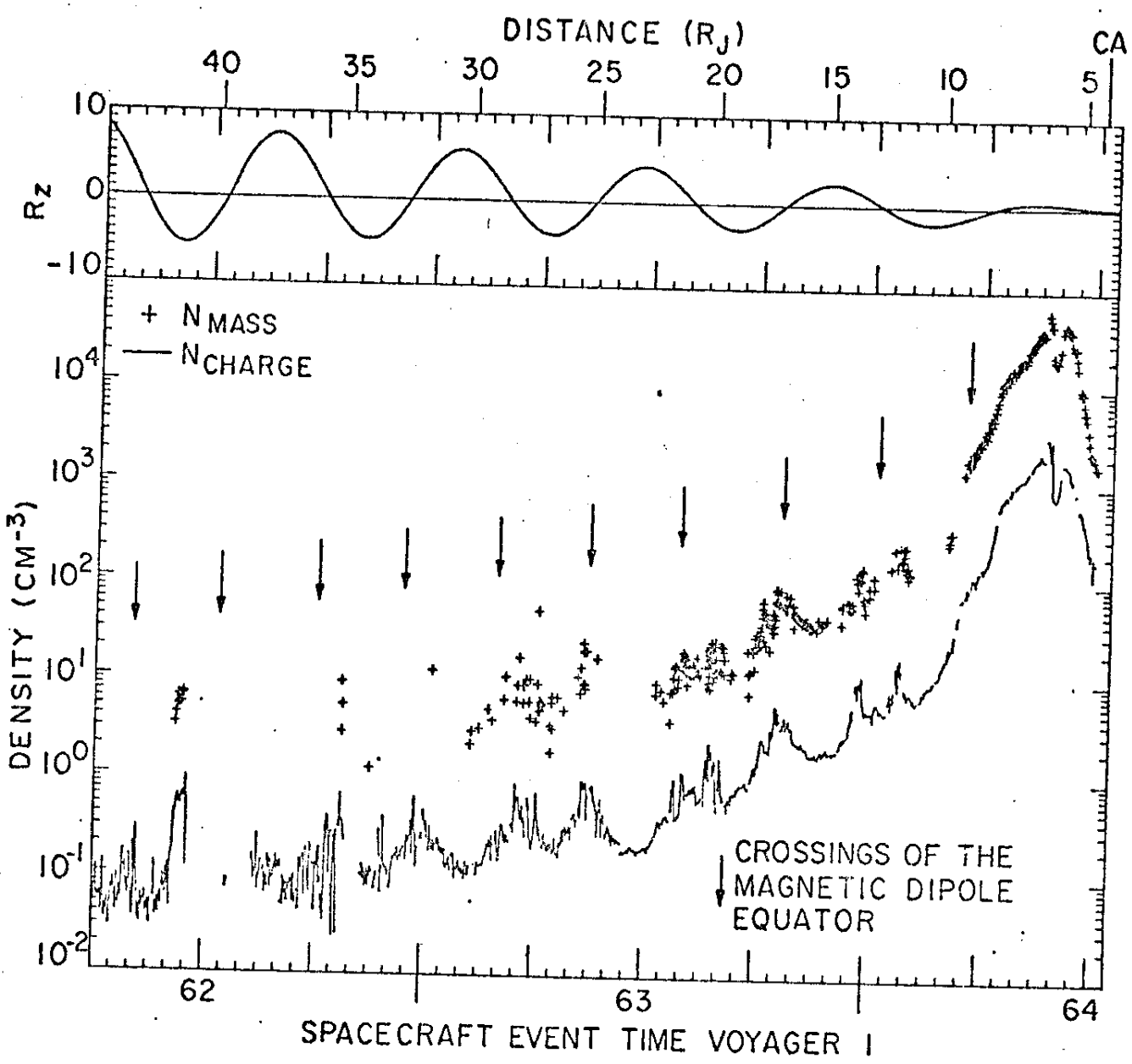

Figure 3: Mass and positive charge density as determined by PLS on the Voyager 1 inbound pass. The crosses represent amu/cc and the solid line total positive ion charge/cc, i.e., $\sum_i n_i Z^*_i$.

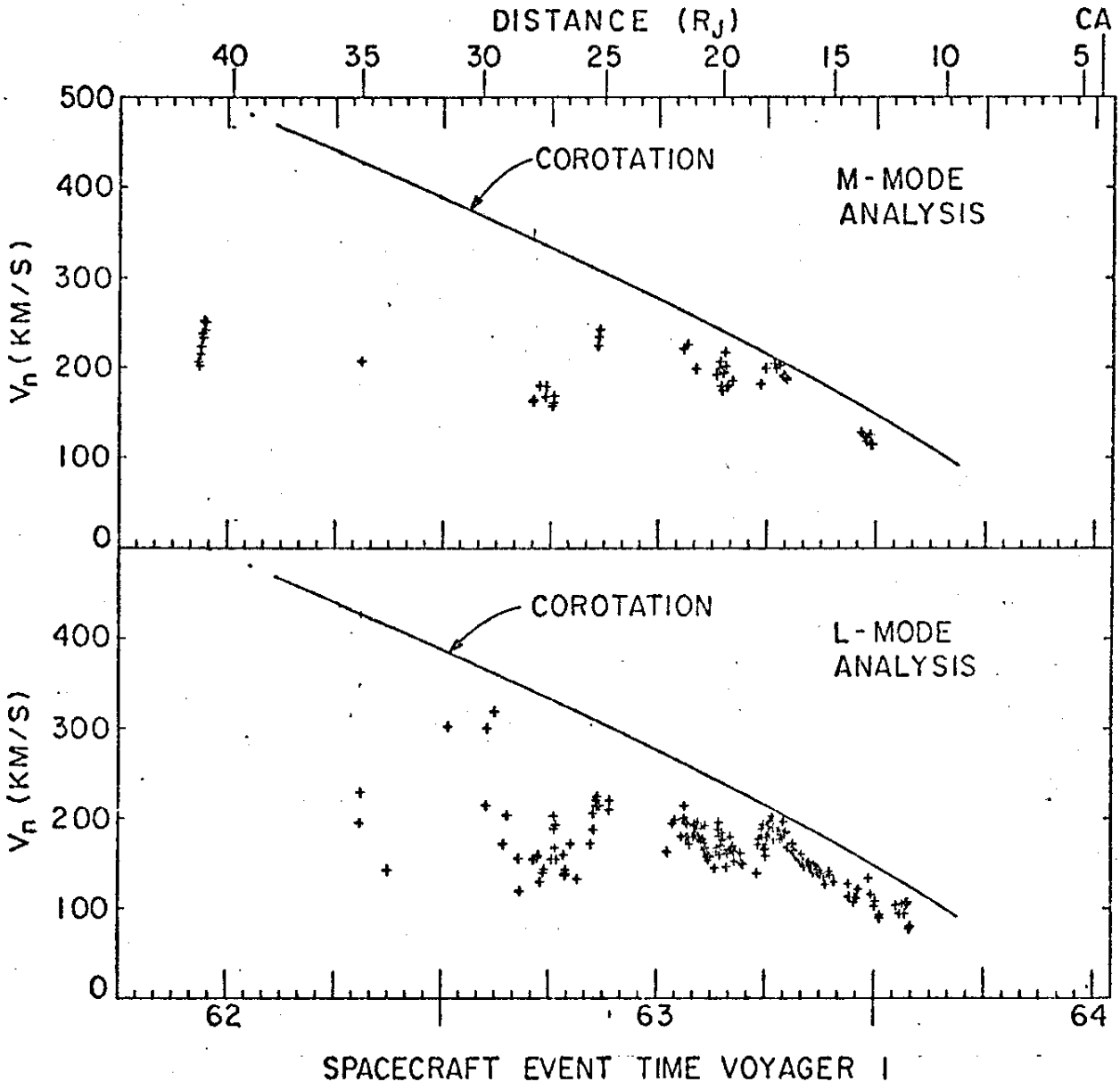

Figure 4: The component of plasma bulk velocity into the D sensor on the Voyager 1 inbound trajectory. The solid line is the expected component of flow assuming rigid corotation.

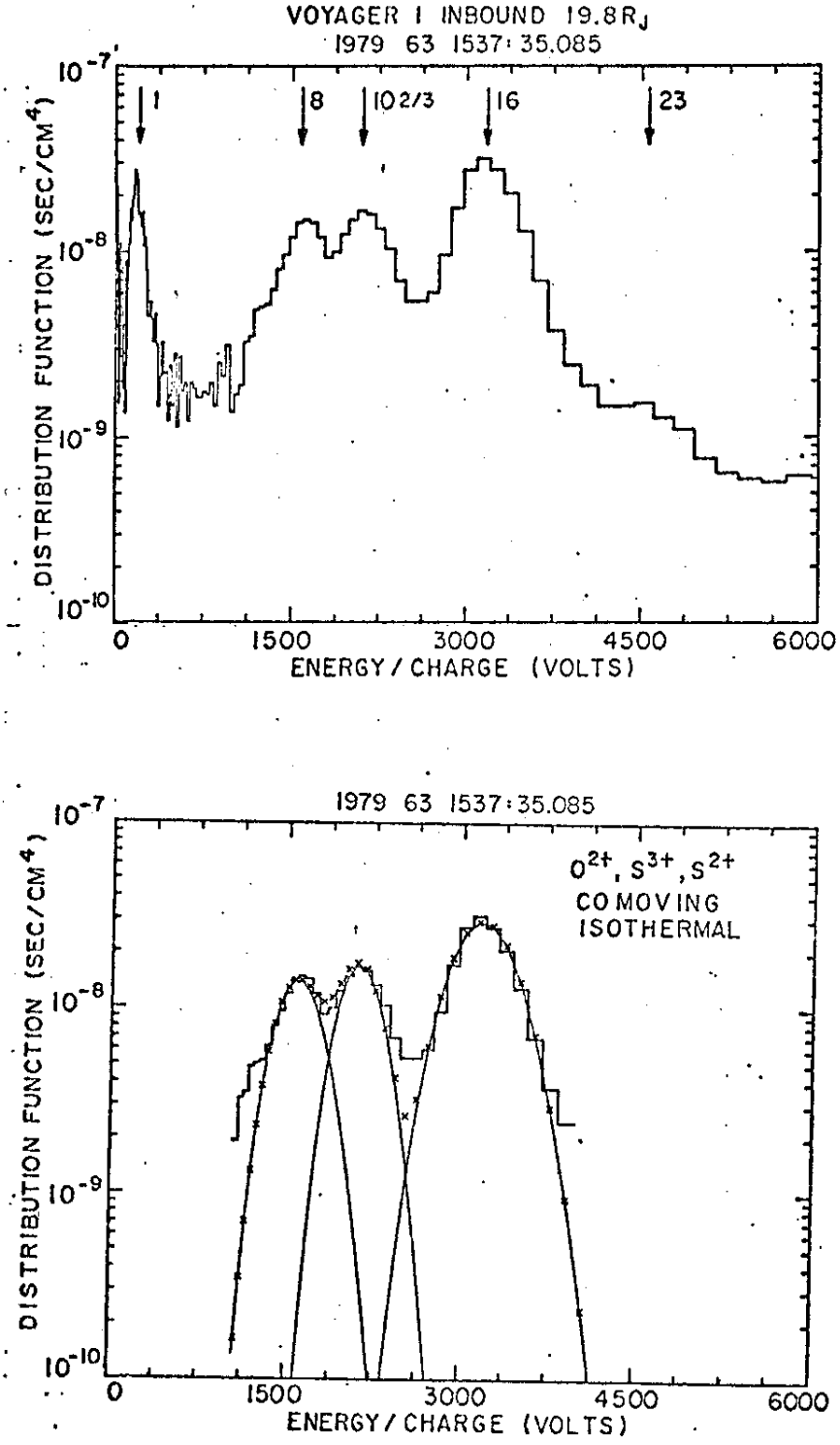

Figure 5: An M-mode spectrum from the D sensor at 19.8 R_J on Voyager 1 inbound. The peaks in energy per charge labeled 1, 8, 10-2/3, 16, and 23 are due to H^+, O^{++}, S^{+++}, O^+ or S^{++}, and Na^+. We also show Maxwellian fits to O^{++}, S^{+++}, and S^{++}.

References

Bridge, H. S., J. W. Belcher, R. J. Butler, A. J. Lazarus, A. M. Mavretic, J. D. Sullivan, G. L. Siscoe, and V. M. Vasyliunas: The Plasma Experiment on the 1977 Voyager Mission, Space Sci Rev 21, 259, 1977.

Belcher, J. W., C. K. Goertz, and H. S. Bridge: The Low Energy Plasma in the Jovian Magnetosphere, GRL 7, 17, 1980.

McNutt, R. L., J. W. Belcher, J. D. Sullivan, F. Bagenal, and H. S. Bridge: Departure from Rigid Corotation of Plasma in Jupiter's Dayside Magnetosphere, Nature 280, 803, 1979.

Hill, T. W.: Corotational Lag in Jupiter's Magnetosphere: A Comparison of Observation and Theory, Science 207, 301, 1980.

Vasyliunas, V. M.: In Methods of Experimental Physics, Vol. 9B of Plasma Physics, edited by R. H. Lovbergs, p. 49, Academic Press, 1971.

05A, 05B
05A, 05B

Voyager Conjoint Data Tape Format For Combined MAG And PLS Analysis

Tapes are IBM standard label, 9 track and contain IBM variable blocked (VB) records. Master tapes are 6250 BPI, distribution copies may be 1600/800 BPI.

There are four distinct types of records: header; magnetometer science; plasma science; and engineering. All Master Library tapes will contain all data record types. Prior to filing of these tapes in the NSSDC at GSFC, any tapes distributed outside the principal sphere of interest (MIT and GSFC), will contain only one type of data (MAG or PLS) plus engineering, unless there is mutual PI agreement to do otherwise.

Engineering records always precede science records. Science records are time ordered by the end time of the PLS data blocks and the begin time of the MAG data blocks. The time tag represents the Begin time of a block.

The first word in each record is an identifier for that type of data. The following table lists the record characteristics and their frequency of occurrence.

Record Type	ID	Rate	Length (Bytes)	Mode
Engineering	ENG	1/12min 1/48min	1092v	GS3,CR1,CR2 CR3,CR4,CR5,CR6,CR7
Low field magnetometer	LFM	1/48sec	2076	All modes
Proton high resolution	M	1/12sec 1/96sec 1/192sec	2540v	CR1 GS3,CR2,CR3,CR4 CR5,CR6
Proton low resolution	I	1/96sec 1/192sec 1/384sec	1056	GS3,CR2,CR3,CR4 CR5,CR6 CR7
Electron	E1/E2	1/12sec 2/96sec 2/192sec 2/384sec	680	CR1 GS3,CR2,CR3,CR4 CR5,CR6 CR7

High field MAG data is not compacted and therefore will not appear on this tape.

The DD card necessary to read this tape is:

```
//ddname DD UNIT=(9TRACK,,DEFER),LABEL=(,SL),DISP=SHR,
//       DCB=(RECFM=VB,LRECL=4224,BLKSIZE=18260,LEN=4),
//       DSN=VOYAGER.CONJOIN1.MAG.PLS,VOL=SER=xxxxxx
```

Each logical record consists of two or more parts. The following diagrams show the different record types and the different segments in each.

ENG - Engineering

Header 32 words	Selected Engineering Data 2 to 240 words

LFM - Magnetometer

Header 32 words	MAG Data 496 words	SEDR 40 words

M - Proton Mode

Header 32 words	Output Data 150 words	SEDR 50 words	Raw Data 256 words	Overlap Variable

L - Proton Mode

Header 32 words	Output Data 150 words	SEDR 50 words	Raw Data 32 words

E1/E2 - Electron Mode

Header 32 words	Output Data 80 words	SEDR 50 words	Raw Data 8 words

Because of the variable length of each record, a word has been added to each record header block to allow the use of FORTRAN in reading this tape. The last halfword of the block contains the count of the number of words remaining in the logical record.

Common Record Header Block

RELATIVE WORD	TYPE*LEN	DESCRIPTION
1	A*4	Data identifier: "ENG ", "LFM ", "M ", "I ", "E1 ", "E2 ", "HDR1", "HDR2"
2	A*4	Telemetry format
3	A*4	s/c id: "FLT1" or "FLT2"
4	I*2	Year of data - 1900 (time tag for beginning of data block)
	I*2	Day of year (Jan 1 = 1)
5	I*2	Hour of day (0-23)
	I*2	Minute of hour (0-59)
6	I*2	Second of minute (0-59)
	I*2	Millisecond of second (0-999)
7-8	R*8	Decimal day of year of data (Jan 1 = 0)
9-10	R*8	Decimal day count since 20AUG77
11	A*4	Type of time: SCET or ERT
12	R*4	Time period of this data block in seconds
13	I*2	2**16 seq counter of data at time of telemetry readout (increments once in 48 min)
	I*2	Modulo 60 seq counter of data readout (increments once in 48 sec)
14	I*2	Line counter of data readout (1-800) (increments once in 60 ms)
	I*2	SPARE
15	Z*4	Status word
16	Z*4	Command
17	I*2	Data identifier: LFM=1, HFM=2, M=3, E1=4, I=5, E2=6, ENG=7, HDR1=8, HDR3=10
	I*2	Data rate: GS3=0, CR1=1, CR2=2, CR3=3, CR4=4, CR5A=5, CR6A=6, CR6B=7, CR7=8, CR5B=9
18		SPARE
19-20	A*8	A character flag which indicates software or s/c hardware intervention reducing confidence in data
21-29		SPARE
30-31	4(I*2)	# of primary data words, # of secondary data words, # of primary full words, # of secondary full words (LFM only)
32	I*2	Record number on tape
	I*2	Number of words remaining in logical record

RELATIVE WORD	TYPE*LEN	DESCRIPTION
	>>>>>>>> 48 sec av (ROTATED) <<<<<<<<	
1	R*4	F1: average of 9.6 sec norms in gammas
2	R*4	F2: norm of (B1,B2,B3) in gammas
3	R*4	DELTA: arsin(B3/F2) in degrees
4	R*4	LAMBDA: 180 - atan(B2,-B1) in degrees
5	R*4	B1: average of first 9.6 sec component in gammas
6	R*4	B2: average of second 9.6 sec component in gammas
7	R*4	B3: average of third 9.6 sec component in gammas
8-10	3(R*4)	RMS: rms vector in gammas
11	I*4	N: number of 9.6 sec avs that make up this average (le 5)
	>>>>>>>> 9.6 sec av (ROTATED) <<<<<<<<	
12-16	5(R*4)	F1: averages of 1.92 sec norms in gammas
17-21	5(R*4)	F2: norms of (B1,B2,B3) in gammas
22-26	5(R*4)	DELTA: arsin(B3/F2) in degrees
27-31	5(R*4)	LAMBDA: 180 - atan(B2,-B1) in degrees
32-36	5(R*4)	B1: averages of first 1.92 sec component in gammas
37-41	5(R*4)	B2: averages of second 1.92 sec component in gammas
42-46	5(R*4)	B3: averages of third 1.92 sec component in gammas
47-61	15(R*4)	RMS: rms vectors in gammas (3 X 5)
62-66	5(I*4)	N: Number of 1.92 sec avs that make up this average (le 5)
	>>>>>>>> 1.92 sec av (ROTATED) <<<<<<<<	
67-91	25(R*4)	F1: averages of detail point norms in gammas
92-116	25(R*4)	F2: norms of (B1,B2,B3) in gammas
117-141	25(R*4)	DELTA: arsin(B3/F2) in degrees
142-166	25(R*4)	LAMBDA: 180 - atan(B2,-B1) in degrees
167-191	25(R*4)	B1: averages of first detail component in gammas
192-216	25(R*4)	B2: averages of second detail component in gammas
217-241	25(R*4)	B3: averages of third detail component in gammas

242-316	75(R*4)	RMS: PAYLOAD rms vectors in gammas (3 X 25)
317-341	25(I*4)	N: number of detail points that make up this average
	>>>>>>>> s/c field averages (PAYLOAD) <<<<<<<<	
342-488		SPARE
489-491	3(R*4)	RMS: vector rms in gammas
492	I*4	NSC: number of averages in 48 secs
493	R*4	SCX: average of first field component in gammas
494	R*4	SCY: average of second field component in gammas
495	R*4	SXZ: average of third field component in gammas
496	R*4	SCF: norm of (SCX,SCY,SCZ) in gammas

Note: For Jupiter System III, (B1,B2,B3) are Spherical coordinates while the angles DELTA and LAMBDA are derived from Cartesian coordinates.

Engineering Data Area

RELATIVE WORD	TYPE*LEN	DESCRIPTION
1	I*2	Deck (Eng code 620-672)
	I*2	Value of ENG
2	R*4	"read-out" time of data in seconds past time on record header block
3-240		repeat words 1 and 2 for each new set

Since only engineering parameters which change are entered into the record, the record is of variable length.

SEDR Data Block

RELATIVE WORD	TYPE*LEN	DESCRIPTION
1-2	R*8	TN: epicday of navigation blcck "closest" to data
3-4	R*8	TP: epicday of pointing vector block "closest" to data
5-10	R*4	Spacecraft relative positicn vector and velocity vector in EG: Inertial Sun Equator System (AU,km/sec). Time tag is TN. S3: Jupiter System III Cartesian (Jupiter radii,km/sec) Time tag is TN.
11	R*4	Spacecraft distance from HG: Sun in AU. Time tag is TN. S3: Jupiter in Jupiter radii. Time tag is TN.
12-13	R*4	Spacecraft relative longitude & latitude in radians in EG: Inertial Sun Equator System. Time tag is TN. S3: Jupiter latitude,Jupiter System III longitude. Time tag is TN. Note 0<=longitude<2*pi and -pi/2<latitude<=+pi/2
14-22	R*4	HG: Matrix to rotate data from Inertial Sun Equator System to Inertial Heliographic System. Time tag is TN. S3: Matrix to rotate data from Jupiter System III Cartesian to Jupiter System III Spherical. Time tag is DT.
23-31	R*4	HG: Matrix to rotate data from Inertial Heliographic System to Earth-Orbit-True System. Time tag is TN. S3: Matrix to rotate data from payload to Jupiter System III Cartesian. Time tag is DT.
32-40	R*4	HG: Matrix to rotate data from payload to Inertial Heliographic System. Time tag is DT. S3: Matrix to rotate data from payload to Jupiter System III Spherical. Time tag is DT.
41-50		SPARE

Matrices are left multiplying with elements in the order:

$$\begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix}$$

Time tag TN is relative words 1-2 above. Time tag DT is record header time plus 1/2 the length of the data record.

When MAG(28) switch is on and the record is LRM, the time tag for relative words 32-40 above is record header time plus 47.04 seconds.

Description of MJS summary tape (and MAG detail tape) HDR1 records at beginning and end of tape(s).

RELATIVE WORD	TYPE*LEN	DESCRIPTION
1	A*4	"HDR1"
2	A*4	Telemetry format
3	A*4	s/c id: "FIT1" or "FIT2"
4	I*2	Year of data - 1900 (from first data record)
	I*2	Day of year of data
5	I*2	Hour of day of data
	I*2	Minute of day of data
6	I*2	Second of minute of data
	I*2	Millisecond of second of data
7	I*4	Year of this run
8	I*4	Calendar day of year of this run
9	A*4	Month of this run
10	I*4	Day of month of this run
11-12	A*8	Run type: "CRUISE" or "ENCOUNTER"
13	A*4	Coordinate system (not on detail tape)
14-16		SPARE
17	I*2	Data identifier=8 (not on detail tape)
	I*2	SPARE
18-31		SPARE
32	I*2	Record number on tape
	I*2	Number of words remaining in logical record
33-52	10(A*8)	List of mounted EDR volume serial numbers
53-64	6(A*8)	List of mounted SEDR volume serial numbers
65-66	A*8	Volume serial number of summary tape
67-68	A*8	Volume serial number of MAG detail tape
69-76	32(L*1)	System switching vectors
77-84	32(L*1)	MAG switching vectors
85-92	32(L*1)	PLS switching vectors
93-94	A*8	Name of zeroes
95-96	A*8	Name of sensitivities
97-98	A*8	Name of calibrations

99-100	SPARE

NOTE: Some fields may be incomplete when this record is at the beginning of the tape.

Description of MJS summary tape HDR3 records to be placed after each HDR1 record.

RELATIVE WORD	TYPE*LEN	DESCRIPTION
1	A*4	"HDR3"
2-3		SPARE
4	I*2	Year of data - 1900 (from first data record)
	I*2	Day of year of data
5	I*2	Hour of day of data
	I*2	Minute of day of data
6	I*2	Second of minute of data
	I*2	Millisecond of second of data
7-16		SPARE
17	I*2	Data identifier=10
	I*2	SPARE
18-31		SPARE
32	I*2	Record number on tape
	I*2	Number of words remaining in logical record
33-1056	A*4096	Contents of PICCNS common block

77-0161

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July 31, 1984

TO: 601/Dr. Kent Hills

FROM: 695/Planetary Magnetospheres Branch

SUBJECT: Voyager MAG Summary Tapes: Formats and Coordinates

The Voyager MAG/PLS Summary tapes for Saturn are essentially identical in format to the Jupiter Voyager tapes, only a few names have changed consistent with the particular encounter. For example, where we used System III for the Jupiter encounter (i.e., the "rotating system") we now use for Saturn the L1 coordinate system. L1 is identical to the Desch and Kaiser SLS system, as far as Saturn's rotation period and phase are concerned; see Desch, M. D., and M. L. Kaiser, Voyager Measurements of the Rotation Period of Saturn's Magnetic Field, Geophys. Res. Lett., 8, 253, 1981.

The MAG portion of the Summary Tapes are described on pp. 1.15-1 through 1.15-9 of GSFC-X-694-76-242, "Commonly Used Digital Tape, Disk and Card Formats," (Revised Feb. 1981), and I have attached p. 1.15-4, which shows the relevant blocks of MAG-averages. Notice the components B_1, B_2, B_3. These correspond to B_R, B_T, B_N, respectively, in the (spacecraft centered) Heliographic (HG) coordinate system, for which we also have supplied Jupiter and Saturn encounter tapes. But in the L1 ($\equiv$ SLS) system B_1, B_2, B_3 correspond to B_r, B_θ, B_ϕ, respectively, which are in a spacecraft centered system whose basis is the following set of orthogonal unit vectors (see Fig. 1):

$\hat{r}$, along the Saturn-spacecraft line, positive away from Saturn;

77-0844 05E

$\hat{\theta}$, perpendicular to $\hat{r}$ and parallel to a Saturnian meridian plane, positive southward; and

$\hat{\phi}$, equal to $\hat{r} \times \hat{\theta}$, which is parallel to Saturn's equatorial plane and positive eastward, i.e., in the direction of planetary rotation.

Obviously the absolute directions of $\hat{r}$, $\hat{\theta}$, and $\hat{\phi}$ will depend on the spacecraft position at any instant, but they do not depend on the period or phase of Saturn. On the other hand, on the L1 tapes the angular representation of the field's direction, given by DELTA (δ_{L1}) and LAMBDA (λ_{L1}) on p. 1.15-4 in the "Formats" document, does depend on the planet's period and our chosen phase. These angles reflect the Desch-Kaiser SLS chosen period/phase. The attached sketch (Fig. 2) gives the definitions of these angles. Notice that for an inertially fixed S/C and fields represented in the L1 system λ_{L1} will go through 360° every 10 hours, 39.4 min.

Usually for model-fitting of the planetary field it is the components B_r, B_θ, B_ϕ, and knowledge of the S/C position in the same spherical system that are used, not λ_{L1} and δ_{L1}. Since in model field fitting the S/C position must be represented in a planet-fixed system, i.e., rotating, then the spin period and phase chosen to represent the planet's rotation (SLS in our case) become important.

Ron Lepping

R. P. Lepping

77-084A-05E
77-076A-05E

RELATIVE WORD	TYPE*LEN	DESCRIPTION
	--------	48 sec av (ROTATED) --------
1	R*4	F1: average of 9.6 sec norms in gammas
2	R*4	F2: norm of (B1,B2,B3) in gammas
3	R*4	DELTA: arsin(B3/F2) in degrees
4	R*4	LAMBDA: 180 - atan(B2,-B1) in degrees
5	R*4	B1: average of first 9.6 sec component in gammas
6	R*4	B2: average of second 9.6 sec component in gammas
7	R*4	B3: average of third 9.6 sec component in gammas
8-10	3(R*4)	RMS: rms vector in gammas
11	I*4	N: number of 9.6 sec avs that make up this average (le 5)
	--------	9.6 sec av (ROTATED) --------
12-16	5(R*4)	F1: averages of 1.92 sec norms in gammas
17-21	5(R*4)	F2: norms of (B1,B2,B3) in gammas
22-26	5(R*4)	DELTA: arsin(B3/F2) in degrees
27-31	5(R*4)	LAMBDA: 180 - atan(B2,-B1) in degrees
32-36	5(R*4)	B1: averages of first 1.92 sec component in gammas
37-41	5(R*4)	B2: averages of second 1.92 sec component in gammas
42-46	5(R*4)	B3: averages of third 1.92 sec component in gammas
47-61	15(R*4)	RMS: rms vectors in gammas (3 X 5)
62-66	5(I*4)	N: Number of 1.92 sec avs that make up this average (le 5)
	--------	1.92 sec av (ROTATED) --------
67-91	25(R*4)	F1: averages of detail point norms in gammas
92-116	25(R*4)	F2: norms of (B1,B2,B3) in gammas
117-141	25(R*4)	DELTA: arsin(B3/F2) in degrees
142-166	25(R*4)	LAMBDA: 180 - atan(B2,-B1) in degrees
167-191	25(R*4)	B1: averages of first detail component in gammas
192-216	25(R*4)	B2: averages of second detail component in gammas
217-241	25(R*4)	B3: averages of third detail component in gammas

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77-070A-05

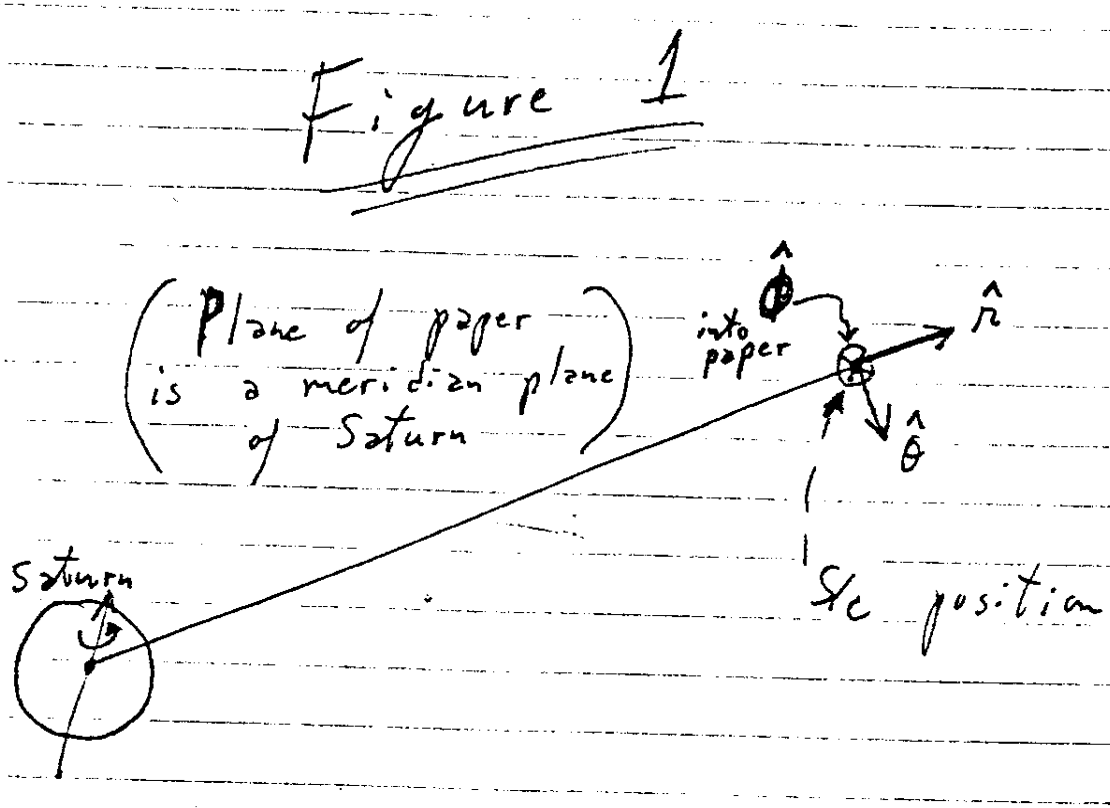

Figure 1. Notice that $\hat{r}$, $\hat{\theta}$, $\hat{\phi}$ depend on the position of the spacecraft (S/C) relative to Saturn, but not on Saturn's period or rotational phase.

77-064A-05[illegible]
77-076A-[illegible]

Figure 2

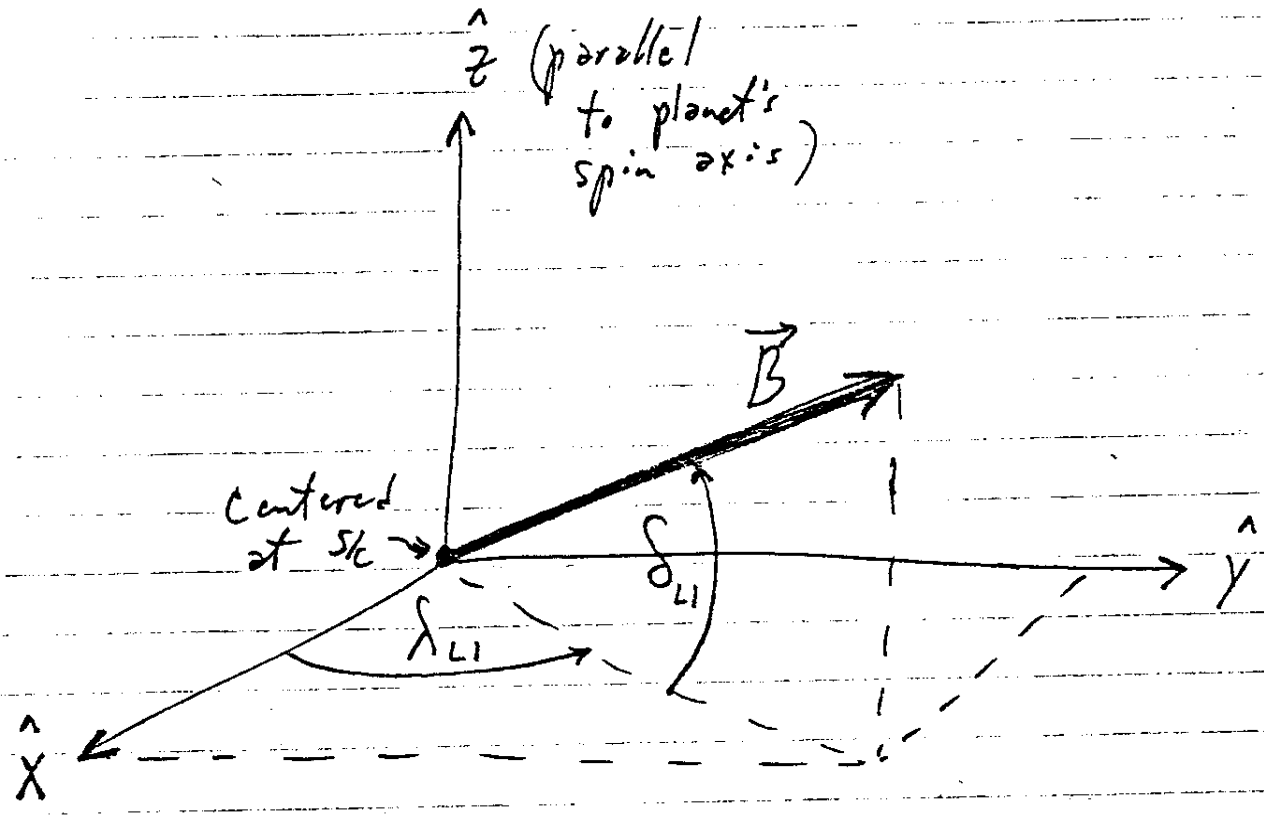

Figure 2. $\hat{X}$-$\hat{Y}$ plane is parallel to the equatorial plane of Saturn, and the $\hat{X}$ and $\hat{Y}$ axes rotate at the SLS period ($10,^h$ 39.4). And $\hat{X}$ is parallel to the $\hat{x}$-axis (at Saturn), which is the intersection of the planet's (SLS)* prime meridian plane and the equatorial plane, positive away from the planet's center.

See Desch and Kaiser, Geophys. Res. Lett., 8 253, 1981.

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Revised Ion Temperatures for Voyager Plasma Measurements in the Io Plasma Torus

Fran Bagenal*

Ralph L. McNutt, Jr.

John W. Belcher

Herbert S. Bridge

James D. Sullivan+

(617) 253-7501

Center for Space Research

Massachusetts Institute of Technology

Cambridge, MA 02139 USA

October, 1984

*Now at Imperial College, London

+Now at the Plasma Fusion Center, MIT

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ABSTRACT

We have discovered that an error was made in computing ion temperatures for some of the results derived from the positive ion data from the Plasma Science (PLS) experiment on the Voyager spacecraft. The reported results directly affected by this error are the ion temperatures in the inner magnetosphere of Jupiter given by Bagenal et al. (1980) and Bagenal and Sullivan (1981) plus a single ion temperature calculated from Voyager 1 data obtained in Saturn's magnetosphere and quoted by Bridge et al. (1981). The ion temperatures quoted for the torus region in the original Jupiter *Science* article (Bridge et al., 1979) and all of the ion temperatures in the middle magnetosphere of Jupiter (McNutt et al., 1981) were derived independently and are unaffected by the error.

DISCUSSION OF ION TEMPERATURE MEASUREMENTS

We are currently reanalyzing much of the positive ion data obtained by the Voyager PLS experiment during the Jupiter encounters. In the course of that analysis it became apparent that some ion temperatures obtained in previous work were a factor of two lower than those derived from the current analysis program. This discrepancy was traced to an error which affected some but not all of the earlier results.

The error, which caused the ion temperature to be quoted at half of the correct value, was introduced because the "ion thermal speed" was defined inconsistently in separate parts of the analysis of the torus data. The energy-per-charge spectra obtained by one of the PLS detectors during the inbound traversal of the Io torus are shown in Figure 5 of Bagenal and Sullivan (1981). In the initial analysis of these spectra each ionic species was assumed to have an isotropic reduced distribution function in velocity space which could be described for a specified direction (such as along the detector normal) by a Maxwellian function

$$f(v) = nw^{-1} (2\pi)^{-1/2} \exp\{-(v-V)^2/(2w^2)\} \qquad (1)$$

involving three independent parameters: the bulk speed of the ions in the specified direction V, the total number density n, and the thermal speed w. For the above form of f(v), w is related to the ion temperature by $w = (kT/m)^{1/2}$ where m is the mass of ion. The error occurred when the values of the ion thermal speed derived from the data in this way were later converted to ion temperatures using the more common definition of $(2kT/m)^{1/2}$ for the thermal speed. Thus the ion temperatures that emerged from the analysis were a factor of two lower than they should have been. Although the values derived for local density and bulk speed are obviously not affected by this error, the underestimate of the ion temperatures has two major effects. First, the incorrect ion temperatures were used to calculate scale heights for different ionic species. Since these scale heights form the basis for the two dimensional plots of plasma density in the torus (as a function of cylindrical radial distance and distance from the centrifugal equator, z), the contour plots given by Bagenal et al. (1980) and Bagenal and Sullivan (1981) are

incorrect. In addition, values of the flux tube content per unit L times the L-shell parameter squared (NL^2), derived using these temperatures, are underestimates by about a factor of $(2)^{1/2}$. The following section contains a summary of published results affected by this error in calculating the ion temperatures.

SUMMARY OF THE EFFECTS ON PUBLISHED RESULTS

The ion temperatures derived by Bagenal and Sullivan (1981) and shown in Figure 7 of that paper should be increased by a factor of two, as should the ion temperatures in Figure 1 of Bagenal et al. (1980) (however, see the following section for a discussion of the inherent uncertainties in the ion temperature determination). The temperatures inside of 10 R_J only, shown in Figure 11 of McNutt et al. (1981), should also be increased by a factor of two. With regard to the single incorrect estimate in Saturn's magnetosphere, the thermal speeds quoted in Figure 5 of Bridge et al. (1981) for ions with mass to charge ratios of 1 and 16 should be 38 and 28 km sec^{-1} respectively, where thermal speed is defined as $(2kT/m)^{1/2}$.

The ion temperatures in the inner magnetosphere of Jupiter were used to extrapolate the local measurements of ion density away from the spacecraft location along magnetic field lines; these extrapolated values of ion density describe the spatial distribution of plasma in the Io torus and were given in the form of density contour plots by Bagenal et al. (1980) and by Bagenal and Sullivan (1981).

Correction of the ion temperatures results in a torus which is more extended in latitude than that shown in these papers. If we approximate the density distribution along a field line as a Gaussian function

$$n(z) = n(z=0) \exp \{-(z/H)^2\} \qquad (2)$$

where the scale height $H \propto (T)^{1/2}$, it is evident that the two-fold increase in temperature means that the torus should be ~40% more extended in the z-direc-

tion. The spatial distribution of torus plasma has been re-calculated in the same manner as Bagenal and Sullivan (1981) using temperatures corrected by a factor of 2. The resulting map of positive ion charge density (in elementary charges/cm^3) is shown in Figure 1.

If we take the boundary of the plasma torus to be defined as the 250 cm^{-3} contour of the electron density map, the total volume was estimated to be $7.7 \times 10^{31} cm^3$ (212 R_J^3) before correcting the temperature. Using the corrected contour map in Figure 1, the volume is increased by 30% to $1.0 \times 10^{32} cm^3$ (287 R_J^3) and is equivalent to a uniform torus with major and minor radii of 6.0 and 1.56 R_J respectively. Only 3.0% (27%) of this volume is occupied by charge densities of over 2000 (1000) cm^{-3} while these regions of high density contribute 9% (48%) of the total of 9.1×10^{34} elementary charges. As an aside, we note that the <u>average</u> density is only 875 cm^{-3}; this is considerably less than values generally used in the literature for the Voyager 1 epoch in studies of the torus.

Values of the quantity NL^2 have been derived using the scale height approximation for the density distribution given in equation (2) and integrating over z to obtain

$$NL^2 = \Sigma\, 2\pi^{3/2}\, R_J^2\, L^3\, n_i(z=0)\, H_i \qquad (3)$$

Thus the erroneous ion temperatures caused the value of NL^2 to be underestimated by a factor of $\sim(2)^{1/2}$.

Values of NL^2 derived from the Voyager data have been used by various authors to calculate rates of plasma diffusion in the torus region (Richardson et al., 1980; Richardson and Siscoe, 1981; Siscoe et al., 1981; Richardson and Siscoe, 1983; Cheng et al., 1983). Tokar et al. (1982a) used the plasma distribution derived by Bagenal and Sullivan (1981) to calculate the dispersion that would be expected if the whistlers observed by the Voyager Plasma Wave experiment had traveled from the ionosphere of Jupiter to the spacecraft. The electrons accompanying the torus ions were insufficient to produce the observed dispersion and Tokar et al. (1982b) inferred that light ions, such as protons, had escaped from Jupiter's ionosphere and populated the mid-latitudes

between the torus and the ionosphere, contributing a further 10%-20% to the total electron content of these L-shells. Correcting the ion temperatures by a factor of two in the warm torus would increase the total plasma content by ~40% which may produce far greater frequency dispersion of the whistlers than observed (however, see the discussion concerning temperature below). Without repeating the work of Tokar et al. (1982) it is not possible to accurately determine the constraint placed by the observed whistler dispersions on the total flux tube content.

Finally, another important quantity that was derived from the PLS ion measurements was the Alfven speed in the torus. Since the Alfven speed is inversely proportional to only the square root of the local mass density, the corrected ion temperatures produce little change in the contour map of Alfven speed shown in Figure 15 of Bagenal and Sullivan (1981). The average time taken by an Alfven wave to travel along field lines between Io and the ionosphere of Jupiter (Bagenal, 1983) should be increased by ~20% to 400 seconds due to the extension of the torus. The range in travel times due to the variation in Io's position in the torus becomes about 200 to 800 seconds.

UNCERTAINTIES IN THE MEASUREMENTS OF ION TEMPERATURES

The ion data obtained inside ~5.7 R_J allowed accurate determination of the temperatures of the major ionic species (Bagenal and Sullivan, 1981; Bagenal, 1984). In this cold inner torus then, the factor of two correction to temperatures discussed above reflects the physical conditions in that region. However, outside of ~5.7 R_J, in the warm torus, there are inherent difficulties in the determination of ion temperatures. We currently feel that an increase of a factor of two in published ion temperatures in that region, although mathematically correct, probably is not physically realistic; on physical grounds an increase in published values of a factor around 1.5 is probably more appropriate in the warm torus for the following reasons. Firstly, the broad velocity distributions of the warm plasma produce a very flat energy-per-charge spectrum in which the individual peaks of the ionic species cannot be resolved. Thus the parameters V, n and w for each species are not well-

constrained by the data. Imposing the condition that all the ions should have the same temperature would reduce the number of free parameters and improve the fit.

However for the isothermal approximation to be valid the time scale for thermal equilibrium between the different heavy ion species must be appreciably less than the characteristic time for diffusive loss. For the thermal (~60 eV) multi-species torus plasma ions the time for equilibration via ion-ion Coulomb collisions is about 5 days and the diffusion time scale is 10 to 100 days. Thus the isothermal assumption is probably reasonable for the bulk of the ions. However new ions are continuously created at pickup energies of 300 to 600 eV and these ions maintain a high energy tail in the ion distribution at energies well above the peak of the thermal distribution. This hot component will broaden the energy-per-charge spectra and increase the ion temperatures derived under the assumption of thermal equilibrium. A preliminary inspection of the high energy tail of the spectrum suggests 10%-20% of the ions are hotter than the thermal population. These numbers are consistent with both theoretical studies (Barbosa et al., 1983; Richardson and Siscoe, 1983) and spectral observations of optical emissions from S^+ ions reported by Brown (1982).

A study of the ionic composition of the warm torus using data from both the PLS detector and the Voyager Ultraviolet Spectrometer is in progress and it is hoped that, as a result of reducing the number of free parameters, the ion temperature can be better constrained. Meanwhile, the original analysis of Bagenal and Sullivan (1981) probably over-estimated the width of the velocity distributions because of the presence of non-thermal tails, and hence we believe the temperature of the thermal ion population outside 5.7 R_J to be only a factor ~1.5 greater than their results, and not the full factor of two. We must be cautious in comparing local measurements made by Voyager 1 in 1979 with remote observations made using ground-based telescopes over a period of several years. Nevertheless, we suggest that the ion temperatures reported here are consistent with the temperatures of S^+ and S^{2+} ions obtained from spectral measurements of line emissions by Trauger et al. (1980), Brown (1981, 1982) and Roesler et al. (1982).

ACKNOWLEGDEMENTS

This work was supported by NASA under contract 953733 to MIT from the Jet Propulsion Laboratory.

Figure Captions

Figure 1.

Revised isodensity contour map of positive charge density (in elementary charges/cm^3) as a function of centrifugal distance and height above the centrifugal equator.

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2. Bagenal, F., and J. D. Sullivan, Direct plasma measurements in the Io torus and inner magnetosphere of Jupiter, *J. Geophys. Res.*, *86*, 8447, 1981.

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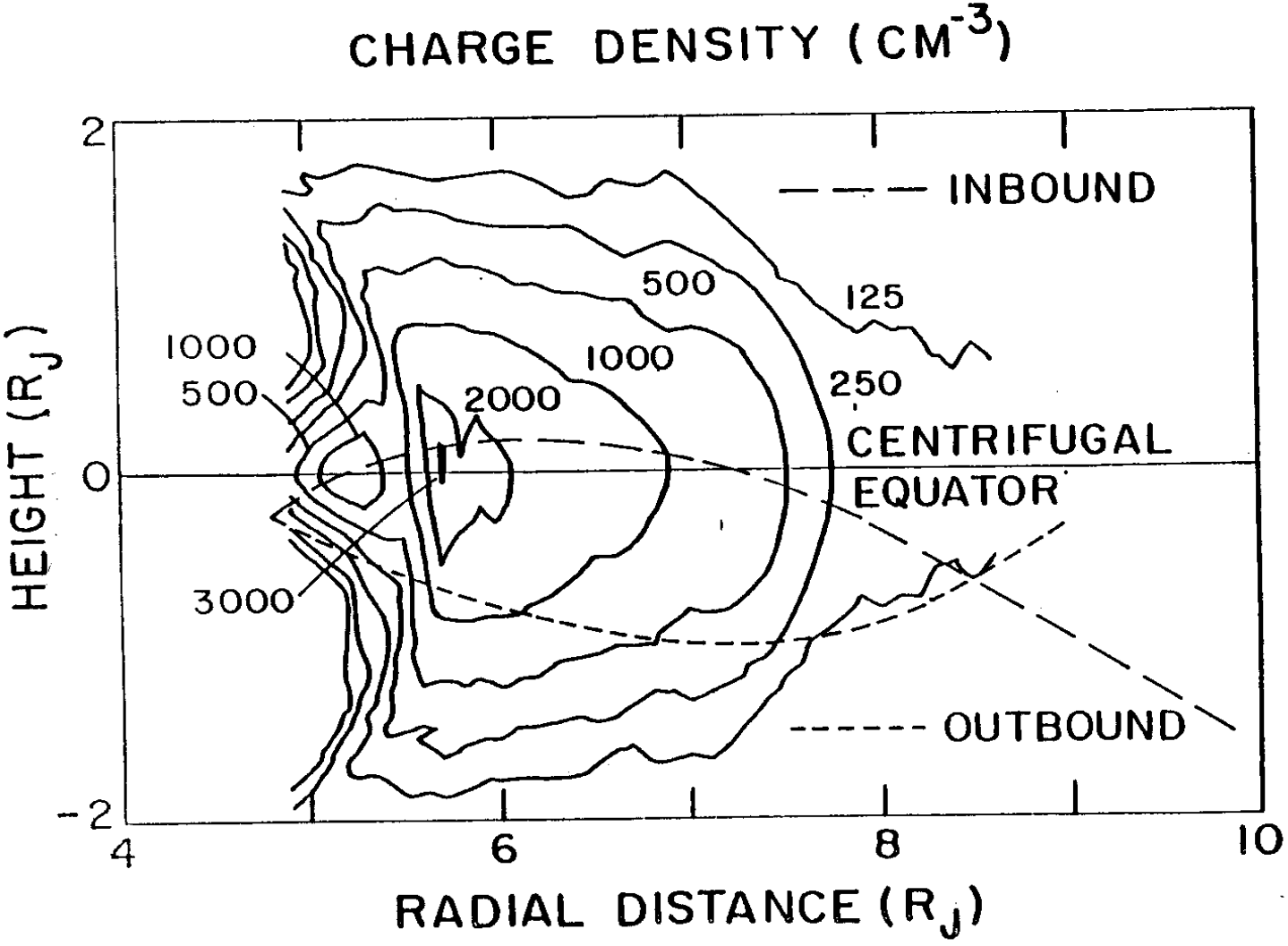
CHARGE DENSITY (CM^{-3})
INBOUND
500
125
1000
1000
250
500
2000
CENTRIFUGAL
EQUATOR
3000
OUTBOUND
HEIGHT (R_J)
2
0
-2
4
6
8
10
RADIAL DISTANCE (R_J)

FIGURE 1

Voyager (HG)

D-41950

3/07/79 - 3/12/79

'05A'

RECORD 1 OF FILE 1
LENGTH = 17360 BYTES

43D00000	01940000	C8C4D9F1	C7E260F3	C6D3E3F1	004F0042	00170015	00200153	000007BC	08000081
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D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
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43F141EB	4413DD21	4418D694	441E381C	44242B07	442AD54C	44325DE6	443AEEE6	4444B6CC	444FEA66
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3F3A3867	3F47A637	3F437FCF	3F35CCD6	3F2F2DE9	3F359381	3F31C402	3F301AD4	3F32EA94	3F298C35
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RECORD 2243 OF FILE 1
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2243 RECCRDS IN FILE 1 OF TAPE

DUMP OF TAPE ROUT1

Voyager 1 (S-3)
D-41956
3/2/79 - 3/7/79
(Resubmitted to NSSDC 9/20/89)

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INPUT TAPE   ROUT1    ON   HT1
DATA INPUT     HS NF 1 FL 1 1 1
DATA INPUT     $4
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FILE 1 RECORD 1 LENGTH 17540 BYTES

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(4)	4322FFFF	F495B50D	E2C3C5E3	421EB852	3FBAJ013	00010002	FF00FFFF	00000000	00030000	77777777
(8)	4[illegible]4 4[illegible]4	4[illegible]4[illegible]40	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(12)	77777777	[illegible]0[illegible]8[illegible]	[illegible]	[illegible]007[illegible]1E8	[illegible]FC[illegible]1	00[illegible]2[illegible]E4	3053[illegible]5E	41F5C28C	[illegible]0000000	00000000
(16)	3C0[illegible]0000	C0030000	00030000	00000000	00[illegible]0000	[illegible]0[illegible]0000	007[illegible]000	46506B8E	C0000000	77777777
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(68)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(72)	77777777	77777777	77777777	77777777	4323[illegible]001	B4A9F805	432300001	B4A9F805	C22C1749	4213DC56
(76)	411BF7[illegible]	[illegible]0000000	[illegible]0[illegible]0	00000000	423C63A5	41218C4E	41835DD8	40FD35FF	C0248910	3F93F316
(80)	3F91E8E8	BF1E2[illegible]F4	CCFFDE3C	40248F38	40FDE043	[illegible]CCCCCCC	3E62E84E	BF47A7A5	CCFFF5E5	C0CCFAE3
(84)	C499575F	3F25FFAA	C0995BF4	40CCF1E4	BF3C0E1A	40181841	4018DE87	C0FDAE62	409AE489	C0CC2E24
(88)	BF55975E	C0CAD2F7	C09868BA	C0223404	77777777	77777777	77777777	77777777	77777777	77777777
(92)	77777777	77777777	77777777	77777777	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE
(96)	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE
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(116)	[illegible]0650[illegible]3D	[illegible]06[illegible]6A	[illegible]063[illegible]6B	[illegible]052[illegible]10	[illegible]0581044	[illegible]0550727	[illegible]0034[illegible]21	[illegible]0034[illegible]0D	FFFEFFFE	FFFEFFFE
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(124)	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE
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(136)	CC7D0078	00780078	00780[illegible]7A	00740079	00780077	00720073	00750072	0074007E	00720073	00760076
(140)	[illegible]071[illegible]78	[illegible]07B[illegible]78	[illegible]076[illegible]71	C0790076	CC720C6A	0C6E0074	C072CCE7	CC5FCC58	C06DCC5D	005E0050
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(148)	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE
(152)	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE
(156)	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE
(160)	FFFEFFFE	FFFEFFFE	[illegible]071[illegible]71	[illegible]07F[illegible]73	007D007B	007A007A	007C0085	007E007B	00780078	007C007B
(164)	00840079	007D007D	00780078	007D0075	0075007D	00730078	007B0078	007A0077	0075007A	0073006C
(168)	CCEEC06C	006C0062	C0620061	C05B0067	C0590063	00630066	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE
(172)	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE
(176)	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE
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(240)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
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(436)	40248F38	40FD6 43	00 00 0	3E7353A7	BF47CCA3	C0FFF5D4	C0CCD3BC	C0998BD3	3F2E4DB0	C0999032
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(1576)	3F91EB26	BF183166	C0FFD542	4029DF63	40FC8D67	00000000	BF41CF3E	BF787DCF	C0FFDB33	C0CCB459
(1580)	C0998763	3F7CEC9C	C099AC16	40CCB70A	BF38D6CB	4017DB37	40191112	C0FDA682	409AA271	C0CBF15E
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(1596)	77777777	77777777	77777777	77777777	CCC4C0C0	00CCCC39	0012C1E8	C0850CC9	C033C032	00350036
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(1608)	42A9AD75	42AC36BE	42B52163	42E3C78B	C1447FB0	C213D9B0	42B98810	42BAA3B5	4163F0AE	C2662BB9
(1612)	4263C4CC	42EF[illegible]EE5	426 F34A	4230C[illegible]23	4081B77C	40FCA27C	42698E21	411ABEA3	3E7931B1	422AB06E
(1616)	4226233B	4229CC7[illegible]	C21F7[illegible]F3	417C1EB1	3D227E28	4222[illegible]E8E	4211E1B5	42EF8358	406B326C	427C2875
(1620)	41113559	7FFFFFFF	4221C584	4210D48B	42BF85DA	40218133	42F67772	41100000	7FFFFFFF	4090EC1F
(1624)	42220E8E	42115185	42BF8358	406B32EC	427F2BA2	427A9FC5	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF
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(1640)	C2B138[illegible]E	C2B8E217	412EA98E	C23ED82E	42C3497D	C212C5AB	C2B34C51	C2B8F7AD	412A23FF	C23E5420
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(1668)	BF8BA5EC	C0FFC7BF	CCCCC4EC	C0994FDD	3FA0DBE4	C0998EEA	40CCD473	BF33FE45	4017C745	40193269
(1672)	C1FDAE14	409A7B7F	CCCC[illegible]9A	BF8C9CF5	C0CABEDE	C[illegible]8E8CB	C0222E84	77777777	77777777	77777777
(1676)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	004B0C5E	00620059	005C0065
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(1712)	[illegible]E4[illegible]7D	[illegible]7E[illegible]86	[illegible]7F[illegible]86	CC880088	CC880089	008E0CEC	008BCC87	CC7FCC8A	C089CC87	0087C07F
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FILE 1 RECORD 2101 LENGTH 15704BYTES

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(168)	40B35F27	C170B325	C1717DAD	C1738444	C1760766	C17620A9	C177F1F8	C1793EBC	C178EFFF	C177971A
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(200)	3F3CD415	3F37BAF9	3F3 24F1	3F593543	3F511F8E	3F5827D1	3F48E8BC	3F3631A0	3F4B3534	3F2BD7B0
(204)	3F356664	3F2E0695	3F787169	3F48B971	3F6ECA8C	3F6E12D3	3F43AAC8	3F3D4DA5	3F9642SD	3F4682CC
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(216)	CCC C2	0CCC 2	CC 2C	CCCCC20	CCCCC20	0CCCC2C	00CCCCCC	CCCCCCC	CCCCCCC	00000000
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(224)	0000 0000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
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(396)	0000002F	0000FFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF	00000037	003BFFFF
(400)	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF	FFFFFFFF	C2ACCCCC	C5F24C4C	C7E260F3	C6D3E3F1
(404)	[illegible]	[illegible]	[illegible]	4241F894	888CADA7	43234F89	4888CADA	E2C3C5E3	413D7CA4	4C4F001A
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(416)	[illegible]	[illegible]	411EB851	41143EA8	C1B9CAC6	41C7A4DB	42111789	42111788	3F456A09	3F30CCDE
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(456)	CCCCCCCC	BF33F6F9	40229132	C0FDA27C	BF9A71BB	40FD754A	4022AAB1	40FFCC1E	3FA00DE4	BF1E983E
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(476)	4C4F001A	[illegible]0017777	CCA [illegible]011	30643C54	CCC1CCC2	77777777	40404040	40404040	77777777	77777777
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(484)	421116F6	421116BD	412C7A3A	42D7B3CD	42101210	4071F5D9	C15CB0EC	40101525	4019C5C5	4020A86B
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(496)	42D777E3	41FF6796	42102231	42102235	42101083	42100EFB	405F0CDC	404CB51C	40724889	408F2A20
(500)	408CC8AC	C15FDCE3	C15AAD20	C15A5FD0	C15CBC33	C15DDB33	4019AB46	401D94C0	403DFB38	3F4E2369
(504)	3F6CA1A2	3FD715A5	3F777E9B	40147963	3F992E2D	3F275B23	3F46C931	3F28D960	3F2BAA54	3F7586CB
(508)	3F5 E9D2	[illegible]5	[illegible]5	[illegible]5	[illegible]5	[illegible]5	42110D93	42110E82	42110C90	42110B99
(512)	421116A4	42111BA0	42111A4D	42111970	421118A6	42111B7B	42111FB3	42111C98	4211177B	4211157F
(516)	42111691	42111926	421114E6	421115E2	42111634	42111532	42111A4C	42111D1E	42111A18	4211185C
(520)	42111CF5	4211CFA1	4211[illegible]8F	4211[illegible]8FD	42110B91	421116A4	42111E9B	42111A4B	4211197B	421118A5
(524)	42111B7C	42111FB2	42111C98	42111777	4211157E	42111690	42111925	421114E6	421115E1	42111635
(528)	42111E3[illegible]	42111A4B	42111D1B	42111A17	4211184E	42111CF6	41286A56	412A9118	412DA0CE	4136E73E

Voyager 2
D-41959
6/19/79 - 6/24/79

36?

RECORD 1 OF FILE 1
LENGTH = 17144 BYTES

HDR1 G5-3 FLT 1 79

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RECORD 2264 OF FILE 1
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2264 RECORDS IN FILE 1 OF TAPE

Voyager 2 (5-3)
'05B'
D-43083
7/04/79 - 7/08/79

RECORD 1 OF FILE 1
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1377 RECORDS IN FILE 1 OF TAPE

VOYAGER 1 H-G Coor.
D-46723
C-21807
1 file
3/2/79 - 3/7/79

RECORD 1 OF FILE 1
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2154 RECORDS IN FILE 1 OF TAPE

Vol 1 S-3 Coor.
D-46724
C-21808
3/02/79 - 03/07/79
Encounter Data

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LENGTH = 17200 BYTES

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446EED33 447C8F99 4490274C 44AEEC60 4317D4CC 4315C4CC 4314E599 4313C4CC 43134E33 431304CC
4312E4CC 4312E199 4312F666 43131E66 43135666 43135CCC 4313F000 43144E66 4314E599 43152E66
4355E000 434C2000 434D0000 43522000 435A1000 43645000 4370F000 43E02000 43520000 43A6F000
43EF7000 43DEF000 43FC0000 44123500 4414FE00 441E3000 411555E1 4116ED51 411553F7 411420C4
41136937 4112F9DE 41128B43 4112312E 4111EEE5 4111E22D 41117CED 411153F7 41113333 4111126E
4110F5C2 4110E147 00000000 00000000 00000000 00000000 41100000 41100000 41100000 41100000
41100000 41100000 41100000 41100000 41100000 41100000 41100000 41100000 3F2EF5C2 00010005
00100010 4516EFC0 4516EFC0 00020005 00030007 3F3A52A3 3F3A52A3 41100000 41100000 41599999
41219999 41100000 42230000 C51EEA00 C519A2E0 C51A9CE0 C51B5800 C51C5200 C51D4C00 C51E4600
C51F4000 C5203A00 C5213400 C5222E00 C5236EEC C5249F00 C525D7E0 C5271C00 C5284E60 C5298100
C52AE980 C52EF200 C52D2A80 C52E6300 C53018E0 C531CE00 C53383E0 C5353900 C536EE80 C5399E00
C53C4DE0 C53EFD00 C541AC80 C5445C00 C5484400 C54C2C00 C5501400 C553FC00 C557E400 C55CC600
C561A800 C5668A00 C56E6C00 C5704E00 C5762A00 C57C0600 C581E200 C587EE00 C58D9A00 C5927C00
C5975E00 C59C4000 C5A12200 C5A60400 C5AEE000 C5E1EC00 C5E79E00 C5ED7400 C5C35000 C5CA2600
C5D0FC00 C5D7D200 C5DEA800 C5E57E00 C6118C30 C614CCE0 C61E1BEC C61E5030 C61E8480 C6249F00
C62AE9E0 C630D400 C636EE80 C63D0900 C6445CC0 C64EAF00 C6530200 C65A550C C661AE00 C66E6C00
C67E3000 C67EF400 C688E800 C6927C00 C6AD37A0 C6ADF340 C6EA2840 C6C7E3E0 C6D59F80 C6E66860
C6F73140 C7107FA2 C7118C30 C71296EE C713A54C C714E1DA C715EEEE C716CAFE C717C7E4 C7192D50
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C729020C C72AEA54 C72CD29C C72EEAE4 C730D4C0 C732ED1C C73506E8 C7371F54 C7393870 C73BE40E
C73EEFA0 C7413E38 C743E6D0 C74692EE C74A0150 C74D7038 C750DF20 C7544E0E C757ECF0 C75B8D80
C75F5E10 45124F80 45155CC0 4516EA00 4519A2E0 451ADE00 451C13E0 451D4C00 451E8460 451FFE80
45217280 4522E980 452460E0 4525D7E0 4527ED00 452942E0 452AFE00 452CAD80 452E63C0 45309580
4532C800 4534FA80 45372D00 45395FE0 453ED0E0 453E41E0 45408260 45432380 45459460 4548C100
454EED80 454F1A00 45524680 45557300 45595B00 455C4300 45612B00 45651300 4568EF00 456D6000
4571C500 45762A00 457A8F00 457EF400 4583D600 4588E800 458D9A00 45927C00 45975E00 459D3A00
45A31600 45A8F200 45AECE00 45B4AA00 45BA8C00 45C0EE00 45C35000 45CE2200 45CC1400 45D75500
45E19600 45EED700 45F69500 46100590 46150EA0 461A17E0 461F20C0 462425D0 462932E0 463037C0
46373CA0 463E4180 464546E0 464C4E40 46543AE0 465C29C0 46641900 466C0E40 4673F780 467E57C0
466EE800 46931840 469D2AE0 46A7DEC0 46E594E0 46C3E6C0 46D10EA0 46DEC740 46EC82E0 46FD4EC0
4710E14A 4711EDC8 4712FA66 471406F4 47155CC0 4716E2EC 4718E55E 47195E24 471AE3F0 471BF152
471D2EE4 471E8480 471FF2E6 472160EC 4722E76C 47249F00 4726E674 4728CDE6 4729FE30 472EDE78
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47450EC8 47481908 474E2648 474E33EE 4751A270 4755115E 4756E040 475EEF2E 475F5E10 423ECCCC
425A06E9 42769999 42944CCC 42B46B65 42D7F0A3 42FFBD70 4312CB5C 4315FDC2 4319A400 431DD214
43229E3D 43282214 432E7AE1 4335CAEF 433E37D7 422EC5A1 424BD439 426E3E51 4284FE51 42A39EEE
42C53E51 42EAA8F5 43114CF5 431449EB 4317E199 431E596F 43200DC2 43252EE1 432E1547 4331E07A
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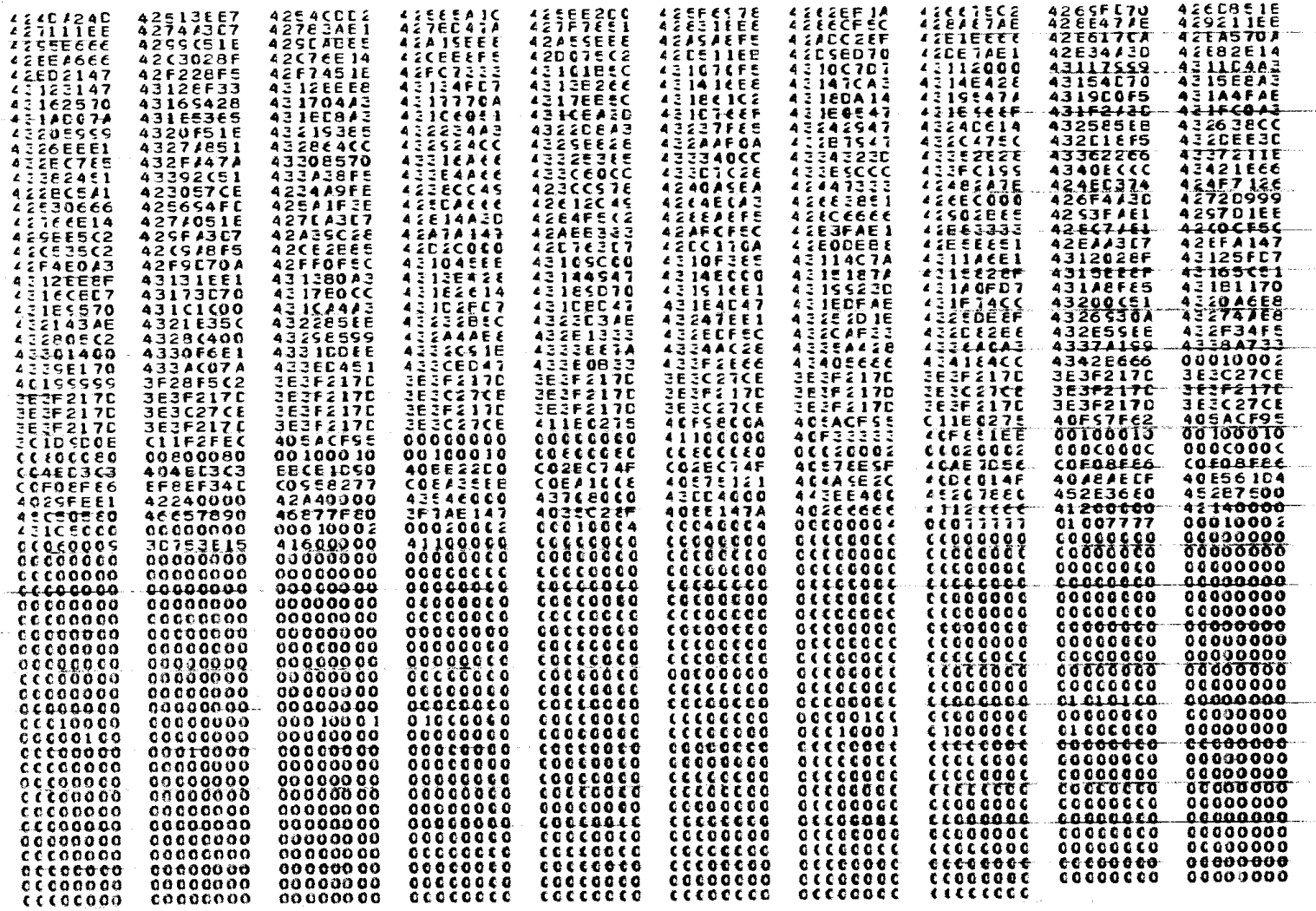

2154 RECORDS IN FILE 1 OF TAPE

DUMP OF TAPE JJ0086

INPUT TAPE JJ0086 ON TU0
DATA INPUT HS FL 1 1 1

D-60880
08/22/81 - 08/28/81

'05D,06D'

YR. DAY HR. MIN.
81 235 22 6

FILE 1 RECORD 1 LENGTH 18196BYTES

(0)	47140000	01940000	C8C40FF1	C7E262F3	C6D5E3F1	00510E5B	00160006	00170E5B	00000FFF	00000000
(40)	D1E4D3E8	00000018	C3D9E4C9	E2C54040	C8C74040	00000000	00000000	00000000	00080000	00000000
(80)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00013C44	F0F0F5F6	F0F94040	D5D6D5C5	40404040	D5D6D5C5	40404040
(160)	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(200)	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(240)	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(280)	01010100	00000001	00000000	00000000	00010001	01000000	01000000	00000000	00000100	01000000
(320)	00000000	00000000	00000100	00000000	00000001	00000000	00000000	00000000	00010001	01000000
(360)	01000000	00000000	00000000	00010000	40404040	40404040	40404040	40404040	40404040	40404040
(400)	00000000	00000000	10447000	C8C4D3F3	00000000	00000000	00E100E5	00160006	00170E5B	00000000
(440)	00000000	00000030	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000A0000
(480)	00000000	00000000	00000000	00000000	00020000	00000000	00000000	00000000	00000000	00000000
(520)	00000000	00000000	00000000	00000000	00020400	00040000	00000000	00000000	00000000	00000000
(560)	00060006	00000000	0006FFFE	438137AE	439804F5	43AD2C28	43C15333	43D4DB0A	43F80385	43FAF8F5
(600)	4410DDCF	44120C99	4413B540	4414702E3	4416A874	4416E4DE	44192607	44196F19	441ABE34	441C4147
(640)	43F141EB	4413DD21	44197694	44183810	44240B07	442ADE6C	443258E6	443AEEE6	4444B6CC	444FEA66
(680)	445CC5B3	446B8D33	44708F99	44902740	44A6B080	4317D4CC	4315C4CC	43149999	4313C4CC	43134CC3
(720)	431304CC	4312E4CC	4312C199	4312F666	43131B66	43136666	43139CCC	4313F000	43144E66	4314A999
(760)	43152E66	43BE0000	434C0000	43DC0D00	43E22000	43EA1000	43645000	437CF000	43802000	43920000
(800)	43A6FCCC	43BF7000	43D9F000	43FD0000	44123500	4414F000	44183000	4419FF81	4416ED91	4417F3F7
(840)	411420C4	41138F37	4111F87B	41128643	4112B1D6	4111E8B8	41118C3D	41117CFD	41115BF7	41113B3E
(880)	41111126	4110F3C7	41100147	00000000	00000000	00000000	00000000	41100000	41100000	41100000
(920)	41100000	41100000	41100000	41100000	41100000	41100000	41100000	41100000	41100000	3FC8FC00
(960)	00010005	00100010	45166FC0	45166FC0	00020005	00030007	3F3A92A3	3F3A92A3	41100000	41100000
(1000)	41599999	41313598	41100000	42430000	C5126A00	C513A280	C51A9C8C	C5185800	C5103200	C5104000
(1040)	C51E4600	C51F4000	C5203A00	C5217400	C5002F00	C5036600	C5049F00	C5071000	C5084800	C5098000
(1080)	C5298100	C52AB980	C52C7200	C52D8A80	C52E6700	C52F1980	C5310E00	C5358380	C5383900	C53E6E80
(1120)	C53B9E00	C53C4D80	C53F5C00	C5414C80	C5446C00	C5494400	C54CCC00	C5501400	C553FC00	C5578400
(1160)	C55CC600	C5614800	C5668A00	C56B6C00	C5704E00	C5762A00	C57C0600	C581E200	C587BE00	C5899A00
(1200)	C5937C00	C5978E00	C5A04200	C5A12800	C5A40400	C5A3C000	C5B18C00	C5B79800	C5BD7400	C5C03000
(1240)	C5CA2600	C5CF5C00	C5E7D200	C5EB7E00	C611A030	C614C020	C6181EC0	C6185030	C618A480	
(1280)	C6249F00	C62A8980	C6300400	C636EF80	C6300900	C6445000	C64BAF00	C6530000	C65A5500	C661A800
(1320)	C6686C00	C6753000	C67BF400	C6884800	C6927C00	C6A03740	C6A0F340	C6BAC840	C6C7E3E0	C6C88F80
(1360)	C6E66860	C6F73140	C7107FA2	C7118C30	C7129B5E	C713A540	C7148100	C7188E68	C716CAF6	C7170784
(1400)	C7192D50	C71A831C	C71BD8E8	C71D2EF4	C71E9480	C71FDA40	C7213018	C7228EE4	C723D9B0	C725D170
(1440)	C72719C4	C7298200	C7 [illegible]A84	C72CD29C	C72E3A84	C7303400	C731ED1C	C7350838	C7371E84	C7398A70
(1480)	C73BE408	C73E2FA0	C74 [illegible]38	C743EA00	C74592A8	C74A0150	C74C7038	C75 [illegible]CC	C75 [illegible]E08	C75B8CF0
(1520)	C75B8D80	C75F5F10	45104F80	45155CC0	45186A00	451A9280	451ADB00	451C1380	451D4C00	451F8480
(1560)	451FF580	45217280	45 [illegible]980	45246C80	45265780	45279E00	45294280	452AF800	452CAD80	452E6300
(1600)	45309580	4532C8C0	45 [illegible]A80	45372D00	45396F40	453BD080	453E4180	45408280	45432380	45465480
(1640)	4548C100	454BED80	454F1A00	45524680	45557300	455 [illegible]80	455D4300	45613D00	4565F300	456 [illegible]80
(1680)	45606000	45710E00	45 [illegible]E00	457A8F00	457FF400	45 [illegible]400	45886800	458D9A00	45927C00	45 [illegible]E00
(1720)	459D3A00	45A31A00	45 [illegible]E00	45AECE00	45B4AA00	45 [illegible]C00	45BE6E00	45C35000	45C63200	45CC1400
(1760)	45D75500	45E19600	45E40700	45F69500	46100590	46150EA0	461A1780	461F0000	46242980	46285E60
(1800)	46303700	46373CA0	46 [illegible]180	464F4660	4640A840	46543A80	465C2BC0	46641900	466C0840	4670F780
(1840)	467E57C0	4686B800	46 [illegible]0	4690E460	46A7D800	46B59460	46C35C00	46D10EA0	46DEC740	46EC82E0
(1880)	46FD48C0	4710E14A	4711ED08	4712FA66	471406F4	47155CC0	4716B28C	47180858	47195524	471A33F0
(1920)	471BF152	471D2EB4	471E8480	471FF2B6	47214EC	4722E78C	47249F00	4726F674	47280DE8	472BF630
(1960)	472BDE78	472D0CC0	472EAF38	473187B0	4733F938	47350C88	47381378	473A5D68	473CA758	473EF148
(2000)	4741FE88	47450EC8	47481908	47482648	47453388	4751A270	47551158	47588040	475BFEF28	475F5E10
(2040)	4238CCCC	423A0EE8	423 [illegible]88	42944CCC	42B [illegible]60	42C7F0A3	42FF8C70	43120E1C	4315FDCC	4319AA00
(2080)	431DD214	43229F70	43 [illegible]014	4328740A	43 [illegible]A8E	432E7D57	4328C6A1	4348D478	43693AF1	4384B831
(2120)	42A39EB8	42C53851	42F44BF5	43114CF5	43149EB8	43178199	43199685	43200DC0	4325EEE1	432B1547
(2160)	4331E07A	43399EA3	43 [illegible]D83	4322D647	4323F106	43 [illegible]22	43340B02	43388E9E	43428E97	43444EDF
(2200)	4249FEF9	424D4040	42 [illegible]87	4254CDD2	4256EA1C	42 [illegible]D0	42 [illegible]978	42 [illegible]1A	42 [illegible]3C2	42 [illegible]D70
(2240)	426D851E	427111EB	4274A3D7	42783AE1	427BD47A	427F7851	42831EB8	4286CF5C	428A87AE	428E47AE
(2280)	429211EB	4295E666	4299C51E	429DA885	42A19EB8	42A59EB8	42A9A8F5	42ADC28F	42B1E666	42B6170A

(18160)	3FA220C6	3FC917F7	40FF7D2D	40B11E34	40B8224F	C0101400	C0B88F4F	40B1671A	BF165A62

1981 YR 240 DAY 23 HR.

FILE 1 RECORD 2286 LENGTH 14232BYTES

(0)	37980000	02AC0000	C5C4040	C7E260F3	C6D3E3F2	C0010CF0	C0170039	C01C00A4	42EFFF92	1
(40)	4356DFFB	31EE44D1	E2C3C6E3	41307044	AC3F0014	00010003	AFAF0000	FFFEFFFE	00060000	77777777
(80)	40404040	40404040	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(120)	77777777	00010C10	00	001	6F48C0BA	002145AF	00000000	00000005	411E5851	C1150
(160)	C0B83F1C	411BC575	411BC539	3F1F7781	3F2AC44A	3F289ACD	00000010	4047C957	40F5C28F	47
(200)	45AF4527	3E88CD47	3E3CF703	3E238C31	3E1F3817	3CC89C5A	3C8E2238	3BCC2CEE	3C2CEFBE	3C12F3D1
(240)	3C4D182C	3C3E22D3	3C1F4CC7	3B5FB312	3B156F45	3B125294	3AC9D988	77777777	77777777	77777777
(280)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(320)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(360)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(400)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(440)	77777777	77777777	77777777	77777777	77777777	4358DFFB	68C820A5	435BDFFB	68CB3CC2	C143C7F8
(480)	C0AEC24F	C2136652	C1B041FD	40B5C46B	41994D32	412D7614	C0123ED9	C070E98F	40E5083F	C0107
(520)	C0E59CE6	C07132D8	00000000	BF80BA5D	40108100	40FF5A44	C0FAD4DF	40313A44	3FC69A60	C031FCA1
(560)	C0FAC631	5FBE7232	3FADABC0	BFE49210	40FF5E8A	BF5B5CDC	BFDFF7CB	40FF8DA0	C07FD55A	C0DD4AE9
(600)	BFEF926B	40DDBA32	C07FF001	BF20B28A	77777777	77777777	77777777	77777777	77777777	77777777
(640)	77777777	77777777	77777777	77777777	00000000	00000000	00400035	00030028	001E0040	004F0044
(680)	001E0000	00000000	C8C40000	D3C6D440	C7F260F3	C6D3E3F2	005100F0	00170039	002300A4	42EFFF92
(720)	23D51923	435BDFF9	22B0B192	E2C3C5E3	42300000	AC7B0013	00017777	88ACC000	30E43054	00010003
(760)	77777777	40404040	40404040	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(800)	77777777	77777777	00000028	00100008	6F490218	411C3F83	411CC138	411C7CEC	411BF717	411C33A4
(840)	C011FF88	C11A7924	40B49100	3FBF8B5F	40113EC6	00000005	411CC138	411C7CEC	411BF717	411C33A4
(880)	411BDCA6	411CC99F	411C7A75	411BF41D	411C324E	4118D8B4	C24C0264	C24A3F8D	C2451942	C241A78A
(920)	C24075A1	42BC5718	42708632	42BDB523	42BB2881	42B7AD3B	C06650F3	C07B0DE9	C09D46BC	C0B889F0
(960)	C0BFC7F3	BFEFFF89	BF594B0C	C01AE48B	C0172D0D	BFC32D83	C11C0441	C11B68AF	C11A1D37	C119A0C4
(1000)	C11922CD	3F85C752	3F4D0925	3F4F0A3E	3FA09A72	3F161B3A	3F6384D7	3F7CC4BE	3FAAC217	3F49E243
(1040)	3F7CC158	3F9D764F	3F7408F6	3F7462EC	3F29DF33	3F1310BA	00000005	00000005	00000005	00000005
(1080)	00000005	411CC8E0	411C63F3	411CE084	411CE4F6	411CE80D	411CC035	411C8105	411C5555	411C557F
(1120)	411C6433	411BE39E	4116A642	411B5544	411C67F4	411C4EEB	411C3469	411C5923	411C114C	411C8B66
(1160)	411C4482	411C07E3	411C1265	411BE626	411BBE7C	411C43E1	411BE33F	411BEBA0	41169A3A	411C477F
(1200)	411CEB90	411C0004	411C9178	411C8ED5	411C8618	411C4382	411C053C	411C10C+	411BE56B	411C8F46
(1240)	411C4E77	411C63E8	411C387D	411C10DF	411C0AF1	411C0B3C	C24CB82A	C24CEE4A	C24C3985	C24B4B25	C24A9325	C248C22D
(1280)	411B9388	C240FF74	C240FE11	C24CB3C4	C24CB82A	C24CEE4A	C24C3985	C24B4B25	C24A9325	C248C22D
(1320)	C2485C9C	C246F009	C2476270	C244B68D	C244AD40	C243B788	C2430B4F	C2421E5E	C2413BB2	C2417BF0
(1360)	C24047FD	C240623F	C2FD0843	C23FB996	C24C85BE	C242C73F	42BCBA56	42BFCF34	42BCFC47	42BA0941
(1400)	42B95F2A	42BA127E	42BA0F30	42BA0329	42B875D	42B974D5	42B6BCAD	42B73C8A	42B5DE07	42B4C
(1440)	42C16AA0	42BFE197	42B3C274	42BB192A	42BBE531	42B68C48	42B74FD5	42B6BCAD	42B73C8A	42B5DE07
(1480)	42B89951	C05C2AAA	C0664E7	C0669724	C0696C46	C0683DD9	C06CEEF3	C0733BF0	C077F02A	C0884318
(1520)	C088EA80	C0903E87	C09B154F	C09E81EA	C0A29A2F	C0A7F1B9	C0AC5263	C084F349	C08AD4C0	C0BA8985
(1560)	C0C40DDA	C0C42648	C0C3E74	C0C24906	C0BCF794	C0B8B423	BFE263DB	C0157F24	C0110332	BFC8AFD4
(1600)	BF9CC0E9	BFB96975	BFD22D17	BFCA103E	BFA2D81A	BFE3C736	C0110F35	BFE77130	C017417A	C0C6FD84
(1640)	C0280FA5	C0244143	C01F1FC8	C0174354	C0104BE8	BFBF04F7	BFB59AA4	BF8A543A	BFB27EFA	C0101771
(1680)	BFE5FECA	C11B68A7	C11C4408	C11C1D55	C11C1F1B	C11C2BDB	C11BEC62	C11BA1E0	C1165D6A	C11B1E76
(1720)	C11B0E35	C11A5DF5	C119E075	C119B292	C11A75C0	C11A2BE7	C119F78F	C1195B58	C1197AFC	C119AF38
(1760)	C1197689	C1192FD1	C1187246	C1190390	C1191588	C11932CB	3F37084A	3F3D656F	3F283A93	3F42BC64
(1800)	3F3B300C	3F667F3D	3F144C8B	3F21F18D	3F239B0C	3F40BEEF	3F3FE5D7	3F344FC5	3F37A8B0	3F37B8BC
(1840)	3F3018BF	3E4921C1	3F119EEF	3F300ED8	3F468441	3F1A11C5	3F3592C4	3F3CE8B0	3F4A7C04	3F3A44F6
(1880)	3F4FC10E	3F4F2DEF	3F4BE0A6	3F4CD3ED	3F312D8F	3F35D0FD	3F48DEE3	3F25DC0B	3F29BFC0	3F38E43F
(1920)	3F47210F	3F384B95	3F4A0FC5	3F65BE4E	3F28A36C	3F492175	3F32E633	3F335201	3F3DCDC9	3F289B06
(1960)	3F3C03C9	3F43BAA4	3F2EDD66	3F2F9AA0	3F32AC12	3F3D4AF2	3F4E2077	3F3AECC0	3F3879F9	3F33AF08
(2000)	3F40D366	3F37A46F	3F3C5414	3F56B7AC	3F3F744A	3F5B0407	3F35CF57	3F1F4BA7	3F33DE76	3F2DC410
(2040)	3F273604	3F297433	3F4C1C4F	3F3DE98F	3F3FDA08	3F364B86	3F27395C	3F2BEAAF	3F3F7099	3F3BC7F8
(2080)	3F52F0B4	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000020
(2120)	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000000	00000000	00000000
(2160)	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000000	00000000	00000000
(2200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

Voyager 2 LI Coord
D-61727
Aug. 23, 1981 -
Aug. 25, 1981 -

NAME OF TAPE DDUTS

INPUT TAPE DDUTS ON T
DATA INPUT [illegible] PART 1

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

1981 Day 235

FILE 1 RECORD 1 LENGTH 18212BYTES

(0)	47240000	01840000	C8C4D9F1	C7E6E3F3	C6D3E3F2	00E10CER	000A0021	002E0206	00000780	000000EC
(40)	4001E407	00000018	C3D9E4C9	E2C84040	D3F14040	00000000	00000000	00000000	00080000	00000000
(80)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(120)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(160)	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(200)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(240)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(280)	01010100	00000000	01000000	00000000	00010001	01000000	00000000	00000000	00010100	00000000
(320)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(360)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(400)	00000000	00000000	10840000	C8C4D9F3	00000000	00000000	005100EB	000A0021	002E0206	00000000
(440)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(480)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(520)	00000000	00000000	00000000	00000000	00020400	00060000	00000000	00000000	00000000	00000000
(560)	[illegible]	[illegible]	[illegible]	43813748	439804F8	43AD2C28	43C15333	43D4DB0A	43E80385	43FAF8F5
(600)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(640)	43F141E8	44136D21	44186694	44136810	44242B07	442AD54C	44325DE6	443AEEE6	4444B6CC	444FEA66
(680)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(720)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(760)	43182E66	435BE000	43402000	434D0000	435D2000	435A1000	43645000	437CF000	43802000	43920000
(800)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(840)	411420C4	4116B937	4112F906	41126643	41123126	4111E885	41116220	41117CED	411153F7	41113333
(880)	41111265	4110F5C2	4110E147	00000000	00000000	00000000	00000000	41100000	41100000	41100000
(920)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(960)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1000)	41999999	41219999	41100000	42230000	C5186A00	C519A280	C51A9C80	C51B5800	C51C5200	C51D4C00
(1040)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1080)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1120)	C5399E00	C53C4D80	C53EFD00	C541AC80	C5445C00	C5484400	C54C2C00	C5501400	C553FC00	C557E400
(1160)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1200)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1240)	C5CA2800	C5D0FC00	C5D7D200	C5DEA800	C5E57E00	C6118C30	C614C080	C6185E80	C61B8480	
(1280)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1320)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1360)	C6E56860	C6F73140	C7107FA2	C7118C50	C71298BE	C715A54C	C714B1DA	C7158E68	C716CAF6	C717D784
(1400)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1440)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1480)	C73BE408	C73E8FA0	C74138B8	C7456E00	C7469268	C74A0180	C74D7038	C750DF20	C7544E08	C757BCF0
(1520)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1560)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1600)	45309580	4532C800	4534FA80	45372D00	45395F80	453BD080	453E4180	45406280	45432380	45459480
(1640)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1680)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1720)	45989A00	45A31600	45A8F200	45AECE00	45B4AA00	45B98C00	45BE6E00	45C35000	45C83200	45CD1400
(1760)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1800)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1840)	467E57C0	46888800	46931840	469D2A60	46A7D8C0	46B59460	46C35000	46D10BA0	46DEC740	46EC62E0
(1880)	46FD48C0	4710E14A	4711ED38	4712FA66	471406F4	47155CC0	4716B28C	47180858	47195E24	471AB3F0
(1920)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(1960)	4726DE78	472DC6C0	472FAF08	47319750	47337F98	4735C988	47381378	473A5D68	473CA758	473EF148
(2000)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2040)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(2080)	4316D214	43229E3D	43282214	432E7AE1	4335CA8F	433E37D7	422BC5A1	424BD439	42683851	4284F851
(2120)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

(18000)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4232FB2B	41D04FD0	4246A000	4052BD7A	C0E3481F
(18040)	[illegible]	[illegible]	[illegible]	C0F987F9	40F1808E	[illegible]	00000000	C03C7E9C	C0F86417	BFD5AAD3
(18080)	[illegible]	[illegible]	[illegible]	[illegible]	40357EC5	[illegible]	C0340051	C03B84DA	C0F37E7C	40F1F455
(18120)	[illegible]	[illegible]	[illegible]	C0FCD00D	4047DFAC	77777777	77777777	77777777	77777777	77777777
(18160)	77777777	77777777	77777777	77777777	77777777	001EC040	00000000	00000000	00000000	003B0052
(18200)	[illegible]	[illegible]	[illegible]							

1981 Day 237

FILE 4 RECORD 484 LENGTH 18232BYTES

(0)	47400000	02AC0000	C5F14040	C7E260F3	C6D3E3F2	005100ED	000D001F	003603AE	42EC9057	2F876709
(40)	[illegible]	72F87670	E2C3C5E3	413D70A4	ABD40012	00010002	6F6F0000	FFFEFFFE	00040000	77777777
(80)	40404040	40404040	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(120)	77777777	00010010	[illegible]	11E7008A	00210B40	00000000	00000005	411147AD	C1854FFD	C15340DE
(160)	[illegible]	[illegible]	[illegible]	3F36C5F7	3F6C923F	[illegible]	00000010	4066686E	40F5C28F	484A16B7
(200)	C44A138F	3D1CC645	3D17FF01	3E1FE91F	3E3BA884	3E47DB78	3E3A5059	3E3D3CF2	3E37E845	3E351E82
(240)	[illegible]	[illegible]	[illegible]	3E211311	3E1C7592	3E1B44B4	3E194140	77777777	77777777	77777777
(280)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(320)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(360)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(400)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(440)	77777777	77777777	77777777	77777777	435BA8EC	944E37EB	435EA905	9022396F	41971BE1	4188A83E
(480)	[illegible]	[illegible]	[illegible]	C12D8A48	41DF62E6	4213AD8F	43147200	40048EF7	40717314	405682BD
(520)	[illegible]	[illegible]	[illegible]	C0788A79	40E1D846	00000000	C0188D72	C01071F1	C0FE49E7	C0AD2C30
(560)	40BC7C3C	3F4883CF	40BAEF04	40AC72F9	C01D5549	C021F543	4080239E	C0DBC143	C0D2CFC5	C0893716
(600)	C02F887F	[illegible]	[illegible]	4078BE39	77777777	77777777	77777777	77777777	77777777	77777777
(640)	77777777	77777777	77777777	77777777	00000000	00E9006E	00760073	00770077	00780078	00740073
(680)	00740072	00730073	08E40000	D3C6D440	C7E260F3	C6D3E3F2	005100ED	000D001F	000301CD	42EC9035
(720)	[illegible]	[illegible]	[illegible]	E2C3C5E3	42300000	ABD40010	00017777	C8A0C010	30643054	00010000
(760)	77777777	40404040	40094040	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(800)	77777777	77777777	00500028	0010000B	11E80218	41CEB896	41CE7766	C22A3A83	419E10D8	4159B6F9
(840)	[illegible]	[illegible]	[illegible]	4030D4EA	4031FCDB	00000005	41CF4499	41CCF46C	41CCE7E6	41D0C703
(880)	[illegible]	[illegible]	[illegible]	[illegible]	41D0C50B	41D3CFF0	C22E8FEB	C2289EC0	C2280AF0	C2290C53
(920)	C227F72A	418070FC	418064F0	418AC6CF	41A5E5C4	41CEE459	41499F43	415403FC	415E974C	415EEFEC
(960)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	41B4DC13	C1307D65	C131AE8A	C134C223	C12FE732
(1000)	C12B1D0F	4031BAD7	[illegible]	[illegible]	[illegible]	402DF961	4016155C	4017646F	401CA9F9	40137802
(1040)	40120FBE	3FDC3E94	4016C72B	40281998	3FCB17A5	4015DFDC	00000005	00000005	00000005	00000005
(1080)	[illegible]	[illegible]	[illegible]	41C34CE8	[illegible]	41CC62A8	41CCC1E0	41CD24A8	41CD0110	41CD0058
(1120)	[illegible]	[illegible]	[illegible]	41CC8618	41CD4848	41CE8860	41CF41D0	41CFF8C0	41CDE398	41D12FD0
(1160)	41D1D748	41D2CAF0	[illegible]	41D42640	41D40010	41D38860	41C9FEE1	41CA8B80	41CE4B32	41CB8149
(1200)	[illegible]	[illegible]	[illegible]	41CCFFE0	41CD0024	41CC310D	41CFCEF1	41CBFF5B	41CC5504	41CD4529
(1240)	[illegible]	41CF41BA	41CFE887	[illegible]	[illegible]	41D1D762	41D2C4E3	41D3D310	41D42635	41D3FF3F
(1280)	41D38832	C22E98FA	C22FA192	C22F3CCE	C22DD625	C22D69F5	C22CCAD0	C22C6FDC	C22BD71C	C22AF180
(1320)	[illegible]	[illegible]	[illegible]	[illegible]	C227D8CD	C228FC35	C2292CBD	C2290BA7	C228FD2F	C228E807
(1360)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	C2276A4E	41733CC2	417A3976	4182FC47	4182122B
(1400)	418F11CD	418FA229	[illegible]	418BDFFE	418BF77E	4185EF68	418061BB	41846903	418CEA1B	418E11C3
(1440)	[illegible]	[illegible]	[illegible]	41AC6ABE	41B1D809	41B679E3	41BF01D7	41C9E3A0	41CE499F	41D525A6
(1480)	[illegible]	[illegible]	[illegible]	4147A67E	4140077E	414E4FAB	415068BB	4151B892	415340DC	415600A5
(1520)	41588164	415CCFD7	[illegible]	4160A24A	415F8C81	415D0FF7	415D1841	415E3869	415F5039	415FF745
(1560)	[illegible]	[illegible]	[illegible]	416684F1	4167D63E	4167A60B	41B5F4CC	41B8124B	41B85811	41B67286
(1600)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	41AD6A79	41AC8BC2	41AC4963	41AE1AD1
(1640)	41B14463	41B2737B	[illegible]	[illegible]	41B40D65	[illegible]	41B59D9F	41B5EB3C	41B4BD63	41B40BD1
(1680)	[illegible]	[illegible]	[illegible]	C12F8C0A	C130F995	C12FA592	C1302C03	C1306055	C1319730	C1325126
(1720)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	C132995E	C1320015	C13103B6	C12F9596	C12ED147
(1760)	[illegible]	C12D0159	[illegible]	C1238177	C12A830F	C128E403	3F75BD3F	3F694CA3	3F7418EE	40122EDF
(1800)	[illegible]	[illegible]	[illegible]	3F8384A7	4018F8F9	3F9F8311	3F93DB1C	3FBA8F99	3F9206D6	3F54E754
(1840)	[illegible]	[illegible]	[illegible]	401018E8	3F9ED0E8	[illegible]	3F4E3412	3FEB388D	3F54953C	4012517A
(1880)	[illegible]	3F5BBBD8	3F91E15C	3FE5C137	3F988D40	3FCAE409	3F9438E2	3FE9DB50	4013B200	3F40D681
(1920)	[illegible]	[illegible]	3F3FD23C	3F27CD37	3F49F1A3	40193A97	3FD263F3	40185E2C	3F5AEB69	3F4F53B0
(1960)	[illegible]	3F479718	[illegible]	3F390DE1	3F66D3EE	3F92F748	3F62B60C	3F7E42C9	3F76F0F7	3F31D859
(2000)	3F57668C	3F2CB696	[illegible]	[illegible]	3F20D1DF	3F2B3110	3F6FC3DD	3F611A79	3F69FECA	3F6F5710
(2040)	[illegible]	[illegible]	3F51C5AE	3F5B5C7D	3F40CCAF	3F388200	3FCD1842	3F6073CB	3F481DD7	3F634FE7
(2080)	[illegible]	[illegible]	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000020
(2120)	00000020	00000020	00000017	00000018	00000020	00000020	00000020	00000020	00000020	00000020
(2160)	[illegible]	[illegible]	00000020	00000020	00000020	00000020	00000000	00000000	00000000	00000000
(2200)	[illegible]	[illegible]	[illegible]	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

DUMP OF TAPE DOUT-4

INPUT TAPE DOUT-4
DATA INPUT ... LAST 1

D-61728
August 24, 1981 – August 29, 1981

FILE	INPUT RECS.	DATA RECORD INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL #
1	7	7	80	0	0 1481	0 236	0	0	0

FILE 1 RECORD 1 LENGTH 16184 BYTES

(0)	3F5F0000	01940000	C80409F1	C7E26CF3	C6D3E3F1	00F100EC	00160006	00170205	0000C78E	000000CD
(40)	D1240328	00000018	C3078409	E2C54040	D3F14040	00000000	00000000	00000000	00080000	00000000
(80)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00010044	C5F2F1F2	F3F84040	D5D6D5C5	40404040	D5D6D5C5	40404040
(160)	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(200)	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(240)	[illegible]	40404040	D5D6D5C5	40404040	D5E6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(280)	01010100	00000000	01000000	00000000	00010001	01000000	01000000	00000000	00000100	00000000
(320)	00000000	00000000	00000100	00000000	00000001	00000000	00000000	00000000	00010001	01000000
(360)	01000000	00000000	00000000	00010000	40404040	40404040	40404040	40404040	40404040	40404040
(400)	00000000	00000000	10840000	C8C409F3	00000000	00000000	005100EC	00160006	00170205	00000000
(440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000A0000
(480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(520)	00000000	00000000	00000000	00000000	00020400	00050000	00000000	00000000	00000000	00000000
(560)	00000000	00000000	0034FFFE	4381374E	439804F5	43AD2C28	43C15333	43D4DB0A	43E80385	43FAF8F5
(600)	441100CF	44120089	44133340	44147053	44154874	44166E4E	441826D7	44196F19	441ABE54	43AC4147
(640)	43F141E0	44130021	44150094	441E381C	44242807	442D084C	44325DE6	443AEEE6	4444B6CC	444FEA66
(680)	[illegible]	44608003	44709F89	4490274C	44A69C80	4317D4CC	4315C4CC	43148999	4313C4CC	43134B33
(720)	4310400C	4312E400	43111199	4312F686	43131F66	43136666	43139CCC	4313F000	43144E66	4314E999
(760)	43152E88	4352C000	43402000	434D0000	43522000	435A1000	43645000	4370F000	43802000	43920000
(800)	[illegible]	43FF7100	[illegible]	43F00000	44123500	4414F800	44183000	41199581	4116ED91	411553F7
(840)	41142004	41138937	[illegible]	4112A443	41123106	4111E583	41115C2D	41117CED	411153F7	41113333
(880)	4111126E	4110F5C2	4110E147	00000000	00000000	00000000	00000000	41100000	41100000	41100000
(920)	[illegible]	41100000	41100000	41100000	41100000	41100000	41100000	41100000	41100000	3F28F5C2
(960)	[illegible]	[illegible]	4511BF00	43166FCC	00020005	00030007	3F3A92A3	3F3A92A3	41100000	41100000
(1000)	41599999	41219999	41100000	42230000	C5186400	C5194280	C514F080	C515E800	C51C5200	C51D4C00
(1040)	[illegible]	[illegible]	C5203A00	C5213400	C5222E00	C5236680	C5249F00	C525D780	C5271000	C5284880
(1080)	C5298100	[illegible]	C52BF200	C52D2AA0	C52E6300	C5301880	C531CE00	C5338380	C5353900	C536EE80
(1120)	C5399E00	C53C4D80	C53EFD00	C541AC80	C5445C00	C5484400	C54C2C00	C5501400	C553FC00	C557E400
(1160)	[illegible]	[illegible]	[illegible]	[illegible]	C5704E00	C5762A00	C57C0600	C581E200	C587BE00	C58D9A00
(1200)	[illegible]	[illegible]	[illegible]	C5A12200	C5A60400	C5ABE000	C5B18000	C5B79800	C5BD7400	C5C35000
(1240)	C5CA2800	C5D0F000	C5D7B200	C5DEA800	C5E57E00	C6118C30	C614C080	C6181BE0	C61B5030	C61E8480
(1280)	[illegible]	[illegible]	C630D400	C6365E80	C63D0900	C6445C00	C64BAF00	C6530200	C65A5500	C661A800
(1320)	[illegible]	C6763000	C67FF400	C688B800	C6927C00	C6A037A0	C6ADF340	C6BA2940	C6C7E3E0	C6D59F80
(1360)	C6E66880	C6F73140	C7107FA2	C7118C30	C712963E	C713A54C	C71481DA	C715BE68	C716CAF6	C717D784
(1400)	[illegible]	[illegible]	C71BD858	C71D2EB4	C71E8480	C71FDA4C	C7213018	C72285E4	C723DBB0	C725317C
(1440)	[illegible]	[illegible]	C72AEA64	C72CD190	C72E8AF4	C730D400	C732ED1C	C7350638	C7371F54	C7393870
(1480)	C73BE408	[illegible]	C7413838	C743E6DC	C7469268	C74A0150	C74D7038	C750DF20	C7544E08	C757BCF0
(1520)	[illegible]	[illegible]	45124F80	45155CC0	45186A00	4519A280	451ADB00	451C1380	451D4C00	451E8480
(1560)	[illegible]	[illegible]	[illegible]	[illegible]	4525D780	45278D00	45294280	452AF800	452CAD80	452E6300
(1600)	45309580	4532C800	4534FA80	45372C00	45395F80	[illegible]	453E4180	4540B280	45432380	45459480
(1640)	[illegible]	[illegible]	454F1A00	45524580	45557300	45595B00	455D4300	45612B00	45651300	4568FB00
(1680)	[illegible]	[illegible]	[illegible]	457A9F00	457EF400	4583D600	4588B800	458D9A00	45927C00	45975E00
(1720)	[illegible]	[illegible]	[illegible]	45AEC500	45B4AA00	45B98C00	45BE6E00	45C35000	45C83200	45CD1400
(1760)	[illegible]	[illegible]	[illegible]	45F69500	46100590	46150EA0	461A17B0	461F20C0	462429D0	462932E0
(1800)	[illegible]	[illegible]	[illegible]	[illegible]	46404B40	46543A80	465C29C0	46641900	466C0840	4673F780
(1840)	[illegible]	[illegible]	[illegible]	[illegible]	46A7D8C0	46B59460	46C35000	46D10BA0	46DEC740	46EC82E0
(1880)	46F54300	4710E14A	4711EDD8	4712FA56	471406F4	47155CC0	4716B28C	47180858	47195E24	471AB3F0
(1920)	[illegible]	[illegible]	47128480	[illegible]	47217DEC	4722F78C	47249F00	47265674	47280DE8	4729F630
(1960)	[illegible]	[illegible]	[illegible]	47319780	[illegible]	4733C988	47381378	473A5D68	473CA758	473EF148
(2000)	[illegible]	[illegible]	[illegible]	47482648	474E3388	4751A270	47551158	47588040	475BEF28	475F5E10
(2040)	[illegible]	[illegible]	[illegible]	42944CCC	42B46B85	42D7F0A3	42FFB070	43120B5C	4315FDC2	43194400
(2080)	43100214	43229E3D	43182214	43227AE1	4331CA4F	[illegible]	4228C5A1	424BD439	42683951	4284F851
(2120)	[illegible]	[illegible]	427AA8F5	43114CF5	431449EB	43178199	431B968F	43200DC2	43252EE1	432B1547

(15400)	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE	FFFEFFFE
(15420)	00000002	00120DDF	42EC00A9	6D61AD43	435BA006	96D61AD4	E2C3C5E3	413D70A4	ABC3001A	00010002	
(15440)	77777777	77777777	77777777	77777777	40404040	40404040	77777777	77777777	77777777	77777777	
(15460)	00000001	00150008A	00210006	00000000							
(15480)	00000001	401E8851	C0E74E59	401E5FCD	3F642C87	40E96852	40E96035	3F29C795	3F20D42B	3F32F275	
(15500)	00000010	40666B7E	40F9C29F	4613E7F	4513A901	3EEFD24A	3E2A92FC	3E14B8E1	3E15040A	3DA4C180	
(15520)	3D7BCE54	3D41F01F	3D181400	3D0B54E7	3D418C84	3D2B62B2	3D5F2F0F	3D212E81	3C7B901E	3D2A166E	
(15540)	3D1B3389	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	
(15560)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	
(15580)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	
(15600)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	
(15620)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	435BA004	87265900	
(15640)	43E9A00B	00B12A1B	421D0D18	41C987EE	41691CED	C1BC0010	C14CB18F	C125EDEA	4217D781	41FFA8C7	
(15660)	42F4A000	C0679EDB	40DF3511	40468CC8	C010B4E8	403FFD9C	C0F61639	C0E832E6	C06BCB72	00000000	
(15680)	40E2FDE0	40D2A6C3	401464FE	40239BDB	3E41A7A8	C0FC834D	C0CE9A9D	40945357	C01D2919	C0555DA2	
(15700)	C0E8CD77	C0E1B6E8	40317413	C0AE0B0B	C02354F9	C0B45EEE	C0BD24FC	40583A63	77777777	77777777	
(15720)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	00880050	004D0051	
(15740)	00400008	00270C0C	00140083	00280083	00270000	00820028					

FILE 2 RECORD 2288 LENGTH 4232BYTES

1981 Day 241

(0)	10880000	40A40000	0C042BF3	00000000	00000000	00E1BBF1	00170038	000B004E	00000000	00000000	
(20)	00000000	00000000	00000010	00000000	00000000	00000000	00000000	000A0000	00000000	00000000	
(40)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	
(60)	00000000	00000000	00000000	8B5E0400	00000000	00000000	00000000	00000000	00000000	00060006	
(80)	00000000	0000FFFF	43A13745	439864F5	43A22C29	43C15733	43D4DB0A	43E80385	43FAF8F5	4410DDCF	
(100)	44120C99	44133D40	441470E3	4415A87A	4416E4DE	44182607	44196F19	441ABE54	43A04147	43F141EB	
(120)	44150CD1	44160F84	44173B1C	44188E07	441A2B40	441B3D5E	441A8FE6	444B8CC	444FEA66	44500583	
(140)	44BC4C9F	44B0B99	44B1B7C2	444A6C80	4317D4CC	4315C4CC	43148999	4315C4CC	43134833	431304CC	
(160)	4312E4CC	4312E199	4312F666	43131E66	43135666	43139CCC	4313F000	43144E66	4314B999	43152E66	
(180)	43C0CCCC	43A4CCCC	43A0CCCC	439E4CCC	439E1CCC	439E8CCC	439F0CCC	43A02CCC	43A20CCC	43A4FCCC	
(200)	43BF7CCC	43DBF000	43FD0000	44123500	4414FB00	44183000	41199581	4116ED91	411553F7	41142CC4	
(220)	41138937	4112F9DB	41128B43	41123126	4111EB85	4111B22D	41117CED	411153F7	41113333	4111126E	
(240)	4111F1C1	4111B1A7	4111CCCC	41100000	41100000	41100000	41100000	41100000	41100000	41100000	
(260)	41100000	41100000	41100000	41100000	41100000	41100000	41100000	41100000	3F28F5C2	00010005	
(280)	00100010	45166FC0	45166FC0	00020005	00030007	3F3A92A3	3F3A92A3	41100000	41100000	41599999	
(300)	4111F999	4111D999	4111B333	C51B6A00	C51BA200	C51A9C80	C51BE800	C51CF200	C51D4C00	C51E4600	
(320)	C51F4C00	C5213400	C5225400	C5236A80	C5254F00	C5280780	C5271000	C52F4880	C5298100		
(340)	C52A8980	C52BF200	C52D2A80	C52E6300	C5301880	C5310E00	C5338380	C5353900	C536EE80	C5399E00	
(360)	C53C4C80	C53AF100	C5414C80	C5445C00	C5484A00	C54C2C00	C5501400	C5537C00	C557E400	C55CC600	
(380)	C5624C00	C5684F00	C5743C00	C5794F00	C57DDA00	C5822600	C5851E00	C587BE00	C58D9A00	C5927C00	
(400)	C5975E00	C59C4000	C5A12200	C5A60400	C5ABE000	C5B13C00	C5879800	C5BD7400	C5C35000	C5CA2600	
(420)	C5D1FC00	C5D7DC00	C5E2A400	C5E87E00	C611FC00	C614C080	C6181E80	C6185030	C61E8480	C6249F00	
(440)	C6288C80	C62E1400	C6343C00	C6383C00	C643AF00	C6533C00	C65A5500	C6614800	C66B6C00		
(460)	C6753000	C67EF400	C6888800	C6927C00	C6A037A0	C6ADF340	C6BA2840	C6C7E3E0	C6D59F80	C6E66860	
(480)	C6F77140	C7107CA0	C7118C10	C7123BBE	C7134540	C7148104	C7158E68	C716CAF6	C717D784	C7192D50	
(500)	C71AF710	C71C0E28	C71D3E14	C71E84F0	C71FDA4C	C7213018	C7226BE4	C723D880	C7253170	C72719C4	
(520)	C7290200	C72AEA94	C72CD29C	C72EBAE4	C730D400	C732ED1C	C7350638	C7371F54	C7393870	C73BE408	
(540)	C73E2FA0	C7413174	C7435E90	C7466E28	C7490180	C74C7C38	C750DF20	C7544E08	C757BCF0	C7588D80	
(560)	C7628E10	C7654F60	C768BC00	C76BA400	C76E9A80	C771ADB00	C7751380	C778D400	C77E8480	C781FB80	
(580)	45217280	4522E980	45246080	4525D780	45278D00	45294280	452AF800	452CAD80	452E6300	45309580	
(600)	45320E80	4534F480	45376D80	453B9F80	453BCC80	453E4180	45405280	45432380	4545B480	4548C100	
(620)	454AC000	454F1000	45524E00	45557BC0	455B5F00	455D4300	45612B00	45651300	4568FB00	456D6000	
(640)	45710E00	45762A00	457AB800	457EF400	4583D600	4588B800	458D9A00	45927C00	45975E00	459D3A00	
(660)	45A1BE00	45A6FC00	45AC3E00	45B04A00	45B58C00	45BAE600	45C35000	45C83200	45CD1400	45D75500	
(680)	45E19E00	45E68C00	45EB7E00	45F03E40	45F1A780	45F20C00	46024E00	4602E0	46033C0		
(700)	46373CA0	463E4180	46454650	464C4B40	46543A80	465C29C0	46641900	466C0840	4673F780	467E57C0	
(720)	46888800	46931840	469D2A60	46A7D8C0	46B59460	46C35000	46D10BA0	46DEC740	46EC82E0	46FD4BC0	
(740)	4711E144	4721A6C0	4731F4C0	4743BFE4	4755EC00	4768D8C0	477B5E24	478B3F0	4715F152		
(760)	471D2E84	471F8480	471FF2B6	472160EC	4722E78C	47249F00	47265674	47280DE8	4729F630	472BDE78	
(780)	472E1C1C	472F4A18	473137C0	473378B8	473BC988	473E1376	473A5D68	473CA758	473EF148	4741FE88	
(800)	474A1C28	474C2A18	474E6588	4750E5B8	4753AD70	4756B1B8	4758B040	475BEF28	475F5E10	4236CCCC	
(820)	423A06E9	42769999	42944CCC	42B46385	42D7F0A3	42FF3D70	4312CB5C	4315FDC2	4319A400	431DD214	
(840)	43200A14	4322AE14	43257AE1	4330C4B6	433E87D7	4348C6A1	4348D439	42683851	4284F851	42A39E38	

DUMP OF TAPE DOUT-4

Voyager 1
LI Coord.

D-61729
11/9/80 - 11/14/80

INPUT TAPE DOUT-4 ON MT4
DATA INPUT H9 FL 1 1 1

1980 314

FILE 1 RECORD 1 LENGTH 16192BYTES

(0)	3F400000	01940000	C8C4D9F1	C7E260F3	C6D3E3F1	0050013A	00160009	0016039A	000007BF	000000D5
(40)	40C1E4C7	00000001	C3D9E4C9	E2C54040	D3F14040	00000000	00000000	00000000	00080000	00000000
(80)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00010044	F0F8F1F5	F3C24040	D5D6D5C5	40404040	D5D6D5C5	40404040
(160)	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(200)	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(240)	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(280)	01010100	00000000	01000000	00000000	00010001	01000000	00000000	00000000	00000100	00000000
(320)	00000000	00000000	00000100	00000000	00000001	00000000	00000000	00000000	00010001	01000000
(360)	01000000	00000000	00000000	00010000	40404040	40404040	40404040	40404040	40404040	40404040
(400)	00000000	00000000	10840000	C8C4D9F3	00000000	00000000	0050013A	00160009	0016039A	00000000
(440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000A0000
(480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(520)	00000000	00000000	00000000	00000000	00020400	00060000	00000000	00000000	00000000	00000000
(560)	00060006	00000000	0006FFFE	438137AE	439804F5	43AD2C28	43C15333	43D4DB0A	43E80385	43FAF8F5
(600)	4410DDCF	44120C99	44133D40	441470E3	4415A87A	4416E4DE	441826D7	44196F19	441ABE54	43A04147
(640)	43F141EB	4413DD21	4418D694	441E381C	44242B07	442AD54C	44325DE6	443AEEE6	4444B6CC	444FEA66
(680)	445CC5B3	446B8D33	447C8F99	4490274C	44A6BC80	4317D4CC	4315C4CC	43148999	4313C4CC	43134B33
(720)	431304CC	4312E4CC	4312E199	4312F666	43131E66	43135666	43139CCC	4313F000	43144E66	4314B999
(760)	43152E66	4355E000	434C2000	434D0000	43522000	435A1000	43645000	4370F000	43802000	43920000
(800)	43A6FCCC	43BF7000	43D8F000	43FD0000	44123500	4414FB00	44183000	41199581	4116ED91	411553F7
(840)	411420C4	41138937	4112F9DB	41128B43	41123126	4111EB85	4111E22D	41117CED	411153F7	41113333
(880)	4111126E	4110F5C2	4110E147	00000000	00000000	00000000	00000000	41100000	41100000	41100000
(920)	41100000	41100000	41100000	41100000	41100000	41100000	41100000	41100000	41100000	3F28F5C2
(960)	00010005	00100010	45166FC0	45166FC0	00020005	00030007	3F3A92A3	3F3A92A3	41100000	41100000
(1000)	41599959	41219999	41100000	42230000	C5186A00	C519A280	C51A9C80	C51B5800	C51C5200	C51D4C00
(1040)	C51E4600	C51F4000	C5203A00	C5213400	C5222E00	C5236680	C5249F00	C525D780	C5271000	C5284880
(1080)	C5298100	C52AB980	C52BF200	C52D2A80	C52E6300	C5301880	C531CE00	C5338380	C5353900	C536EE80
(1120)	C5399E00	C53C4080	C53EFD00	C541AC80	C5445C00	C5484400	C54C2C00	C5501400	C553FC00	C557E400
(1160)	C55CC600	C561A800	C5668A00	C56B6C00	C5704E00	C5762A00	C57C0600	C581E200	C587BE00	C58D9A00
(1200)	C5927C00	C5975E00	C59C4000	C5A12200	C5A60400	C5ABE000	C5B1BC00	C5B79800	C5BD7400	C5C35000
(1240)	C5CA2C00	C5D0FC00	C5D7D200	C5DEA800	C5E57E00	C6118C30	C614C080	C6181BE0	C61B5030	C61E8480
(1280)	C6249F00	C62AB980	C630D400	C636EE80	C63D0900	C6445C00	C64BAF00	C6530200	C65A5500	C661A800
(1320)	C66B6C00	C6753000	C67EF400	C6888800	C6927C00	C6A037A0	C6ADF340	C6BA2840	C6C7E3E0	C6D59F80
(1360)	C6E66860	C6F73140	C7107FA2	C7118C30	C71298BE	C713A54C	C714B1DA	C715BE68	C716CAF6	C717D784
(1400)	C7192D50	C71A831C	C71BD8E8	C71D2EB4	C71E8480	C71FDA4C	C7213018	C72285E4	C723DBB0	C725317C
(1440)	C72719C4	C729020C	C72AEA54	C72CD29C	C72EBAE4	C730D400	C732ED1C	C7350638	C7371F54	C7393870
(1480)	C73BE408	C73E8FA0	C7413B38	C743E6D0	C7469268	C74A0150	C74D7038	C750DF20	C7544E08	C757BCF0
(1520)	C75B8D80	C75F5E10	45124F80	45155CC0	45186A00	4519A280	451ADB00	451C1380	451D4C00	451E8480
(1560)	451FB880	45217280	4522E980	45246080	4525D780	45278D00	45294280	452AF800	452CAD80	452E6300
(1600)	45309580	4532C800	4534FA80	45372D00	45395F80	453BD080	453E4180	45408280	45432380	45459480
(1640)	4548C100	454BED80	454F1A00	45524680	45557300	45595B00	455D4300	45612B00	45651300	4568FB00
(1680)	456C6000	4571C500	45762A00	457A8F00	457EF400	4583D600	4588E800	458D9A00	45927C00	45975E00
(1720)	459D3A00	45A31600	45A8F200	45AECE00	45B4AA00	45B98C00	45BE6E00	45C35000	45C83200	45CD1400
(1760)	45D75500	45E19600	45EBD700	45F69500	46100590	46150EA0	461A17B0	461F20C0	462429D0	462932E0
(1800)	463C37C0	46373CA0	463E4180	46454660	464C4B40	46543A80	465C29C0	46641900	466C0840	4673F780
(1840)	467E57C0	4688B800	46931840	469D2A60	46A7D8C0	46B59460	46C35000	46D10BA0	46DEC740	46EC82E0
(1880)	46FD4BC0	4710E14A	4711EDD8	4712FA66	471406F4	47155CC0	4716B28C	47180858	47195E24	471AB3F0
(1920)	471BF152	471D2EB4	471E8480	471FF2B6	472160EC	4722E78C	47249F00	47265674	47280DE8	4729F630
(1960)	472EDE78	472DC6C0	472FAF08	47319750	47337F98	4735C988	47381378	473A5D68	473CA758	473EF148
(2000)	4741FE88	47450BC8	47481908	474B2648	474E3388	4751A270	47551158	47588040	475BEF28	475F5E10
(2040)	423BCCCC	425A06E9	42769999	42944CCC	42B46B85	42D7F0A3	42FFBD70	4312CB5C	4315FDC2	4319A400
(2080)	431DD214	43229E3D	43282214	432E7AE1	4335CA8F	433E37D7	422BC5A1	424BD439	42683851	4284F851
(2120)	42A39EB8	42C53851	42EAA8F5	43114CF5	431449EB	4317B199	431B968F	43200DC2	43252EE1	432B1547
(2160)	4331E07A	4339B4A3	4342BB33	422E0E97	42328106	4236BB22	423ACB02	423EB999	42428E97	42464ED9
(2200)	4249FEF9	424DA24D	42513BE7	4254C0D2	42585A1C	425BE2D0	425F6978	4262EF1A	426675C2	4269FD70
(2240)	426D851E	427111EB	4274A3D7	42783AE1	427BD47A	427F7851	42831EB8	4286CF5C	428A87AE	428E47AE
(2280)	429211EB	4295E666	4299C51E	429DAB85	42A19EB8	42A59EB8	42A9A8F5	42ADC28F	42B1E666	42B6170A

(15520)	C6D3E3F1	0050013B	00000002	00060194	4313A005	FE13A835	4349A005	FE13A835	E2C3C5E3	413D70A4
(15560)	88260016	00010002	6A6A0000	FFFEFFFE	00040000	00000000	40404040	40404040	00000000	00000000
(15600)	00000000	00000000	00000000	00000000	000C0000	00000000	0000C000	00010010	00000001	0015008A
(15640)	000F0006	00000000	00000007	4118F5C2	C05C2C75	C02C5ED8	4010A3A9	4067CBDD	4067A440	3F359D83
(15680)	3F2E6F37	3F426AF8	00000010	C01478C2	40F5C28F	47BF71C0	448BDBA3	3E285EF0	3D7FBD06	3D194ACA
(15720)	3DB98DDC	3E10B8B5	3D585298	3D602640	3DD0287A	3D806ED3	3CCAE74C	3D14BD19	3D435C93	3D35E219
(15760)	3D37731E	3D37135D	3C7DAE02	00000000	00000000	CC000000	00000000	00000000	00000000	00000000
(15800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(15840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(15880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(15920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(15960)	4349A006	34EEB574	4349A006	34EEB574	4241A460	421A5827	4182675A	C1EB8660	C14F96D1	C127F3D0
(16000)	42473306	4168F60B	42257000	40C9FC8F	C09A86F4	401D4E19	40174666	C011CE65	C0FE5131	409B8CB9
(16040)	40C852E5	00000000	C01F4B22	C0BD6F56	C0A55357	C03DDF68	C09FC9A1	40BE32F7	C0F66E78	40402CA1
(16080)	C01A4086	BFF8D893	C02DAB1F	C0FB69BB	40F6451F	C045DC85	BF28B6EA	C04427D8	C0F2030E	40302D5B
(16120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(16160)	00270053	0086008D	009D00C6	00FF00FF	00FF00FF	C0FF00FF	0000004A	0083008C		

FILE 1 RECORD 2222 LENGTH 9188BYTES

(0)	23E40000	08E40000	D3C6D440	C7E260F3	C6D3E3F1	0050013B	00160007	002F004D	4313EEC0	CF437FC1
(40)	4349EEC0	CF437FC1	E2C3C5E3	42300000	88B9003A	00010000	88A0C000	30643054	00010000	00000000
(80)	40404040	40404040	00000000	00000000	00000000	00000000	0000C000	00000000	00000000	00000000
(120)	00000000	00500028	00100008	68420218	412C57D8	412BFFE7	C23C347E	42E0C525	C09A6FD0	4125653B
(160)	41151492	4051A464	401EC792	40135B15	00000005	412B89A1	412C82D8	412E19B6	412B7CDD	412CCEA3
(200)	41288134	412C70E5	412DE9CB	412B51BA	412C899E	C239FE3C	C23C006E	C23BB26B	C2397E6D	C23E1D74
(240)	42E9748E	42DDDFEB	42DAAAC0	42CD818B	42F6B68C	C0BF2B7C	C08AE886	C07C157C	C0231398	C111B221
(280)	412302CC	41262517	4127C9AD	4126C8B2	41233FE6	4116E4DF	4115171D	41158F3F	41132BF7	4114AFAA
(320)	4018D786	3FC7A217	3F8E9422	40108DA7	4028777F	40156253	40419A38	3FE7DED7	3F8868A0	403B150D
(360)	3FD8B6EB	3FE40487	4049A3DB	401CB777	401924A3	00000005	00000005	00000005	00000005	00000005
(400)	412C5BC6	412BB9F6	412C1C1C	412B1CF5	412A7607	412A8297	412A6168	412D610A	412E7BA8	412DE184
(440)	412CC882	412E6F76	412EF741	412EE7A6	412D84A4	412C9BAD	412B7E8C	412A65F8	412B9CE2	412B6A6D
(480)	412ACDF4	412B0FF3	412DB795	412F1644	412D9760	412C57F3	412BB613	412C11FB	412B1B41	412A74EB
(520)	412A8153	412A5A64	41205BCF	412E78A8	412DDE10	412CC6D8	412E6D9B	412EF173	412ED6DD	412D83D7
(560)	412C9A17	412B7DBC	412A551F	412B9B88	412B67DF	412AB9E7	412AFF52	412DB45D	412F0586	412D961E
(600)	C23AFD28	C23B7198	C239C23D	C2385EC5	C23916AA	C237867E	C23BDB80	C23F65D7	C23D279F	C23B784C
(640)	C23BAB97	C23EE98A	C23CABE9	C23A6C24	C23738E7	C236E47C	C2372AB2	C238712C	C23BD191	C23BC7AA
(680)	C23D15D8	C23E9EDF	C23DAF56	C23C0D21	C23E0EA0	42E66819	42ED74D1	42EE31FA	42E7A144	42E5AEC3
(720)	42E28679	42E1D41E	42DE07C0	42D9D0FF	42D93B86	42DEC973	42E6B530	42DEB599	42D79F43	42CC80EF
(760)	42C7DBC0	42C52222	42C8746D	42D72793	42D9784B	42E45E18	4310029B	4310A1E5	42F4BBF3	42EE450B
(800)	C0B4A6AD	C0DC0080	C0DD4FE1	C0AC78F4	C0A16981	C087F987	C09813DB	C0A153A2	C081E7A0	C072520F
(840)	C08F3B69	C0D07545	C09B9991	C064D90C	BFC484DA	3FEBDA68	4018E9F1	BF1F6C51	C064E815	C0702AB5
(880)	C0AD7968	C1140C40	C118931E	C111C8FD	C0F3AB4F	41248084	41230EAD	41229FDA	41226C47	4122727B
(920)	41227868	4123C3D7	4127CABF	4128CA98	4127E7DA	41263313	412761B9	412858AA	4128B1E0	4128510D
(960)	4128101D	412779DD	41264D13	41264AFB	4125C974	41240933	4120F50B	412142A6	4124B54C	4125494E
(1000)	411680F8	411631BF	41177EB1	411799F6	4116ACFD	41175F4B	41149943	41134BC8	4114BAD0	4115746D
(1040)	411593FC	4114DAB9	4115F003	41165194	41151BEF	411394E8	41122F60	4112077A	4113E319	41142CFC
(1080)	41143BB9	4112FDD2	41137611	41176491	41155A27	3F9D9E0A	3FF71443	3F84F620	3F8BCE7B	3FD6381A
(1120)	3FB62660	3FD573D9	401AC3ED	3F56CCA5	3F3908F0	3F31620D	3FCB09BC	3F4969B4	3F86D879	3F3BE3F5
(1160)	3F4BE860	3F83A903	3F56A767	3FEE70F7	3FE834E9	3FE3DCD0	3FB8A159	40157593	3FE932AF	3F4135B5
(1200)	3F82DE16	3FEAE98A	3F67E391	3FBC5F68	3FC765BD	3F5495C8	3FEAC93F	3FE204D3	3FE68A85	3FB18E84
(1240)	3F4B0776	3FE188F3	40127155	3F75B9BA	3FD706DE	401A8B7A	401AD783	3F6A11E7	3F5B05D3	3F7BA139
(1280)	3F7E614F	3F436411	3F9D4F74	3F46D07A	3F5F8E42	3F710728	3F781431	40120BA2	4020B49E	3FC01C49
(1320)	3F7001FB	3F7EE788	3F57109D	3F6BE905	3FCEA3EC	3F726CEB	402251F4	40169CEA	3F716231	401F9CF7
(1360)	4014D28B	4015E950	4012E198	3F73A541	40140733	401F6863	4015F8B1	3F70D24D	3F9DAE75	3F6007FB
(1400)	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000020
(1440)	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000020
(1480)	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000020	00000020
(1520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

D-61730
November 14, 1980 -
November 18, 1980

DUMP OF TAPE DOUT5

INPUT TAPE DOUT5 ON TAU
DATA INPUT BY [illegible] 1 1 84 . LAST 1

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

1980 004319

FILE 0 RECORD 1 LENGTH 1920 BYTES

(0)	47000000	01540000	C8C4D9F1	C7E240F3	C6D3E3F1	02200E3F	0016C009	0017004D	00000078	00000012
(40)	40D1C1D5	00000012	C3D9E4C9	E2C54040	D3F14040	00000000	00000000	00080000	00000000	
(80)	C3D1D6C1	F0F1D5C4	C8C3D5C3	C6C6C6C6	C6C6C6C6	00000000	00000000	C0000000	00000000	
(120)	00000000	00000000	00000000	00010044	F1F3F0F6	F6C74040	D5D6D5C5	40404040	D5D6D5C5	40404040
(160)	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(200)	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(240)	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040	D5D6D5C5	40404040
(280)	01010100	00000000	01000000	00000000	00010001	01000000	00000000	00000000	00010100	00000000
(320)	00000000	00000000	00700200	00000000	00000000	00000000	00000000	00000000	00010001	01000000
(360)	01000100	00000000	00100000	00010000	40404040	40404040	40404040	40404040	40404040	40404040
(400)	00000000	00000000	10840000	C8C4D9F3	00000000	00000000	0050013F	00160009	0017004D	00000000
(440)	00000000	00000000	00200200	00000000	00000000	00000000	00000000	00000000	00000000	000A0000
(480)	00000000	00100000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(520)	00000000	00000000	00000000	00000000	00020400	00060000	00000000	00000000	00000000	00000000
(560)	00000001	00100000	0004FFFE	43A157AE	439804F8	43AD2C28	43C15333	43D4DB0A	43E8C385	43FAF8F5
(600)	441CDD0F	441D0299	441E3D40	441F70F3	441FA97A	4416E4DE	44182607	44196F19	441ABE54	43A04147
(640)	43F141E8	4413DD21	4418D694	441E381C	44242807	442AD54C	44325DE6	443AEEE5	4444B6CC	444FEA66
(680)	445AC0C8	446FA5E8	447BFE8	44882740	44A68C80	43170400	43154C00	43148999	4313C4CC	43134833
(720)	43127400	43120400	43130148	4312F646	43151E36	4313E666	4313CCCC	4313F000	43144E66	43148999
(760)	43162E66	4355E000	43402000	434D0000	43522000	435A1000	43645000	4370F000	43802000	43920000
(800)	43A1CCCC	43AF7CCC	43BFCCCC	43FD0CCC	44123CCC	4414F800	44183000	41199E81	4116ED91	411553F7
(840)	411420C4	41138937	4112F9DB	41128B43	41123126	4111EB85	4111B22D	41117CED	411153F7	41113333
(880)	4111126E	4110F5C2	4110E147	00000000	00000000	00000000	00000000	41100000	41100000	41100000
(920)	41100000	41100000	41100000	41100000	41100000	41100000	41100000	41100000	41100000	3F28F5C2
(960)	C0D1C1D5	7FFFFFFF	4614BF70	46169FC0	00000025	00030007	3F3A92A3	3F3A92A3	41100000	41100000
(1000)	41599999	41219999	41100000	42230000	C5186A00	C519A280	C51A9C80	C51B5800	C51C5200	C51D4C00
(1040)	C51E4A00	C51F4700	C5213400	C5223E00	C5236680	C5249F00	C5257D80	C5271000	C5284880	
(1080)	C5294100	C52A3A80	C52B2F00	C52E6300	C5301880	C5310F00	C5338380	C5353900	C536EE80	
(1120)	C5399E00	C53C4D80	C53EFD00	C541AC80	C5445C00	C5484400	C54C2C00	C5501400	C553FC00	C557E400
(1160)	C55BCC00	C55E4B80	C5610A00	C5646C00	C5704E00	C5762A00	C57C0600	C5815200	C587BE00	C58D9A00
(1200)	C5947600	C5971C00	C5984000	C5A12E00	C5A69400	C5A9F000	C5B1B000	C5B79800	C5BD7400	C5C35000
(1240)	C5CA2600	C5D0FC00	C5D7D200	C5DEA800	C5E57E00	C6118C30	C614C080	C61818E0	C61B5030	C61E8480
(1280)	C6214EF0	C624B6A0	C627E450	C63EEE80	C6430F00	C6445C00	C648AF00	C65B0200	C665A500	C661A800
(1320)	C66BAC30	C67E3A10	C67FF410	C6883800	C6927C00	C6A037A0	C6ADF340	C6BA2840	C6C7E3E0	C6D59F80
(1360)	C6E66860	C6F73140	C7107FA2	C7118C30	C71298BE	C713A54C	C714B1DA	C715BE68	C716CAF6	C717D784
(1400)	C71B0996	C71A6110	C71B3828	C71D3EF4	C71E8460	C71FDA4C	C7213018	C72285E4	C723DBB0	C7253170
(1440)	C7267B24	C7280F2C	C7294A74	C72C5290	C72E0AE4	C7300400	C7320D10	C7350638	C7371F54	C7393870
(1480)	C73E8408	C73E8FA0	C7413B38	C743E6D0	C7469268	C74A0150	C74D7038	C750DF20	C7544E08	C757BCF0
(1520)	C7B4D9B0	C7F05170	4811CFF0	4815BCC0	4819EA90	4819A280	451AD800	451C1380	451D4C00	451E8480
(1560)	451FB680	45217280	45230E80	45246B8C	452BD740	4527BCC0	45294280	452AF800	452CAD80	452E6300
(1600)	45309880	45320800	4534FA80	45372D00	45395F80	453BD080	453E4180	4540B280	45432380	45459480
(1640)	4548C180	454D7E80	45581F00	455E2A8C	45667300	4553FB00	45604300	45612B00	45631300	4564FB00
(1680)	45680000	45715100	457A8F00	457EF400	45F5D600	45B8B800	45BD9A00	45927C00	45975E00	
(1720)	45903A00	45A31600	45A8F200	45AECE00	45B4AA00	45B98C00	45BE6E00	45C35000	45C83200	45CD1400
(1760)	45D72E00	45DC8C00	45E25A00	45E85E00	46100580	4613DEA0	461A17B0	461F20C0	46242DD0	462932E0
(1800)	462E37F0	46337B40	46384E80	463D41C0	4644C340	46543A80	465C29C0	46641900	466C0840	4673F780
(1840)	467E57C0	46885800	46931840	469D2A80	46A7D8C0	46B59460	46C35000	46D10BA0	46DEC740	46EC82E0
(1880)	46FD4BC0	4710E14A	4711EDD8	4712FA66	471406F4	47155CC0	4716B28C	47180858	47195E24	471AB3F0
(1920)	471BF9BC	471CF54A	471E4498	471FF4E6	47210CEC	4722E78C	47249F00	47265674	4728CDE8	4729F630
(1960)	472DD578	472DC4C0	472FAF08	47319750	47337F98	4735C988	47381378	473A5D68	473CA758	473EF148
(2000)	474AF8E4	474C1A2A	474D3B70	474E5CB6	474E5CB6	47515270	4752F110	47588040	475BEF28	475F5E10
(2040)	4761CCC0	476A1A58	476B6BF0	476C8D88	476C8D88	476F7CA3	476FBC70	4812CEEC	4815FDC2	4819A400
(2080)	481DD214	48229E3D	48282214	482E7AE1	4833CA8F	483E37D7	422BC5A1	424BD439	42683851	4284F851
(2120)	42A0F8F4	42BC7AF1	42D8BAEE	42F4FAEB	43114CE8	4317B199	431B9E8F	43000DC2	4302EEE1	4303B547

(18040)	00000000	3F139B5E	3EE4A1CE	3EF153EC	00000190	3F944871	402DFAFE	3F10F183	402EEACF	4349F006
(18080)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	42314AA5
(180C0)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(18100)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
(18140)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

FILE [illegible] RECORD 1800 LENGTH 15292BYTES

1980 32.3

(0)	3FB00000	04240000	D3404040	C7E260F3	C6D3E3F1	00500143	00160037	0017029D	43142F48	3BB5B585
(40)	40447F48	3BB5B585	F2F3C5F3	413D70A4	8932003A	0021AC02	2F2F0000	02F00000	C0080000	77777777
(80)	40404040	40404040	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(C0)	77777777	C01A0C42	03000001	84970DE6	008A3706	000A000A	00090010	41247AE0	4013C869	408B61EB
(100)	3F0B45F7	409D4D73	43405C06	3F301413	3F2FF5D4	3F291FD0	00000010	C0147F19	40F5C28F	41400000
(140)	41300000	41400000	41100000	4017649C	40174C95	40164ED9	3E27112B	4319C302	43198858	43164033
(180)	4385FFD7	41DF049E	42390A20	4314AFEA	431A2B94	41E409E8	4256A738	42354680	4239B571	4223C61F
(1C0)	00000000	41700103	40FF2203	4231A64E	41100000	FB0C2CC7	4231B76C	42337831	4225F996	00000000
(200)	C21C0465	3E381D8E	41B87121	42565213	43196499	40164B36	42240D3C	41B9E620	7FFFFFFF	7FFFFFFF
(240)	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	41B87121	42565213	43196499	7FFFFFFF
(280)	4014A9B0	41B3A021	4210EB84	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF
(2C0)	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	41286F63	7FFFFFFF	41500000	41100000	41600000
(300)	41500000	41500000	41100000	40F0F838	40F0C178	40F7C180	4017AC8D	4017A39D	40170CE0	C052260F
(340)	C0A2A58A	C0438040	42B27EB5	42722276	C31830FE	431AEF02	C23FFD0E	C2252D38	42A0CCFF	426F937D
(380)	C316E88B	4319F840	C23DE622	C222C185	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF
(3C0)	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	7FFFFFFF	41700000	7FFFFFFF
(400)	7FFFFFFF	7FFFFFFF	7FFFFFFF	C0492FEB	C033F1FD	40430B64	4230AB5E	77777777	77777777	77777777
(440)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(480)	77777777	77777777	77777777	77777777	43442F47	111F0C34	434A2F49	57A9DB48	C2398EE1	C26E8680
(4C0)	423AF6EA	00000000	00000000	00000000	42895C65	42195A2E	42E57C00	C0829BFF	408F08E7	4069E91
(500)	C03DCA55	405A6438	C0E766F6	C0D35772	C0907792	00000000	3FA71A55	40F63097	40456882	4018D5A4
(540)	5D41AD2D	4DFAF4AF	4DF24413	BF342BFA	C01ABF42	407A1755	C0B34C11	4087F31A	C0CFDE7A	C0513B8E
(580)	4F0CF619	2016A3D6	C0A84DC9	C0CCB8DA	77777777	77777777	77777777	77777777	77777777	77777777
(5C0)	77777777	77777777	77777777	77777777	00000000	000A004D	00000000	00330020	00940003	005C008D
(600)	8C1A3C0A	90A1B8B4	80F33310	3C0C0000	00100000	00480000	00A100D1	00460088	00600042	00560069
(1000)	00230000	00000027	00000020	00560065	000D0071	007A006D	003A0044	00320034	00000000	001A0040
(1040)	00000000	00210000	00000034	C02B0000	00350040	004AC066	02AC0000	C5F24040	C7E260F3	C6D3E3F1
(1080)	00500143	00160037	0017029D	43142F49	21D1DEB1	434A2F49	21D1DEB1	E2C3C5E3	413D70A4	8932003A
(10C0)	0021AC02	2F2F0000	02F00000	C0080000	77777777	40434040	40404040	77777777	77777777	77777777
(1100)	77777777	77777777	77777777	77777777	77777777	77777777	00010010	00000001	5498008A	00213706
(1140)	00000000	00000005	41700103	FFFFFFFF	4FF8C2AC	408A1B93	3FC30E50	408B9C2C	408B6918	3F24DD8C
(1180)	3A0F4A0F	00000010	40091CF7	40F5C28F	4A136EFF	4EC96F60	3F15D98C	3EA3F23C	3E5EC059	3E222090
(11C0)	3C9B523D	3C12997A	3BDF31D4	3C17EBC6	3B7D7BFC	3B5E18AD	3C576095	3C34CB6A	3C1298DA	3C2C19AA
(1200)	3C2D8EE6	3C49F42C	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(1240)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(1280)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(12C0)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(1300)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(1340)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777
(1380)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	434A2F47
(13C0)	111F0C34	434A2F49	57A9DB48	C2398EE1	C26E8680	423AF6EA	00000000	00000000	00000000	4289DC65
(1400)	40178405	4DEF7C00	C0481783	40EF5F16	406D7EA0	C0538E87	405A8D8E	C0E766EF	C0D3B6D0	C08FEBAB
(1440)	C0C1C0C0	BFA2A189	40FA01A8	42460B34	4018D5A8	C046C05B	40F4C573	40FE9337	BF342572	C01AC67B
(1480)	407A1BE5	C0B34C90	4087EE58	C0DF0B5C	C0513C2A	405DF0F9	C016A932	C0A3AC32	C0C38807	77777777
(14C0)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	77777777	00440000
(1500)	00000000	00000000	00000017	00000000	0058C04D	0058C058	00610076	08E40000	D3C6D440	C7E260F3
(1540)	C6D3E3F1	00500143	00160036	00360095	43142F47	1220EB71	434A2F47	1220EB71	E2C3C5E3	42300000
(1580)	89320038	0021A777	68500000	30643084	00010000	77777777	40404040	40404040	77777777	77777777
(15C0)	77777777	77777777	77777777	77777777	77777777	77777777	77777777	00500028	00100008	54990218
(1600)	408C5EDC	408C4835	41692E98	4315EB9C	C0501576	C037A989	C064D81C	3F378689	3F124FAA	3F31EAE3
(1640)	40000000	4060D406	409BBCD6	408C11A3	408FED0C	40BBA5AC	408CD0FF	408D6C5D	408C0018	408FECE7
(1680)	4164A72E	41768F1C	4170B8AE	4172FB1E	4182B41D	4182DD25	431613B9	43160C8F	431EE865	4315D06B
(16C0)	4318CC76	C034B43DC	C040A739	C04F84A9	C0538F60	C0546A40	C037B826	C038B7EC	C0390233	C036FA26
(1700)	C038E353	C0E52BF3	C0678306	C0643480	C061D940	C0614EB3	3EE35C9B	3F11E8BC	3F16B818	3EF8FA12
(1740)	3EE13BB4	3EBC0198	3F1A2DF3	3F139CFE	3E9D5AEE	3EAA1B64	3EC76764	3E83F73E	3F182180	3E985AD5
(1780)	3EA86F31	00000005	00000005	00000005	00000005	00000005	00000005	408D2868	408D1730	408E3F06	408BE398
(17C0)	40911E0F	40BC214B	40B0C48C	40B0C60	40B0C708	40B0C870	40B0CE10	40BB4E08	40BC1038	40B0DBF0
(1800)	41B14CF1	41A2D18A	43A2F04C	40B6EF30	40BC6B48	40BB6DD0	40BBA448	40BBD318	40B0DA5B	40BC7F80
(2240)	408AD1D8	408D1CC7	408D072D	408E2D93	408BCC45	408C0679	408C1A09	408CA1AF	408CF5EB	408FC4A3
(2280)	41B2AA7E	40BF0C6C	40B7B8C0	40BBF646	40BC8B8E	40BD1F2	40BBB719	40BCA93D	40BBD0D2	40BC2233