#273

MARINER 5

TRIAX MAG FIELD VENUS ENCOUNTER

67-060A-05D

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TRIAX MAG. FLD. VENUS ENCOUNTER

67-060A-05D

This data set has been restored. There was originally one 7-track, 556 BPI tape written in BCD. There is one restored tape written in ASCII. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The original tape was created on an IBM 7094 computer and the restored tape was created on an IBM 9021 computer. The DR and DS numbers along with the corresponding D number are as follows:

DR#	DS#	D#	FILES	TIME SPAN
DR005473	DS005473	D014476	1	10/19/67 - 10/19/67

REQ. AGENT	RAND NO.	ACQ. AGENT
VJP	RC0610	DJH

MARINER 5

TRIAX MAG FIELD VENUS ENCOUNTER

67-060A-05D

This data set consists of 1, 556 BPI, 7-track BCD tape that was produced on the IBM 7094 computer. The tape contains 357 card images on one file.

D#	C#	TIME SPAN
D-14476	C-11435	10/19/67 - 10/19/67

Table 1.

P1	E − 156 min	Initial passage through a boundary in the solar plasma
SHA	E − 22 min	Closest approach to shadow of Venus
IONI	E − 13.1 min	Initial detection of ionosphere by dual-frequency receiver
DL	E − 7.9 min	Dark limb of planet observed by ultraviolet photometer
ATMI	E − 3.18 min	Initial detection of atmosphere by S-band occultation experiment
GO	E − 2.0 min	"Geometrical occultation"—Earth-spacecraft line of sight intersects dark limb of planet
LOS	E − 14 sec	Loss of spacecraft radio signal resulting from occultation
E	E	Periapsis
TER	E + 3.4 min	Terminator crossing observed by ultraviolet photometer
QUAD	E + 3.55 min	Quadrature; Sun-Venus-Mariner angle 90°
CO	E + 10.0 min	Center of geometrical occultation
BL	E + 16.7 min	Bright limb crossing observed by ultraviolet photometer
P5	E + 18 min	Final passage through a boundary in the solar plasma
ROS	E + 20.6 min	Reacquisition of signal by Goldstone tracking station
XGO	E + 22.8 min	Exit from geometrical occultation at bright limb
ATMF	E + 23.0 min	Final observation of atmospheric effect on S-band signal
IONF	E + 24.0 min	Final detection of ionosphere by dual-frequency receiver

are overlapping and complementary. However a puzzling inconsistency appears. The minimum altitude quoted for Mariner data (40 km) and the maximum quoted for Venera data (26 km) do not indicate overlap, although the atmospheric data clearly do. Stated in another way, the atmosphere at 26 km from Venera (0.7 atm, 313°K) is observed by Mariner at 6114-km range, corresponding to an altitude of 58 km. It will be of great interest to see how this discrepancy can be reconciled. Until both sets of data have been studied in greater depth, it would be premature to speculate on the cause of the disagreement.

However it should be noted that the two American experiments were made on opposite sides of the planet, with the Russian experiment about halfway between, and that the shape of Venus (which determines the conversion from range to altitude) is completely unknown. The mysteries about Venus have by no means all been dispelled by the two highly successful and complementary Venus missions in October 1967.

The Mariner V spacecraft (Fig. 1) was launched from Cape Kennedy at 06 : 01 : 00 U.T. on 14 June 1967. That day had been selected in advance to optimize the value of the scientific data at the planet. An orbit correction maneuver was performed late on 19 June, and the spacecraft passed by Venus on 19 October at 17 : 34 : 55.3 U.T. 10,151.0 km from the center. It passed out of telemetry range early in December, and proceeded toward the perihelion of its solar orbit. Like all Mariners, this spacecraft was oriented with respect to Sun and Canopus by an attitude control system to within one-half degree about each axis. An abbreviated chronology of significant events during the Venus encounter is given in Table 1, which also lists the codes used to represent the events on the orbit plots.

Approximately 850 hours of telemetry data at 33.33 bits per second were received by the Deep Space Net during the first 40 days. Subsequently, at a data rate of 8.33 bits per second, an additional 1670 hours of data were received prior to Venus encounter and about 600 hours were received after encounter. Near the planet 937,000 information bits (of which 648,000 were scientific data) were stored by the spacecraft tape recorder. These were transmitted to Earth twice during the following week.

Of the specifically scientific instruments aboard, four were slightly modified versions of instruments originally built for the 1964 Mars mission—the magnetometer, the plasma probe, the charged-particle detectors, and the ultraviolet photometers. The fifth scientific instrument was the dual frequency radio receiver. The spacecraft science data subsystem provided the sequencing command pulses to operate all these instruments, and transferred their data outputs to the telemetry subsystem. The dual frequency receiver provided scientific data whenever it was receiving signals from the Stanford University transmitter. The other instruments produced data continuously throughout the flight. The spacecraft transponder received commands from Earth and transmitted data to Earth. In addition, it provided the capability for the range data and the Doppler range-rate data required for the celestial mechanics experiment and the radio signal required for the S-band occultation experiment.

The output of the science data subsystem was in binary digital form, arranged into a frame 420 bits in length, repeated every 50.4 seconds during the latter portion of the flight. During the Venus encounter this "real time data format" was recorded on the magnetic tape and simultaneously sent to the telemetry transmitter. In addition the data from certain experiments (the dual-frequency receiver, the ultraviolet photometers, and one of the charged-particle detectors) were sampled more frequently and recorded on the tape, the data storage rate being 133.33 bits per second.

At the time that Mariner flew by Venus, it was 79,764,370 km from Earth, so that the transit time for radio signals was 266 seconds. To avoid confusion between spacecraft time and Earth time, it is convenient to specify the times of all encounter events relative to the time of closest approach (conventionally called "encounter" and denoted by E).

Figure 2 presents an isometric view of the orbit from E −210 minutes to E +30 minutes, a time period which includes all planet-related observations except that of the outermost edges of the hydrogen corona. The spacecraft approached the dark side of Venus from north of the planet's orbit, crossed the plane of the terminator shortly after passing periapsis, and was deflected sharply (101.5°) in toward Sun by the gravitational field.

The motion of the spacecraft in its actual orbital plane is shown in Fig. 3. This view is the appropriate one for most purposes, as the center of Earth lies only 1.5° off this plane, and the line of sight for the ultraviolet photometers makes an angle of only 3.2° with it. Events pertinent to the ultraviolet experiment and the two occultation experiments are shown on the figure.

A projection onto the plane of the terminator (Fig. 4) depicts the orbit as seen from Sun. This view demonstrates that the spacecraft never passed into the optical shadow of the planet. To have done so would have caused loss of orientation control. The minimum distance to the shadow was more than 2400 km, at E −22 minutes. An additional representation of the orbit, particularly suited to illustrating the plasma interaction, is contained in the following paper (2).

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MARINER 5 VENUS ENCOUNTER DATA

The accompanying printout and cards contain the following information arranged by columns:

(1) Frame count (3 digits: 000 to 796);

(2) Time in decimal hours X 10^3 measured from closest approach; minus hours are before, plus hours after periapsis; example: -3951 implies 3.951 hours <u>before</u> closest approach.

(3) B_{XASE}, the X component of the magnetic field in Aphrodiocentric Solar Ecliptic coordinates; in these coordinates, Z_{ASE} is parallel to the north ecliptic pole (E) and the prime meridian contains the vector from Venus to the sun (S); Thus, $X_{ASE} = Y_{ASE} \times Z_{ASE}$, $Y_{ASE} = \frac{E \times S}{|E \times S|}$ and $Z_{ASE} = E$; the units are 10^{-2} gamma; example: -122 implies -1.22 gamma.

(4) B_{YASE}, the Y field component in ASE coordinates.

(5) B_{ZASE}, the Z field component in ASE coordinates.

(6) B, the field magnitude obtained from the square root of the sums of the squares of the components; the three components and the magnitude are averages over one data frame; three vector samples were obtained each frame at unequal intervals of 1/7, 2/7, and 4/7 of the time between frames; at encounter the latter was 50.4 seconds and the corresponding time intervals were 7.2, 14.4, and 28.8 seconds.

(7) S_{XASE}, the standard deviation of the X field component (B_{XASE}) over the frame whose number is given in column 1; the units are 10^{-2} gamma; example: 30 implies 0.30 gamma.

(8) S_{YASE}, the standard deviation of B_{YASE} over the frame.

(9) S_{ZASE}, the standard deviation of B_{ZASE} over the frame.

(10) S_B, the standard deviation of B over the data frame.

691	-3951	-122	-486	634	811	30	63	16	28
692	-3937	-51	-501	614	803	102	48	25	19
693	-3923	-225	-541	528	794	39	46	50	14
694	-3909	-67	-522	561	793	175	54	53	11
695	-3895	-19	-493	600	808	184	112	58	43
696	-3881	-225	-593	482	802	39	60	37	28
697	-3867	-400	-556	353	774	16	40	50	10
698	-3853	-520	-479	303	772	30	38	40	11
699	-3839	-535	-430	316	760	19	51	29	20
700	-3825	-551	-453	281	770	25	39	23	18
701	-3811	-551	-369	348	753	36	27	49	16
702	-3797	-551	-377	266	735	62	55	127	32
703	-3783	-567	-380	292	745	32	17	34	22
704	-3769	-496	-488	292	760	32	74	36	37
705	-3755	-464	-435	357	733	16	43	44	11
706	-3741	-456	-433	422	762	69	26	20	24
707	-3727	-512	-256	356	677	0	37	24	11
708	-3713	-504	-269	348	676	46	62	43	14
709	-3699	147	-629	498	824	93	43	48	27
710	-3685	44	-672	489	847	118	93	53	33
711	-3671	28	-545	613	824	41	46	28	24
712	-3657	-67	-710	424	846	81	100	102	29
713	-3643	52	-637	493	826	147	75	51	34
714	-3629	99	-660	497	835	48	28	20	23
715	-3615	44	-765	386	862	25	50	54	32
716	-3601	44	-691	455	838	50	59	94	21
717	-3587	195	-726	441	882	102	35	73	19
718	-3573	282	-710	376	853	25	11	37	18
719	-3559	235	-690	419	872	154	67	157	14
720	-3545	36	-558	594	819	16	48	30	18
721	-3531	179	-673	488	853	54	23	28	17
722	-3517	179	-687	469	854	59	22	13	19
723	-3503	107	-722	435	856	86	17	41	10
724	-3489	131	-741	393	857	99	34	47	25
725	-3475	187	-747	401	879	41	56	112	11
726	-3461	219	-740	433	886	19	24	27	20
727	-3447	266	-735	397	880	54	36	25	13
728	-3433	354	-743	353	898	46	16	24	8
729	-3419	417	-722	293	886	32	20	31	20
730	-3405	457	-700	289	886	19	16	24	15
731	-3391	481	-685	253	875	25	13	9	16
732	-3377	433	-700	275	870	16	19	34	18
733	-3363	497	-625	306	857	32	24	33	12
734	-3349	489	-632	301	858	30	39	58	11
735	-3335	505	-578	358	849	19	43	27	17
736	-3321	306	-714	395	880	96	69	23	30
737	-3307	147	-814	373	911	59	18	28	7
738	-3293	-11	-849	310	911	96	28	42	12
739	-3279	235	-742	322	906	323	76	37	19
740	-3265	425	-636	421	890	130	61	90	19
741	-3251	425	-602	438	860	48	23	24	16
742	-3237	290	-730	459	916	30	74	65	27
743	-3223	123	-838	366	934	79	65	89	17
744	-3209	76	-872	373	954	46	25	32	20
745	-3195	28	-819	324	888	32	49	88	26

746	-3181	28	-767	345	845	32	58	39	37
747	-3167	-35	-741	294	802	50	46	31	34
748	-3153	-154	-745	257	806	36	24	24	16
749	-3139	-170	-745	285	818	32	12	18	18
750	-3125	28	-682	362	782	89	40	61	17
751	-3111	-3	-767	275	827	102	34	82	6
752	-3097	-273	-668	271	787	140	36	46	14
753	-3083	-456	-656	67	808	19	44	83	33
754	-3069	-472	-606	-33	774	36	38	62	20
755	-3055	441	-537	385	817	172	86	33	42
756	-3041	592	-363	405	809	30	66	27	22
757	-3027	695	-263	352	826	19	54	62	39
758	-3013	743	-230	297	838	54	70	55	50
759	-2999	775	-283	339	894	19	48	32	27
760	-2985	529	-466	341	841	200	229	41	34
761	-2971	-11	-810	267	864	119	22	51	10
762	-2957	-218	-798	121	844	41	18	100	32
763	-2943	-297	-678	72	747	19	20	48	21
764	-2929	-384	-565	52	774	30	53	57	52
765	-2915	-361	-724	-16	827	108	111	82	58
766	-2901	-384	-703	-118	822	89	113	52	76
768	-2873	-504	-685	67	865	77	43	110	25
769	-2859	-448	-774	114	906	41	41	57	36
770	-2845	-535	-655	10	852	41	27	75	29
771	-2831	-424	-746	-12	867	46	40	99	27
772	-2817	-448	-659	-40	805	54	56	46	18
773	-2803	-353	-638	-16	740	83	59	66	31
774	-2789	-82	-718	102	741	108	23	48	10
775	-2775	568	-398	213	804	296	183	38	63
776	-2761	775	-191	180	826	19	113	29	34
777	-2747	831	-244	220	897	30	57	66	41
778	-2733	640	-249	232	789	75	258	200	123
779	-2719	576	-126	69	609	48	106	82	51
780	-2705	584	-58	0	622	82	187	74	71
781	-2691	807	-247	238	878	16	42	34	20
782	-2677	783	-259	181	852	32	104	59	61
783	-2663	751	-220	160	804	30	62	54	7
784	-2649	664	-546	216	891	19	55	63	23
785	-2635	695	-428	241	855	32	57	36	23
786	-2621	688	-350	254	833	30	190	53	82
787	-2607	727	-412	78	847	16	72	87	23
788	-2593	1061	-609	41	1237	324	68	102	300
789	-2579	1268	-708	-25	1453	30	47	8	48
790	-2565	1307	-785	174	1542	58	51	129	65
791	-2551	1069	-564	279	1258	253	56	144	214
792	-2537	1149	-529	193	1285	46	32	105	29
793	-2523	1196	-661	146	1381	83	72	112	88
794	-2509	950	-240	50	1087	362	252	267	218
795	-2495	950	-472	107	1099	108	136	201	24
796	-2481	902	-725	158	1222	168	217	254	107
-0	-2467	1069	-469	-80	1193	77	175	148	80
1	-2453	1093	-541	-30	1234	65	148	130	103
2	-2439	1149	-558	-48	1280	58	69	32	65
3	-2425	1188	-485	96	1295	39	26	139	39
4	-2411	1133	-443	225	1240	32	72	57	49

5	-2397	1172	-578	24	1313	65	54	92	56
6	-2383	1133	-496	2	1239	19	65	53	41
7	-2369	1156	-505	-41	1264	56	60	46	72
8	-2355	1149	-462	-147	1249	89	28	37	76
9	-2341	1196	-539	-190	1333	25	75	113	34
10	-2327	1101	-544	-126	1237	65	50	58	61
11	-2313	1109	-654	-190	1304	58	25	49	43
12	-2299	1069	-501	-231	1220	58	177	112	89
13	-2285	1156	-454	-286	1278	91	57	75	101
14	-2271	998	-295	-380	1113	44	64	87	46
15	-2257	1125	-549	-360	1321	64	187	119	86
16	-2243	1085	-484	-441	1278	85	91	128	88
17	-2229	1133	-505	-397	1305	89	60	70	106
18	-2215	1141	-496	-411	1311	134	42	49	142
19	-2201	1085	-525	-324	1253	68	83	65	80
20	-2188	1037	-601	-241	1227	91	93	43	103
21	-2173	974	-349	-244	1066	48	36	62	44
22	-2159	910	-260	-318	1002	30	54	55	39
23	-2145	910	-307	-264	1005	16	121	70	48
24	-2131	934	-390	-310	1060	41	54	25	55
25	-2117	958	-379	-255	1064	50	57	53	57
26	-2103	934	-328	-317	1043	32	61	52	40
27	-2089	926	-346	-290	1035	16	81	55	39
28	-2075	894	-366	-332	1033	41	134	60	44
29	-2061	854	-416	-443	1054	19	72	90	60
30	-2047	870	-401	-423	1056	77	91	50	29
31	-2033	862	-423	-419	1055	41	108	48	38
32	-2019	815	-441	-364	1001	19	99	30	36
33	-2005	759	-538	-362	1005	56	70	64	29
34	-1991	862	-370	-297	1006	74	207	61	97
35	-1977	950	-484	-200	1087	39	36	50	37
36	-1963	934	-418	-184	1043	19	58	60	31
37	-1949	902	-168	-170	935	41	21	40	33
38	-1935	862	-258	-250	937	41	36	59	43
39	-1921	854	-231	-289	934	54	37	34	44
40	-1907	807	-336	-206	902	46	88	27	72
41	-1893	743	-427	-143	879	41	75	108	39
42	-1879	807	-511	-46	959	39	39	39	34
43	-1865	783	-500	-48	932	19	43	28	8
44	-1851	807	-424	-131	922	30	15	30	23
45	-1837	862	-369	-228	967	19	13	52	18
46	-1823	870	-431	-165	987	16	43	43	27
47	-1809	926	-398	-142	1021	30	57	49	21
48	-1795	894	-367	-131	977	41	22	38	38
49	-1781	886	-391	-109	977	30	32	45	20
50	-1767	902	-420	-109	1004	41	19	58	39
51	-1753	831	-420	-138	943	30	37	24	24
52	-1739	783	-407	-158	904	19	43	105	24
53	-1725	759	-363	-167	867	44	97	66	35
54	-1711	703	-490	44	866	48	78	80	60
55	-1697	807	-362	-31	900	30	117	125	65
56	-1683	703	-533	25	894	41	121	81	62
57	-1669	823	-498	20	969	41	49	106	57
58	-1655	839	-490	131	988	44	95	86	54
59	-1641	401	-590	55	760	248	147	123	183

60	-1627	409	-314	-38	560	46	145	165	71
61	-1613	298	-411	278	616	170	133	65	90
62	-1599	187	-203	201	582	156	366	335	221
63	-1585	338	-179	-139	494	175	194	180	149
64	-1571	409	78	-195	513	95	202	82	74
65	-1557	266	-80	-111	389	166	212	126	165
66	-1543	449	67	-155	560	102	254	167	139
67	-1529	306	-122	-43	357	179	74	55	154
68	-1515	449	28	-27	496	99	127	160	91
69	-1501	449	-73	57	503	141	195	118	171
70	-1487	433	-53	-5	491	102	174	148	111
71	-1473	298	-3	-31	443	69	270	228	155
72	-1459	457	-276	-118	611	192	121	158	53
73	-1445	370	-375	36	583	152	137	144	41
74	-1431	346	-300	67	499	119	93	147	100
75	-1417	227	-295	153	540	228	183	258	150
76	-1403	258	-342	-47	543	239	261	164	211
77	-1389	44	-143	-8	506	341	219	282	102
78	-1375	-361	-159	234	507	154	203	118	183
79	-1361	-297	85	78	560	366	115	327	207
80	-1347	-202	-134	6	414	227	228	159	130
81	-1333	-114	291	44	434	236	166	185	170
82	-1319	537	-488	-38	800	144	356	169	255
83	-1305	-35	-3	6	377	242	249	220	170
84	-1291	-90	239	-77	392	263	63	171	141
85	-1277	-345	154	105	406	30	67	94	62
86	-1263	-202	334	-147	459	169	102	137	148
87	-1249	-281	312	-56	449	145	123	97	156
88	-1235	-480	338	47	621	85	127	162	109
89	-1221	-170	128	-85	336	189	241	82	200
90	-1207	-440	248	-61	534	95	136	97	109
91	-1193	-480	254	57	568	122	60	117	91
92	-1179	-19	12	38	276	221	123	113	52
93	-1165	-162	100	79	346	184	209	142	142
94	-1151	171	-381	299	616	279	182	203	192
95	-1137	91	-455	192	575	242	213	139	212
96	-1123	-74	-25	71	283	193	187	110	124
97	-1109	115	-285	145	457	185	173	206	120
98	-1095	-265	-249	276	724	317	454	226	208
99	-1081	-51	-120	170	434	130	337	167	128
100	-1067	-90	-193	101	335	175	217	101	177
101	-1053	4	-89	139	510	301	348	241	190
102	-1039	76	-65	82	405	389	185	160	252
103	-1025	-483	-262	237	623	256	177	42	267
104	-1011	-523	-56	175	595	224	155	96	196
105	-997	-225	-134	189	404	215	175	125	185
106	-983	-241	-118	224	416	111	158	156	106
107	-969	-308	-134	114	549	300	375	233	332
108	-955	-579	-150	125	663	169	218	172	200
109	-941	-400	-221	130	505	116	102	106	84
110	-927	-178	32	42	243	114	134	62	103
111	-913	-361	121	25	421	218	146	66	204
112	-899	-464	161	52	504	119	97	64	137
113	-885	-202	42	1	363	273	197	136	208
114	-871	-575	-16	201	622	182	99	106	197

115	-857	-559	140	96	596	85	128	45	113
116	-843	-345	161	-33	432	145	179	108	157
117	-829	-662	263	15	736	85	119	147	103
118	-815	-639	81	56	659	119	115	71	130
119	-801	-911	-71	284	1011	75	291	130	65
120	-787	-936	26	245	1004	32	253	86	43
121	-773	-661	48	62	704	199	199	75	183
122	-759	-598	-7	159	644	244	143	41	227
123	-745	-472	32	200	559	157	97	253	223
124	-731	-575	56	135	599	105	76	52	117
125	-717	-742	53	211	789	52	151	36	53
126	-703	-773	51	171	804	189	111	81	196
127	-689	-955	164	218	998	112	57	58	109
128	-675	-828	140	240	883	65	106	77	79
129	-661	-832	42	371	938	81	150	204	151
130	-647	-899	77	304	958	78	68	56	68
131	-633	-894	235	314	990	80	128	76	50
132	-619	-724	369	386	924	216	123	69	153
133	-605	-162	315	224	468	154	214	27	163
134	-591	-904	72	555	1089	233	194	31	199
135	-577	-820	96	162	860	69	102	149	85
136	-563	-697	-217	104	754	147	163	93	188
137	-549	-829	-163	198	886	45	166	77	72
138	-535	-710	-12	137	748	86	177	56	81
139	-521	-599	-109	100	646	180	136	139	184
140	-507	-680	-58	115	728	122	190	128	132
141	-493	-716	-127	146	750	280	115	53	290
142	-479	-850	-10	263	896	22	91	38	26
143	-465	-344	220	150	766	565	223	226	149
144	-451	942	-93	-205	1040	237	312	191	218
145	-437	-361	-66	274	576	253	232	151	137
146	-423	-210	-79	269	436	144	270	70	178
147	-409	-599	-264	101	691	134	115	112	80
148	-395	-488	-147	132	605	158	260	158	173
149	-381	-297	104	322	498	184	119	70	87
150	-367	-676	-216	191	753	120	142	47	105
151	-353	258	-360	142	526	239	112	87	133
152	-339	123	-246	313	537	709	158	159	176
153	-325	-3	140	140	650	416	387	432	355
154	-311	-257	-46	181	538	360	223	133	96
155	-297	-241	14	98	515	419	196	94	159
156	-283	-372	-156	288	564	288	160	120	227
157	-269	-610	-272	161	760	262	303	202	311
158	-255	-598	-503	-136	865	253	166	232	171
159	-241	-432	-364	-72	587	170	123	125	205
160	-227	-503	-405	-90	693	307	167	103	283
161	-213	-98	-447	-176	661	396	109	181	77
162	-199	-178	-621	-168	687	127	88	99	97
163	-185	-225	-499	-336	669	127	176	152	195
164	-171	76	-571	-442	781	167	141	211	105
165	-157	-194	-545	-252	691	223	99	132	19
166	-143	314	-491	-446	801	235	274	125	211
167	-129	91	-207	-340	675	240	476	281	275
168	-115	195	-215	-192	479	269	242	214	263
169	-101	-3	-224	-44	530	369	116	296	94

170	-87	52	-326	117	602	439	145	239	177
171	-73	44	-497	-479	743	206	95	189	125
172	-59	235	-398	-219	908	567	446	530	411
173	-45	465	-433	-262	845	479	101	267	263
174	-31	322	-393	-293	687	181	151	401	299
175	-17	131	-157	-145	915	543	510	522	229
176	-3	417	-13	-257	888	535	356	385	118
177	11	338	-340	12	807	488	434	152	168
178	25	322	20	-235	873	409	404	606	310
179	39	807	-337	-19	1330	561	237	892	404
180	53	497	-359	-72	1094	680	221	711	448
181	67	878	-252	-158	1405	648	380	933	567
182	81	441	-960	-792	2051	586	958	1140	316
183	95	338	-148	-295	1142	987	296	591	576
184	109	266	-31	-1222	1636	536	670	891	650
185	123	1403	328	-806	1881	358	407	827	409
186	137	1204	262	-754	1605	467	420	547	453
187	151	950	-230	-307	1413	469	498	753	298
188	165	505	-549	237	941	360	216	451	330
189	179	568	-449	-437	1005	190	250	536	306
190	193	386	-431	-227	1170	224	303	1041	495
191	207	619	-455	82	1228	861	511	277	408
192	221	290	-685	72	929	358	316	314	153
193	235	807	-589	-416	1109	421	104	112	378
194	249	632	-413	-277	845	187	93	306	267
195	263	473	-351	-5	665	187	239	192	186
196	277	521	-517	388	979	384	332	214	188
197	291	139	-823	-54	874	234	136	112	151
198	305	409	-538	-63	760	164	257	208	143
199	319	457	-740	-206	986	324	343	247	334
200	333	648	-434	321	869	116	148	102	57
201	347	632	-322	235	752	53	49	59	43
202	361	592	-245	316	718	16	60	47	31
203	375	632	-262	295	747	16	32	29	18
204	389	600	-262	295	721	25	26	43	16
205	403	560	-416	114	765	83	172	231	75
206	417	227	-698	-268	793	86	25	90	9
207	432	107	-742	-317	822	65	43	73	21
208	445	163	-753	-285	824	25	10	32	11
209	459	195	-766	-295	846	30	31	18	28
210	474	179	-693	-303	786	54	73	62	40
211	487	-27	-792	-101	803	46	19	60	17
212	502	-35	-749	-149	767	25	41	33	43
214	529	4	-811	-229	848	50	28	70	26
216	557	123	-714	-231	775	138	28	55	29
217	572	-202	-666	-343	780	58	18	14	27
218	585	-297	-673	-319	804	19	11	16	7
219	599	-313	-647	-301	781	25	13	21	8
220	614	-313	-660	-339	807	25	26	29	34
221	627	-257	-666	-372	808	19	26	25	21
222	642	-313	-627	-345	786	36	41	52	21
223	655	-313	-638	-343	793	50	39	23	26
224	669	-337	-629	-327	788	19	18	31	12
225	684	-345	-598	-316	762	30	21	18	19
226	697	-329	-569	-345	745	19	28	33	31

227	712	-376	-574	-281	750	54	34	80	22
228	725	-440	-541	-287	757	16	47	29	22
229	739	-456	-477	-282	722	19	51	45	35
230	754	-408	-494	-313	719	41	34	65	32
231	767	-424	-479	-322	719	16	13	39	13
236	837	-178	-696	-171	743	32	27	61	22
237	852	-225	-361	-396	675	92	291	170	85
238	865	-162	-531	-473	738	46	75	62	23
239	879	-313	-582	-382	768	25	38	57	24
240	894	-353	-573	-367	772	25	36	65	14
241	907	-345	-618	-272	766	68	63	41	27
242	922	-289	-549	-446	769	41	24	53	21
243	935	-289	-513	-499	774	19	19	30	23
244	949	-313	-477	-523	777	25	34	11	22
245	964	-273	-462	-503	739	25	25	26	10
246	977	-289	-453	-488	732	59	66	25	44
247	992	-273	-301	-500	653	50	76	50	29
248	1005	-329	-371	-509	718	74	62	35	50
249	1019	-392	-394	-476	735	25	50	8	30
250	1034	-289	-400	-509	712	19	29	13	17
251	1047	-202	-431	-521	714	92	52	32	37
252	1062	-138	-517	-492	730	41	20	15	15
253	1075	-162	-526	-451	716	46	37	22	21
254	1089	-170	-546	-435	722	19	22	32	4
255	1104	-218	-555	-422	733	19	32	26	34
256	1117	-225	-557	-433	744	30	26	25	13

Frame count

Time : 1.117 hours after periapsis

B_{XASE} = -2.25 gamma (average over frame 256)

B_{YASE} = -5.57 gamma

B_{ZASE} = -4.33 gamma

Field magnitude, B = 7.44 gamma

Standard Deviation of B_{XASE} (over frame 256)

" " B_{YASE} 0.30 gamma

" " B_{ZASE}

" " B 0.13 gamma

691	-3951	-122	-486	634	811	30	63	16	28	REC	1,	LENGTH	84
692	-3937	-51	-501	614	803	102	48	25	19	REC	2,	LENGTH	84
693	-3923	-225	-541	528	794	39	46	50	14	REC	3,	LENGTH	84
694	-3909	-67	-522	561	793	175	54	53	11	REC	4,	LENGTH	84
695	-3895	-19	-493	600	808	184	112	58	43	REC	5,	LENGTH	84
696	-3881	-225	-593	482	802	39	60	37	28	REC	6,	LENGTH	84
697	-3867	-400	-556	353	774	16	40	50	10	REC	7,	LENGTH	84
698	-3853	-520	-479	303	772	30	38	40	11	REC	8,	LENGTH	84
699	-3839	-535	-430	316	760	19	51	29	20	REC	9,	LENGTH	84
700	-3825	-551	-453	281	770	25	39	23	18	REC	10,	LENGTH	84
701	-3811	-551	-369	348	753	36	27	49	16	REC	11,	LENGTH	84
702	-3797	-551	-377	266	735	62	55	127	32	REC	12,	LENGTH	84
703	-3783	-567	-380	292	745	32	17	34	22	REC	13,	LENGTH	84
704	-3769	-496	-488	292	760	32	74	36	37	REC	14,	LENGTH	84
705	-3755	-464	-435	357	733	16	43	44	11	REC	15,	LENGTH	84
706	-3741	-456	-433	422	762	69	26	20	24	REC	16,	LENGTH	84
707	-3727	-512	-256	356	677	0	37	24	11	REC	17,	LENGTH	84
708	-3713	-504	-269	348	676	46	62	43	14	REC	18,	LENGTH	84
709	-3699	147	-629	498	824	93	43	48	27	REC	19,	LENGTH	84
710	-3685	44	-672	489	847	118	93	53	33	REC	20,	LENGTH	84
711	-3671	28	-545	613	824	41	46	28	24	REC	21,	LENGTH	84
712	-3657	-67	-710	424	846	81	100	102	29	REC	22,	LENGTH	84
713	-3643	52	-637	493	826	147	75	51	34	REC	23,	LENGTH	84
714	-3629	99	-660	497	835	48	28	20	23	REC	24,	LENGTH	84
715	-3615	44	-765	386	862	25	50	54	32	REC	25,	LENGTH	84
716	-3601	44	-691	455	838	50	59	94	21	REC	26,	LENGTH	84
717	-3587	195	-726	441	882	102	35	73	19	REC	27,	LENGTH	84
718	-3573	282	-710	376	853	25	11	37	18	REC	28,	LENGTH	84
719	-3559	235	-690	419	872	154	67	157	14	REC	29,	LENGTH	84
720	-3545	36	-558	594	819	16	48	30	18	REC	30,	LENGTH	84
721	-3531	179	-673	488	853	54	23	28	17	REC	31,	LENGTH	84
722	-3517	179	-687	469	854	59	22	13	19	REC	32,	LENGTH	84