#715

PIONEER 10 & 11
72-012A-09C/73-019A-09C
ARCHIVAL TRACKING DATA FILES(ATDF)

PIONEER 10 & 11
72-012A-09D/73-019A-09D
INTERMEDIATE DATA RECORDS(IDR)

715	72-012A-09C	PSCM-0001
715	72-012A-09D	PSCM-0000
715	73-019A-09C	PSCM-0002
715	73-019A-09D	PSCM-0001

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1. INTRODUCTION:

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 This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system.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

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

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

2. ERRATA/CHANGE LOG:

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

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

Version	Date	Person	Page	Description of Change
01				
02				

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

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

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

4. CATALOG MATERIALS:

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

b. Core Catalog Materials

PIONEER- 10

72-012A-09C PSCM-00016

ARCHIVAL TRACKING DATA FILE(ATDF)

THIS DATA SET CONSISTS OF 39, 9-TRACK,BINARY, 6250 BPI TAPES, WITH A VAX LABEL OF "JPL". TAPE NUMBERS D-86242-86247 WERE WRITTEN BY THE UNIVAC, WHILE TAPE NUMBERS D-86248-86254 WERE WRITTEN BY THE VAX WITH THE "BACKUP" COMMAND. TAPES CREATED WITH THE BACKUP COMMAND HAVE BEEN CONVERTED.ATTACHED ALSO IS A LISTING OF THE DIRECTORIES FOUND ON THE VAX BACKUP TAPES.
THE D AND C NUMBERS ALONG WITH THIER FILES AND TIME SPANS ARE AS FOLLOWS:

D#	C#	FILES	TIME SPANS
D-86242	C-29347	3	02/08/81 - 03/25/81
			09/22/83 - 11/09/83
D-86243	C-29348	8	06/01/78 - 02/21/80
D-86244	C-29349	14	02/13/80 - -2/10/81
D-86245	C-29350	9	03/23/81 - 11/20/81
			11/19/81 - 12/30/81
			11/24/81 - 11/25/81
D-86246	C-29351	15	12/29/81 - 12/23/82
			02/10/83 - 06/03/83
D-86247	C-29352	9	06/02/83 - 09/23/83
			12/29/83 - 01/25/85
D-104174	C-031300	1	06/03/91 - 11/24/91
D-104175	C-031301	1	11/22/91 - 12/08/91
D-104176	C-031302	1	12/07/91 - 03/09/92
D-104177	C-031302	1	03/08/92 - 10/12/92
D-104178	C-031303	1	10/11/92 - 04/16/93
D-104179	C-031304	1	04/24/93 - 10/11/93
D-104180	C-031305	1	10/10/93 - 11/25/93
D-107842	C-032433	1	11/24/93 - 11/27/93
D-107843	C-032434	1	11/27/93 - 11/30/93
D-107844	C-032435	1	11/29/93 - 12/03/93
D-107845	C-032436	1	12/03/93 - 12/05/93
D-107846	C-032437	1	12/05/93 - 12/07/93
D-107847	C-032438	1	12/06/93 - 12/09/93
D-107848	C-032439	1	12/08/93 - 12/10/93
D-107849	C-032440	1	12/09/93 - 12/11/93
D-107850	C-032441	1	12/11/93 - 12/12/93
D-107851	C-032442	1	12/12/93 - 12/14/93
D-107852	C-032443	1	12/13/93 - 12/16/93
D-107853	C-032444	1	12/15/93 - 12/17/93
D-107854	C-032445	1	12/16/93 - 12/18/93
D-107855	C-032446	1	12/17/93 - 12/19/93
D-107856	C-032447	1	12/18/93 - 12/19/93
D-107857	C-032448	1	12/19/93 - 12/20/93
D-107858	C-032449	1	12/20/93 - 12/21/93
D-107859	C-032450	1	12/20/93 - 01/15/94
D-107860	C-032451	1	01/14/94 - 04/25/94

(D-107842 - 107860 ARE NL, 1600 BPI TAPES)

VAX "BACKUP" TAPES

D-86248	C-29353	11	01/26/86 - 09/07/86
D-86249	C-29354	12	05/13/86 - 12/21/86 *
D-86250	C-29355	13	02/06/87 - 02/06/87
			03/11/87 - 03/11/87
			04/05/87 - 04/05/87
			04/30/87 - 04/30/87
			05/21/87 - 05/21/87
			06/10/87 - 06/10/87
			07/16/87 - 07/17/87
			08/02/87 - 08/02/87
			08/23/87 - 08/23/87
			09/16/87 - 09/16/87
			10/07/87 - 10/07/87
			11/23/87 - 11/23/87
			12/02/87 - 12/02/87
D-86251	C-29356	4	12/27/87 - 03/09/88
			03/04/88 - 06/18/88
			06/17/88 - 09/20/88
			11/30/88 - 12/03/88
D-86252	C-29357	4	12/02/88 - 01/27/89
			01/26/89 - 06/02/89
			06/01/89 - 11/22/89
			07/19/89 - 11/01/89
D-86253	C-29358	3	10/31/89 - 12/03/89
			12/03/89 - 12/05/89
			12/05/89 - 12/09/89
D-86254	C-29359	4	12/09/89 - 03/07/90
			03/07/90 - 07/26/90

DIRECTORIES FOR VAX "BACKUP" TAPES

D#	FILE NAME
D-86248	85026T049.DAT
	85179T260.DAT
	85250T301.DAT
	HST136237.DAT
	HST238268.DAT
	HST268287.DAT
	TDF49126.DAT
	TDM944.DAT
	TDR126134.DAT
	TDR134190.DAT
D-86248	TDR49126.DAT

* THIS IS A LABELED TAPE WITH 3 DATA FILES, PLUS THE HEADER AND TRAILER, TOTALING 9 FILES.
THE 12 FILE NAMES MENTIONED IN PAGE 2 ARE ALL SAVED IN THESE 3 DATA FILES.

D-86249	86133T175.DAT
	86191T271.DAT
	86271T321.DAT
	86320T337.DAT
	86334T337.DAT
	86355T041.DAT
	TDM286298.DAT
	TDM298308.DAT
	TDM307319.DAT
	TDM318333.DAT
	TDM333352.DAT
D-86249	TDM352006.DAT
D-86250	87037T071.DAT
	87070T096.DAT
	87095T121.DAT
	87120R142.DAT
	87141R162.DAT
	87161R198.DAT
	87197R215.DAT
	87214T235.DAT
	87235T259.DAT
	87259T281.DAT
	87280R328.DAT
	87327T337.DAT
D-86250	87336T361.DAT
D-86251	87361172500-88078042912
	88063171500-88169011500
	88168163000-88263042950
D-86251	88334163000-88337043000
D-86252	88336027000-89027001000
	89026182000-89153054740
	89152000100-89326065010
D-86252	89200114500-89305024640
D-86253	89304135000-89337120000
	89337115300-89339190000
D-86253	89339180000-89343161800
D-86254	89343160000-90066075800
	90066060400-90207151510
	90208T014.DAT
D-86254	91024T154.DAT

PIONEER 11
73-019A-09C PSCM-00023
ARCHIVAL TRACKING DATA FILE

THIS DATA SET CONSISTS OF 21, 9-TRACK, BINARY, 6250 BPI TAPES, WITH A VAX LABEL OF "JPL". TAPE NUMBERS D-86255-86260 AND D-86267 WERE WRITTEN BY THE UNIVAC, WHILE TAPE NUMBERS D-86261-86266 WERE WRITTEN BY THE VAX WITH THE "BACKUP" COMMAND. TAPES WITH THE BACKUP COMMAND HAVE BEEN CONVERTED ATTACHED ALSO IS A LISTING OF THE DIRECTORIES FOUND OF THE VAX BACKUP TAPES. THE D AND THE C NUMBERS ALONG WITH THEIR FILES AND TIME SPANS ARE AS FOLLOWS

D#	C#	FILES	TIME SPANS
D-86255	C-29360	17	06/15/78 - 04/23/79
D-86256	C-29361	11	04/23/79 - 04/03/80
D-86257	C-29362	8	04/02/80 - 05/08/81
D-86258	C-29363	18	06/21/81 - 08/19/82
D-86259	C-29364	7	08/19/82 - 01/27/83
			01/28/83 - 11/03/83
			02/03/84 - 04/28/84
D-86260	C-29365	5	06/26/84 - 06/16/85
D-86267	C-29372	4	08/21/80 - 10/02/80
			11/04/83 - 02/03/84
			04/27/84 - 06/26/84
D-104181	C-031307	1	04/14/90 - 08/03/90
D-104182	C-031308	1	08/03/90 - 10/22/90
D-104183	C-031309	1	10/25/90 - 05/19/91
D-104184	C-031310	1	05/19/91 - 10/18/91
D-104185	C-031311	1	10/14/91 - 04/28/92
D-104186	C-031312	1	04/27/92 - 10/13/92
D-104187	C-031313	1	10/13/92 - 04/06/93
D-104188	C-031314	1	04/26/93 - 11/01/93

VAX "BACKUP" TAPES

D#	C#	FILES	TIME SPANS
D-86261	C-29366	9	06/28/85 - 06/28/85
			09/07/85 - 09/07/85
			10/03/85 - 10/03/85
			10/18/85 - 10/18/85
			12/09/86 - 12/09/86
			04/16/87 - 04/16/87
			06/14/87 - 06/14/87
			06/28/97 - 06/28/87
D-86262	C-29367	3	08/01/87 - 08/01/87
			09/21/87 - 09/21/87
			12/20/87 - 12/30/87
D-86263	C-29368	5	08/02/87 - 09/22/87
			09/22/87 - 11/06/87
			12/31/87 - 03/22/88
			03/21/88 - 05/17/88
			05/18/88 - 07/16/88

D-86264	C-29369	4	07/15/88 - 09/16/88
			11/14/88 - 03/02/89
			03/02/89 - 05/09/89
			05/07/89 - 08/11/89
D-86265	C-29370	3	08/11/89 - 11/21/89
			11/07/89 - 04/13/90
			04/14/90 - 08/03/90
D-86266	C-29371	2	08/03/90 - 08/03/90
			10/22/90 - 10/22/90

DIRECTORIES FOR VAX "COPY" TAPES

D#	FILE NAME
D-86261	85179T260.DAT
	85250T301.DAT
	85276T331.DAT
	85291T045.DAT
	86343T017.DAT
	87106T166.DAT
	87165T180.DAT
	87179T198.DAT
D-86261	87179T215.DAT
D-86262	87214T265.DAT
	87265T88001.DAT
D-86262	87365T88081.DAT
D-86263	87214163010-87265234617
	87265193500-87310155642
	87365163000-88081042900
	88080213423-88137211500
D-86263	88138055500-88197042900
D-86264	88196163000-88259222020
	88318163000-89061220201
	89061184200-89129075950
D-86264	89127225500-89223065800
D-86265	89223065900-89325063450
	89311171000-90103175600
D-86265	90104071000-90215065700
D-86266	90215T295.DAT
	90295T140.DAT

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JPL

April 22, 1992

Dr. Paul Butterworth
Code 933 GSFC
National Space Science Data Center
NASA - Goddard Space Flight Center
Greenbelt, MD 20771

Dear Dr. Butterworth,

SUBJECT: Data Submission for Pioneer 10/11 Celestial Mechanics Experiment

I have been asked by Dr. John D. Anderson to send you all of the Archival Tracking Data Files (ATDF) that we have to the present time. I am sending twenty-six tapes, each of which contains several files. Enclosed is a list of the number of files on each tape and inclusion dates of the data on each file. Also enclosed is the document *DSN Tracking System Interfaces, Archival Tracking Data File Interface, TRK-2-25.* This document specifies the ATDF's content and the format of the radiometric data in each file.

I will be submitting more data to you in this format when I am able to gather and copy the latest ATDFs. My phone number is (818) 354-7411, FTS 792-7411, mail stop 301-150, if you have questions about my archiving procedure.

Sincerely yours,

Janet E. Hierath

Janet E. Hierath

cc: Dr. John D. Anderson
Eunice K. Lau

12-01244-04C

PIONEER 10 DATA

Tapes written by the UNIVAC with "@env,v 351*abs." and "@copy" commands:

external label	year	file #	TDF tape #	begin date	end date	records
SC23-78T79	1978	1	B008	152	227	1527
D86243	"	2	B011	228	297	1936
	1978/79	3	B021	298	021	1932
	1979	4	D143	022	052	432
	"	5	D2300	045	159	1591
	"	6	W962	159	269	1670
	"	7	A4741	269	332	5148
	1979/80	8	J980	330	052	1853
SC23-80T81	1980	1	A5259	044	161	2056
	"	2	"	?	?	4111
D86244	"	3	A4633	161	210	1548
	"	4	A5156	210	247	1436
	"	5	A8174	246	263	567
	"	6	"	?	?	6
	"	7	A5262	263	304	1684
	"	8	"	?	?	166
	"	9	A5245	305	350	1339
	"	10	"	?	?	182
	"	11	"	?	?	12513
	1980/81	12	D151	350	005	1063
	1981	13	A8190	005	041	1596
	"	14	"	?	?	9
SC23-81T82	1981	1	C291	082	124	1466
	"	2	A6033	121	158	1825
D86245	"	3	"	?	?	1378
	"	4	A4649	130	202	1631
	"	5	A5202	130	202	1631
	"	6	T2197	179	275	2643
	"	7	A4751	274	324	2191
	"	8	Q2261	323	364	2318
	"	9	T2191	328	329	1244
SC23-82T83	1981/82	1	Q2263	364	042	2347
	1982	2	K2148	048	098	2159
D86246	"	3	A5279	099	148	2246
	"	4	S2071	147	197	2116
	"	5	S2381	196	266	3
	"	6	"	?	?	6
	"	7	"	?	?	10
	"	8	"	?	?	3
	"	9	"	?	?	6
	"	10	"	?	?	10
	"	11	L2288	268	323	2150
	"	12	M2153	322	357	2151
	1983	13	S2384	041	109	2471
	"	14	A2559	110	154	1614
	"	15	"	?	?	273

external label	year	file #	TDF tape #	begin date	end date	records
SC23-83T84	1983	1	W2271	153	217	2393
	"	2	D2498	217	266	2130
	1983/84	3	W2276	363	066	2410
	1984	4	D2097	067	143	2361
	"	5	"	?	?	731
	"	6	A2631	144	234	2437
	"	7	U2212	235	314	1540
	1984/85	8	A5253	327	025	1457
	"	9	"	?	?	174
SC23-00000	1981	1	A754	039	084	1403
	1983	2	W2274	312	364	2301
	"	3	W2273	265	313	2265

Tapes written by the VAX with the "BACKUP" command:

external label	file #	file name	# of blocks
SC23-85T86	1	85026T049.DAT	4962
	2	85179T260.DAT	17199
	3	85250T301.DAT	11451
	4	HST136237.DAT	14900
	5	HST238268.DAT	8316
	6	HST268287.DAT	5686
	7	TDF49126.DAT	21279
	8	TDM944.DAT	17451
	9	TDR126134.DAT	3308
	10	TDR134190.DAT	16317
	11	TDR49126.DAT	21279
SC23-86T87	1	86133T175.DAT	27075
	2	86191T271.DAT	36099
	3	86271T321.DAT	20664
	4	86320T337.DAT	6111
	5	86334T337.DAT	36840
	6	86355T041.DAT	27169
	7	TDM286298.DAT	6395
	8	TDM298308.DAT	8096
	9	TDM307319.DAT	8253
	10	TDM318333.DAT	9167
	11	TDM333352.DAT	5891
	12	TDM352006.DAT	8033
SC23-1987	1	87037T071.DAT	17987
	2	87070T096.DAT	10191
	3	87095T121.DAT	12018
	4	87120R142.DAT	10695
	5	87141R162.DAT	8962
	6	87161R198.DAT	12443
	7	87197R215.DAT	6694
	8	87214T235.DAT	10380
	9	87235T259.DAT	10143
	10	87259T281.DAT	10096
	11	87280T328.DAT	26854
	12	87327T337.DAT	6615
	13	87336T361.DAT	13860

Tapes written by the VAX with the "BACKUP" command:

external label	file #	begin date	end date	# of blocks
SC23-87T88	1	87361172500	88078042912	47880
	2	88063171500	88169011500	47156
	3	88168163000	88263042950	35910
	4	88334163000	88337043000	44541
SC23-88T89	1	88336027000	89027001000	40478
	2	89026182000	89153054740	58354
	3	89152000100	89326065010	38131
	4	89200114500	89305024640	54212
SC23-1989	1	89304135000	89337120000	53015
	2	89337115300	89339190000	56307
	3	89339180000	89343161800	59866
SC23-89T90	1	89343160000	90066075800	55755
	2	90066060400	90207151510	49518

external label	file #	file name	# of blocks
SC23-89T90	3	90208T014.DAT	50794
	4	91014T154.DAT	54810

PIONEER 11 DATA

Tapes written by the UNIVAC with "@env,v 351*abs." and "@copy" commands:

external label	year	file #	TDF tape #	begin date	end date	records
SC24-78T79	1978	1	E2019	166	195	1009
	"	2	F2026	195	227	1329
	"	3	O2075	228	257	1073
	"	4	H2370	230	257	1041
	"	5	H2375	258	285	675
	"	6	W2278	287	304	460
	"	7	W2373	287	304	460
	"	8	O2076	293/321	304/337	707
	"	9	H2391	305	333	790
	"	10	H2397	333	365	749
	"	11	A7121	338	360	519
	1978/79	12	F2074	363	031	1132
	1979	13	A7122	017	052	1472
	"	14	W2280	031	059	1407
	"	15	D2223	053	087	1439
	"	16	E2015	087	106	1021
	"	17	E2231	087	113	1364

external label	year	file #	TDF tape #	begin date	end date	records
SC24-79T80	1979	1	I2016	113	141	1468
	"	2	D2354	136	162	1583
	"	3	G2223	162	194	1886
	"	4	G2224	194	220	1174
	"	5	S2116	220	240	1775
	"	6	G2225	240	244	570
	"	7	G2251	244	253	1984
	"	8	G2252	247	271	1768
	"	9	G2254	271	322	1811
	1979/80	10	G2255	320	018	1768
	1980	11	A4758	016	093	1654
SC24-80T81	1980	1	Q681	092	163	1968
	"	2	A4657	162	233	2430
	1980/81	3	A4466	275	005	3173
	1981	4	A2156	005	042	1775
	"	5	U2148	042	085	2460
	"	6	U2182	086	138	2923
	"	7	A2158	128	175	2846
	"	8	"	?	?	7
SC24-81T82	1981	1	U2186	172	219	1948
	"	2	"	?	?	5
	"	3	U2183	219	268	1585
	"	4	U2142	267	317	1776
	1981/82	5	A5209	316	015	1747
	"	6	"	?	?	36
	"	7	"	?	?	23
	"	8	"	?	?	5759
	1982	9	A5211	014	085	2498
	"	10	S2209	084	126	1812
	"	11	C646	127	168	48
	"	12	S2210	169	231	2242
	"	13	"	?	?	93
	"	14	"	?	?	76
	"	15	"	?	?	35
	"	16	"	?	?	38
	"	17	"	?	?	189
	"	18	"	?	?	94
SC24-82T83	1982	1	E2003	232	316	2179
	1982/83	2	I2134	315	027	2084
	1983	3	S2388	028	091	2058
	"	4	T2270	090	161	2327
	"	5	S2391	147	237	2568
	"	6	S2181	238	307	2308
	1984	7	S2113	034	118	2950
SC24-84T85	1984	1	Y2036	176	243	2413
	"	2	"	?	?	667
	"	3	T2275	244	332	2037
	1984/85	4	D2488	333	093	2213
	1985	5	T2274	092	167	1418
SC24-00000	1980	1	A3025	233	275	1708
	1983/84	2	S2112	308	034	1880
	1984	3	N2156	117	177	1960
	"	4	"	?	?	980

Tapes written by the VAX with the "BACKUP" command:

external label	file #	file name	# of blocks
SC24-85T87	1	85179T260.DAT	17199
	2	85250T301.DAT	11451
	3	85276T331.DAT	9671
	4	85291T045.DAT	25279
	5	86343T107.DAT	53031
	6	87106T166.DAT	41029
	7	87165T180.DAT	10899
	8	87179T198.DAT	10159
	9	87179T215.DAT	20223
SC24-87T88	1	87214T265.DAT	31941
	2	87265T88001.DAT	51015
	3	87365T88081.DAT	46715
SC24-90T91	1	90215T295.DAT	55708
	2	90295T140.DAT	59520

external label	file #	begin date	end date	# of blocks
SC24-87T88B	1	87214163010	87265234617	31941
	2	87265193500	95310155642	51015
	3	87365163000	88081042900	46715
	4	88080213423	88137211500	39438
	5	88138055500	88197042900	50054
SC24-88T89	1	88196163000	88259222020	45014
	2	88318163000	89061220201	46368
	3	89061184200	89129075950	43707
	4	89127225500	89223065800	60008
SC24-89T90	1	89223065900	89325063450	48227
	2	89311171000	90103175600	55173
	3	90104071000	90215065700	51015

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TRK-2-25

DSN TRACKING SYSTEM INTERFACES
ARCHIVAL TRACKING DATA FILE INTERFACE

(Insert this module in Document 820-13; Rev. A)

EFFECTIVE DATE: Mark IVA Implementation
Initial Release Date: January 1, 1986

Approved by: _____ (430)

_____ (314)

_____

A. PURPOSE

This module specifies the Archival Tracking Data File (ATDF) format of the radio metric data from the Deep Space Network (DSN). The content and format of the ATDFs generated by the Network Operations Control Center (NOCC) Navigation Subsystem (NAV) are defined herein.

B. REVISION AND CONTROL

Revisions or changes to information contained in this module may be initiated in accordance with the procedures described in Section I of this document.

C. GENERAL INFORMATION

Radio metric data are received by the NAV in the form of Intermediate Data Record tapes (IDRs). These IDRs are processed to generate ATDFs. An ATDF contains all radio metric data received from the Deep Space Communications Complexes (DSCCs). These data include angles, S-, X-, and Ka-band doppler, S-, X-, and Ka-band range, S-, X-, and Ka-band differenced range versus integrated doppler (DRVID), programmed frequency data, pseudo-residuals, and validation data. An ATDF will contain data for a single spacecraft, for one or more stations, and for one or more passes or days.

D. DATA FORMAT

The data on the ATDF are arranged as follows:

(1) File Identification logical record (one only)
(2) Transponder logical record (one only)
(3) Tracking Data logical records (time ordered)
(4) Software end-of-file mark (one only)
(5) Hardware end-of-file mark (one only)

The logical record types are described in detail in Tables 1, 2, and 3.

The ATDF block (physical record) is 2016 32-bit words in length and consists of 28 72-word (2304-bit) logical records.

Note that several items of data have been split into two parts: a Sign Bits field and a Data item. For these items, the leftmost (sign) bit of the Data item has been left-extended to fill another item of information. For always non-negative items, the Sign Bits field will be zero; for items that may be positive, zero, or negative (provided as two's complement numbers), the Sign Bits field will be filled with zeros (non-negative) or ones (negative). The user may extract any specific Data item and sign-extend manually, or may use any portion of the Sign Bits field combined with the Data item to get a signed integer that will fill one word on the user's computer system. For

example, a 22-Sign Bits/14-bit Data item pair may be taken as a 20-bit item to be ignored plus a 16-bit data item, or as a 4-bit item to be ignored plus a 32-bit data item, or as a single 36-bit item of data, etc. This is always true — whether the Sign Bits field is all zero-bits or all one-bits.

E. EXPLANATORY NOTES

The following explanatory notes apply to Tables 1, 2, and 3:

(1) A two-part Length indicator (n/m) specifies a Sign Bits field (n bits in length) plus a Data item (m bits in length). If the Data item is specified to be two's complement, the Sign Bits field may be all zero-bits (non-negative) or all one-bits (negative); otherwise it will be all zero-bits.

(2) H/P = high part = variable / 10^4
L/P = low part = (variable modulo 10^4) x 10^3
Double precision variable = (H/P) x 10^4 + (L/P) / 10^3

(3) Items not applying to a record data type are set to zero for that record.

Table 1. File Identification Logical Record

Item Number	Bit Number	Length (Bits)	Description
1	1-36	29/7	Data Length = 8
2	37-72	29/7	Record Type = 10
3*	73/84	12	Last 2 Digits of Year
4*	85/100	16	Day-of-Year
5*	101-108	8	Hour
6*	109-120	12	Minute
7*	121-128	8	Second
8	129-148	20	0 (not used)
9	149-156	8	Spacecraft ID Number
10	157-164	8	73 (= 'I') or 83 (= 'S')
11	165-172	8	68 (= 'D') or 80 (= 'P')
12	173-180	8	82 (= 'R')
13	181-192	12	32 (= ' ')
14	193-208	16	65 (= 'A')
15	209-216	8	84 (= 'T')
16	217-228	12	68 (= 'D')
17	229-236	8	70 (= 'F')
18	237-252	16	0 (not used)
——	253-2304	2052	Not Used (all zeros)

*File creation time

Table 2. Transponder Logical Record

Item Number	Bit Number	Length (Bits)	Description
1	1-36	29/7	Data Length = 8
2	37-72	29/7	Record Type = 30
3	73-84	12	Last 2 Digits of Year
4	85-100	16	Day-of-Year
5	101-108	8	Hour "On" Time
6	109-120	12	Minute
7	121-128	8	Second
8	129-148	20	0
9	149-156	8	Spacecraft ID Number
10	157-180	24	Reserved (set to zeros)
11	181-192	12	Last 2 Digits of Year
12	193-208	16	Day-of-Year
13	209-216	8	Hour "Off" Time
14	217-228	12	Minute
15	229-236	8	Second
16	237-252	16	0
17	253-288	12/24	Spacecraft Transponder Frequency H/P (Hz x 1000)
18	289-324	12/24	Spacecraft Transponder Frequency L/P (Hz x 1000)
—	325-2304	1980	Not Used (all zeros)

Table 3. Tracking Data Logical Record

Item Number	Bit Number	Length (Bits)	Description
1	1-36	29/7	Data Length = 64
2	37-72	29/7	Record Type 90 = Low Rate Data 91 = High Rate (H/R) Data
3	73-84	12	Last 2 Digits of Year
4	85-100	16	Day-of-Year
5	101-108	8	Hour Record Time Tag
6	109-120	12	Minute
7	121-128	8	Second
8	129-156	28	Spacecraft ID Number
9	157-164	8	Network ID 2 = Deep Space Network (DSN)
10	165-172	8	Station Number
11	173-180	8	Downlink Frequency Band (Receiver Type) 0 = Not Applicable 1 = S-band 2 = X-band 3 = L-band
12	181-184	4	Data Type Identifier 0 = Old/Unknown 1 = High Rate Doppler 2 = Low Rate Doppler 3 = Angles 4 = DRVID 5 = Range 6 = Ramp 7 = Mixed
13	185-192	8	Ground Mode 0 = No Doppler, No Range, No DRVID 1 = 1-Way Doppler 2 = 2-Way Doppler 3 = 3-Way Doppler 4 = 3-Way Coherent Doppler 5 = 1-Way, No Doppler 6 = 2-Way, No Doppler 7 = 3-Way, No Doppler 8 = 3-Way Coherent, No Doppler
14	193-200	8	Range Type 0 = No Range Data 6 = PLOP 7 = SRA (see item 28) 8 = MU2
15	201-208	8	Angle Type 0 = No Angle Data 1 = Azimuth/Elevation 2 = Hour Angle/Declination

Table 3. Tracking Data Logical Record (Continued)

Item Number	Bit Number	Length (Bits)	Description
15 (Cont)			Angle Type (Cont.) 3 = X/Y (+X is East) 4 = X/Y (+X is South)
16	209-216	8	DRVID Type 0 = No DRVID Data 6-8 = Same as for Range Type (item 14)
17	217-221	5	Doppler Good/Bad Indicator 0 = Good 1 = Bad
18	222	1	Doppler Data Tolerance 0 = In Tolerance 1 = Out of Tolerance
19	223	1	0
20	224-227	4	Doppler Bias (two's complement, MHz)
21	228	1	Reserved (set to zero)
22	229	1	Angle Good/Bad Indicator 0 = Good 1 = Bad
23	230-232	3	Reserved (set to zeros)
24	233-235	3	Reserved (set to zeros)
25	236	1	Receiver Loop Lock Indicator 0 = In Lock 1 = Out of Lock
26	237	1	Transmitter/Exciter On/Off 0 = On 1 = Off
27	238-239	2	Reserved (set to zeros)
28	240-242	3	Source Designation 1 = Deep Space Network (DSN) (34m/64m) 2 = Deep Space Network (26m)
29	243-252	10	Reserved (set to zeros)
30	253-288	5/31	Sample Time (seconds x 100)
31	289-324	12/24	Doppler Count H/P (cycles x 1000)
32	325-360	12/24	Doppler Count L/P (cycles x 1000)
33	361-396	12/24	Range Data Field - Part 1 0 if Item 14 = 0 otherwise, range-at-T_0 H/P (RU x 1000 or NS x 1000)
34	397-432	12/24	Range Data Field - Part 2 0 if Item 14 = 0 otherwise, range-at-T_0 L/P (RU x 1000 or NS x 1000)

Table 3. Tracking Data Logical Record (Continued)

Item Number	Bit Number	Length (Bits)	Description
35	433-452	4/16	Lowest Ranging Component
36	453-524	72	Reserved (set to zeros)
37	525-540	16	DRVID Power/Noise Ratio (two's complement, dB x 10)
38	541-576	17/19	Angle 1 (Azimuth/Hour Angle/X, degrees x 1000)
39	577-612	17/19	Angle 2 (Elevation/Declination/Y, degrees x 1000)
40	613-648	5/31	Doppler Reference Frequency (Hz x 10)
41	649-684	8/28	DRVID (two's complement, RU x 100)
42	685-720	12/24	No. 2 H/R Doppler H/P (cycles x 1000) or 0
43	721-756	12/24	No. 2 H/R Doppler L/P (cycles x 1000) or Round Trip Light Time (seconds)
44	757-792	12/24	No. 3 H/R Doppler H/P (cycles x 1000) or 0
45	793-828	12/24	No. 3 H/R Doppler L/P (cycles x 1000) or $T_{acquisition}$ (seconds past 0-hour)
46	829-864	12/24	No. 4 H/R Doppler H/P (cycles x 1000) or 0
47	865-900	12/24	No. 4 H/R Doppler L/P (cycles x 1000) or T_1 Integration Time Constant (seconds)
48	901-936	12/24	No. 5 H/R Doppler H/P (cycles x 1000) or 0
49	937-972	12/24	No. 5 H/R Doppler L/P (cycles x 1000) or T_2 Integration Time Constant (seconds)
50	973-1008	12/24	No. 6 H/R Doppler H/P (cycles x 1000) or 0
51	1009-1044	12/24	No. 6 H/R Doppler L/P (cycles x 1000) or T_3 Integration Time Constant (seconds)
52	1045-1080	12/24	No. 7 H/R Doppler H/P (cycles x 1000) or 0
53	1081-1116	12/24	No. 7 H/R Doppler L/P (cycles x 1000) or Ref. Voltage (two's complement, millivolts)
54	1117-1152	12/24	No. 8 H/R Doppler H/P (cycles x 1000) or 0
55	1153-1188	12/24	No. 8 H/R Doppler L/P (cycles x 1000) or Quad. Voltage (two's complement, millivolts)
56	1189-1224	12/24	No. 9 H/R Doppler H/P (cycles x 1000) or 0
57	1225-1260	12/24	No. 9 H/R Doppler L/P (cycles x 1000) or Carrier Suppression (two's complement, dB or millivolts)
58	1261-1296	12/24	No. 10 H/R Doppler H/P (cycles x 1000) or 0
59	1297-1332	12/24	No. 10 H/R Doppler L/P (cycles x 1000) or Highest Ranging Component
60	1333-1368	5/31	Doppler Residual (two's complement, Hz x 1000)
61	1369-1404	14/22	Range Residual (two's complement, RU)
62	1405-1422	18	Angle 1 Residual (two's complement, degrees x 1000)
63	1423-1440	18	Angle 2 Residual (two's complement, degrees x 1000)

Table 3. Tracking Data Logical Record (Continued)

Item Number	Bit Number	Length (Bits)	Description
64	1441-1443	3	Uplink Frequency Band and Source ID 0 = S-band, TRK-2-14 1 = S-band, TRK-2-15 2 = X-band, TRK-2-15 ~~7 = S-band, TRK-2-20~~ 3 = C-band, TRK-2-15
65	1444-1446	3	Angle Mode 0 = Auto Track 1 = Manual Aided 2 = Computer 3 = Sidereal 4 = Brake
66	1447-1448	2	Conscan Mode 0 = Conscan Off 1 = Closed Loop 2 = Open Loop
67	1449	1	Angle 1 Residual Tolerance 0 = In Tolerance 1 = Out of Tolerance
68	1450	1	Angle 2 Residual Tolerance 0 = In Tolerance 1 = Out of Tolerance
69	1451-1453	3	Doppler Channel Number 1 = S-band, 26-meter DSS 2 = S-band, 34/64-meter DSS 3 = X-band, 34/64-meter DSS
70	1454	1	Frequency Standard Reference 0 = Backup 1 = Prime
71	1455-1458	4	Doppler Receiver Reference 1 = Block III, Receiver 1 2 = Block III, Receiver 2 3 = Block IV, Receiver 1 4 = Block IV, Receiver 2
72	1459-1462	4	Reserved (set to zeros)
73	1463	1	Doppler Residual Tolerance 0 = In Tolerance 1 = Out of Tolerance
74	1464	1	Doppler Noise Tolerance 0 = In Tolerance 1 = Out of Tolerance
75	1465-1494	30	Reserved (set to zeros)
76	1495-1512	18	Total Slipped Cycles During Count (cycles)
77	1513-1530	18	Doppler Noise (Hz x 1000)

Table 3. Tracking Data Logical Record (Continued)

Item Number	Bit Number	Length (Bits)	Description
78	1531-1548	18	Received Signal Strength (two's complement, dBm or volts x 10)
79	1549-1584	5/31	Differential Doppler Phase (two's complement, cycles x 1000): S - 3/11 X
80	1585	1	Range Modulation On/Off 0 = On 1 = Off
81	1586	1	Prime Ranging Channel 0 = S-band 1 = X-band
82	1587	1	Pipelining On/Off 0 = On 1 = Off
83	1588	1	Chopper Frequency On/Off 0 = On 1 = Off
84	1589	1	Reserved (set to zero)
85	1590	1	Range Validity 0 = Good 1 = Bad
86	1591	1	Range Calibration Tolerance 0 = In Tolerance 1 = Out of Tolerance
87	1592	1	Range Configuration Change Flag 0 = Same 1 = Different
88	1593	1	Range Power/Noise Ratio Tolerance 0 = In Tolerance 1 = Out of Tolerance
89	1594	1	Range Residual Tolerance 0 = In Tolerance 1 = Out of Tolerance
90	1595	1	Pseudo DRVID Tolerance 0 = In Tolerance 1 = Out of Tolerance
91	1596	1	Differenced S-X Range Tolerance 0 = In Tolerance 1 = Out of Tolerance
92	1597-1600	4	Receiver Number
93	1601	1	Reserved (set to zero)
94	1602-1603	2	Amplifier Number

Table 3. Tracking Data Logical Record (Continued)

Item Number	Bit Number	Length (Bits)	Description
95	1604-1605	2	Amplifier Type 0 = S-band Maser 1 = X-band Maser 2 = Parametric Amplifier 3 = FET
96	1606	1	Transmitter Power Indicator 0 = Low Power 1 = High Power
97	1607	1	Reserved (set to zero)
98	1608-1620	13	Transmitter Power (kilowatts)
99	1621-1644	24	Range Calibration (RU x 100)
100	1645-1656	12	Range Power/Noise Ratio (two's complement, dB x 10)
101	1657-1692	15/21	Average Doppler Residual (two's complement, Hz x 1000)
102	1693-1728	8/28	Pseudo DRVID (two's complement, RU x 100)
103	1729-1764	14/22	Differenced S-X Range (two's complement, RU x 100) or Ramp Delay Time (two's complement, nanoseconds)
104	1765-1786	22	Z Correction (two's complement, nanoseconds x 100)
105	1787-1800	14	Spacecraft Delay (nanoseconds)
106	1801-1833	19/14	DRVID Noise (RU x 100)
107	1834	1	DRVID Validity 0 = Good 1 = Bad
108	1835	1	DRVID Noise Tolerance 0 = In Tolerance 1 = Out of Tolerance
109	1836	1	DRVID Power/Noise Ratio Tolerance 0 = In Tolerance 1 = Out of Tolerance
110	1837-1872	8/28	Differenced S-X DRVID (two's complement, RU x 100)
111	1873-1877	5	Ramp Controller Indicator 0 = POCA Controller 1 = DCO Controller 2 = New Controller
112	1878-1908	31	Programmed Frequency Ramp Rate (two's complement, Hz x 1000000), or Received Signal Strength (two's complement, dBm or volts x 4096), or Ranging Transmitter Coder In-Phase offset from Sample Timetag (seconds)
113	1909-1944	12/24	Programmed Start Frequency - Part 1 (Hz / 10)

Table 3. Tracking Data Logical Record (Continued)

Item Number	Bit Number	Length (Bits)	Description
114	1945-1980	12/24	Programmed Start Frequency - Part 2 (Hz modulo 10, x 1000000)
115	1981-2124	144	Reserved (set to zeros)
116	2125-2160	5/31	Transmitter/Exciter Frequency (Hz x 10)
117	2161-2304	144	0 (not used)

Pioneer 10 - ATDF

D-104175 72-012A-09C

HEX DUMP OF KM2009

FILE 1 RECORD 1 8064 BYTES

Day 346 12/12

Day 326

(0)	00000000	80000000	0A05B015	A1002222	00000175	44446020	00415404	44600000	00000000	00000000
(40)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(80)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(280)	00000000	00000000	00000000	80000000	1E05B014	60603A32	00000170	0000005B	01560202	C0600000
(320)	00037F53	000560F4	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(560)	00000000	00000000	00000000	00000000	00000004	00000000	5A05B014	60603A32	00000170	20E01201
(600)	00000001	E0004000	000003E8	000046C1	70007C56	A5000000	00000000	00000000	00000000	00000000
(640)	00000000	00000000	00000000	000D1ABA	F0000000	00000000	00000000	00000000	00000000	00000000
(680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(720)	00000000	00000000	00000000	00000000	00000000	00000FFF	FFB8BF00	00000000	00000000	20080000
(760)	00000000	0500113F	93E00000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(800)	00000000	00000000	000007FF	53000000	00000000	00000000	00000000	00000000	00000000	00000000
(840)	00000D1A	BA5E0000	00000000	00000000	00000000	00000000	00000004	00000000	5A05B014	60603B00
(880)	00000170	20E01201	00000001	E0004000	000003E8	000046FB	10003DC2	A1000000	00000000	00000000
(920)	00000000	00000000	00000000	00000000	00000000	000D1ABA	F0000000	00000000	00000000	00000000
(960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000FFF	FFB8D100	00000000
(1040)	00000000	20080000	00000000	0000113F	94300000	00000000	00000000	00000000	00000000	00000000
(1080)	00000000	00000000	00000000	00000000	000007FF	537C0000	00000000	00000000	00000000	00000000
(1120)	00000000	00000000	00000D1A	BA770000	00000000	00000000	00000000	00000000	00000004	00000000
(1160)	5A05B014	60603B0A	00000170	20E01201	00000001	E0004000	000003E8	00004734	A000976E	07000000
(1200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000D1ABA	F0000000	00000000
(1240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000FFF
(1320)	FFB8B200	00000000	00000000	20080000	00000000	000017FF	93F00000	00000000	00000000	00000000
(1360)	00000000	00000000	00000000	00000000	00000000	00000000	000007FF	530C0000	00000000	00000000
(1400)	00000000	00000000	00000000	00000000	00000D1A	BA900000	00000000	00000000	00000000	00000000
(1440)	00000004	00000000	5A05B014	60603B14	00000170	20E01201	00000001	E0004000	000003E8	0000476E
(1480)	4000582B	55000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000D1ABA
(1520)	F0000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1600)	00000000	00000FFF	FFB88500	00000000	00000000	20080000	00000000	000017FF	94000000	00000000
(1640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000007FF	53240000
(1680)	00000000	00000000	00000000	00000000	00000000	00000000	00000D1A	BAA90000	00000000	00000000
(1720)	00000000	00000000	00000004	00000000	5A05B014	60603B1E	00000170	20E01201	00000001	E0004000
(1760)	000003E8	000047A7	E0001892	32000000	00000000	00000000	00000000	00000000	00000000	00000000
(1800)	00000000	000D1ABA	F0000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1880)	00000000	00000000	00000000	00000FFF	FFB87700	00000000	00000000	20080000	00000000	000017FF
(1920)	93A00000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1960)	000007FF	52880000	00000000	00000000	00000000	00000000	00000000	00000000	00000D1A	BAC20000
(2000)	00000000	00000000	00000000	00000000	00000004	00000000	5A05B014	60603B28	00000170	20E01201
(2040)	00000001	E0004000	000003E8	000047E1	70007138	77000000	00000000	00000000	00000000	00000000
(2080)	00000000	00000000	00000000	000D1ABA	F0000000	00000000	00000000	00000000	00000000	00000000
(2120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2160)	00000000	00000000	00000000	00000000	00000000	00000FFF	FFB85800	00000000	00000000	20080000

(2200)	00000000	000017FF	94400000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2240)	00000000	00000000	000007FF	538C0000	00000000	00000000	00000000	00000000	00000000	00000000
(2280)	00000D1A	BADB0000	00000000	00000000	00000000	00000000	00000004	00000000	5A05B014	60603B32
(2320)	00000170	20E01201	00000001	E0004000	000003E8	0000481B	100030F7	BB000000	00000000	00000000
(2360)	00000000	00000000	00000000	00000000	00000000	000D1ABA	F0000000	00000000	00000000	00000000
(2400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000FFF	FFB8E300	00000000
(2480)	00000000	20080000	00000000	030017FF	94600000	00000000	00000000	00000000	00000000	00000000
(2520)	00000000	00000000	00000000	00000000	000007FF	53B40000	00000000	00000000	00000000	00000000
(2560)	00000000	00000000	00000D1A	BAF40000	00000000	00000000	00000000	00000000	00000004	00000000
(2600)	5A05B014	60700000	00000170	20E01201	00000001	E0004000	000003E8	00004854	A0008904	3B000000
(2640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000D1ABA	F0000000	00000000
(2680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000FFF
(2760)	FFBA2700	00000000	00000000	20080000	00000000	060017FF	94C00000	00000000	00000000	00000000
(2800)	00000000	00000000	00000000	00000000	00000000	00000000	000007FF	54520000	00000000	00000000
(2840)	00000000	00000000	00000000	00000000	00000D1A	BB0D0000	00000000	00000000	00000000	00000000
(2880)	00000004	00000000	5A05B014	6070000A	00000170	20E01201	00000001	E0004000	000003E8	0000488E
(2920)	4000481F	56000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000D1ABA
(2960)	F0000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3040)	00000000	00000FFF	FFB9A900	00000000	00000000	20080000	00000000	000017FF	94800000	00000000
(3080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000007FF	53E20000
(3120)	00000000	00000000	00000000	00000000	00000000	00000000	00000D1A	BB260000	00000000	00000000
(3160)	00000000	00000000	00000004	00000000	5A05B014	60700014	00000170	20E01201	00000001	E0004000
(3200)	000003E8	000048C7	E00006E6	E9000000	00000000	00000000	00000000	00000000	00000000	00000000
(3240)	00000000	000D1ABA	F0000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3320)	00000000	00000000	00000000	00000FFF	FFB9E900	00000000	00000000	20080000	00000000	080017FF
(3360)	93D00000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3400)	000007FF	52DC0000	00000000	00000000	00000000	00000000	00000000	00000000	00000D1A	BB3F0000
(3440)	00000000	00000000	00000000	00000000	00000004	00000000	5A05B014	6070001E	00000170	20E01201
(3480)	00000001	E0004000	000003E8	00004901	70005DF6	12000000	00000000	00000000	00000000	00000000
(3520)	00000000	00000000	00000000	000D1ABA	F0000000	00000000	00000000	00000000	00000000	00000000
(3560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3600)	00000000	00000000	00000000	00000000	00000000	00000FFF	FFBA9E00	00000000	00000000	20080000
(3640)	00000000	010017FF	94100000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3680)	00000000	00000000	000007FF	53460000	00000000	00000000	00000000	00000000	00000000	00000000
(3720)	00000D1A	BB580000	00000000	00000000	00000000	00000000	00000004	00000000	5A05B014	60700028
(3760)	00000170	20E00600	00000000	00004000	00000000	00000000	00000000	00000000	00000000	00000000
(3800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3920)	00000000	20000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3960)	00000000	00000000	00000000	00000000	00000800	00000000	43183A00	05D13890	00000000	00000000
(4000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000004	00000000
(4040)	5A05B014	60700028	00000170	20E01201	00000001	E0004000	000003E8	0000493B	10001C1C	56000000
(4080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000D1ABA	F0000000	00000000
(4120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(4160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000FFF
(4200)	FFBAFB00	00000000	00000000	20080000	00000000	030017FF	93900000	00000000	00000000	00000000
(4240)	00000000	00000000	00000000	00000000	00000000	00000000	000007FF	527C0000	00000000	00000000
(4280)	00000000	00000000	00000000	00000000	00000D1A	BB710000	00000000	00000000	00000000	00000000
(4320)	00000004	00000000	5A05B014	60700032	00000170	20E01201	00000001	E0004000	000003E8	00004974
(4360)	A0007286	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000D1ABA
(4400)	F0000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(4440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(4480)	00000000	00000FFF	FFBB4700	00000000	00000000	20080000	00000000	000017FF	94000000	00000000
(4520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000007FF	53220000
(4560)	00000000	00000000	00000000	00000000	00000000	00000000	00000D1A	BB720000	00000000	00000000

(4600)	00000000	00000000	00000004	00000000	5A05B014	60700100	00000170	20E01201	00000001	E0004000
(4640)	000003E8	000049AE	40003004	89000000	00000000	00000000	00000000	00000000	00000000	00000000
(4680)	00000000	000D1ABA	F0000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(4720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(4760)	00000000	00000000	00000000	00000FFF	FFBB6C00	00000000	00000000	20080000	00000000	080017FF
(4800)	93F00000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(4840)	000007FF	530E0000	00000000	00000000	00000000	00000000	00000000	00000000	00000D1A	BB720000
(4880)	00000000	00000000	00000000	00000000	00000004	00000000	5A05B014	6070010A	00000170	20E01201
(4920)	00000001	E0004000	000003E8	000049E7	D00085C9	9F000000	00000000	00000000	00000000	00000000
(4960)	00000000	00000000	00000000	000D1ABA	F0000000	00000000	00000000	00000000	00000000	00000000
(5000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(5040)	00000000	00000000	00000000	00000000	00000000	00000FFF	FFBC0A00	00000000	00000000	20080000
(5080)	00000000	050017FF	93900000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(5120)	00000000	00000000	000007FF	52700000	00000000	00000000	00000000	00000000	00000000	00000000
(5160)	00000D1A	BB720000	00000000	00000000	00000000	00000000	00000004	00000000	5A05B014	60700114
(5200)	00000170	20E01201	00000001	E0004000	000003E8	00004A21	7000429E	99000000	00000000	00000000
(5240)	00000000	00000000	00000000	00000000	00000000	000D1ABA	F0000000	00000000	00000000	00000000
(5280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(5320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000FFF	FFBBB000	00000000
(5360)	00000000	20080000	00000000	050017FF	93E00000	00000000	00000000	00000000	00000000	00000000
(5400)	00000000	00000000	00000000	00000000	000007FF	52F20000	00000000	00000000	00000000	00000000
(5440)	00000000	00000000	00000D1A	BB720000	00000000	00000000	00000000	00000000	00000004	00000000
(5480)	5A05B014	6070011E	00000170	20E01201	00000001	E0004000	000003E8	00004A5B	000097B0	93000000
(5520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000D1ABA	F0000000	00000000
(5560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(5600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000FFF
(5640)	FFBB5A00	00000000	00000000	20080000	00000000	030017FF	94800000	00000000	00000000	00000000
(5680)	00000000	00000000	00000000	00000000	00000000	00000000	000007FF	53EA0000	00000000	00000000
(5720)	00000000	00000000	00000000	00000000	00000D1A	BB720000	00000000	00000000	00000000	00000000
(5760)	00000004	00000000	5A05B014	60700128	00000170	20E00600	00000000	00004000	00000000	00000000
(5800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(5840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(5880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(5920)	00000000	00000000	00000000	00000000	00000000	20000000	00000000	00000000	00000000	00000000
(5960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000FFF	86FAF000
(6000)	43183A00	05D13890	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(6040)	00000000	00000000	00000004	00000000	5A05B014	60700128	00000170	20E01201	00000001	E0004000
(6080)	000003E8	00004A94	A00053DE	9F000000	00000000	00000000	00000000	00000000	00000000	00000000
(6120)	00000000	000D1ABA	F0000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(6160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(6200)	00000000	00000000	00000000	00000FFF	FFBC3900	00000000	00000000	20080000	00000000	010017FF
(6240)	93D00000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(6280)	000007FF	52D60000	00000000	00000000	00000000	00000000	00000000	00000000	00000D1A	BB720000
(6320)	00000000	00000000	00000000	00000000	00000004	00000000	5A05B014	60700132	00000170	20E01201
(6360)	00000001	E0004000	000003E8	00004ACE	40000FBB	85000000	00000000	00000000	00000000	00000000
(6400)	00000000	00000000	00000000	000D1ABA	F0000000	00000000	00000000	00000000	00000000	00000000
(6440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(6480)	00000000	00000000	00000000	00000000	00000000	00000FFF	FFBCBB00	00000000	00000000	20080000
(6520)	00000000	010017FF	93C00000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(6560)	00000000	00000000	000007FF	52BA0000	00000000	00000000	00000000	00000000	00000000	00000000
(6600)	00000D1A	BB5B0000	00000000	00000000	00000000	00000000	00000004	00000000	5A05B014	60700200
(6640)	00000170	20E01201	00000001	E0004000	000003E8	00004B07	D00063D8	F8000000	00000000	00000000
(6680)	00000000	00000000	00000000	00000000	00000000	000D1ABA	F0000000	00000000	00000000	00000000
(6720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(6760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000FFF	FFBCC200	00000000
(6800)	00000000	20080000	00000000	000017FF	94400000	00000000	00000000	00000000	00000000	00000000
(6840)	00000000	00000000	00000000	00000000	000007FF	53A00000	00000000	00000000	00000000	00000000
(6880)	00000000	00000000	00000D1A	BB420000	00000000	00000000	00000000	00000000	00000004	00000000
(6920)	5A05B014	6070020A	00000170	20E01201	00000001	E0004000	000003E8	00004B41	70001F0D	32000000
(6960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	000D1ABA	F0000000	00000000

```
( 7000)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 7040)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000FFF
( 7080)   FFBD1C00  00000000  00000000  20080000  00000000  030016BF  94400000  00000000  00000000  00000000
( 7120)   00000000  00000000  00000000  00000000  00000000  00000000  000007FF  53900000  00000000  00000000
( 7160)   00000000  00000000  00000000  00000000  00000D1A  BB2A0000  00000000  00000000  00000000  00000000
( 7200)   00000004  00000000  5A05B014  60700214  00000170  20E01201  00000001  E0004000  000003E8  00004B7B
( 7240)   00007288  05000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  000D1ABA
( 7280)   F0000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 7320)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 7360)   00000000  00000FFF  FFBDBE00  00000000  00000000  20080000  00000000  030016BF  94A00000  00000000
( 7400)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  000007FF  54220000
( 7440)   00000000  00000000  00000000  00000000  00000000  00000000  00000D1A  BB110000  00000000  00000000
( 7480)   00000000  00000000  00000004  00000000  5A05B014  6070021E  00000170  20E01201  00000001  E0004000
( 7520)   000003E8  00004BB4  A0002D14  5D000000  00000000  00000000  00000000  00000000  00000000  00000000
( 7560)   00000000  000D1ABA  F0000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 7600)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 7640)   00000000  00000000  00000000  00000FFF  FFBD9300  00000000  00000000  20080000  00000000  070016BF
( 7680)   94100000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 7720)   000007FF  53460000  00000000  00000000  00000000  00000000  00000000  00000000  00000D1A  BAF80000
( 7760)   00000000  00000000  00000000  00000000  00000004  00000000  5A05B014  60700228  00000170  20E01201
( 7800)   00000001  E0004000  000003E8  00004BEE  30007FE9  83000000  00000000  00000000  00000000  00000000
( 7840)   00000000  00000000  00000000  000D1ABA  F0000000  00000000  00000000  00000000  00000000  00000000
( 7880)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 7920)   00000000  00000000  00000000  00000000  00000000  00000FFF  FFBE6F00  00000000  00000000  20080000
( 7960)   00000000  000016BF  93C00000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 8000)   00000000  00000000  000007FF  52BE0000  00000000  00000000  00000000  00000000  00000000  00000000
( 8040)   00000D1A  BADF0000  00000000  00000000  00000000  00000000
```

HEX DUMP OF KM2009

FILE 1 RECORD 3963 8064 BYTES

```
(    0)   00000004  00000000  5A05B015  60202B2F  00000170  23F01203  00000009  E0104000  00000064  00004281
(   40)   20005F77  46000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  000D1AD2
(   80)   60000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  120)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  160)   00000000  00000000  000C3000  00000000  00000000  20080000  00000000  00006BC0  00000000  00000000
(  200)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  240)   00000000  00000000  00000000  00000000  00000000  00000000  00000D1A  D2600000  00000000  00000000
(  280)   00000000  00000000  00000004  00000000  5A05B015  60202B30  00000170  23F01203  00000009  E0104000
(  320)   00000064  00004286  10003E66  D8000000  00000000  00000000  00000000  00000000  00000000  00000000
(  360)   00000000  000D1AD2  60000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  400)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  440)   00000000  00000000  00000000  00000000  000C2000  00000000  00000000  20080000  00000000  01006BC0
(  480)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  520)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000D1A  D2600000
(  560)   00000000  00000000  00000000  00000000  00000004  00000000  5A05B015  60202B31  00000170  23F01203
(  600)   00000009  E0104000  00000064  0000428B  00001D55  3F000000  00000000  00000000  00000000  00000000
(  640)   00000000  00000000  00000000  000D1AD2  60000000  00000000  00000000  00000000  00000000  00000000
```

PIONEER 10 AND 11
PSCM-00007 72-012A-09D/73-019A-09D PSCM-00010
INTERMEDIATE DATA RECORDS

THIS DATA SET CONSISTS OF 9 TAPES, 8 TAPES ARE FOR PIONEER 10 AND 1 TAPE FOR PIONEER 11. THE TAPES ARE 9-TRACK,6250 BPI, WRITTEN ~~IN~~ with ASCII data headers and binary data records. ALL TAPES ARE LABELED, WITH THE EXCEPTION OF TAPES,D86463 AND D86464.THE LABEL NAMES ARE GIVEN BELOW, AS WELL AS THE DD, DC NUMBERS, FILES AND THEIR TIME SPANS:

D#	C#	LABEL NAME	FILES	TIME SPANS
D-86457	C-29373	P1081N	7	12/06/81-12/09/81
				12/03/81-12/07/81
				12/01/81-12/04/81
				11/22/81-11/25/81
				11/19/81-11/23/81
				11/15/81-11/17/81
				11/13/81-11/16/81
D-86458	C-29374	P1081M	4	11/29/81-12/02/81
				11/26/81-11/30/81
				11/24/81-11/27/81
				11/18/81-11/20/81
D-86459	C-29375	P1082E	6	11/25/82-11/29/82
				11/23/82-11/26/82
				11/21/82-11/23/82
				11/18/82-11/22/82
				11/16/82-11/19/82
				11/15/82-11/17/82
D-86460	C-29376	P1082L	6	12/09/82-12/13/82
				12/07/82-12/10/82
				12/05/82-12/08/82
				12/02/82-12/06/82
				11/30/82-12/03/82
				11/28/82-12/01/82
D-86461	C-29377	P1083L	14	12/11/83-12/13/83
				12/08/83-12/12/83
				12/06/83-12/09/83
				12/04/83-12/07/83
				12/02/83-12/05/83
				11/29/83-12/01/83
				11/27/83-11/30/83
				11/24/83-11/28/83
				11/22/83-11/25/83

				11/20/83-11/23/83
				11/17/83-11/21/83
				11/15/83-11/18/83
				11/13/83-11/16/83
				11/10/83-11/14/83
D-86462	C-29378	P1084L	13	11/21/84-11/24/84
				11/23/84-11/27/84
				11/26/84-11/29/84
				11/28/84-12/01/84
				11/30/84-12/04/84
				12/03/84-12/06/84
				12/05/84-12/08/84
				12/07/84-12/11/84
				12/10/84-12/13/84
				12/12/84-12/15/84
				12/14/84-12/18/84
				12/17/84-12/20/84
				12/19/84-12/22/84
D-86463	C-29379	---	17	11/23/84-12/05/84
				12/08/84-12/11/84
D-86464	C-29380	---	10	11/17/85-11/20/85
				11/21/85-11/25/85
				11/24/85-11/27/85
				11/26/85-11/29/85
				11/28/85-12/02/85
				12/01/85-12/04/85
				12/03/85-12/06/85
				12/05/85-12/09/85
				12/08/85-12/11/85
				12/10/85-12/13/85

PIONEER 11/73-019A-09D

D-86465	C-29381	P111824	13	05/07/82-05/10/82
				05/04/82-05/06/82
				05/03/82-05/05/82
				04/29/82-05/02/82
				04/27/82-04/30/82
				04/22/82-04/26/82
				04/20/82-04/23/82
				04/18/82-04/21/82
				04/15/82-04/19/82
				05/15/83-05/17/83
				05/13/83-05/16/83
				05/21/83-05/23/83
				05/18/83-05/22/83

Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91109
(818) 354-4321

72-

JPL

August 29, 1991

Dr. Paul Butterworth
Code 933 GSFC
National Space Science Data Center
NASA - Goddard Space Flight Center
Greenbelt, MD 20771

Dear Dr. Butterworth,

SUBJECT: Data Submission for Pioneer 10/11 Celestial Mechanics Experiment

I have been asked by Dr. John D. Anderson to send the rest of the Intermediate Data Records (IDR) files to you. The nine tapes that I am sending contain several files as before. Enclosed is a list of the contents of each of the tapes. The format of the data records on these tapes is the same as the format of the data submitted in June 1990, and I presume you still have the format information sent by Eunice Lau in October 1990 (copy of letter attached).

We will be sending more data at a later time in the form of Tracking Data Files (TDF). All other data up to the present will be submitted in this form, and appropriate documentation will be enclosed with the data.

Sincerely yours,

Janet E. Hierath

Janet E. Hierath

cc: Dr. John D. Anderson
Eunice K. Lau

Jet Propulsion Laboratory
California Institute of Technology

4800 Oak Grove Drive
Pasadena, California 91109

(818) 354-4321

JPL

October 17, 1990

Dr. Paul Butterworth
Code 933 GSFC
National Space Science Data Center
NASA - Goddard Space Flight Center
Greenbelt, MD 20771

Dear Dr. Butterworth:

SUBJECT: Data Submission for Pioneer 10/11 Celestial Mechanics Experiment

This is in response to Norman J. Schofield's letter to Dr. John D. Anderson dated July 26, 1990. Dr. Anderson was out of the country for the summer and did not open his mail until he returned at the end of September.

This is in reference to our data set submitted June 20, 1990 to Donald Sawyer with your NSSDC ID number of 72-012A-09C. The header information noted in paragraph 3 of Schofield's letter can be ignored. It does not contain much useful information. The only header information which you may wish to look at are the fields containing "IDR" and the time span. The times are data request times, and usually the file stop time is open-ended. Also "WDT" should be "UDT" with a 015 hex code for radio metric data.

In reading the data record, the block size should be 150 bytes with 8 blocks per record. I am enclosing documentation entitled DSN Tracking System Interfaces, Metric Data Interface, TRK-2-15. This document contains a complete description of the 1200-bit data blocks in each data record.

Also enclosed is the JPL Technical Report 32-1527, "Mathematical Formulation of the Double-Precision Orbit Determination Program (DPODP)," by Theodore D. Moyer.

Please keep us informed as to your progress in reading the Intermediate Data Record (IDR) files. We will be submitting more data as soon as you confirm their readability. My phone number is (818) 354-6013, FTS 792-6013, and mail stop 301-150G. John Anderson's phone number is (818) 354-2956, FTS 792-3956, mail stop 301-230.

Sincerely,

Eunice Lau

Eunice Lau

cc: J. D. Anderson

PIONEER 10 DATA

external label	year	file #	IDR tape #	begin date	end date	records
SC23-81A	1981	1	L8142	340	343	4776
	"	2	L8101	337	341	12028
	"	3	L8034	335	338	6587
	"	4	K8376	326	329	7100
	"	5	K8339	323	327	10017
	"	6	K8253	319	321	5665
	"	7	K8223	317	320	5497
SC23-81B	1981	1	L8009	333	336	7509
	"	2	K8447	330	334	11395
	"	3	K8412	328	331	7616
	"	4	K8282	322	324	6518
SC23-82A	1982	1	K8574	329	333	9739
	"	2	K8533	327	330	6094
	"	3	K8468	325	327	7832
	"	4	K8415	322	326	10699
	"	5	K8344	320	323	6377
	"	6	K8322	319	321	2929
SC23-82B	1982	1	L8305	343	347	4623
	"	2	L8245	341	344	7921
	"	3	L8207	339	342	8207
	"	4	L8147	336	340	11533
	"	5	L8043	334	337	6766
	"	6	L8005	332	335	7063
SC23-83A	1983	1	L8336	345	347	2026
	"	2	L8273	342	346	4293
	"	3	L8182	340	343	3841
	"	4	L8139	338	341	3007
	"	5	L8101	336	339	3107
	"	6	L8020	333	335	2661
	"	7	K8553	331	334	3301
	"	8	K8516	328	332	1960
	"	9	K8472	326	329	2403
	"	10	K8455	324	327	4413
	"	11	K8393	321	325	2177
	"	12	K8311	319	322	1425
	"	13	K8274	317	320	148
	"	14	K8232	314	318	170
SC23-84A	1984	1	K5657	325	328	280
	"	2	K5732	327	331	392
	"	3	K5795	330	333	135
	"	4	K5845	332	335	882
	"	5	L5930	334	338	1203
	"	6	L5987	337	340	1195
	"	7	L6030	339	342	1046
	"	8	L6106	341	345	1041
	"	9	L6161	344	347	76
	"	10	L6219	346	349	71
	"	11	L6289	348	352	127
	"	12	L6343	351	354	63
	"	13	L6398	353	356	72

external label	year	file #	IDR tape #	begin date	end date	records
SC23-84B	1984	1	K5647	327	327	30
	"	2	K5674	328	328	20
	"	3	K5694	329	329	54
	"	4	K5721	330	330	47
	"	5	K5796	331	331	70
	"	6	K5770	332	332	52
	"	7	K5799	333	333	27
	"	8	K5860	335	335	1169
	"	9	L5895	336	336	1134
	"	10	L5914	337	337	29
	"	11	L5939	338	338	743
	"	12	L5971	339	339	1576
	"	13	L6036	342	342	36
	"	14	L6067	343	343	87
	"	15	L6084	344	344	288
	"	16	L6122	345	345	46
	"	17	L6376	345	346	42
SC23-85A	1985	1	K1194	321	324	282
	"	2	K1485	325	329	323
	"	3	K1564	328	331	233
	"	4	K1672	330	333	153
	"	5	L1819	332	336	1794
	"	6	L1961	335	338	1414
	"	7	L2059	337	340	1436
	"	8	L2191	339	343	2246
	"	9	L2272	342	345	917
	"	10	L2360	344	347	1978

PIONEER 11 DATA

external label	year	file #	IDR tape #	begin date	end date	records
SC24-82A	1982	1	E8142	127	130	223
	"	2	E8081	124	126	105
	"	3	E8058	123	125	96
	"	4	E8028	119	122	100
	"	5	D8437	117	120	2207
	"	6	D8379	112	116	2055
	"	7	D8329	110	113	1799
	"	8	D8307	108	111	2060
	"	9	D8272	105	109	865
	1983	10	E8317	135	137	1513
	"	11	E8283	133	136	9701
	"	12	E0340	141	143	1970
	"	13	E0316	138	142	5966

TRK-2-15

DOCUMENT 820-13; REV. A
DSN SYSTEM REQUIREMENTS
DETAILED INTERFACE DESIGN

IDR-12-1A

DSN INTERFACES

INTERMEDIATE DATA RECORD FORMATS

(MARK IVA)

Insert this modular document in 820-13; Rev. A)

EFFECTIVE SERVICE: All Projects (for Telemetry System, except Helios and Pioneer 10 and 11)

EFFECTIVE DATE: Mark IVA Implementation
Initial Release Date: April 1, 1985

Approved by: Chi Tung Peng
Stephen P. Stoddy 1/21/85
Robert L. Collins 3/11/85
Roger A. Crowe 3/12/85

A. PURPOSE

This module defines and controls the formats of the DSN Intermediate Data Record (IDR) for all Mark IVA or Goddard Space Flight Center (GSFC) projects.

B. REVISION AND CONTROL

Revisions or changes to the information herein presented may be initiated according to the procedures in Section I of this document.

C. GENERAL INFORMATION AND DEFINITIONS

The Data Records Subsystem (GDR) Data Records Generator (DRG) is used to generate IDRs for various project data in real time. All data directed to the

DRG are separated into streams by the DRG. A stream is uniquely defined by specifying a combination of a source station (DSS number), a spacecraft number, a data type (user-dependent type code (UDT) for DSN data and Block Format Code (BFC) for GSFC and RMOC data), and status (i.e., real-time or recall (Gross Data Description (GDD) for DSN data and a BFC for GSFC data). IDRs are digital tapes, which will conform to the format defined in Section D, created by the DRG for a real-time stream or a merged result of real-time and recalled streams.

Data on the IDRs will be time ordered by Earth-received time of a given data stream. However, Very Long Baseline Interferometry (VLBI) IDRs will have the following: (1) time-ordered ancillary data only, (2) time-ordered correlator data only, or (3) time-ordered ancillary data followed by time-ordered correlator data. All IDR tapes will consist of a single data file as defined in Figure IDR-12-1A-1. All IDR files with the exception of Radio Metric data will contain data for one spacecraft from one DSS (on one subcarrier and carrier for Telemetry); each Tracking IDR file will contain data for one spacecraft from one or more DSSs for one or more passes or partial passes.

D. IDR FORMAT

The IDR is recorded on a 9-track magnetic tape. The recording method is NRZI (non-return-to-zero, change-on-one) at 800 b/in. or PE (phase-encoded) at 1600 b/in. dependent on user requirements. The format of the IDR file is shown in Figure IDR-12-1A-1.

1. IDR Files

An IDR file may be of any length depending on data rate and time interval. The end of a tape/IDR file is always indicated by a double end-of-file (EOF) mark. An IDR file is always an integral number of records; if the last record is not full, it is completed with filler blocks (defined in this document). If the IDR stretches over multiple tapes, each tape is formatted as described in paragraph 2. of this module.

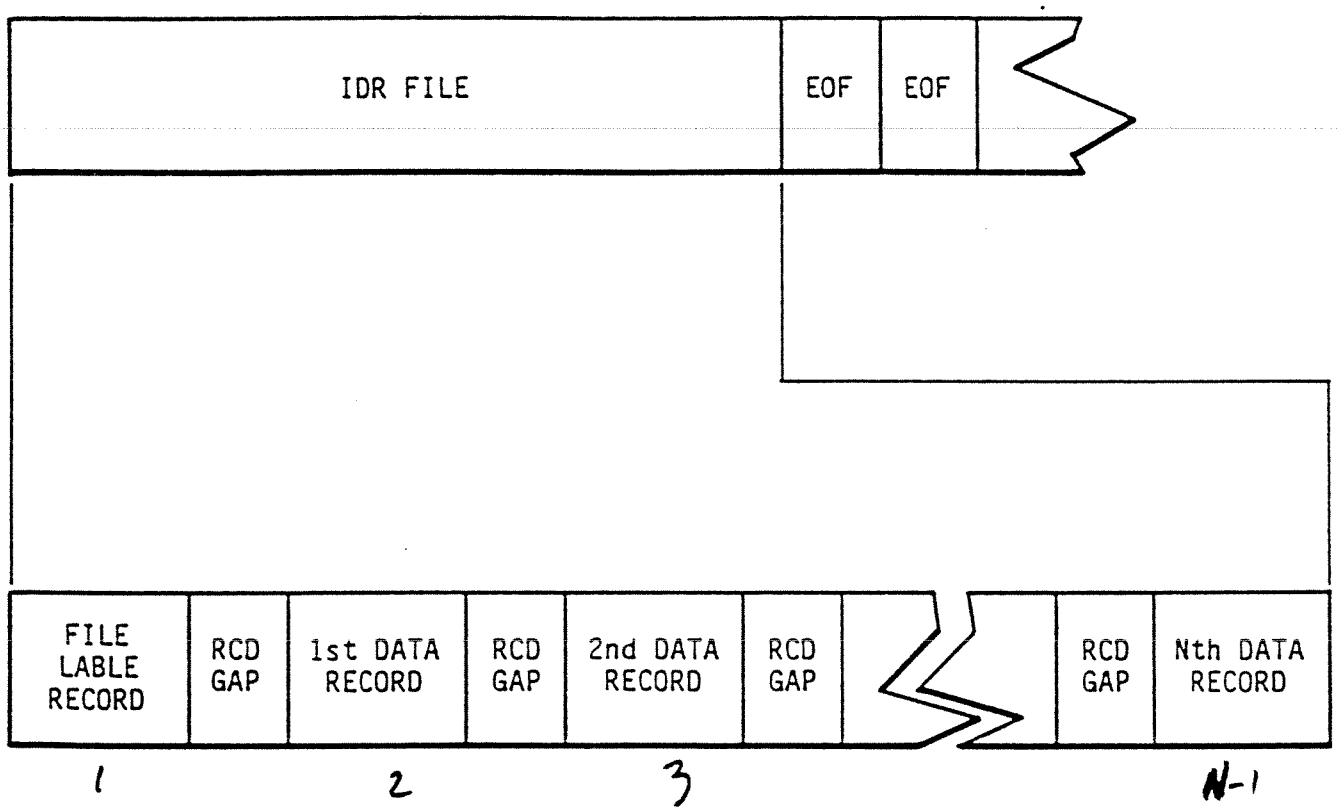

Figure IDR-12-1A-1. IDR File Format

2. IDR Records

a. File Label Record. The file label record will always be the first record of an IDR file. It consists of 608 16-bit words (9728 bits) comprised of a 16-bit record sequence number (all zeros), 8 zero bits, 840 bits of data and 8864 unused (zero) bits. The data portion will contain information specifying the IDR file type and contents (content parameters are derived from operator manual inputs). Table IDR-12-1A-1 describes the general format of the IDR file label record.

b. Data Records (General and RT or RSC formats). The file label record is followed by N data records, where N is the appropriate number of records necessary to provide all data for a selected spacecraft, station(s), and pass(es). Each data record consists of 608 16-bit words (9728 bits) comprised of a 16-bit record sequence number (1 through 32767), seven additional 16-bit items of information, and eight 1200-bit, or two 4800-bit blocks. Each block appears on the IDR exactly as it was received on the communication circuit (i.e., with sync word, and error code and status). Blocks with GCF errors will not be recorded.

Table IDR-12-1A-4 describes the general format of an IDR Data Record. Each block is identified as to whether it is data or filler by BFC (bit positions 41-48 of each block). Filler blocks have a BFC of $5E_{16}$ and 8888_{16} pattern from the fourth word to the end of the block.

Each IDR file will have a new record number sequence beginning with all zero bits (0) for the file label record, incrementing sequentially from 1 to $N \leq 32767$ for the data records. There will be no discontinuities in the sequence numbers for the data records.

Table IDR-12-1A-1. File Label Record Format

Bit Number	Length (bits)	Description
1-16	16	Record Sequence Number - binary integer (binary number, right-justified with leading zeros) = (RJ/LZ)
17-24	8	0 (spare)
25-48	24	File Type - 3 ASCII characters (File Type is a software input: nominally "TLM" is for Telemetry, and "RMD" is for Tracking. Table IDR-12-1A-2 describes the characters that may be used on the IDR tapes; for any other data types not defined in this table, including GSFC data, DRG will print spaces in this field.
49-72	24	Tape ID number - 3 ASCII characters = "IDR"
73-96	24	DSS Number if applicable (see OPS-6-7, 8) - 3 ASCII characters, right-justified with leading character zero (RJ/LZ)
97-120	24	Spacecraft Number (see OPS-6-7, 8) - 3 ASCII characters, RJ/LZ
121-152	32	Pass Number - 4 ASCII characters (manual input)
153-168	16	Tape Number - 2 ASCII characters (manual input)
169-192	24	Data Type - 3 ASCII characters (Data Type is a manual input provided only for convenience in identification and labeling) Table IDR-12-1A-3 describes the ASCII characters that may be used for this field. If not entered by operator, this field will be blanks.
193-200	8	"0" - ASCII character zero
201-216*	16	File Start Year - 2 ASCII characters, RJ/LCZ
217-240	24	File Start Day-of-Year - 3 ASCII characters, RJ/LCZ

*If the time parameter has not been entered by the operator, the start time is the time of the first block and the end time is set to zero. The UDTs and DDTs are operator inputs and may not be encountered in generation (not in file). If the UDT/DDT parameter is bypassed (not entered by operator), those fields will be set to three-character ASCII zeros.

Table IDR-12-1A-1. File Label Record Format (Contd)

Bit Number	Length (bits)	Description
241-264	24	File Stop Day-of-Year - 3 ASCII characters, RJ/LCZ
265-280	16	File Start Hour - 2 ASCII characters, RJ/LCZ
281-296	16	File Start Minute - 2 ASCII characters, RJ/LCZ
297-312	16	File Start Second - 2 ASCII characters, RJ/LCZ
313-328	16	File Stop Hour - 2 ASCII characters, RJ/LCZ
329-344	16	File Stop Minute - 2 ASCII characters, RJ/LCZ
345-360	16	File Stop Second - 2 ASCII characters, RJ/LCZ
361-384	24	File Start Day-of-Year - binary integer
385-408	24	0 (spare)
409-432	24	File Start UTC (seconds times 100; i.e., 1/100ths of a second but with 1 second resolution) - binary integer
433-456	24	File Stop UTC (seconds times 100) - binary integer
457-480	24	User Dependent Type Code - 3 ASCII characters+ = UDT
481-504	24	1st UDT - 3 ASCII characters, RJ/LCZ*
505-528	24	2nd UDT - 3 characters, RJ/LCZ**
529-600	72	9 ASCII zeros
601-624	24	Data Dependent Type Code - 3 ASCII characters = "DDT."***
625-648	24	1st DDT - 3 ASCII characters, RJ/LCZ***
649-672	24	2nd DDT - 3 ASCII characters, RJ/LCZ***

+Characters "BFC" ASCII will appear here for GSFC data.
*Block Format Code will appear here for GSFC data block.
**Always "000" for GSFC data blocks.
***Not applicable to GSFC blocks after this field.

Table IDR-12-1A-1. File Label Record Format (Contd)

Bit Number	Length (bits)	Description
673-696	24	3rd DDT - 3 ASCII characters, RJ/LCZ*
o o o	o o o	o o o
841-864	24	10th DDT - 3 ASCII characters, RJ/LCZ*
865-9728	8864	0 (Not used)

*Not applicable to GSFC blocks after this field.

NOTE: Bits 217-456 indicate the nominal file start and stop times. They are not the exact time tags of the first and last data blocks in the file, but there are no records in the file with time tags outside these limits.

NOTE: Unused UDTs and DDTs are set to 3 character zeros ("000").

Table IDR-12-1A-2. User-Dependent Type Code and Data Type Assignments for Data Requiring Generation of IDRs

Binary Bits (Word 4) 4	5	6	7	8	9	10	Hex/OCT Representation	User-Dependent Types	File Type
0	0	0	1	0	1	1	0B/013	TLM Data-TPA 1, Channel 1	TLM
1	1	1	0	0	1	1	73/163	TLM Data-TPA 2, Channel 1	TLM
0	0	0	1	1	0	0	0C/014	TLM Data-TPA 3, Channel 1	TLM
0	0	0	1	1	0	1	0D/015	TLM Data-TPA 4, Channel 1	TLM
0	0	0	0	1	1	1	07/007	TLM Data-TPA 1, Channel 2	TLM
0	0	0	1	0	0	0	08/010	TLM Data-TPA 2, Channel 2	TLM
0	0	0	1	0	0	1	09/011	TLM Data-TPA 3, Channel 2	TLM
0	0	0	1	0	1	0	0A/012	TLM Data-TPA 4, Channel 2	TLM
0	0	1	0	1	0	1	15/025	Radio Metric Data-MDA Mark IVA	RMD
0	0	1	0	1	1	0	16/026	Radio Metric Data-MDA Mark III	RMD
1	0	0	0	1	1	1	47/107*	CMD Data - Prime CPA	CMD
0	0	1	0	1	1	1	17/027	Ground Weather Data	MMA GWD
0	1	1	1	1	1	0	3E/076	LMC to NMP Link Status Block	MON
0	0	0	0	1	1	0	06/006	Telecom Link Analysis (MON-5-9)	MON
1	1	1	0	0	0	0	70/160	Supplementary AGC Data (MON-5-10)	MON
0	0	0	1	1	1	0	0E/016	Galileo AGC Data (MON-5-11)	MON
0	1	1	1	1	1	1	3F/077	DSS Monitor Data (DIS)	MON
0	1	1	0	0	0	1	31/061	Radio Science Data or VLBI High-Speed Data	RSC
0	1	1	0	1	0	0	34/064	VLBI Status Data	VLB
0	1	1	0	1	0	1	35/065	VLBI Data (Quick Look)	VLB
0	0	1	0	0	0	1	11/021	VLBI	VLB
0	1	1	0	1	1	0	36/066	VLBI Data (Correlator Assembly)	VLB

*Command IDR delivery required only on request.

Table IDR-12-1A-3. Allowable IDR ASCII Characters

Character	Octal Code	Hexa-decimal Code	Character	Octal Code	Hexa-decimal Code
0	60	30	I	111	49
1	61	31	J	112	4A
2	62	32	K	113	4B
3	63	33	L	114	4C
4	64	34	M	115	4D
5	65	35	N	116	4E
6	66	36	O	117	4F
7	67	37	P	120	50
8	70	38	Q	121	51
9	71	39	R	122	52
A	101	41	S	123	53
B	102	42	T	124	54
C	103	43	U	125	55
D	104	44	V	126	56
E	105	45	W	127	57
F	106	46	X	130	58
G	107	47	Y	131	59
H	110	48	Z	132	5A

NOTE: ASCII characters are 8-bit, right-justified, zero-filled binary integers (i.e., numeric code representations of alphanumeric characters).

Table IDR-12-1A-4. Data Record Format

Bit Number	Length (bits)	Description	
1-16	16	Record Sequence Number - binary integer (1 to 32767)	
17-32	16	Record Size in Bytes - binary integer	
33-48	16	Block Size in Bytes - binary integer	
49-64	16	Number of Bytes to 1st Block - binary integer	
65-80	16	Number of Blocks in Record - binary integer	
81-96	16	0 (spare)	
97-112	16	0 (spare)	
113-128	16	0 (spare)	
129-1328	1200	1st 1200-bit HSD Block	1st 4800-bit WBD Block
1329-2528	1200	2nd 1200-bit HSD Block	
2529-3728	1200	3rd 1200-bit HSD Block	
3729-4928	1200	4th 1200-bit HSD Block	
4929-6128	1200	5th 1200-bit HSD Block	2nd 4800-bit WBD Block
6129-7328	1200	6th 1200-bit HSD Block	
7329-8528	1200	7th 1200-bit HSD Block	
8529-9728	1200	8th 1200-bit HSD Block	

ASCII LIST OF PIONEER 10 D-86457

FILE 1 RECORD 1 80 BYTES

VOL1P1081N 1

FILE 2 RECORD 1 1216 BYTES

```
(    0)  00000052  4D444944  52614C6C  30323330  30303030  3154524B  30383133  34303334  33323333  30303030
(   40)  34333030  30000154  00000081  16E018B8  20554454  30313630  30303030  30303030  30303044  44543030
(   80)  30303030  30303030  30303030  30303030  30303030  30303030  30303030  00000000  00000000  00000000
(  120)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  160)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  200)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  240)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  280)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  320)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  360)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  400)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  440)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  480)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  520)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  560)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  600)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  640)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  680)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  720)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  760)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  800)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  840)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  880)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  920)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  960)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 1000)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 1040)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 1080)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 1120)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 1160)  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 1200)  00000000  00000000  00000000  00000000
```

HEX DUMP OF PIONEER 10 FILE 2 D86457

FILE 2 RECORD 4776 1216 BYTES

```
(    0)  12A704C0  00960010  00080000  00000000  62762719  77DE0589  17179EE0  343A189C  E3C78A22  B2181A7F
(   40)  F93FFEBE  3C4B48F2  D00E10E3  E01429EF  B7C0553D  6F00006C  64015807  F8087A60  80000000  41E571E6
(   80)  E0001A00  140031D0  149D8023  1B1A1C80  025A479E  010656E5  BF994F7D  BDFE69EB  58000353  5028003F
(  120)  E063D650  00000002  0F2738F3  C289B306  06DFFF1F  FFEF8F0F  80000000  00000000  00000000  00000000
(  160)  005F0029  443B6276  271977DE  05891717  E530343A  199691E9  606709C2  68C853DF  6F7ECA7A  DE0000D7
(  200)  6C0A0000  000AF592  00000000  83C9691E  B408C7DE  285FC53D  F6F7F0A7  ADE0000D  8540A000  00407F58
```

```
(  240)    E0000000  083C9CE3  D68A2ABE  181D7FFA  0001BE3C  571EC800  01800078  00AD0149  D80231B1  A1C8001F
(  280)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  000000BE  0000228C  62762719
(  320)    77DE0589  17181410  343A1A96  91ED20B1  F219C4C0  53DF6F80  0A7ADE00  00D8B002  20000407  F5960000
(  360)    000083C9  691EF00D  76668261  053DF6F8  0EA7ADE0  000D89C0  22000000  0F595000  0000083C  9CE3DE0A
(  400)    2ED0181F  3FFC0003  7E3C4B48  F8707E6D  66DCFA29  EFB7C075  3D6F0000  6C4E0110  0000037A  CB000000
(  440)    0041E3E0  00000000  00000000  00000000  00000000  003E0000  42426276  271977DE  05891718  53BC343A
(  480)    1BAE3E47  00030001  1000E602  93B00463  63439000  4B48F960  9127A542  C129EFB7  C06D3D6F  00006C2A
(  520)    00B00000  007ACC80  00000041  E4E71F2C  519680C1  07FFDE00  29F1E25A  47D2851F  0F7A4201  4F7DBE02
(  560)    E9EB7800  035F6005  8000100F  D6580000  00020F27  38FB428D  B386085F  FED0016F  8F0F8000  00000000
(  600)    00000000  00000000  000000AF  002C2F52  62762719  77DE0589  17188940  343A1C96  91F6816D  388A1926
(  640)    53DF6F7F  BA7ADE00  00D90001  6000080E  F59B0000  000083CA  E3EF8000  30001000  2820293B  00463634
(  680)    390004B4  8FC30C95  6A6965A2  9EFB7C00  53D6F000  06D12020  00008087  ACA80000  00041E4B  48FD20DC
(  720)    1113C70E  29EFB7BF  A53D6F00  006C6802  0007FC04  7ACC0000  000041E3  E0000000  00000000  00000000
(  760)    000E0005  1ABA6276  271977DE  05891718  B820343A  1D9CE3F4  8A3AC818  217FFA40  05BE3C4B  48FE10EE
(  800)    CB8CB60C  29EFB7C0  353D6F00  006C4C02  0000000C  7ACD0000  000041E5  71FD6000  18000700  1230149D
(  840)    80231B1A  1C80025A  47F8080C  308B61F1  4F7DBE02  E9EB7800  0362300E  80002023  D6500000  00020F27
(  880)    38FF028F  B806083F  FF30015F  8F0F8000  00000000  00000000  00000000  0000009F  003360BE  627627FF
(  920)    005E8888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  960)    88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
( 1000)    88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
( 1040)    88888888  88888888  88888888  88888888  88888888  00000000  00006276  27FF005E  88888888  88888888
( 1080)    88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
( 1120)    88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
( 1160)    88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
( 1200)    88888888  88888888  88880000  00000000
```

ASCII LIST OF PIONEER 10 FILE 4 D-86457

```
FILE 4     RECORD 1     80 BYTES

HDR1JEH*OUT          P1081N00010002000100 84236 90091 000000U1100-1
```

HEX DUMP OF PIONEER 10 FILE 5 D-86457

```
FILE 5     RECORD 1     1216 BYTES

(    0)    00000052  4D444944  52614C6C  30323330  30303030  3154524B  30383133  33373334  31323333  30303030
(   40)    34333030  30000151  00000081  16E018B8  20554454  30313630  30303030  30303030  30303044  44543030
(   80)    30303030  30303030  30303030  30303030  30303030  30303030  30303030  00000000  00000000  00000000
(  120)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  160)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  200)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  240)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  280)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  320)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  360)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  400)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  440)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  480)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  520)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  560)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  600)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  640)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  680)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
```

```
( 720)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 760)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 800)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 840)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 880)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 920)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 960)    00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 1000)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 1040)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 1080)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 1120)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 1160)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 1200)   00000000  00000000  00000000  00000000
```

HEX DUMP OF PIONEER 10 FILE 5 D-86457

FILE 5 RECORD 12028 1216 BYTES

```
(    0)   2EFB04C0  00960010  00080000  00000000  6276277A  77DE0589  1718B820  34104196  A1FA41D1  50B41C54
(   40)   53DF58FF  0A9ADFFF  FFEE0401  20000000  F5690000  00008019  6A1FA49D  1EEF9427  453DF58F  F0A9ADFF
(   80)   FFFEE8C0  12000000  0F569000  00000801  96A1FA51  D28D3E68  D253DF59  003A9ADF  FFFFEA58  01200000
(  120)   00F56900  00000080  17C00000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
(  160)   003E0017  BA096276  27FF005E  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  200)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  240)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  280)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88880000  00000000  627627FF
(  320)   005E8888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
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(  400)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  440)   88888888  88888888  88888888  88888888  88888888  00000000  00006276  27FF005E  88888888  88888888
(  480)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  520)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  560)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  600)   88888888  88888888  88880000  00000000  627627FF  005E8888  88888888  88888888  88888888  88888888
(  640)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  680)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  720)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  760)   00000000  00006276  27FF005E  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  800)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  840)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
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(  920)   005E8888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
(  960)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
( 1000)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
( 1040)   88888888  88888888  88888888  88888888  88888888  00000000  00006276  27FF005E  88888888  88888888
( 1080)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
( 1120)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
( 1160)   88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888  88888888
( 1200)   88888888  88888888  88880000  00000000
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