file 6

10/17/88

INTEROFFICE MEMORANDUM

TO: DISTRIBUTION

FROM: S. COLLINS Sherry

SUBJ: ORIGINAL DOCUMENT RELEASE - SIS- MON-105

Attached is the signed original release of subject document.

Please contact me at ~~46195~~ 30965 if you have questions.

10-6

PROJECT MAGELLAN SOFTWARE INTERFACE SPECIFICATION Cover Sheet	NUMBER: MON - 105 REVISION: Original DATE: 08/10/88

SIS NAME: DSN Monitor Data File (820-13, MON 5-12)

DOMAIN:

System	Subsystem	Program	Make/Use
MOS	MON		MAKE
MOS	TPS	GIF/MHR	USE
MOS	SDPS	CONTROL	USE (ON EDR)
MOS	Science	N/A	USE (ON EDR)
MOS	IDPS	RCBR	USE (ON EDR)
MOS	RES	RAS	USE (ON EDR)

Computer System: DSN

Purpose of Interface (Summary):
This document describes the monitor data file generated by the Deep Space Network for the Magellan mission. The monitor data file is generated by the MON subsystem which transmits the file to the TPS for inclusion on the SCI EDR and for display on SFOC workstations. Refer to TPS-101 for details on the SCI EDR. This module contains module 820-13, MON 5-12.

INTERFACE MEDIUM

Disk File: [ ]

Magnetic Tape: [ ] Tracks: Density:

Other: [X] Electrical to TPS

SIS COORDINATOR: B. Beaudry

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IDPS	Sys Eng.	K. Andersen		8/16/88
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SIS MON-105

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MON-5-12

DSN MONITOR AND CONTROL SYSTEM INTERFACE WITH MAGELLAN PROJECT TELECOMMUNICATION LINK ANALYSIS

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

EFFECTIVE DATE: February 1, 1988 EFFECTIVE SERVICE: MAGELLAN

Initial release date: October 15, 1987
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Approved by:

1/25/88
1/26/88
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1/26/88

A. PURPOSE

This module defines and controls the content and format of the telecommunications link analysis data blocks that are generated by the Deep Space Network (DSN) Deep Space Communications Complex (DSCC) Monitor and Control Subsystem (DMC) and then transmitted to the Mission Control and Computing Center (MCCC) and the Magellan Mission Operations Center (MOC) for the support of the Magellan Project telecommunications link analysis activities. This block will also be transmitted to the Network Operations Control Center (NOCC) for monitoring of DSN performance.

B. REVISION AND CONTROL

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

C. GENERAL INFORMATION

This module defines the monitor data from the DMC Link Monitor and Control (LMC) to the MCCC, the Magellan MOC, and the NOCC via the DSN Ground Communications Facility (GCF) Digital Communications Subsystem (GDC).

The telecommunications link analysis data blocks will be generated and transmitted at 5-second intervals. These blocks will be sent to the MCCC, MOC, and NOCC via the GCF Error Correction and Switching Assembly (ECS). In order to accomplish this delivery, the LMC will insert the proper Block Header Codes (as illustrated in this module and defined in Module OPS-6-8 of this document) in the appropriate location in the header. In case of conflict, (except data-dependent type (DDT) codes) Module OPS-6-8 shall govern.

In the event of communications equipment or LMC failure at the DSCC, the telecommunications link analysis data from the DSCC will not be available. Upon recovery from the failure, the transmission of these data will be resumed. The data will be available for replay from the Area Routing Assembly (ARA) if the LMC has requested the ARA to log the data block at time of transmission, and both the LMC and ARA have functioned properly.

To minimize the potential of data degradation due to manipulation of the parameter value, the LMC will transfer the data in the same format that the data is received from the other subsystems.

D. DATA BLOCK

The data will be contained in one 4800-bit block. This provides space for the GCF header, the Standard Formatted Data Units (SFDU) header, the monitor data information field, and the GCF block ending. The unused portion of the block at the end of the monitor data information will contain filler data.

The following definitions apply in this module: "operational" means functioning normally (according to specifications) as far as can be determined; "critical" means seriously impaired.

1. Word Format Description

In this module, the monitor parameter data will be presented in one of the formats described in the following paragraphs.

a. Parameter Descriptor Word (PDW). During the generation of these MON-5-12 blocks, the LMC may determine that it has not received data, when expected, from one or more of the DSCC subsystems. To minimize concerns of validity and timeliness of word content when this occurs, the LMC will provide parameter descriptor words (PDW) for all parameters except operator input values. The LMC PDWs will only indicate "observed" or "not observed" with the LMC Link Process Code and will report as follows:

Observed	Not Observed	Link number
#0000	#8000	1
#0100	#8100	2
#0200	#8200	3
•	•	•
•	•	•
•	•	•
#0700	#8700	8

The expression "this PDW covers words xx-xx and xx-xx" defines the words in this module that the PDW qualifies.

Subsystems have the option of providing parameter descriptors to precede any item and will provide some PDWs to better define the validity of their data.

The PDW word contains three fields: the first field shall state the validity of the data, the second field shall state the results of an analysis of the data, and the third field shall contain the process code of the subsystem observing the data. as shown below. The PDW shall be included whenever one of its fields is required to fully describe the succeeding parameter(s).

1	2	4	5	16
: VALIDITY	: ANALYSIS	:	SOURCE	:

1.) Validity. The validity field will notify the receiving computer whether or not the parameter value is meaningless and not to be processed. The validity field shall be coded as follows:

Code	Meaning
0	The subsystem has observed the parameter; the value may be used.
1	The subsystem has not observed the parameter, or the parameter is not applicable to this mode of operation; the value should be discarded.

2.) Analysis. Subsystems shall include the PDW if the parameter is ever subject to standard and limit (S&L) tests prior to transmission. The analysis field will communicate the results to the receiving computer. This field will have different interpretations depending upon the type of monitor parameter (status, configuration, or performance). It will be used to organize the presentation of displays generated by the DMC. The analysis field will be coded as follows:

a.) Status and Configuration Parameters. This field is not defined for status or configuration parameters and shall be coded as zero for these types.

b.) Performance Parameters.

Code	Meaning
0	The subsystem has not analyzed the data; disregard this field.
1	The parameter has a normal, reasonable, or expected value.
2	High warning limit has been exceeded.
3	High critical limit has been exceeded.
4	Low warning limit has been exceeded.
5	Low critical limit has been exceeded.

3.) Source Field. Subsystems shall include the PDW if the parameter will ever be observed by a subsystem other than the subsystem sending it. The source field will identify the observing subsystem to the receiving computer. The source field contains the process code of the subsystem that originally observed the parameter.

b. Integer. An integer format (16 bits) can be used to express integral quantities in the range -32768 to +32767 with a resolution of unity. Integers shall be expressed in signed two's complement notation (most significant bit (MSB) = bit 2), as indicated below:

1	2														16
		14													0
: S	:	2													2 :

c. Double Integer (DI). A double integer (DI) format (32 bits) can be used to express integral quantities in the range -2,147,483,648 to +2,147,483,647 with a resolution of unity, as shown below. Double integers shall be expressed in a signed two's complement notation (MSB is bit 2 in the first word).

1	2														16
		30													16
: S	:	2													2 :
	15														0
: 2															2 :

In the SFDU header description, reference is made to 8-bit, 16-bit, and 64-bit integers. These formats are not defined in the standards documents, but are integer numbers expressed in binary notation.

d. Status. The status format shall be used for status parameters only. It shall contain two fields: the qualification field (bits 1 through 13) and the uniform status code field (bits 14 through 16), as indicated below:

1												13	14		16
: Qualification													: Status Code		:

The qualification field may be used to clarify the uniform status code, and shall have the following meanings:

Status Qualification Number	Qualifying Word or Phrase
0	(None)
1	Off Line
2	On Line
3	In Sync
4	Out of Sync
5	In Lock
6	Out of Lock
7	Recording
8	Reading
9	Awaiting Operator Intervention
10	Expected Input Missing
11	Enabled
12	Disabled

The uniform status code field shall be used to report the value of a status item in a uniform code, and shall have the following meanings:

Code	Meaning
0	Out of Service
1	Operational
2	Busy
3	Deviation
4	Marginal
5	Critical
6	Emergency

e. Floating Point (FP). A Floating Point (FP) format (32 bits) can be used to express quantities in the approximate range $\pm 2^{255}$ (about $\pm 10^{76}$) with a precision of 22 bits (over six significant decimal digits). Floating point numbers shall be expressed with a sign, a 9-bit exponent, and a 22-bit mantissa, as shown below:

1	2	10	11	16
: S : Exponent		: Mantissa		:
: Mantissa (continued)				:

The exponent values are defined as follows:

Exponent Value (HEX)	Floating Point Number		Value
000	2^{-256}	x	Fraction Value (1 > F > 0)
100	2^{0}	x	Fraction Value
1FF	2^{255}	x	Fraction Value

A negative number is represented as the integer two's complement of the absolute value.

f. Double Floating Point (DFP). A Double Floating Point format (48 bits) can be used to express quantities in the approximate range $\pm 2^{255}$ (about $\pm 10^{76}$) with a precision of 38 bits (over ten significant decimal digits). Double Floating Point numbers shall be expressed with a sign, a 9-bit exponent, and a 38-bit mantissa, as shown below:

1	2	10	11	16
: S : Exponent		: Mantissa		:
: Mantissa (continued)				:
: Mantissa (continued)				:

The exponent values are defined as follows:

Exponent Value (HEX)	Floating Point Number		Value
000	2^{-256}	x	Fraction Value (1 > F > 0)
100	2^{0}	x	Fraction Value
1FF	2^{255}	x	Fraction Value

A negative number is represented as the integer two's complement of the absolute value.

g. ASCII Floating Point (ASCII FP). An ASCII Floating Point format (12 bytes) can be used to express quantities in the range ± 10 to a

2-decimal digit power up to 99 with a precision of seven decimal digits, as indicated below:

1	8	9	16
: CHARACTER 1		: CHARACTER 2	:
: CHARACTER 3		: CHARACTER 4	:
: CHARACTER 5		: CHARACTER 6	:
: CHARACTER 7		: CHARACTER 8	:
: CHARACTER 9		: CHARACTER 10	:
: CHARACTER 11		: CHARACTER 12	:

The quantity shall be represented as a 12-character string in the following format.

+0.000000+00

where

"+" is either a plus or a minus sign

"0" is a decimal digit (0 to 9)

"." is a decimal point

The string shall be interpreted as a signed decimal number with 6 fractional digits multiplied by 10 to a 2-decimal digit signed power.

NOTE:
In the ASCII formats described below: those ASCII fields in the SFDU Header will be right-justified while those in the Monitor Data Field (Words 40-295) will be left-justified.

Each printable ASCII character will consist of two hexadecimal characters in the range 20 to 7F.

h. ASCII 2. ASCII 2 (2 bytes) can be used to express 2-character ASCII strings. Each byte shall contain a printable ASCII character, as shown below:

1	2	8	9	10	16
: 0 :	CHARACTER 1	: 0 :	CHARACTER 2		:

i. ASCII 4. ASCII 4 (4 bytes) can be used to express 4-character ASCII strings. Each byte shall contain a printable ASCII character, as shown below:

1	2	8	9	10	16
0	CHARACTER 1		0	CHARACTER 2	
0	CHARACTER 3		0	CHARACTER 4	

j. ASCII 12. ASCII 12 (12 bytes) can be used to express 12-character ASCII strings. Each byte shall contain a printable ASCII character, as shown below:

1	2	8	9	10	16
0	CHARACTER 1		0	CHARACTER 2	
0	CHARACTER 3		0	CHARACTER 4	
0	CHARACTER 5		0	CHARACTER 6	
0	CHARACTER 7		0	CHARACTER 8	
0	CHARACTER 9		0	CHARACTER 10	
0	CHARACTER 11		0	CHARACTER 12	

k. Unformatted. Unformatted (16 bits) shall be used to report anything that cannot be expressed in the above formats. The individual word description will explain how any unformatted messages are constructed and interpreted (see below).

1	16
EXPLANATION OF UNFORMATTED MESSAGES	

l. Double Unformatted (DU). Double unformatted (32 bits) shall be used to report anything that cannot be expressed in the above formats. The individual word description will explain how any double unformatted messages are constructed and interpreted (see below).

1	16
EXPLANATION OF DOUBLE UNFORMATTED MESSAGES	

m. Time. Time Format (12 bytes) can be used to express a time measurement to a resolution of one millisecond. Time shall be expressed as a string of 12 ASCII digits containing the following information:

Item	Bytes	Minimum Value	Maximum Value
Day of Year	3	001	366
Hour	2	00	23
Minute	2	00	59
Second	2	00	59
Millisecond	3	000	999

Each digit shall be expressed with leading zeros and shall be arranged in six 16-bit words as follows:

1 2	8 9 10	16
: 0 : day	: 0 : day	:
: 0 : day	: 0 : hour	:
: 0 : hour	: 0 : minute	:
: 0 : minute	: 0 : second	:
: 0 : second	: 0 : millisecond	:
: 0 : millisecond	: 0 : millisecond	:

2. Block format

The format of the block is shown in Figure 1.

3. Block Description

a. Standard Fields.

1.) GCF Header. The GCF Header, Word 1 bit 1 through Word 8 bit 16, will be the standard DSN GCF block header as defined in Module OPS-6-8 of this document. The following description of the GCF header is for illustration only: Module OPS-6-8 shall govern at all times, except for the DDT Code.

WORD 1

BIT

1 thru 16 First 16 bits of NASCOM Sync Code; always (6276 HEX).

BIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WORD 1	SYNC CODE															
2	SYNC CODE								SOURCE CODE							
3	DESTINATION CODE								BLK FORMAT CODE							
4	GDO		UDT CODE						DDT CODE							
5	0	S/C CODE							TIME							
6	TIME															
7	GCF	DOY												BSN		
8	BLOCK SERIAL NUMBER								0	0	0	0	0	0	0	0
9	NUMSEG = 1 (SFDU SEGMENTS IN THIS BLK)															
10	SEGLEN = 284 (16-BIT WORDS IN SFDU SEGMENT)															
11	SFDU ID MODULO 2**16															
12	SEGNUM = 1								0	0	0	0	0	0	0	1
13	N								J							
14	P								L							
15	VERSION ID = 2								CLASS ID = 1							
16	SPARE															
17	0								1							
18	3								0							
19	LENGTH OF SFDU BLOCK (548 BYTES)															
20	LENGTH OF SFDU BLOCK															
21	LENGTH OF SFDU BLOCK															
22	LENGTH OF SFDU BLOCK															
23	PRIMARY HEADER TYPE = 2															
24	LENGTH OF PRIMARY HEADER = 4															
25	MAJOR DATA CLASS = 6								MINOR DATA CLASS = 0							
26	MISSION ID = 4								FORMAT CODE = 0							
27	JPL SECONDARY HEADER TYPE CODE = 12															
28	LENGTH OF SECONDARY HEADER = 14															
29	ORIGINATOR ID = 48								SPARE = 0							
30	SPACECRAFT CODE								DATA SOURCE							
31	SPARE = 0								MST P-FIELD							
32	DAYS SINCE JANUARY 1, 1958															
33	FIRST 2 BYTES OF MILLISECONDS OF DAY															
34	LAST 2 BYTES OF MILLISECONDS OF DAY															
35	SPARE															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

BIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WORD 36	MONITOR DATA BLOCK HEADER CODE = 10															
37	LENGTH OF DATA BLOCK (518 BYTES)															
38	REC'NG ANT. "A" ID															
39	POW BY LMC FOR ANT. POINTING VALUES															
40	POW BY APA FOR ANT. "A" EL ANGLE															
41	REC'NG ANT. "A" EL ANGLE															
42	REC'NG ANT. "A" EL ANGLE															
43	REC'NG ANT. "A" CONSCAN DRIVE STATUS															
44	REC'NG ANT. "A" CONSCAN DRIVE STATUS															
45	REC'NG ANT. "A" CONSCAN LOOP STATUS															
46	REC'NG ANT. "A" CONSCAN LOOP STATUS															
47	REC'NG ANT. "B" ID															
48	POW BY APA FOR ANT. "B" ELEV ANGLE															
49	REC'NG ANT. "B" ELEV ANGLE															
50	REC'NG ANT. "B" ELEV ANGLE															
51	REC'NG ANT. "B" CONSCAN DRIVE STATUS															
52	REC'NG ANT. "B" CONSCAN DRIVE STATUS															
53	REC'NG ANT. "B" CONSCAN LOOP STATUS															
54	REC'NG ANT. "B" CONSCAN LOOP STATUS															
55	POW BY LMC; ODD RECVRS ANT. "A"															
56	RECVR "A" LOCK STATUS (ANT. "A")															
57	RECVR "A" AGC BANDWIDTH SETTING (ANT. "A")															
58	RECVR "A" AGC BANDWIDTH SETTING (ANT. "A")															
59	RECVR "A" S-X-BAND (ANT. "A")															
60	RECVR "A" LOOP BANDWIDTH (ANT. "A")															
61	RECVR "A" LOOP BANDWIDTH (ANT. "A")															
62	RECVR "A" LOOP MODE (ANT. "A")															
63	RECVR "A" LOOP MODE (ANT. "A")															
64	RECVR "A" SIG. LEVEL (AGC) (ANT. "A")															
65	RECVR "A" SIG. LEVEL (AGC) (ANT. "A")															
66	POW BY LMC; ANT. "A" RECVR "A" PPM DATA															
67	POW BY PPM; ANT. "A" RECVR "A" (SIG. LEVEL)															
68	ANT. "A" PPM SIG. LEVEL															
69	ANT. "A" PPM SIG. LEVEL															
70	POW BY PPM FOR ANT. "A" RECVR "A" SNT DATA															
71	RECVR "A" SNT (ANT. "A")															
72	RECVR "A" SNT (ANT. "A")															
73	POW BY LMC; EVEN RECVRS ANT. "A"															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Figure 1. Telecommunications Link Analysis Data Block Format (Page 1 of 4)

BIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WORD 74	RECVR "B" LOCK STATUS (ANT. "A")															
75	RECVR "B" AGC BANDWIDTH SETTING (ANT. "A")															
76	RECVR "B" AGC BANDWIDTH SETTING (ANT. "A")															
77	RECVR "B" S-/X-BAND (ANT. "A")															
78	RECVR "B" LOOP BANDWIDTH (ANT. "A")															
79	RECVR "B" LOOP BANDWIDTH (ANT. "A")															
80	RECVR "B" LOOP MODE (ANT. "A")															
81	RECVR "B" LOOP MODE (ANT. "A")															
82	RECVR "B" SIG. LEVEL (AGC) (ANT. "A")															
83	RECVR "B" SIG. LEVEL (AGC) (ANT. "A")															
84	PDW BY LMC; ANT. "A" RECVR "B" PPM DATA															
85	PDW BY PPM; ANT. "A" RECVR "B" SIG. LEVEL															
86	RECVR "B" PPM SIG. LEVEL (ANT. "A")															
87	RECVR "B" PPM SIG. LEVEL (ANT. "A")															
88	PDW BY PPM; RECVR "B" SNT (ANT. "A")															
89	RECVR "B" SNT (ANT. "A")															
90	RECVR "B" SNT (ANT. "A")															
91	PDW BY LMC; ODD RECVRS, ANT. "B"															
92	RECVR "A" LOCK STATUS (ANT. "B")															
93	RECVR "A" AGC BANDWIDTH SETTING (ANT. "B")															
94	RECVR "A" AGC BANDWIDTH SETTING (ANT. "B")															
95	RECVR "A" S-/X-BAND (ANT. "B")															
96	RECVR "A" LOOP BANDWIDTH (ANT. "B")															
97	RECVR "A" LOOP BANDWIDTH (ANT. "B")															
98	RECVR "A" LOOP MODE (ANT. "B")															
99	RECVR "A" LOOP MODE (ANT. "B")															
100	RECVR "A" SIG. LEVEL (AGC) (ANT. "B")															
101	RECVR "A" SIG. LEVEL (AGC) (ANT. "B")															
102	PDW BY LMC; RECVR "A" PPM DATA (ANT. "B")															
103	PDW BY PPM; RECVR "A" RCV SIG. LEVEL (ANT. "B")															
104	RECVR "A" PPM SIG. LEVEL (ANT. "B")															
105	RECVR "A" PPM SIG. LEVEL (ANT. "B")															
106	PDW BY PPM; RECVR "A" SNT (ANT. "B")															
107	RECVR "A" SNT (ANT. "B")															
108	RECVR "A" SNT (ANT. "B")															
109	PDW BY LMC; EVEN RECVRS, IN ANT. "B"															
110	RECVR "B" LOCK STATUS (ANT. "B")															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

BIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WORD 111	RECVR "B" AGC BANDWIDTH SETTING (ANT. "B")															
112	RECVR "B" AGC BANDWIDTH SETTING (ANT. "B")															
113	RECVR "B" S-/X-BAND (ANT. "B")															
114	RECVR "B" LOOP BANDWIDTH (ANT. "B")															
115	RECVR "B" LOOP BANDWIDTH (ANT. "B")															
116	RECVR "B" LOOP MODE (ANT. "B")															
117	RECVR "B" LOOP MODE (ANT. "B")															
118	RECVR "B" SIG. LEVEL (AGC) (ANT. "B")															
119	RECVR "B" SIG. LEVEL (AGC) (ANT. "B")															
120	PDW BY LMC; RECVR "B" PPM DATA (ANT. "B")															
121	PDW BY PPM; ANT. "B" RECVR "B" SIG.LEVEL															
122	RECVR "B" PPM SIG. LEVEL (ANT. "B")															
123	RECVR "B" PPM SIG. LEVEL (ANT. "B")															
124	PDW BY PPM; RECVR "B" SNT (ANT. "B")															
125	RECVR "B" SNT (ANT. "B")															
126	RECVR "B" SNT (ANT. "B")															
127	PDW BY LMC FOR TPA DATA															
128	RTC CH 1 STATUS															
129	RTC CH 2 STATUS															
130	DSA CH 1 STATUS															
131	PDW BY TPA FOR BBA DSA 1 SNR															
132	BBA DSA 1 SNR															
133	DSA CH 2 STATUS															
134	PDW BY TPA FOR BBA DSA 2 SNR															
135	BBA DSA 2 SNR															
136	CH 1 MCD STATUS															
137	PDW BY TPA FOR CH 1 MCD SNR															
138	CH 1 MCD SNR															
139	CH 2 MCD STATUS															
140	PDW BY TPA FOR CH 2 MCD SNR															
141	CH 2 MCD SNR															
142	PDW BY TPA; CH 1 TLM BIT RATE VALUES															
143	CH 1 TLM BIT RATE															
144	CH 1 TLM BIT RATE															
145	PDW BY TPA; CH 2 TLM BIT RATE VALUES															
146	CH 2 TLM BIT RATE															
147	CH 2 TLM BIT RATE															
148	PDW BY LMC FOR MDA DATA															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Figure 1. Telecommunications Link Analysis Data Block Format (Page 2 of 4)

BIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WORD 149	CH 1 TRK (DOPPLER) MODE (ANT. "A")															
150	CH 1 REQ. DOPPLER SAMPLE (ANT. "A")															
151	CH 1 REQ. DOPPLER SAMPLE (ANT. "A")															
152	CH 2 TRK (DOPPLER) MODE (ANT. "A")															
153	CH 2 REQ. DOPPLER SAMPLE RATE (ANT. "A")															
154	CH 2 REQ. DOPPLER SAMPLE RATE (ANT. "A")															
155	CH 1 TRK (DOPPLER) MODE (ANT. "B")															
156	CH 1 REQ. DOPPLER SAMPLE RATE (ANT. "B")															
157	CH 1 REQ. DOPPLER SAMPLE RATE (ANT. "B")															
158	CH 2 TRK (DOPPLER) MODE (ANT. "B")															
159	CH 2 REQ. DOPPLER SAMPLE RATE (ANT. "B")															
160	CH 2 REQ. DOPPLER SAMPLE RATE (ANT. "B")															
161	TRANSMITTING ANTENNA ID															
162	POW BY LMC; LOW-POWER TXR DATA															
163	TRANSMITTER ID															
164	TRANSMITTER ID															
165	TRANSMITTER BEAM															
166	TRANSMITTER BEAM															
167	POW BY TXR; LOW-POWER TXR POWER VALUE															
168	TRANSMITTER POWER FOR LOW-POWER TXR															
169																
170																
171																
172																
173	TRASMITTER POWER FOR LOW-POWER TXR															
174	POW BY LMC; HIGH-POWER TXR DATA															
175	TRANSMITTER ID															
176	TRANSMITTER ID															
177	TRANSMITTER BEAM															
178	TRANSMITTER BEAM															
179	POW BY TXR FOR HIGH-PWR TXR POWER VALUE															
180	TRANSMITTER POWER FOR HIGH-POWER TXR															
181																
182																
183																
184																
185	TRANSMITTER POWER FOR HIGH-POWER TXR															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

BIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WORD 186	POW BY LMC FOR EXCITER FREQUENCY VALUE															
187	EXCITER FREQUENCY															
188																
189																
190																
191																
192	EXCITER FREQUENCY															
193	POW BY LMC FOR COMMAND S/S DATA															
194	CMA MODE															
195	CMA MODE															
196	COMMAND MODULATION															
197	COMMAND MODULATION															
198	COMMAND CARRIER SUPPRESSION															
199	COMMAND CARRIER SUPPRESSION															
200	COMMAND BIT RATE															
201																
202																
203																
204																
205	COMMAND BIT RATE															
206	POW BY TPA; FSS CHANNEL 1 CONFIG. DATA															
207	CH 1 FSS IN-LOCK BIT-ERROR TOLERANCE															
208	CH 1 FSS OUT-OF-LOCK BIT-ERROR TOL.															
209	CH 1 FSS IN LOCK THRESHOLD															
210	CH 1 FSS OUT-OF-LOCK THRESHOLD															
211	POW BY TPA FOR FSS CH 1 STATUS DATA															
212	CH 1 FSS LOCK MODE															
213	CH 1 FSS OUT OF LOCK REASON															
214	CH 1 FSS IN LOCK FRAME COUNT (MS)															
215	CH 1 FSS IN LOCK FRAME COUNT (LS)															
216	CH 1 FSS DATA REVERSAL COUNT															
217	CH 1 FSS TOTAL ACQUISITION COUNT															
218	CH 1 FSS BITS TO ACQUIRE COUNT															
219	CH 1 FSS BITS TO ACQUIRE COUNT															
220	CH 1 FSS FLYWHEEL FRAME COUNT															
221	CH 1 FSS BIT SLIP COUNT															
222	CH 1 FSS S/C FORMAT ID															
223	CH 1 FSS S/C FRAME COUNT															
224	POW BY TPA; FSS CH 2 CONFIG. DATA															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Figure 1. Telecommunications Link Analysis Data Block Format (Page 3 of 4)

BIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WORD 225	CH 2 FSS IN-LOCK BIT-ERROR TOLERANCE															
226	CH 2 FSS OUT-OF-LOCK BIT-ERROR TOLERANCE															
227	CH 2 FSS IN-LOCK THRESHOLD															
228	CH 2 FSS OUT-OF-LOCK THRESHOLD															
229	PDW BY TPA; FSS CHANNEL 2 STATUS DATA															
230	CH 2 FSS LOCK MODE															
231	CH 2 FSS OUT OF LOCK REASON															
232	CH 2 FSS IN LOCK FRAME COUNT (MS)															
233	CH 2 FSS IN LOCK FRAME COUNT (LS)															
234	CH 2 FSS DATA REVERSAL COUNT															
235	CH 2 FSS TOTAL ACQUISITION COUNT															
236	CH 2 FSS BITS TO ACQUIRE COUNT															
237	CH 2 FSS BITS TO ACQUIRE COUNT															
238	CH 2 FSS FLYWHEEL FRAME COUNT															
239	CH 2 FSS BIT SLIP COUNT															
240	CH 2 FSS S/C FORMAT ID															
241	CH 2 FSS S/C FRAME COUNT															
242	PDW BY TPA FOR CH 1 SUBCARRIER FREQUENCY															
243	CH 1 SUBCARRIER FREQUENCY															
244	CH 1 SUBCARRIER FREQUENCY															
245	PDW BY TPA FOR CH 2 SUBCARRIER FREQUENCY															
246	CH 2 SUBCARRIER FREQUENCY															
247	CH 2 SUBCARRIER FREQUENCY															
248	PDW BY LMC FOR ODR (DDR) DATA															
249	CH 1 ODR 1															
250	CH 1 ODR 1															
251	CH 1 ODR 2															
252	CH 1 ODR 2															
253	CH 2 ODR 1															
254	CH 2 ODR 1															
255	CH 2 ODR 2															
256	CH 2 ODR 2															
257	PDW BY LMC FOR VLBI DATA															
258	CURRENT VLBI RADIO SOURCE															
259																
260																
261																
262	CURRENT VLBI RADIO SOURCE															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

BIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WORD 263	CURRENT VLBI RADIO SOURCE															
264	VLBI RECORDER ON TIME FOR CURRENT SOURCE															
265																
266																
267																
268																
269	VLBI RECORDER ON TIME, CURRENT SOURCE															
270	VLBI RECORDER OFF TIME, CURRENT SOURCE															
271																
272																
273																
274																
275	VLBI RECORDER OFF TIME, CURRENT SOURCE															
276	NEXT VLBI RADIO SOURCE															
277																
278																
279																
280																
281	NEXT VLBI RADIO SOURCE															
282	VLBI RECORDER ON TIME FOR NEXT SOURCE															
283																
284																
285																
286																
287	VLBI RECORDER ON TIME FOR NEXT SOURCE															
288	VLBI RECORDER OFF TIME FOR NEXT SOURCE															
289																
290																
291																
292																
293	VLBI RECORDER OFF TIME FOR NEXT SOURCE															
294	TPA CH 1 RECEIVER NUMBER															
295	TPA CH 2 RECEIVER NUMBER															
296	CHECKSUM															
297	RESERVED															
298	ERROR CORRECTION															
299	ERROR CORRECTION													ESC		EPC
300	ERROR POLYNOMIAL CODE															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Figure 1. Telecommunications Link Analysis Data Block Format (Page 4 of 4)

WORD 2

BIT

1 thru 8 — Last 8 bits of NASCOM Sync Code; always (27 HEX).

9 thru 16 — Source Code (Originator of Block): The Source Codes will be selected from the listings in Table OPS-6-8-6, -6A, or -6B of Module OPS-6-8.

WORD 3

BIT

1 thru 8 — Destination Code (Destination of Data Block): The Destination Codes will be selected from the listing in Table OPS-6-8-6, -6A, or -6B of Module OPS-6-8 for the MCCC 4800-bit data block, which at present is as follows:

Destination	Binary	Hex	Octal
MCCC	11001111	CF	317

The GCF GDC will route this monitor data block to the NOCC as part of its standard operations.

9 thru 16 — Block Format Code: The Block Format Codes will be selected from the listing in Table OPS-6-8-7 of Module OPS-6-8.

WORD 4

BIT

1 thru 3 — GDD Code: The GDD Codes shall be selected from the listing in Table OPS-6-8-8 of Module OPS-6-8.

4 thru 10 — UDT Code: The User-Dependent Type (UDT) Code will be selected from the listings in Table OPS-6-8-9A, -9B, -9C, -9D, 9E, or 9F of Module OPS-6-8; the UDT at present is as shown below:

1E(HEX) 036(OCT) = Telecom Link Analysis

WORD 4 (Continued)

BIT	
11 thru 16	DDT Code: The Data-Dependent Type (DDT) Code assignments are controlled in the individual system interface modules of this document. These codes are listed in Module OPS-6-8, Appendix A, for convenience. For these data blocks the DDT Code is as shown below:

	Binary	Hex	Octal
DDT	1011000	58	130

WORD 5

BIT	
1	Zeros
2 thru 8	Spacecraft Number: The Spacecraft Number to be selected from the listings in Tables OPS-6-8-10, -10A, and -10B of Module OPS-6-8.
9 thru 16	Block Time (Universal Time, Coordinated (UTC)), which is the time the block is assembled. The total time code is 24 bits and indicates UTC in binary centiseconds.

WORD 6

BIT	
1 thru 16	Block Time (continued)

WORD 7

BIT	
1 thru 2	GCF: Reserved for Central Communications Terminal Network Data Processing Area (CCT-NDPA) control.
3 thru 12	Day of Year code in binary-coded decimal format: bits 3 and 4 will contain the hundreds digit, bits 5 through 8 will contain the tens digit, and bits 9 through 12 will contain the units digit.
13 thru 16	First four bits of the Block Serial Number (BSN). The total BSN is 12 bits. The BSN is modulo 4096.

WORD 8

BIT

1 thru 8	Last eight bits of the BSN
9 thru 16	Zeros

2.) Data Block Ending. The Data Block Ending consists of Word 298, bit 1 through Word 300, bit 16.

The last 48 bits at the end of the block are reserved for GCF error correction, error status, and error detection. These words and bits are defined in Module OPS-6-8 of this document.

b. SFDU Headers. The SFDU Headers are described below.

WORD 9

BIT

1 thru 16	NUMSEG: Number of SFDU segments in this block. A 16-bit unsigned binary counter representing the number of SFDUs or portions of SFDUs contained within this transport block. (In this block, NUMSEG will always be 1.)

WORD 10

BIT

1 thru 16	SEGLEN: Number of 16-bit words in full SFDU segment. A 16-bit unsigned binary number representing the total number of 16-bit words contained in the SFDU segment beginning in Word 13 and going to the end of word 296 in the monitor data block. (In this block, SEGLEN equals 284 words.)

WORD 11

BIT

1 thru 16	SFDU ID: A 16-bit unsigned integer assigned to the SFDU by originator. Values will be assigned sequentially, beginning with 1 and increasing modulo 2**16, recycling to 1. Value 0 signifies either the initial startup or the sequence number reset by the originator.

WORD 12

BIT	
1 thru 8	SEGNUM: An 8-bit unsigned integer value. Each SFDU may be divided into one or more segments which shall bear consecutive segment numbers beginning with 1, and shall be transmitted in the order of the segment numbers. (In this case, there will normally be only 1 SFDU per block, and the SFDU will be contained in 1 block.)
9 thru 15	Zeros
16	Segment Indicator: A bit interpreted as follows: 0 = Not last segment of SFDU 1 = Last segment of SFDU (this will be set to 1, since normally there is only 1 SFDU in these blocks).

WORD 13 AND 14 — JPL Control Authority identifier: in ASCII 4 format.

WORD 13

BIT	
1 thru 8	First byte of JPL Control Authority identifier in ASCII format. Set Value = N
9 thru 16	Second byte of JPL Control Authority identifier in ASCII format. Set Value = J

WORD 14

BIT	
1 thru 8	Third byte of JPL Control Authority identifier in ASCII format. Set Value = P
9 thru 16	Fourth byte of JPL Control Authority identifier in ASCII format. Set Value = L

WORD 15

BIT	
1 thru 8	Version ID: Set value = 2 decimal. (Indicates length of field; Words 19 - 22 are in binary.)
9 thru 16	Class ID: ASCII format. Set value = I. (Indicates SFDU contains data.)

WORD 16

BIT

1 thru 16 Spare. Set to ASCII zeros.

WORD 17 AND 18 Data Definition Record (DDR) ID (indicates a JPL primary aggregation). in ASCII format.

WORD 17

BIT

1 thru 8 First byte of DDR ID in ASCII format. Set value = 0 decimal.

9 thru 16 Second byte of DDR ID in ASCII format. Set value = 1 decimal.

WORD 18

BIT

1 thru 8 Third byte of DDR ID in ASCII format. Set value = 3 decimal.

9 thru 16 Fourth byte of DDR ID in ASCII format. Set value = 0 decimal.

WORDS 19 THRU 22

BIT

1 thru 16 Length of the SFDU block in binary unsigned 64-bit integer format. Shows the number of bytes in the SFDU block from Word 23 to end of Word 297 in the data block. In this block, the SFDU length is 548 bytes.

WORD 23

BIT

1 thru 16 Primary Header Type Code in binary unsigned 16-bit integer format. Set value = 2 decimal.

WORD 24

BIT

1 thru 16 Length of Primary Header in binary unsigned 16-bit integer format. Set value = 4 decimal.

WORD 25

BIT	
1 thru 8	Major Data Class in binary unsigned 8-bit integer value format. Set value = 6 decimal.
9 thru 16	Minor Data Class in binary unsigned 8-bit integer value format. Set value = 0 decimal.

WORD 26

BIT	
1 thru 8	Mission ID in binary unsigned 8-bit integer format. Set value = 4 decimal.
9 thru 16	Format Code (unused) in binary unsigned 8-bit integer format. Set value = 0 decimal.

WORD 27

BIT	
1 thru 16	JPL Secondary Header Type Code in binary unsigned 16-bit integer format. Set value = 12 decimal.

WORD 28

BIT	
1 thru 16	Length of Secondary Header in binary unsigned 16-bit integer format. Set value = 14 decimal.

WORD 29

BIT	
1 thru 8	Originator ID in binary unsigned 8-bit integer format. Set value = 48 decimal.
9 thru 16	Spare in binary unsigned 8-bit integer format. Set value = 0 decimal.

WORD 30

BIT	
1 thru 8	Spacecraft Code (See Module OPS-6-8, Tables OPS-6-8-10, -10A, and -10B) in binary unsigned 8-bit integer format.

WORD 30 (Continued)

BIT	
9 thru 16	Data Source (See Module OPS-6-8, Tables OPS-6-8-6, -6A, -6b) in binary unsigned 8-bit integer format; (12 for DSS 12, etc.) For Antenna Arrays, the master antenna (DSS) is used.

WORD 31

BIT	
1 thru 8	Spare in binary unsigned 8-bit integer format. Set value = 0 decimal.
9 thru 16	MST P-field, detailed as follows: bit 9: Extension Flag (set value to 0) bits 10-12: Time Code Identification (set value = 100 binary) bit 13: Epoch Identification (value = 1, binary - 1958 January 1 epoch) bit 14: Length of Day segment (value = 0, binary 16-bit day segment) bits 15 and 16: Resolution (number of optional subsecond segments. value = 00, binary - milliseconds)

WORD 32

BIT	
1 thru 16	Days since 1958 January 1, starting with 0. In binary unsigned 16-bit integer format.

WORD 33

BIT	
1 thru 16	First 2 bytes of milliseconds of day field in binary unsigned 32-bit integer format; most significant bit (MSB) = bit 1.

WORD 34

BIT	
1 thru 16	Last 2 bytes of milliseconds of day field described in Word 33.

WORD 35

BIT

1 thru 16 Spare.

WORD 36

BIT

1 thru 16 Monitor Data Block Header Code in binary unsigned 16-bit integer format. Set value = 10 decimal.

WORD 37

BIT

1 thru 16 Length of Data Block (in bytes) in binary unsigned 16-bit integer format. Starting at the first monitor data word (in this block Word 38) up to and including the checksum (in this block Word 296). In this block, the length is 518 bytes.

c. Block data field. Word 40, bit 1, through Word 296, bit 16, will be the Data Block Information Field of the Block (BIF).

WORD 38

BIT

1 thru 16 Receiving Antenna "A" ID: This is the number, in binary notation, of the ECS identifier defined in Module OPS-6-8, Table OPS-6-8-6A, of this document (listed as DSS XX). In this module, the Receiving Antenna "A" is defined as the single antenna in the nonarrayed configuration or the (master, prime, uplinking) antenna to which the Command Subsystem is assigned/connected in the arrayed configuration.

WORD 39

BIT

1 thru 16 PDW for antenna pointing values in PDW format. This PDW is generated by the LMC based on whether or not the LMC

WORD 39 (Continued)

has observed data from the Antenna Pointing Assembly (APA) in the expected time frame as indicated by the watchdog timer. This PDW covers Words 40–46 and 48–54.

WORD 40

BIT	
1 thru 16	PDW for Receiving Antenna "A" Elevation Angles in PDW format received from APA. This PDW covers Words 41–42.

WORD 41 AND 42

BIT	
1 thru 16	Receiving Antenna "A" Elevation Angle: Provides, in Floating Point format, the elevation angle of Antenna "A" in degrees with a resolution to at least 0.1 degrees.

WORD 43 AND 44

BIT	
1 thru 16	Receiving Antenna "A" Conscan Drive: Provides, in ASCII 4 format, the status of conscan drive to indicate ON/OFF.

WORD 45 AND 46

BIT	
1 thru 16	Receiving Antenna "A" Conscan Loop: Provides, in ASCII 4 format, the conscan loop status to indicate OPEN/CLOS.

In this module, Receiving Antenna "B" is defined as the second antenna assigned in the arrayed configuration.

All information in the Receiving Antenna "B" fields will be 1-filled or ASCII blank-filled when in a nonarrayed configuration.

Magellan requirements requested two antennas to be arrayed. This Monitor Data Block provides for only two antennas in a link. In case there are more than two antennas in a link, only the data from the first two antennas assigned to the link will be reported.

WORD 47

BIT

1 thru 16 — Receiving Antenna "B" ID: This is the number, in Binary notation, of the ECS identifier defined in Module OPS-6-8 of this document.

WORD 48

BIT

1 thru 16 — PDW for Receiving Antenna "B" Elevation Angles in PDW format received from APA. This PDW covers Words 49-50.

WORD 49 AND 50

BIT

1 thru 16 — Receiving Antenna "B" Elevation Angle: Provides, in Floating Point format, the elevation angle of Antenna "B" in degrees with a resolution to at least 0.1 degrees.

WORD 51 AND 52

BIT

1 thru 16 — Receiving Antenna "B" Conscan Drive: Provides, in ASCII/4 format, the status of conscan drive to indicate ON/OFF.

WORD 53 AND 54

BIT

1 thru 16 — Receiving Antenna "B" Conscan Loop: Provides, in ASCII 4 format, the conscan loop status to indicate OPEN/CLOS.

In this module, Receiver "A" shall refer to the odd-numbered receivers in the Link; i.e., 1, 3, 5, etc. Receiver "B" shall refer to the even-numbered receivers in the Link; i.e., 2, 4, etc. In an arrayed mode, there would be such notations as: Receiving antenna "A" - Receiver "A", and Receiver "B"; and Receiving antenna "B" - Receiver "A", and Receiver "B".

WORD 55

BIT

1 thru 16 — PDW for data for Receiving Antenna "A" Receiver "A" in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the odd numbered receivers of Antenna "A" in the link within the expected time frame as indicated by the watchdog timer. This PDW covers Words 56-65.

WORD 56 — Receiving Antenna "A" Receiver "A" Status; provides, in STATUS format, indication of Receiver Lock status and Receiver status as follows:

BIT

1 thru 13 — Receiver Lock Status

- 0 = None
- 5 = In Lock
- 6 = Out of Lock
- Others Not Used

14 thru 16 — Receiver Status

- 0 = Out of Service
- 1 = Operational
- 5 = Critical
- Others Not Used

WORD 57 AND 58

BIT

1 thru 16 — Receiving Antenna "A" Receiver "A" automatic gain control (AGC) Bandwidth Setting: Provides, in ASCII 4 format, Receiver "A" AGC bandwidth setting to indicate NAR/MED/WIDE.

WORD 59

BIT

1 thru 16 — Receiving Antenna "A" Receiver "A" Band: Provides, in ASCII 2 format, indication of the frequency Band of operations (S or X).

WORD 60 AND 61

BIT

1 thru 16 — Receiving Antenna "A" Receiver "A" Loop Bandwidth: Provides, in ASCII 4 format, the RF Loop Bandwidth setting to indicate:

For Block IV Receiver
1, 2, 3, 4

For Block III Receiver
NAR, MED, WIDE

WORD 62 AND 63

BIT

1 thru 16 — Receiving Antenna "A" Receiver "A" Loop Mode: Provides, in ASCII 4 format, the setting of the receiver loop mode to indicate NAR/WIDE.

WORD 64 AND 65

BIT

1 thru 16 — Receiving Antenna "A" Receiver "A" Signal Level (AGC): Provides, in Floating Point format, the receiver signal level in dBm with a resolution to 0.1 dBm.

WORD 66

BIT

1 thru 16 — PDW for Receiving Antenna "A" Receiver "A" Precision Power Monitor (PPM) data in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the PPM in the expected time frame as indicated by the watchdog timer. This PDW covers Words 67-72.

WORD 67

BIT

1 thru 16 — PDW for Antenna "A" Receiver "A" PPM Receiver Signal Level in PDW format by the PPM. This PDW covers Words 68-69.

WORD 68 and 69

BIT

1 thru 16 — Receiving Antenna "A" Receiver "A" PPM Signal Level: Provides, in Floating Point format, the PPM signal level, in dB with a resolution to 0.1 dB.

WORD 70

BIT

1 thru 16 — PDW for Receiving Antenna "A" Receiver "A" SNT in PDW format by the PPM. This PDW covers Words 71-72.

WORD 71 AND 72

BIT

1 thru 16 — Receiving Antenna "A" Receiver "A" system noise temperature (SNT): Provides, in Floating Point format, the SNT in Kelvins plus or minus 2.3 percent.

WORD 73

BIT

1 thru 16 — PDW for Receiving Antenna "A" Receiver "B" in PDW format: This PDW is generated by the LMC based on whether or not the LMC has observed data from the even numbered receivers of Antenna "A" in the link within the expected time frame as indicated by the watchdog timer. This PDW covers Words 74-83.

WORD 74 — Receiving Antenna "A" Receiver "B" Status: Provides, in STATUS format, indication of Receiver Lock status and Receiver status as follows:

BIT

1 thru 13 — Receiver Lock Status

0 = None

5 = In Lock

6 = Out of Lock

Others Not Used

WORD 74 (Continued)

BIT

14 thru 16 — Receiver Status

0 = Out of Service

1 = Operational

5 = Critical

Others Not Used

WORD 75 AND 76

BIT

1 thru 16 — Receiving Antenna "A" Receiver "B" AGC Bandwidth Setting: Provides, in ASCII 4 format, the receiver AGC bandwidth setting to indicate NAR/MED/WIDE.

WORD 77

BIT

1 thru 16 — Receiving Antenna "A" Receiver "B" Band: Provides, in ASCII 2 format, indication of the frequency Band of operations (S or X).

WORD 78 AND 79

BIT

1 thru 16 — Receiving Antenna "A" Receiver "B" Loop Bandwidth: Provides, in ASCII 4 format, the RF Loop Bandwidth setting to indicate:

For Block IV Receiver
1, 2, 3, 4

For Block III Receiver
NAR, MED, WIDE

WORD 80 AND 81

BIT

1 thru 16 — Receiving Antenna "A" Receiver "B" Loop Mode: Provides, in ASCII 4 format, the setting of the receiver loop mode to indicate NAR/WIDE.

WORD 82 AND 83

BIT	
1 thru 16	Receiving Antenna "A" Receiver "B" Signal Level (AGC): Provides, in Floating Point format, the receiver signal level in dBm with a resolution to 0.1 dBm.

WORD 84

BIT	
1 thru 16	PDW for Receiving Antenna "A" Receiver "B" PPM data in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the PPM in the expected time frame as indicated by the watchdog timer. This PDW covers Words 85-90.

WORD 85

BIT	
1 thru 16	PDW for Antenna "A" Receiver "B" PPM Receiver Signal Level in PDW format by the PPM. This PDW covers Words 86-87.

WORD 86 AND 87

BIT	
1 thru 16	Receiving Antenna "A" Receiver "B" PPM Signal Level: Provides, in Floating Point format, the PPM signal level, in dB with a resolution to 0.1 dB.

WORD 88

BIT	
1 thru 16	PDW for Receiving Antenna "A" Receiver "B" SNT in PDW format by the PPM. This PDW covers words 89-90.

WORD 89 AND 90

BIT	
1 thru 16	Receiving Antenna "A" Receiver "B" SNT: Provides, in Floating Point format, the SNT in Kelvins plus or minus 2.3 percent.

WORD 91

BIT

1 thru 16 — PDW for data for Receiving Antenna "B" Receiver "A" in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the odd-numbered receivers of Antenna "B" in the link within the expected time frame as indicated by the watchdog timer. This PDW covers Words 92-101.

WORD 92

Receiving Antenna "B" Receiver "A" Status: Provides, in STATUS format, indication of Receiver Lock status and Receiver status as follows:

BIT

1 thru 13 — Receiver Lock Status

- 0 = None
- 5 = In Lock
- 6 = Out of Lock
- Others Not Used

14 thru 16 — Receiver Status

- 0 = Out of Service
- 1 = Operational
- 5 = Critical
- Others Not Used

WORD 93 AND 94

BIT

1 thru 16 — Receiving Antenna "B" Receiver "A" AGC Bandwidth Setting: Provides, in ASCII 4 format, the receiver AGC bandwidth setting to indicate NAR/MED/WIDE.

WORD 95

BIT

1 thru 16 — Receiving Antenna "B" Receiver "A" Band: Provides, in ASCII 2 format, indication of the frequency band of operations (S or X).

WORD 96 AND 97

BIT

1 thru 16 — Receiving Antenna "B" Receiver "A" Loop Bandwidth: Provides, in ASCII 4 format, the RF Loop Bandwidth setting to indicate:

For Block IV Receiver
1, 2, 3, 4

For Block III Receiver
NAR, MED, WIDE

WORD 98 AND 99

BIT

1 thru 16 — Receiving Antenna "B" Receiver "A" Loop Mode: Provides, in ASCII 4 format, the setting of the receiver loop mode to indicate NAR/WIDE.

WORD 100 AND 101

BIT

1 thru 16 — Receiving Antenna "B" Receiver "A" Signal Level (AGC): Provides, in Floating Point format, the receiver signal level in dBm with a resolution to 0.1 dBm.

WORD 102

BIT

1 thru 16 — PDW for Receiving Antenna "B" Receiver "A" PPM data in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the PPM in the expected time frame as indicated by the watchdog timer. This PDW covers Words 103-108.

WORD 103

BIT

1 thru 16 — PDW for Antenna "B" Receiver "A" PPM Receiver Signal Level in PDW format by the PPM. This PDW covers Words 104-105.

WORD 104 AND 105

BIT

1 thru 16 — Receiving Antenna "B" Receiver "A" PPM Signal Level: Provides, in Floating Point format, the PPM signal level, in dB with a resolution to 0.1 dB.

WORD 106

BIT

1 thru 16 — PDW for Receiving Antenna "B" Receiver "A" SNT in PDW format by the PPM. This PDW covers Words 107-108.

WORD 107 AND 108

BIT

1 thru 16 — Receiving Antenna "B" Receiver "A" SNT: Provides, in Floating Point format, the SNT in Kelvins plus or minus 2.3 percent.

WORD 109

BIT

1 thru 16 — PDW for Receiving Antenna "B" Receiver "B" in PDW format: This PDW is generated by the LMC based on whether or not the LMC has observed data from the even-numbered receivers of Antenna "B" in the link within the expected time frame as indicated by the watchdog timer. This PDW covers Words 110-119.

WORD 110 — Receiving Antenna "B" Receiver "B" Status: Provides, in STATUS format, indication of Receiver Lock status and Receiver status as follows:

BIT

1 thru 13 — Receiver Lock Status

0 = None

5 = In Lock

6 = Out of Lock

Others Not Used

WORD 110 (Continued)

BIT

14 thru 16 — Receiver Status

0 = Out of Service

1 = Operational

5 = Critical

Others Not Used

WORD 111 AND 112

BIT

1 thru 16 — Receiving Antenna "B" Receiver "B" AGC Bandwidth Setting: Provides, in ASCII 4 format, the receiver AGC bandwidth setting to indicate NAR/MED/WIDE.

WORD 113

BIT

1 thru 16 — Receiving Antenna "B" Receiver "B" Band: Provides, in ASCII 2 format, indication of the frequency band of operations (S or X).

WORD 114 AND 115

BIT

1 thru 16 — Receiving Antenna "B" Receiver "B" Loop Bandwidth: Provides, in ASCII 4 format, the RF Loop Bandwidth setting to indicate:

For Block IV Receiver
1, 2, 3, 4

For Block III Receiver
NAR, MED, WIDE

WORD 116 AND 117

BIT

1 thru 16 — Receiving Antenna "B" Receiver "B" Loop Mode: Provides, in ASCII 4 format, the setting of the receiver loop mode to indicate NAR/WIDE.

WORD 118 AND 119

BIT

1 thru 16 — Receiving Antenna "B" Receiver "B" Signal Level (AGC): Provides, in Floating Point format, the receiver signal level in dBm with a resolution to 0.1 dBm.

WORD 120

BIT

1 thru 16 — PDW for Receiving Antenna "B" Receiver "B" PPM data in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the PPM in the expected time frame as indicated by the watchdog timer. This PDW covers Words 121-126.

WORD 121

BIT

1 thru 16 — PDW for Antenna "B" Receiver "B" PPM Receiver Signal Level in PDW format by the PPM. This PDW covers Words 122-123.

WORD 122 AND 123

BIT

1 thru 16 — Receiving Antenna "B" Receiver "B" PPM Signal Level: Provides, in Floating Point format, the PPM signal level, in dB with a resolution to 0.1 dB.

WORD 124

BIT

1 thru 16 — PDW for Receiving Antenna "B" Receiver "B" SNT data in PDW format by the PPM. This PDW covers Words 125-126.

WORD 125 AND 126

BIT

1 thru 16 — Receiving Antenna "B" Receiver "B" SNT: Provides, in Floating Point format, the SNT in Kelvins plus or minus 2.3 percent.

WORD 127

BIT

1 thru 16 — PDW for Telemetry Processor Assembly (TPA) data in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the TPA in the expected time frame as indicated by the watchdog timer. This PDW covers Words 128-147 and 206-247.

WORD 128 — Real-Time Telemetry Combiner (RTC) Channel 1 Status: Provides, in STATUS format, the Baseband RTC Channel 1 lock status and RTC Channel 1 status as follows:

BIT

1 thru 13 — RTC Channel 1 Lock Status

- 0 = None
- 5 = In Lock
- 6 = Out of Lock
- Others Not Used

14 thru 16 — RTC Channel 1 Status

- 0 = Out of Service
- 1 = Operational
- 5 = Critical
- Others Not Used

WORD 129 — RTC Channel 2 Status: Provides, in STATUS format, the Baseband RTC Channel 2 lock status and RTC Channel 2 status as follows:

BIT

1 thru 13 — RTC Channel 2 Lock Status

- 0 = None
- 5 = In Lock
- 6 = Out of Lock
- Others Not Used

WORD 129 (Continued)

BIT	
14 thru 16	RTC Channel 2 Status 0 = Out of Service 1 = Operational 5 = Critical Others Not Used

WORD 130 — Demodulator/Synchronizer Assembly (DSA) Channel 1 Status: Provides, in STATUS format, the Baseband DSA Channel 1 lock status and DSA Channel 1 status as follows:

BIT	
1 thru 13	DSA Channel 1 Lock Status 0 = None 5 = In Lock 6 = Out of Lock Others Not Used
14 thru 16	DSA Channel 1 Status 0 = Out of Service 1 = Operational 5 = Critical Others Not Used

WORD 131

BIT	
1 thru 16	PDW for BBA DSA 1 SNR from TPA in PDW format for Word 132.

WORD 132

BIT	
1 thru 16	BBA DSA 1 SNR: Provides the DSA 1 SNR in dB in fixed point two's complement binary format with the binary point between bits 9 and 10.

WORD 133 — DSA Channel 2 Status: Provides, in STATUS format, the Baseband DSA Channel 2 lock status and DSA Channel 2 status as follows:

WORD 133 (Continued)

BIT

1 thru 13 DSA Channel 2 Lock Status

0 = None

5 = In Lock

6 = Out of Lock

Others Not Used

14 thru 16 DSA Channel 2 Status

0 = Out of Service

1 = Operational

5 = Critical

Others Not Used

WORD 134

BIT

1 thru 16 PDW for BBA DSA 2 SNR from TPA in PDW format for Word 135.

WORD 135

BIT

1 thru 16 BBA DSA 2 SNR: Provides the DSA 2 SNR in dB in fixed point two's complement binary format with the binary point between bits 9 and 10.

WORD 136 Channel 1 Maximum Likelihood Convolutional Decoder Assembly (MCD) Status: Provides, in Status format, the Channel 1 MCD Lock Status and the Channel 1 MCD Status as follows:

BIT

1 thru 13 Channel 1 MCD Lock Status

0 = None

5 = In Lock

6 = Out of Lock

Others not used

WORD 136 (Continued)

BIT

14 thru 16 Channel 1 MCD Status

0 = Out of Service

1 = Operational

5 = Critical

Others Not Used

WORD 137

BIT

1 thru 16 PDW for Channel I MCD SNR from the TPA for Word 138.

WORD 138

BIT

1 thru 16 Channel 1 MCD SNR: Provides the Channel 1 MCD SNR in dB in fixed point two's complement binary format with the binary point between bits 9 and 10.

WORD 139 Channel 2 MCD Status: Provides, in Status format, the Channel 2 MCD Lock Status and the Channel 2 MCD Status as follows:

BIT

1 thru 13 Channel 2 MCD Lock Status

0 = None

5 = In Lock

6 = Out of Lock

Others not used

14 thru 16 Channel 2 MCD Status

0 = Out of Service

1 = Operational

5 = Critical

Others Not Used

WORD 140

BIT

1 thru 16 PDW for Channel 2 MCD SNR from the TPA for Word 141.

WORD 141

BIT

1 thru 16 — Channel 2 MCD SNR: Provides the Channel 2 MCD SNR in dB in fixed point two's complement binary format with the binary point between bits 9 and 10.

WORD 142

BIT

1 thru 16 — PDW for Channel 1 bit rate from the TPA. This PDW covers Words 143-144.

WORD 143 AND 144

BIT

1 thru 16 — Channel 1 Bit Rate: Provides, in Floating Point format, channel 1 telemetry bit rate in bits per second (b/s).

WORD 145

BIT

1 thru 16 — PDW for Channel 2 bit rate from the TPA. This PDW covers Words 146-147.

WORD 146 AND 147

BIT

1 thru 16 — Channel 2 Bit Rate: Provides, in Floating Point format, channel 2 telemetry bit rate in bits per second (b/s).

WORD 148

BIT

1 thru 16 — PDW for MDA values in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the MDA in the expected time frame as indicated by the watchdog timer. This PDW covers Words 149-160.

WORD 149

BIT

1 thru 16 — Antenna "A" Channel 1 Doppler (Tracking) Mode: Provides, in ASCII 2 format, the Doppler (Tracking) mode of the station as follows:

1 = One-way
2 = Two-way
3 = Three-way
4 = Three-way coherent

WORD 150 AND 151

BIT

1 thru 16 — Antenna "A" Channel 1 Requested Doppler Sample Rate: Provides, in floating point format, the requested doppler sample rate.

WORD 152

BIT

1 thru 16 — Antenna "A" Channel 2 Doppler (Tracking) Mode: Provides, in ASCII 2 format, the Doppler (Tracking) mode of the station as follows:

1 = One-way
2 = Two-way
3 = Three-way
4 = Three-way coherent

WORD 153 AND 154

BIT

1 thru 16 — Antenna "A" Channel 2 Requested Doppler Sample Rate: Provides, in floating point format, the requested doppler sample rate.

WORD 155

BIT

1 thru 16 — Antenna "B" Channel 1 Doppler (Tracking) Mode: Provides, in ASCII 2 format, the Doppler (Tracking) mode of the station as follows:

WORD 155 (Continued)

1 = One-way
2 = Two-way
3 = Three-way
4 = Three-way coherent

WORD 156 AND 157

BIT	
1 thru 16	Antenna "B" Channel 1 Requested Doppler Sample Rate: Provides, in floating point format, the requested doppler sample rate.

WORD 158

BIT	
1 thru 16	Antenna "B" Channel 2 Doppler (Tracking) Mode: Provides, in ASCII 2 format, the Doppler (Tracking) mode of the station as follows: 1 = One-way 2 = Two-way 3 = Three-way 4 = Three-way coherent

WORD 159 AND 160

BIT	
1 thru 16	Antenna "B" Channel 2 Requested Doppler Sample Rate: Provides, in floating point format, the requested doppler sample rate.

WORD 161

BIT	
1 thru 16	Transmitting Antenna ID: Provides, in binary notation, the number of the ECS identifier defined in Module OPS-6-8 of this document.

WORD 162

BIT

1 thru 16 — PDW for low-power transmitter data in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the low power TXR in the expected time frame as indicated by the watchdog timer. This PDW covers Words 163-173.

WORD 163 AND 164

BIT

1 thru 16 — Transmitter ID: Identifies, in ASCII 4 format, the transmitter being used. To indicate SIM/SNNN/XNNN for low-power transmitter. Where NNN = the value of the maximum design power of the transmitter and may contain a space.

WORD 165 AND 166

BIT

1 thru 16 — Transmitter Beam: Provides, in ASCII 4 format, the status of the low-power transmitter beam to indicate OFF/ON/SAFE.

WORD 167

BIT

1 thru 16 — PDW for low-power transmitter power data in PDW format received from Transmitter.

WORD 168 THRU 173

BIT

1 thru 16 — Transmitter Power: Provides, in ASCII 12 format, the value of the transmitter output power in kW for the low-power transmitter.

WORD 174

BIT

1 thru 16 — PDW for high-power transmitter data in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the high-power transmitter in the expected time frame as indicated by the watchdog timer. This PDW covers Words 175-185.

WORD 175 AND 176

BIT

1 thru 16 — Transmitter ID: Identifies, in ASCII 4 format, the transmitter being used. To indicate SIM/SNNN/RDRS/RDRX for high-Power transmitter. Where NNN = the value of the maximum design power of the transmitter and may contain a space.

WORD 177 AND 178

BIT

1 thru 16 — Transmitter Beam: Provides, in ASCII 4 format, the status of the high-power transmitter beam to indicate OFF/ON/SAFE.

WORD 179

BIT

1 thru 16 — PDW for high-power transmitter power data in PDW format received from Transmitter.

WORD 180 THRU 185

BIT

1 thru 16 — Transmitter Power: Provides, in ASCII 12 format, the value of the transmitter output power in kW for the high-power transmitter.

WORD 186

BIT

1 thru 16 — PDW for Exciter Frequency data in PDW format. This PDW is generated by the LMC based on whether or not the LMC

WORD 186 (Continued)

has observed data from the Exciter Assembly (EXC) in the expected time frame as indicated by the watchdog timer. This PDW covers Words 187-192.

WORD 187 THRU 192

BIT

1 thru 16 — Exciter Frequency: Provides, in ASCII 12 format, the value of the exciter frequency with resolution to 0.1 Hz.

WORD 193

BIT

1 thru 16 — PDW for Command Subsystem (DCD) data in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the DCD in the expected time frame as indicated by the watchdog timer. This PDW covers Words 194-205.

WORD 194 AND 195

BIT

1 thru 16 — Command Modulator Assembly (CMA) Mode: Provides, in ASCII 4 format, indication of the CMA operating mode. Set to blanks if data not received from the Command Processor Assembly (CPA).

C1 = Calibrate 1
C2 = Calibrate 2
I1 = Idle 1
I2 = Idle 2
AC = active
AB = abort

WORD 196 AND 197

BIT

1 thru 16 — Command Modulation: Provides, in ASCII 4 format, the state.

For Block III Exciter

WORD 196 AND 197 (Continued)

OFF,MOD1,MOD2,MOD3
For Block IV Exciter
OFF,MOD1,MOD2,MOD3,MOD4

WORD 198 AND 199

BIT	
1 thru 16	Command Carrier Suppression: Provides, in ASCII 4 format, the Command carrier suppression in dB. Set to blanks if data not received from CPA.

WORD 200 THRU 205

BIT	
1 thru 16	Command Bit Rate: Provides, in ASCII 12 format, the value of the Command bit rate in bits per second (b/s). Set to blanks if data not received from CPA.

WORD 206

BIT	
1 thru 16	PDW for Channel 1 Frame Synchronizer Status (FSS) Configuration data from TPA. This PDW covers Words 207-210.

WORD 207

BIT	
1 thru 16	Channel 1 FSS In-Lock Bit-Error Tolerance: Provides, in integer format, the allowable bit errors in the sync pattern while the FSS is in Lock or Flywheel mode.

WORD 208

BIT	
1 thru 16	Channel 1 FSS Out-of-Lock Bit-Error Tolerance: Provides, in integer format, the allowable bit errors in the sync pattern while the FSS is in Search or Verify mode.

WORD 209

BIT

1 thru 16 Channel 1 FSS In-Lock Threshold: Provides, in integer format, the number of consecutive good frames before the FSS goes from Verify to Lock mode.

WORD 210

BIT

1 thru 16 Channel 1 FSS Out-of-Lock Threshold: Provides, in integer format, the number of consecutive bad frames before the FSS drops from Flywheel to Search mode.

WORD 211

BIT

1 thru 16 PDW for Channel 1 FSS Status data from TPA: This PDW covers Words 212-223.

WORD 212

BIT

1 thru 16 Channel 1 FSS Lock Status: Specifies, in integer format, whether or not the FSS is in lock or out of lock. The value reported is for the last frame transport block of the reporting period.

0 = In Lock - means the FSS is in the Lock or Flywheel modes

1 = Out of Lock - means the FSS is in the Search or Verify modes

WORD 213

BIT

1 thru 16 Channel 1 FSS Out of Lock Reason: Specifies, in integer format, why the FSS left the lock mode in the reporting period.

0 = The FSS did not go out of lock during the reporting period.

WORD 213 (Continued)

1 = The FSS went to Search mode because the Flywheel count expired.

2 = The FSS was forced into search.

3 = Both occurred during the reporting period.

WORD 214 AND 215

BIT	
1 thru 16	Channel 1 FSS in Lock Frame Count: Provides, in double integer format, the number of frames the FSS processed in its last (if out of lock) or current (if in lock) lock period. The value is stationary when the FSS is out of lock and is incrementing when the FSS is in lock. When the FSS does from out of lock to in lock, the value is instantly set to zero (i.e., is set to zero to count up again).

WORD 216

BIT	
1 thru 16	Channel 1 FSS Data Reversal Count: Provides, in integer format, the number of transitions in data polarity that the FSS in its last (if out of lock) or current (if in lock) lock period. The value is stationary when the FSS is out of lock and increments when the FSS is in lock and the polarity for the current frame differs from that of the previous frame within the lock period. When the FSS goes from out of lock to in lock, the value is instantly set to zero (i.e., is set to zero to count up again).

WORD 217

BIT	
1 thru 16	Channel 1 FSS Total Acquisition Count: Provides, in integer format, the number of transitions from the Search or Verify mode from the start of the tracking pass. The FSS goes directly from the Search mode to the Lock mode if the Verify frame count threshold is zero.

WORD 218 AND 219

BIT

1 thru 16 — Channel 1 FSS Bits To Acquire: Provides, in double integer format, the number of bits the FSS processed in its last (if in lock) or current acquisition (if not in lock). The value is stationary when the FSS is in lock and is incrementing when the FSS is out of lock. When the FSS goes from in lock to out of lock, the value is instantly set to zero (i.e., is set to zero to count up again).

WORD 220

BIT

1 thru 16 — Channel 1 FSS Flywheel Frame Count: Provides, in integer format, the number of frames the FSS processed in Flywheel mode in its last (if out of lock) or current (if in lock) lock period. The value is stationary when the FSS is out of lock and increments when the FSS is in lock and in the Flywheel mode. When the FSS goes from out of lock to in lock, the value is instantly set to zero (i.e., is set to zero to count up again).

WORD 221

BIT

1 thru 16 — Channel 1 FSS Bit Slip Count: Provides, in integer format, the number of bits by which the frames that the FSS encountered in its last (if out of lock) or current (if in lock) lock period were short of their respective frame sizes, plus the number of bits by which the frames that the FSS encountered in its last (if out of lock) or current (if in lock) lock period exceeded their respective frame sizes. The value is stationary when the FSS is out of lock and increments when the FSS is in lock and the frame length for the current frame is either less than or greater than the appropriate frame size. When the FSS goes from out of lock to in lock, the value is instantly set to zero (i.e., is set to zero to count up again).

WORD 222

BIT

1 thru 16 — Channel 1 FSS Spacecraft Format ID: Provides, in integer format, the Spacecraft ID (right justified) from the last in lock frame that the FSS observed. In lock means the FSS was either in the Lock mode or the Flywheel mode.

WORD 223

BIT

1 thru 16 — Channel 1 FSS Spacecraft Frame Count: Provides, in integer format, the spacecraft frame count (right justified) extracted from the last in lock frame that the FSS observed. In lock means that the FSS was in either the Lock mode or the Flywheel mode.

WORD 224

BIT

1 thru 16 — PDW for Channel 2 FSS configuration data from TPA. This PDW covers Words 225-228.

WORD 225

BIT

1 thru 16 — Channel 2 FSS In-Lock Bit-Error Tolerance: Provides, in integer format, the allowable bit errors in the sync pattern while the FSS is in Lock or Flywheel mode.

WORD 226

BIT

1 thru 16 — Channel 2 FSS Out-of-Lock Bit-Error Tolerance: Provides, in integer format, the allowable bit errors in the sync pattern while the FSS is in Search or Verify mode.

WORD 227

BIT

1 thru 16 — Channel 2 FSS In-Lock Threshold: Provides, in integer format, the number of consecutive good frames before the FSS goes from Verify to Lock mode.

WORD 228

BIT

1 thru 16 Channel 2 FSS Out-of-Lock Threshold: Provides, in integer format, the number of consecutive bad frames before the FSS drops from Flywheel to Search mode.

WORD 229

BIT

1 thru 16 PDW for Channel 2 FSS status data from TPA. This PDW covers Words 230-241.

WORD 230

BIT

1 thru 16 Channel 2 FSS Lock Status: Specifies, in integer format, whether the FSS is in lock or out of lock. The value reported is for the last frame transport block of the reporting period.

0 = In Lock - means the FSS is in the Lock mode or the Flywheel mode

1 = Out of Lock - means the FSS is in the Search mode or Verify mode

WORD 231

BIT

1 thru 16 Channel 2 FSS Out-of-Lock Reason: Specifies, in integer format, the reason the FSS left the Lock mode during the reporting period.

0 = The FSS did not go out of lock during the reporting period

1 = The FSS went to Search mode because the Flywheel count expired

2 = The FSS was forced into search

3 = Both occurred during the reporting period.

WORD 232 AND 233

BIT

1 thru 16 — Channel 2 FSS In Lock Frame Count: Provides, in double integer format, the number of frames the FSS processed in its last (if out of lock) or current (if in lock) lock period. The value is stationary when the FSS is out of lock and is incrementing when the FSS is in lock. When the FSS goes from out of lock to in lock, the value is instantly set to zero (i.e., is set to zero to count up again).

WORD 234

BIT

1 thru 16 — Channel 2 FSS Data Reversal Count: Provides, in integer format, the number of transitions in data polarity that the FSS encountered in its last (if out of lock) or current (if in lock) lock period. The value is stationary when the FSS is out of lock and increments when the FSS is in lock and the polarity for the current frame differs from that of the previous frame within the lock period. When the FSS goes from out of lock to in lock, the value is instantly set to zero (i.e., is set to zero to count up again).

WORD 235

BIT

1 thru 16 — Channel 2 FSS Total Acquisition Count: Provides, in integer format, the number of transitions from the Search mode or the Verify mode to the Lock mode from the start of the tracking pass. The FSS goes directly from the Search mode to the Lock mode if the verify frame count threshold is zero.

WORD 236 AND 237

BIT

1 thru 16 — Channel 2 FSS Bits to Acquire: Provides, in double integer format, the number of bits the FSS processed in

WORD 236 AND 237 (Continued)

its last (if in lock) or current acquisition (if not in lock). The value is stationary when the FSS is in lock and is incrementing when the FSS is out of lock. When the FSS goes from in lock to out of lock, the value is instantly set to zero (i.e., is set to zero to count up again).

WORD 238

BIT

1 thru 16 — Channel 2 FSS Flywheel Frame Count: Provides, in integer format, the number of frames the FSS processed in the Flywheel mode in its last (if out of lock) or current (if in lock) lock period. The value is stationary when the FSS is out of lock and increments when the FSS is in lock and in the Flywheel mode. When the FSS goes from out of lock to in lock, the value is instantly set to zero (i.e., is set to zero to count up again).

WORD 239

BIT

1 thru 16 — Channel 2 FSS Bit Slip Count: Provides, in integer format, the number of bits by which the frames that the FSS encountered in its last (if out of lock) or current (if in lock) lock period were short of their respective frame sizes, plus the number of bits by which the frames that the FSS encountered in its last (if out of lock) or current (if in lock) lock period exceeded their respective frame sizes. The value is stationary when the FSS is out of lock and increments when the FSS is in lock and the frame length for the current frame is either less than or greater than the appropriate frame size. When the FSS goes from out of lock to in lock, the value is instantly set to zero (i.e., is set to zero to count up again).

WORD 240

BIT

1 thru 16 — Channel 2 FSS Spacecraft Format ID: Provides, in integer format, the spacecraft ID (right justified) from the last in lock frame that the FSS observed. In lock means the FSS was either in the Lock mode or the Flywheel mode.

WORD 241

BIT

1 thru 16 — Channel 2 FSS Spacecraft Frame Count: Provides, in integer format, the spacecraft frame count (right justified) extracted from the last in lock frame that the FSS observed. In lock means that the FSS was in either the Lock mode or the Flywheel mode.

WORD 242

BIT

1 thru 16 — PDW for Channel 1 subcarrier frequency data from TPA. This PDW covers Words 243-244.

WORD 243 AND 244

BIT

1 thru 16 — Channel 1 Subcarrier Frequency: Provides, in double unformatted format (two unformatted words of double precision with binary point between bits 8 and 9 of the second word), the value of the channel 1 subcarrier frequency. This subcarrier frequency value is only applicable to Type-B (those connected to MCDs) groups.

WORD 245

BIT

1 thru 16 — PDW for Channel 2 subcarrier frequency data from TPA. This PDW covers Words 246-247.

WORD 246 AND 247

BIT

1 thru 16 — Channel 2 Subcarrier Frequency: Provides, in double unformatted format (two unformatted words of double precision with binary point between bits 8 and 9 of the second word), the value of the channel 1 subcarrier frequency. This subcarrier frequency value is only applicable to Type-B (those connected to MCDs) groups.

WORD 248

BIT

1 thru 16 — PDW for Digital Data Recording Subsystem (DDR) data in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the DDR in the expected time frame as indicated by the watchdog timer. This PDW covers Words 249-256.

WORD 249 AND 250

BIT

1 thru 16 — Channel 1 ODR 1 Recording Status: Provides, in ASCII 4 format, the recording status of the Channel 1 ODR 1 recorder as follows:

NONE = not recorded
DDR = recorded at DDR
ARA = recorded at ARA
BOTH = recorded at both the DDR and the ARA
FAIL = DDR Recorder failed (if only the DDR is recording)

These words set to ASCII blanks if data is not received by LMC.

WORD 251 AND 252

BIT

1 thru 16 — Channel 1 Original Data Record (ODR) 2 Recording Status: Provides, in ASCII 4 format, the recording status of the Channel 1 ODR 2 recorder as follows:

WORD 251 AND 252 (Continued)

NONE = Not recorded
DDR = Recorded at DDR
ARA = Recorded at ARA
BOTH = Recorded at both the DDR and the ARA
FAIL = DDR Recorder failed (if only the DDR is recording)

These words set to ASCII blanks if data are not received by the LMC.

WORD 253 AND 254

BIT

1 thru 16 — Channel 2 ODR 1 Recording Status: Provides, in ASCII 4 format, the recording status of the Channel 2 ODR 1 recorder as follows:

NONE = Not recorded
DDR = Recorded at DDR
ARA = Recorded at ARA
BOTH = Recorded at both the DDR and the ARA
FAIL = DDR Recorder failed (if only the DDR is recording)

These words set to ASCII blanks if data are not received by the LMC.

WORD 255 AND 256

BIT

1 thru 16 — Channel 2 ODR 2 Recording Status: Provides, in ASCII 4 format, the recording status of the Channel 2 ODR 2 recorder as follows:

NONE = Not recorded
DDR = Recorded at DDR
ARA = Recorded at ARA
BOTH = Recorded at both the DDR and the ARA
FAIL = DDR Recorder failed (if only the DDR is recording)

These words set to ASCII blanks if data are not received by the LMC.

WORD 257

BIT	
1 thru 16	PDW for VLBI data in PDW format. This PDW is generated by the LMC based on whether or not the LMC has observed data from the VLBI in the expected time frame as indicated by the watchdog timer. This PDW covers Words 258-293.

WORD 258 THRU 263

BIT	
1 thru 16	Current Very Long Baseline Interferometry (VLBI) Radio Source ID: Provides, in ASCII 12 format, the current VLBI Radio Source ID. Set to blanks if data not received by LMC.

WORDS 264 THRU 269

BIT	
1 thru 16	VLBI Recorder ON Time for current Radio Source: Provides, in time format, the time the recorder was or is supposed to be turned ON. Set to blanks if data not received by LMC.

WORD 270 THRU 275

BIT	
1 thru 16	VLBI Recorder OFF Time for current Radio Source: Provides, in time format, the time the recorder was or is supposed to be turned OFF. Set to blanks if data not received by LMC.

WORD 276 THRU 281

BIT	
1 thru 16	Next VLBI Radio Source ID: Provides, in ASCII 12 format, the next VLBI Radio Source ID. Set to blanks if data not received by LMC.

WORD 282 THRU 287

BIT

1 thru 16 — VLBI Recorder ON Time for next Radio Source: Provides, in time format, the time the recorder was or is supposed to be turned ON. Set to blanks if data not received by LMC.

WORD 288 THRU 293

BIT

1 thru 16 — VLBI Recorder OFF Time for next Radio Source: Provides, in time format, the time the recorder was or is supposed to be turned OFF. Set to blanks if data not received by LMC.

WORD 294

BIT

1 thru 16 — Channel 1 Receiver Number: Provides, in unformatted format, the number of the receiver (input at the TPA) that is processing the data stream for TPA Channel 1. At present, this parameter is presented using the setting of bits 1 through 5 to designate receivers 1 through 5, respectively. At some future time, additional receivers may be installed at each DSCC. At that time, additional bits (6 - x) will be set to indicate the use of these additional receivers.

The correlation between the number of the receiver presented in this parameter data field and the other receiver designator (Receiver A or Receiver B) used in this block is shown in Table MON-5-12-1.

WORD 295

BIT

1 thru 16 — Channel 2 Receiver Number: Provides, in unformatted format, the number of the receiver (input at the TPA) that is processing the data stream for TPA Channel 2. At present, this parameter is presented using the setting of bits 1 through 5 to designate receivers 1

Table MON-5-12-1. Receiver Cross-Reference Table

Type of Antenna	Receiver A	Receiver B
64-meter	1	2
70-meter	1	2
34-meter STD	3	4
34-meter HEF	5	

WORD 295 (Continued)

through 5, respectively. At some future time, additional receivers may be installed at each DSCC. At that time, additional bits (6 - x) will be set to indicate the use of these additional receivers.

The correlation between the number of the receiver presented in this parameter data field and the other receiver designator (Receiver A or Receiver B) used in this block is shown in Table MON-5-12-1.

WORD 296

BIT

1 thru 16 — Checksum: Additive arithmetic sum, ignoring overflow, of 16-bit Words 9 through 296.

WORD 297

BIT

1 thru 16 — Reserved

WORD 298 THRU 300 — GCF error correction, error status code, and error polynomial code as defined in Module OPS-6-8 of this document.