Voyager 2 Missing Daily EDRs for 2011

August 2, 2011

To date, six days of 2011 Voyager-2 Cosmic Ray Subsystem (CRS) data have been compromised due to the reasons noted below.

Day 33	Weather
Day 73	DSS-43 problem
Day 140	No tracking support

Appendix A contains the emails from the Jet Propulsion Laboratory (JPL) noting the data loss for the above days.

Day 145/146	DSN Coverage
Day 159/160	DSN Coverage
Day 174/175	DSN Coverage

The data loss for these three days results from subsequent DSN tracking passes occurring greater than 24 hours apart and also at unique times with respect to the one way light time (OWLT). DSN tracking uses Earth Receive Time (ERT) while our CRS database uses the Space Craft Event Time (SCET). Both ERT and SCET times are in Coordinated Universal Time (UTC). The Voyager 2 OWLT during days 145 – 175 is approximately 13h:09s.

The tables below show that subtracting the OWLT from the scheduled tracking time as shown in the Voyager Space Flight Operations Schedule (SFOS) (see Appendix B) results in coverage gaps that span an entire day in SCET.

The following set of tables is for DOY 145/146 (May 24/25):

EARTH RECEIVE TIME (UTC)			SPACE CRAFT EVENT TIME (UTC)	
DOY	DATE	COVERAGE	DATE	COVERAGE
145	05/25/2011	08:20 – 11:30	05/24/2011	19:11- 22:21
145	05/25/2011	11:10 – 13:10	05/24/2011	22:01 – 24:01
146	05/26/2011	13:10 – 17:35	05/26/2011	00:01 – 04:26

SPACE CRAFT EVENT TIME (UTC)	
DATE	CRS DATA BASE
05/24/2011	19:45- 23:45
05/26/2011	00:15 – 04:15

Thus the CRS database is missing data for 05/25/2011.

The next set of tables is for DOY 159/160 (June 8/9):

EARTH RECEIVE TIME (UTC)			SPACE CRAFT EVENT TIME (UTC)	
DOY	DATE	COVERAGE	DATE	COVERAGE
159	06/08/2011	09:15 – 12:55	06/07/2011	20:06- 23:46
160	06/09/2011	17:30 – 21:25	06/09/2011	04:21 – 08:16

SPACE CRAFT EVENT TIME (UTC)	
DATE	CRS DATA BASE
06/07/2011	20:00- 23:30
06/09/2011	04:30 – 08:15

Thus the CRS database is missing data for 06/08/2011. Our database for 6/07/2011 actually contains data that starts before the start of scheduled tracking. The tracking must have started earlier than reported in the SFOS.

The last set of tables is for DOY 174/175 (June 23/24):

EARTH RECEIVE TIME (UTC)			SPACE CRAFT EVENT TIME (UTC)	
DOY	DATE	COVERAGE	DATE	COVERAGE
174	06/23/2011	08:15 – 13:15	06/22/2011	19:06- 24:06
175	06/24/2011	15:35 – 19:55	06/24/2011	02:26 – 06:46

SPACE CRAFT EVENT TIME (UTC)	
DATE	CRS DATA BASE
06/22/2011	19:15- 23:45
06/24/2011	02:15 – 06:30

Thus the CRS database is missing data for 06/23/2011.

Appendix A

Thu, Feb 3, 2011 at 1:32 PM

Hi Everyone,

There are no day 33 daily files for Voyager 2 due to weather. Heavy rain during the entire support period (DSS-43, from 33/15:45 to 19:50 ERT).

Regina Wong
Regina.F.Wong@jpl.nasa.gov
Voyager Science & Data Management
(818) 393-1035

Tue, Mar 15, 2011 at 1:46 PM

Hi Everyone,

There's no daily file on day 73 for Voyager 2 due to problem at DSS-43. The station was unable to acquire spacecraft downlink for the entire support (from 073/17:25 to 073/23:40 ERT).

They were unable to determine if the fault is software or hardware and is troubleshooting.

Regards,

Regina Wong
Regina.F.Wong@jpl.nasa.gov
Voyager Science & Data Management
(818) 393-1035

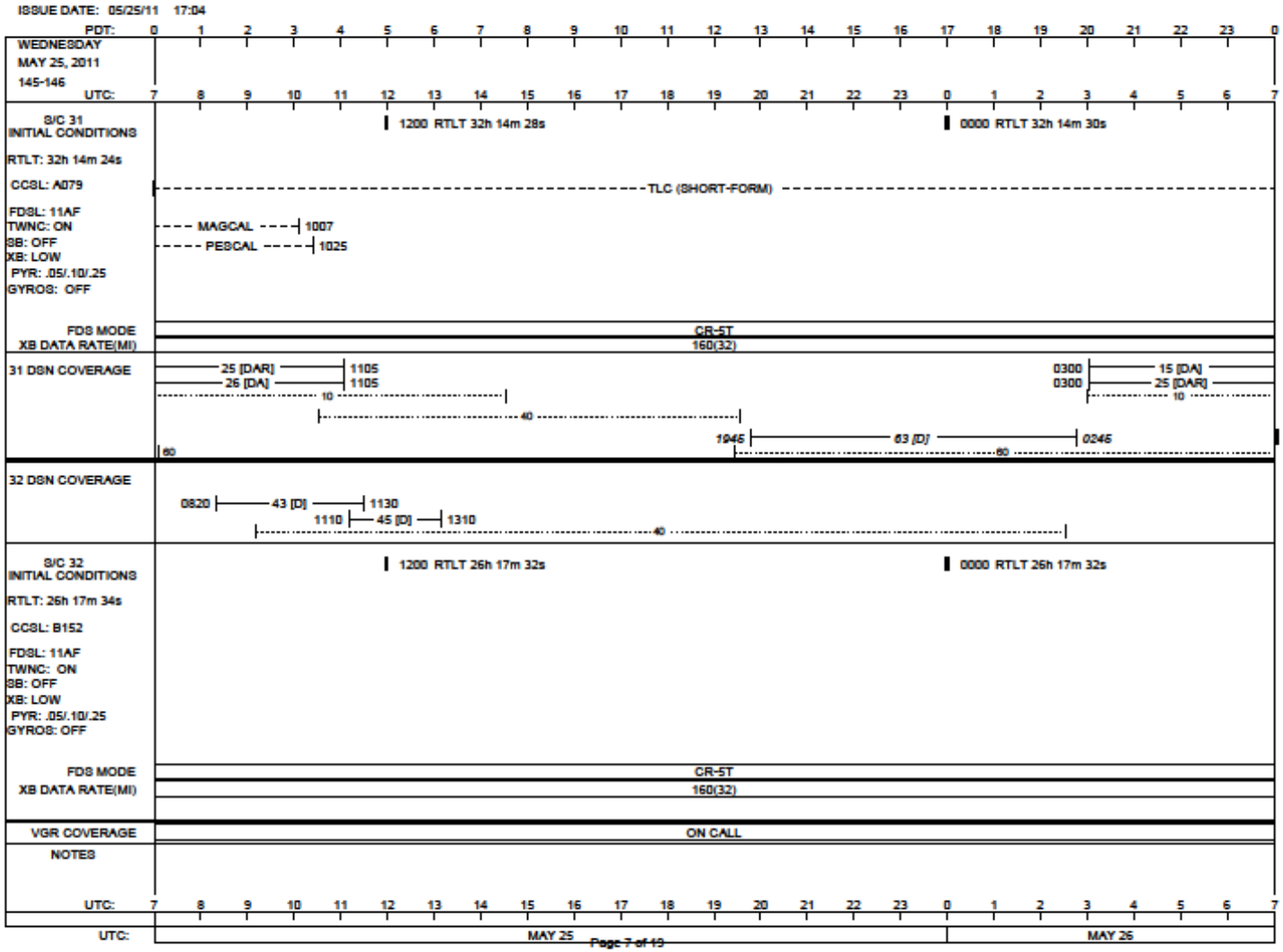
Mon, May 23, 2011 at 3:21 PM

Hi Everyone,

There's no tracking support for Voyager 2 on day 140; therefore, there's no daily file for Voyager 2 for that day.

Regina Wong
Regina.F.Wong@jpl.nasa.gov
Voyager Science & Data Management

Appendix B


ISSUE DATE: 05/25/11 17:04
PDT: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0
WEDNESDAY
MAY 25, 2011
145-146
UTC: 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7
S/C 31
INITIAL CONDITIONS
RTLT: 32h 14m 24s
CCSL: A079
FDSL: 11AF
TWNC: ON
SB: OFF
XB: LOW
PYR: .05/.10/.25
GYROS: OFF
1200 RTLT 32h 14m 28s
0000 RTLT 32h 14m 30s
TLC (SHORT-FORM)
MAGCAL 1007
PESCAL 1025
FDS MODE
XB DATA RATE(MI)
CR-5T
160(32)
31 DSN COVERAGE
25 [DAR] 1105
26 [DA] 1105
10
40
1945 63 [D] 0245
60
0300 15 [DA]
0300 25 [DAR]
10
32 DSN COVERAGE
0820 43 [D] 1130
1110 45 [D] 1310
40
S/C 32
INITIAL CONDITIONS
RTLT: 26h 17m 34s
CCSL: B152
FDSL: 11AF
TWNC: ON
SB: OFF
XB: LOW
PYR: .05/.10/.25
GYROS: OFF
1200 RTLT 26h 17m 32s
0000 RTLT 26h 17m 32s
FDS MODE
XB DATA RATE(MI)
CR-5T
160(32)
VGR COVERAGE
ON CALL
NOTES
UTC: 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7
UTC:
MAY 25
MAY 26

ISSUE DATE: 05/25/11 17:04

PDT: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0

THURSDAY
MAY 26, 2011
146-147

UTC: 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7

S/C 31
INITIAL CONDITIONS

RTLT: 32h 14m 30s

CCSL: A079

FDSL: 11AF
TWNC: ON
SB: OFF
XB: LOW
PYR: .05/.10/.25
GYROS: OFF

1200 RTLT 32h 14m 34s

0000 RTLT 32h 14m 38s

TLC (SHORT-FORM)
D/L 0842

FDS MODE: CR-5T
XB DATA RATE(MI): 160(32)

31 DSN COVERAGE

15 [DA] 0900
25 [DAR] 0900
10
40
2215 65 [DAR] 0315
2215 55 [DA] 0315
10
60
60

32 DSN COVERAGE

1310 43 [B] 1735
40

S/C 32
INITIAL CONDITIONS

RTLT: 26h 17m 32s

CCSL: B152

FDSL: 11AF
TWNC: ON
SB: OFF
XB: LOW
PYR: .05/.10/.25
GYROS: OFF

1200 RTLT 26h 17m 32s

0000 RTLT 26h 17m 30s

1357 DUMMY (5 MIN BRACKETED 16:15)

FDS MODE: CR-5T
XB DATA RATE(MI): 160(32)

VGR COVERAGE: ON CALL | VGR | ON CALL

NOTES

UTC: 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7

UTC: MAY 26 | MAY 27

ISSUE DATE: 06/06/11 19:42

WEDNESDAY
JUNE 8, 2011
159-160

PDT: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0

UTC: 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7

S/C 31 INITIAL CONDITIONS

RTLT: 32h 16m 24s

CCSL: A079

FDSL: 11AF
TWNC: ON
SB: OFF
XB: LOW
PYR: .05/.10/.25
GYROS: OFF

1200 RTLT 32h 16m 28s

0000 RTLT 32h 16m 34s

TLC (SHORT-FORM)
D/L 0944

FDS MODE: CR-5T

XB DATA RATE(MI): 160(32)

31 DSN COVERAGE

15 [DAR] 0940
24 [DA] 0940
10
40
60
10
15 [DAR] 0615
25 [DA] 0615

32 DSN COVERAGE

0915 45 [D] 1255
40

S/C 32 INITIAL CONDITIONS

RTLT: 26h 17m 28s

CCSL: B152

FDSL: 11AF
TWNC: ON
SB: OFF
XB: LOW
PYR: .05/.10/.25
GYROS: AC ON

1200 RTLT 26h 17m 28s

0000 RTLT 26h 17m 28s

1230 GYRO INIT

FDS MODE: CR-5T

XB DATA RATE(MI): 160(32)

VGR COVERAGE: ON CALL

NOTES

UTC: 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7

UTC: JUN 08 | JUN 09

ISSUE DATE: 06/06/11 19:42

THURSDAY
JUNE 9, 2011
160-161

PDT: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0

UTC: 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7

S/C 31 INITIAL CONDITIONS

RTLT: 32h 16m 34s

CCSL: A079

FDSL: 11AF
TWNC: ON
SB: OFF
XB: LOW
PYR: .05/.10/.25
GYROS: OFF

1200 RTLT 32h 16m 38s

0000 RTLT 32h 16m 44s

FDS MODE: CR-5T

XB DATA RATE(MI): 160(32)

31 DSN COVERAGE

15 [DAR] 1255

25 [DA] 1005

1005 24 [DA] 1255

10

40

60

15 [DAR] 0615

25 [DA] 0615

10

32 DSN COVERAGE

1730 45 [D] 2125

40

S/C 32 INITIAL CONDITIONS

RTLT: 26h 17m 28s

CCSL: B152

FDSL: 11AF
TWNC: ON
SB: OFF
XB: LOW
PYR: .05/.10/.25
GYROS: AC ON

1200 RTLT 26h 17m 30s

0000 RTLT 26h 17m 30s

1317 COMMAND MORATORIUM

FDS MODE: CR-5T

XB DATA RATE(MI): 160(32)

VGR COVERAGE: ON CALL

NOTES

UTC: 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7

UTC: JUN 09 | JUN 10

ISSUE DATE: 06/23/11 14:02

THURSDAY
JUNE 23, 2011
174-175

PDT: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0

UTC: 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7

S/C 31 INITIAL CONDITIONS

RTLT: 32h 19m 22s

CCSL: A079

FDSL: 11AF
TWNC: ON
SB: OFF
XB: LOW
PYR: .05/.10/.25
GYROS: OFF

1200 RTLT 32h 19m 30s

0000 RTLT 32h 19m 36s

1830 DUMMY (02:50)

U/L 1900 — TLC (SHORT-FORM)

FDS MODE: CR-5T

XB DATA RATE(MI): 160(32)

31 DSN COVERAGE

0715 24 [DA]
0715 26 [DAR]
10
40
1730 — 63 [T] — 1950
60
0330 - 0700 — 24 [DA]
0330 - 0700 — 25 [DAR]
10

32 DSN COVERAGE

0815 — 45 [D] — 1315
40

S/C 32 INITIAL CONDITIONS

RTLT: 26h 18m 6s

CCSL: B152

FDSL: 11AF
TWNC: ON
SB: OFF
XB: LOW
PYR: .05/.10/.25
GYROS: OFF

1200 RTLT 26h 18m 8s

0000 RTLT 26h 18m 10s

FDS MODE: CR-5T

XB DATA RATE(MI): 160(32)

VGR COVERAGE: ON CALL

NOTES

UTC: 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7

UTC: JUN 23 — JUN 24

ISSUE DATE: 06/23/11 14:02

FRIDAY
JUNE 24, 2011
175-176

PDT: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0

UTC: 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7

S/C 31 INITIAL CONDITIONS

RTLT: 32h 19m 36s

CCSL: A079

FDSL: 11AF
TWNC: ON
SB: OFF
XB: LOW
PYR: .05/.10/.25
GYROS: OFF

1200 RTLT 32h 19m 44s

0000 RTLT 32h 19m 50s

TLC (SHORT-FORM)

D/L 0448

1614 1614 TAPPOS

1916 1917 PWS/RH

2123 2137 TAPPOS

1916 GS-4B 1917

FDS MODE: CR-5T | CR-5T

XB DATA RATE(MI): 160(32) | 160(32)

31 DSN COVERAGE

0700 24 [DA]
0700 25 [DAR]
10
40
2105 63 [D] 0220
60
0230 14 [D]
10

32 DSN COVERAGE

1535 34 [D] 1955
40

S/C 32 INITIAL CONDITIONS

RTLT: 26h 18m 10s

CCSL: B152

FDSL: 11AF
TWNC: ON
SB: OFF
XB: LOW
PYR: .05/.10/.25
GYROS: OFF

1200 RTLT 26h 18m 12s

0000 RTLT 26h 18m 14s

FDS MODE: CR-5T

XB DATA RATE(MI): 160(32)

VGR COVERAGE: ON CALL

NOTES

[1] S/C 31=GS-4B @ 1916 XB=2.8K(41) NOT RECOVERABLE

UTC: 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 0 1 2 3 4 5 6 7

UTC: JUN 24 | JUN 25