

ATTITUDE TIMELINE

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TIMELINE

Attitude Timeline

MET/GMT	ORBITER		REF ATT/REMARKS	EVENT
	MNVR OPTION	DAP E/S/ $\beta$		
1 000/01:00:00 M  320/22:09:59 G				STS-121 Launch Nov. 15, 2004  GMTLO: 320/21:09:59
2 000/01:12:00 M 20:53  320/22:21:59 G 30:52	LVLH TRACK TGT = 2 P = 90.00 BV = 3 Y = 0.00 OM = 100.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  EARTH R 0 P 90 $\beta = 14$	LVLH R=180.00 P= 0.00 Y=280.00	-ZLV +YVV PLBD Opening
3 000/03:00:00 M 50  321/00:09:59 G 10:49	LVLH TRACK TGT = 2 P = 90.00 BV = 3 Y = 0.00 OM = 90.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  EARTH R 0 P 90 $\beta = 14$	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV -YVV  WLES Battery Life Extension
4 000/04:55:00 M 05:06:26  321/02:04:59 G 16:25	M50 (CALC) INRTL R = 92.00 MNVR P = 129.00 PYR Y = 340.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  SUN R 207 P 33 $\beta = 13$	+X PYR R = 359.99 P = 16.46 Y = 0.41  LVLH 000/05:14:52 M 321/02:24:51 G	NC-1 Posi Heads Up OMS TIG 05:14:52  DV= 18.3
5 000/05:20:00 M 32:50  321/02:29:59 G 42:49	LVLH TRACK TGT = 2 P = 90.00 BV = 3 Y = 0.00 OM = 90.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  EARTH R 0 P 90 $\beta = 13$	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV -YVV  WLES Battery Life Extension
6 000/08:30:00 M 41:47  321/05:39:59 G 51:46	INRTL R = 0.00 MNVR P = 0.00 Y = 0.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  SUN R 293 P 127 $\beta = 13$		
7 000/09:45:00 M 57:01  321/06:54:59 G 07:07:00	LVLH TRACK TGT = 2 P = 90.00 BV = 3 Y = 0.00 OM = 90.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  EARTH R 0 P 90 $\beta = 13$	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV -YVV  WLES Battery Life Extension
8 000/15:19:00 M 30:05  321/12:28:59 G 40:04	M50 (CALC) INRTL R = 95.00 MNVR P = 132.00 PYR Y = 322.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  SUN R 224 P 17 $\beta = 12$	+X PYR R = 359.95 P = 15.93 Y = 359.87  LVLH 000/15:39:53 M 321/12:49:52 G	NC-2 Posi Head Up OMS TIG 15:39:53  DV= 8.3
9 000/15:45:00 M 57:51  321/12:54:59 G 13:07:50	LVLH TRACK TGT = 2 P = 90.00 BV = 3 Y = 0.00 OM = 90.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  EARTH R 0 P 90 $\beta = 12$	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV -YVV  WLES Battery Life Extension
10 001/01:45:00 M  321/22:54:59 G				NC-3 Placeholder

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MEAN OF 1950 AND PYR EULER SEQUENCE

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MET/GMT	ORBITER		REF ATT/REMARKS	EVENT
	MNVR OPTION	DAP E/S/ $\beta$		
11 001/07:00:00 M 12:28  322/04:09:59 G 22:27	INRTL R = 0.00 MNVR P = 0.00 Y = 0.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  SUN R 293 P 126 $\beta = 9$		
12 001/08:15:00 M 26:46  322/05:24:59 G 36:45	LVLH TRACK TGT = 2 P = 90.00 BV = 3 Y = 0.00 OM = 90.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  EARTH R 0 P 90 $\beta = 8$	LVLH R= 0.00 P=180.00 Y=270.00	-ZLV -YVV  WLES Battery Life Extension
13 001/13:00:00 M 15:00  322/10:09:59 G 24:59 FUTURE LOAD	LVLH TRACK TGT = 2 P = 90.00 BV = 3 Y = 0.00 OM = 270.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  EARTH R 0 P 90 $\beta = 8$	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV +YVV Simo Dump (1/13:15)  SOPA (~14:00)
14 001/14:30:00 M 41:12  322/11:39:59 G 51:11	M50 (CALC) INRTL R = 134.00 MNVR P = 86.00 PYR Y = 78.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  SUN R 190 P 132 $\beta = 7$	+X PYR R = 0.25 P = 15.78 Y = 0.17 LVLH 001/14:50:17 M 322/12:00:16 G	NH Posi Heads Up OMS TIG 14:50:17  DV= 168.7
15 001/14:55:00 M   322/12:04:59 G		RATE 0.2000 DB AT 2.00 DB RT 0.100  EARTH R 180 P 125 $\beta = 7$	LVLH R= 0.26 HOLD P= 34.95 Y= 0.15	LVLH HOLD between burns
16 001/15:30:00 M 32:22  322/12:39:59 G 42:21	M50 (CALC) INRTL R = 155.00 MNVR P = 194.00 PYR Y = 279.00  MNVR A7/AUTO/ALT HOLD (same)	RATE 0.2000 DB AT 2.00 DB RT 0.100  SUN R 347 P 35 $\beta = 7$	+X PYR R = 359.88 P = 15.95 Y = 0.05 LVLH 001/15:32:24 M 322/12:42:23 G	NC-4 Posi Head Up OMS TIG 15:32:24  DV= 105.3
17 001/15:35:00 M 38:51  322/12:44:59 G 48:50	EPH TARGET TGT = 1 P = 90.00 BV = 3 Y = 0.00 OM = 0.00  MNVR B7/AUTO/ALT HOLD A7/AUTO/VERN	RATE 0.5000 DB AT 2.00 DB RT 0.100  $\beta = 7$	LVLH R=359.99 P=270.95 Y= 0.00  TGT VIDFILE: 121BAS VID #: 12	-Z TGT TRK
18 001/16:43:00 M 44:19  322/13:52:59 G 54:18	M50 (CALC) INRTL R = 140.00 MNVR P = 179.00 PYR Y = 281.00  MNVR A7/AUTO/ALT HOLD (same)	RATE 0.2000 DB AT 2.00 DB RT 0.100  SUN R 346 P 32 $\beta = 7$	+X PYR R = 359.67 P = 15.93 Y = 0.01 LVLH 001/17:03:00 M 322/14:12:59 G	TI Posi Head Up TIG 17:03  DV= 8.9
19 001/17:05:00 M 08:44  322/14:14:59 G 18:43	EPH TARGET TGT = 1 P = 90.00 BV = 3 Y = 0.00 OM = 0.00  MNVR B7/AUTO/ALT HOLD A7/AUTO/VERN	RATE 0.5000 DB AT 2.00 DB RT 0.100  $\beta = 7$	LVLH R=359.75 P=272.58 Y= 0.00  TGT VIDFILE: 121BAS VID #: 12	-Z TGT TRK
20 001/18:09:00 M 35:44  322/15:18:59 G 45:43	LVLH TRACK TGT = 2 P = 270.00 BV = 5 Y = 0.00 OM = 0.00  MNVR A8/AUTO/VERN HOLD A7/AUTO/VERN	RATE 0.0500 DB AT 1.000 DB RT 0.020  EARTH R 180 P 90 $\beta = 7$	LVLH R= 0.00 P= 0.00 Y= 0.00	+ZLV +XVV Establish RBAR

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MET/GMT	ORBITER		REF ATT/REMARKS	EVENT
	MNVR OPTION	DAP E/S/ $\beta$		
21 001/18:36:00 M 38:00 322/15:45:59 G 47:59	LVLH TRACK TGT = 2 P = 180.00 BV = 5 Y = 0.00 OM = 0.00 MNVR A9/AUTO/PRI HOLD (same)	RATE 0.7500 DB AT 1.00 DB RT 0.10 EARTH R 53 P 180 $\beta = 7$	LVLH R= 0.00 P= 90.00 Y= 0.00	RPM
22 001/18:38:30 M 40:30 322/15:48:29 G 50:29	LVLH TRACK TGT = 2 P = 90.00 BV = 5 Y = 0.00 OM = 0.00 MNVR A9/AUTO/PRI HOLD (same)	RATE 0.7500 DB AT 1.00 DB RT 0.10 EARTH R 0 P 90 $\beta = 7$	LVLH R= 0.00 P=180.00 Y= 0.00	RPM
23 001/18:40:30 M 42:30 322/15:50:29 G 52:29	LVLH TRACK TGT = 2 P = 0.00 BV = 5 Y = 0.00 OM = 0.00 MNVR A9/AUTO/PRI HOLD (same)	RATE 0.7500 DB AT 1.00 DB RT 0.10 EARTH R 135 P 0 $\beta = 7$	LVLH R= 0.00 P=270.00 Y= 0.00	RPM
24 001/18:44:00 M 19:06:57 322/15:53:59 G 16:16:56	LVLH TRACK TGT = 2 P = 179.00 BV = 5 Y = 0.00 OM = 0.00 MNVR A9/AUTO/PRI HOLD (same)	RATE 0.1300 DB AT 1.00 DB RT 0.10 EARTH R 0 P 179 $\beta = 7$	LVLH R= 0.00 P= 91.00 Y= 0.00	-XLV +ZVV TORVA Transition from +RBar to +VBar
25 001/19:44:00 M 322/16:53:59 G	FREE DRIFT Config DAP: A12 for Att. Cntrl			DOCKING 01/19:49 ISS (0,0,0)
26 001/20:12:00 M 41:50 322/17:21:59 G 51:49	COE (CALC) TGT = 2 P = 157.00 BV = 5 Y = 5.00 OM = 180.00 MNVR A12/AUTO/VERN HOLD (same)	RATE 0.1000 DB AT 3.000 DB RT 0.050 EARTH R 13 P 156 $\beta = 6$	ISS YPR R = 5.43 P = 22.91 Y = 182.12 LVLH 001/20:12:00 M 322/17:21:59 G	BIAS -XLV -ZVV ORB R = 178.04 LVLH P = 66.92 Y = 355.40
27 006/15:10:00 M 25:01 327/12:19:59 G 35:00	LVLH TRACK TGT = 2 P = 157.00 BV = 5 Y = 0.00 OM = 270.00 MNVR A12/AUTO/VERN HOLD (same)	RATE 0.1000 DB AT 3.000 DB RT 0.050 EARTH R 0 P 157 $\beta = -15$	LVLH R= 90.00 P= 90.00 Y= 23.00	Bias -XLV +YVV STS Waste Dump
28 006/16:30:00 M 45:01 327/13:39:59 G 55:00	COE (CALC) TGT = 2 P = 157.00 BV = 5 Y = 355.00 OM = 180.00 MNVR A12/AUTO/VERN HOLD (same)	RATE 0.1000 DB AT 3.000 DB RT 0.050 EARTH R 347 P 156 $\beta = -15$	ISS YPR R = 354.57 P = 22.91 Y = 177.88 LVLH 006/16:30:00 M 327/13:39:59 G	BIAS -XLV -ZVV ORB R = 181.96 LVLH P = 66.92 Y = 4.60
29 008/16:40:00 M 17:09:50 329/13:49:59 G 14:19:49	LVLH TRACK TGT = 2 P = 180.00 BV = 5 Y = 0.00 OM = 0.00 MNVR A12/AUTO/VERN HOLD (same)	RATE 0.1000 DB AT 3.000 DB RT 0.050 EARTH R 20 P 180 $\beta = -25$	LVLH R= 0.00 P= 90.00 Y= 0.00	-XLV +ZVV Prep for Undock
30 008/17:43:00 M 329/14:52:59 G	FREE DRIFT for Undocking			UNDOCK 008/17:46

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	MNVR OPTION	DAP E/S/ $\beta$		
31 008/18:15:00 M  329/15:24:59 G	LVLH FREE ROTATION ROTR ABOUT +Y AXIS RATE=0.130  MNVR A9/LVLH/VERN HOLD (same)	RATE 0.1300 DB AT 1.000 DB RT 0.020  $\beta = -25$	LVLH R= 0.00 P= 90.00 Y= 0.00	FLY AROUND
32 008/19:01:00 M  329/16:10:59 G	  HOLD A9/LVLH/VERN	RATE 0.1300 DB AT 1.000 DB RT 0.020  SUN R 26 P 95 $\beta = -25$	INRTL R=229.44 HOLD P=297.78 Y=332.04	LVLH HOLD SEP 1: TIG: 19:01
33 008/19:21:00 M 38 329/16:30:59 G 31:37	M50 (CALC) INRTL R = 234.00 MNVR P = 310.00 PYR Y = 347.00  MNVR B7/AUTO/ALT HOLD (same)	RATE 0.5000 DB AT 2.00 DB RT 0.100  SUN R 28 P 112 $\beta = -25$	+X PYR R = 0.27 P = 180.29 Y = 359.76 LVLH 008/19:29:00 M 329/16:38:59 G	SEP 2 TIG: 8/19:29
34 008/19:28:30 M  329/16:38:29 G	  HOLD A7/INRT/PRI	RATE 0.2000 DB AT 2.00 DB RT 0.20  SUN R 28 P 112 $\beta = -25$	INRTL R=234.00 HOLD P=310.00 Y=347.00	SEP 2 TIG: 8/19:29
35 008/19:30:00 M 34:12 329/16:39:59 G 44:11	LVLH TRACK TGT = 2 P = 90.00 BV = 5 Y = 0.00 OM = 310.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  EARTH R 0 P 90 $\beta = -25$	LVLH R= 0.00 P=180.00 Y= 50.00	Biased -ZLV +YVV Simo Init 8/20:00
36 008/21:40:00 M 44:10 329/18:49:59 G 54:09	LVLH TRACK TGT = 2 P = 90.00 BV = 3 Y = 0.00 OM = 0.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  EARTH R 0 P 90 $\beta = -26$	LVLH R= 0.00 P=180.00 Y= 0.00	-ZLV -XVV
37 009/15:55:00 M 16:02:30 330/13:04:59 G 12:29	LVLH TRACK TGT = 2 P = 90.00 BV = 3 Y = 0.00 OM = 270.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  EARTH R 0 P 90 $\beta = -30$	LVLH R= 0.00 P=180.00 Y= 90.00	-ZLV +YVV Cond. Dump
38 009/21:15:00 M 23:25 330/18:24:59 G 33:24	LVLH TRACK TGT = 2 P = 0.00 BV = 5 Y = 75.00 OM = 247.00  MNVR B2/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  EARTH R 90 P 75 $\beta = -31$	LVLH R=263.73 P=196.23 Y= 22.17  Sunset: 22:32 Menlo AOS 23:47 LOS 23:52	Bias +YLV -XVV MEPSI Jettison @22:32 Retrograde with 67 deg OOP
39 009/22:40:00 M 48:00 330/19:49:59 G 57:59	LVLH TRACK TGT = 2 P = 90.00 BV = 3 Y = 0.00 OM = 0.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  EARTH R 0 P 90 $\beta = -31$	LVLH R= 0.00 P=180.00 Y= 0.00	-ZLV -XVV
40 010/14:05:00 M 13:49 331/11:14:59 G 23:48	INRTL R = 208.00 MNVR P = 204.00 Y = 32.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  SUN R 31 P 103 $\beta = -34$		IMU ALIGN -Y: 81 -Z: 71 PAIR AOS: 14:13 PAIR LOS: 14:42

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	MNVR OPTION	DAP E/S/ $\beta$		
41 010/14:23:00 M 30:45  331/11:32:59 G 40:44	INRTL R = 4.00 MNVR P = 103.00 Y = 64.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  SUN R 291 P 123 $\beta = -34$		VERIF -Y: 100 -Z: 41  PAIR AOS: 14:26 PAIR LOS: 14:57
42 010/14:37:00 M 42:00  331/11:46:59 G 51:59	TGT= 4 BV = 5 P = 184.00 Y = 0.00 OM = 90.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  SUN R 180 P 176 $\beta = -34$	INRTL R=151.74 P=327.24 Y= 53.67  RA= 241.802 DEC= -20.918S	-XSI
43 010/16:17:00 M 20:48  331/13:26:59 G 30:47	M50 (CALC) INRTL R = 145.00 MNVR P = 291.00 PYR Y = 34.00  MNVR A1/AUTO/VERN HOLD (same)	RATE 0.2000 DB AT 1.000 DB RT 0.020  SUN R 90 P 150 $\beta = -35$	+Y PYR R = 359.84 P = 0.49 Y = 29.78  TCWIN 010/16:22:29 M 331/13:32:28 G	COMM
44 010/18:22:00 M 26:03  331/15:31:59 G 36:02	M50 (CALC) INRTL R = 144.00 MNVR P = 184.00 PYR Y = 325.00  MNVR TRN/AUTO/PRI HOLD (same)	RATE 0.5000 DB AT 3.50 DB RT 0.20  SUN R 85 P 36 $\beta = -35$	+X PYR R = 0.32 P = 196.42 Y = 359.94  LVLH 010/18:22:00 M 331/15:31:59 G	D/O BURN Retro Head Down Dual OMS  KSC TIG 10/18:42