Maneuver Acceptance Committee : Pre- Apogee Delta-V 1 Checklist

C. Reno

Last Update 6/6/11

Attendees : Nathan, John S, Ryan, Jim, Robert, Marissa, John Carrico, Dave, Mark, Tim, Bret, Jeff, Zach Greenberg, Lisa

App-roved	By	Parameter	Info on Page	Limits	Value/ Filename
	FDG	Repointing Vector Validation	8-9	N/A	0.19 degrees in plane 0.12 out of plane
	FDG	Current OD Uncertainty	7, 14	Within ground station FOV for post ADV1 passes	0.3 (apo), 0.9 (per)
	MOC	SAP		Contacts Still Valid	APL and ADV1 Contact has changed. ADV1 has a shortened view period. End time is 06/08 20:38:50 vs original 06/08 21:00 APL shows a D/L of 2k only
	MOC	USN Coverage for ADV1		Available at time of MAC (can be waivered)	
	FDG	No Burn Trajectory	13		
	MOM	Time of ADV1 (6/8 2000 UTC)		In viable viewperiod	
	FDG	Duration of Burn (600s)		600s - no tolerance	
	MOC	ADV1 ATS		N/A	IBEX_DV1_June_8_v003.scr
	MOC	Contact ATS		<240 commands onboard	IBEX_2011_6_8_june11Contacts_v001
	SYS, ACS, HPS, MOC, MOM, PM, ISOC, FDG	Approved Delta-V ATS (prior to MAC)		N/A	MOC Approve Tank heater set points post maneuver have been changed to burn +30 minutes As per systems recommendation
	ACS	ACS TLM (from contact before MAC)	23	GREEN	Green
	HPS	HPS TLM (from contact before MAC)	19-21,28	GREEN	Green
	EPS	EPS TLM (from contact before MAC)	25-27	GREEN	Green
	SYS	SCB TLM (from contact before MAC)	22,24,	GREEN	Green
	SYS	Temperature Plots	29		
	MOC, FDG, SYS, EPS, ACS, HPS	All files posted to SFTP (prior to MAC) Charts, screen captures Tpages, ATS, etc.	Yes		

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S/C State as of pass prior to MAC:

Sun Angle __23.1___ Post-Maneuver Expected Sun Angle __23__ tol +/- 1 degree (quaternions)
Post- Repointing Spin Rate ___4.18__ Post-Maneuver Expected Spin Rate _4.15 - 4.2_ standard rpm range

Average pointing vector : x=0.365055 y=0.632879 z=0.682788
Error (in plane) : 0.19
Error (out of plane) : 0.11
Total error : 0.215

Repointing Maneuver Success Criteria :

Maneuver Completed within Allotted time	____Y___
End of burn pressure within limits	____Y___ (no change)
Cat bed heaters on & off	____Y___
Nutation damping pulses	____N/A___
Spin down pulses	____N___

Post- Spin Up Spin Rate __21.18_____ Post-Maneuver Expected Spin Rate ___22_____ tol. +/- 1 rpm

Spin Up Success Criteria

Correct polarity	__Y_____
Maneuver Completed within Allotted time	__Y_____
End of burn pressure within limits	__Y_____
Cat bed heaters on & off	__Y_____
Nutation damping pulses	__N_____

SCB State __HK
CEU Mode __Off
FC Mode ___Mission
ACE Mode ___High Rate
EPS Mode __Normal
Star Tracker ___Off
ACS Low Rate Sensor __N/A_____

Fuel used Table : Grey boxes do not have meaningful values - leave blank * Minimal accuracy

Immediately before/after maneuver	Tank 1 Pres (SYS) psi	Tank 1 Temp (SYS) °C	Tank 2 Pressure (SYS) psi	Tank 2 Temp (SYS) °C	Delta-V (FDG) m/s	Fuel Use (SYS, FDG, MT) kg	Fuel Remaining (SYS, FDG, MT) kg

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	Est	Obs	Est	Obs	Est	Obs	Est	Obs	Est	Recon	OD	Recon	OD*	Est	Obs
Pre-Repointing		173.43		18.82		173.14		20.05							16.41
Post-Repointing	173.43	172..85	18.82	18.33	173.14	172.75	20.05	19.31				0.004		16.41	16.514
Pre-Spin Up	173.43	172..85	18.82	18.33	173.14	172.75	20.05	19.31						16.41	16.514
Post-Spin Up MT - top **JG - bottom**	171.66	172.55 **172.7**	18.82	18.9 **19.07**	171.35	172.55 **172.41**	20.05	20.7 **21.29**				0.197		16.21	16.408 **16.27**
Pre-ADV1 MT - top **JG - bottom**	172.18 **172.70**		18.585 **19.07**		171.88 **172.41**		19.696 **21.29**							16.403 **16.27**	
Post-ADV1	140.28		18.82		140.28		20.05		103.1			4.17		12.04	
Pre-ADV2	140.28		18.82		140.28		20.05							12.04	
Post-ADV2	121.24		18.82		121.24		20.05		94.16			3.67		8.37	
Pre-ADV3	121.24		18.82		121.24		20.05							8.37	
Post-ADV3	111.0		18.82		111.0		20.05		67.62			2.52		5.85	
Pre-Spin Down	111.0		18.82		111.0		20.05							5.85	
Post-Spin Down	110.01		18.82		110.01		20.05		X			0.197		5.65	
Pre-Repointing	110.01		18.82		110.01		20.05							5.65	
Post-Repointing	110.0		18.82		110.0		20.05		X			0.006		5.65	

Table Change History (date, person, change) :

Approvals By :

___Y__ Dave McComas __Y___ Robert Lockwood ___Y__ John Carrico

Maneuver Acceptance Committee : Pre- Apogee Delta-V 1 Checklist

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Last Update 6/6/11

Attendees : Nathan, John S, Ryan, Jim, Robert, Marissa, John Carrico, Dave, Mark, Tim, Bret, Jeff, Zach Greenberg, Lisa

__Y___ John Scherrer
__Y___ Nathan Schwadron
__Y___ Chelle Reno
__Y___ Mark Tapley
__Y___ Ryan Tyler
__Y___ Bret Hautamaki
__Y___ Jim Bobbett
__Y___ Jeff Godward
__Y___ Tim Perry
__Y___ Sheral Wesley
___Y__ Lisa Policastri
_____ Ryan Lebois
___Y__ Marissa Intelisano

IBEX Operations
Pre-ADV1 Status

Flight Dynamics Group
IBEX.FDG@AppliedDefense.com
John Carrico, Lisa Policastri, Ryan Lebois, Marissa Intelisano

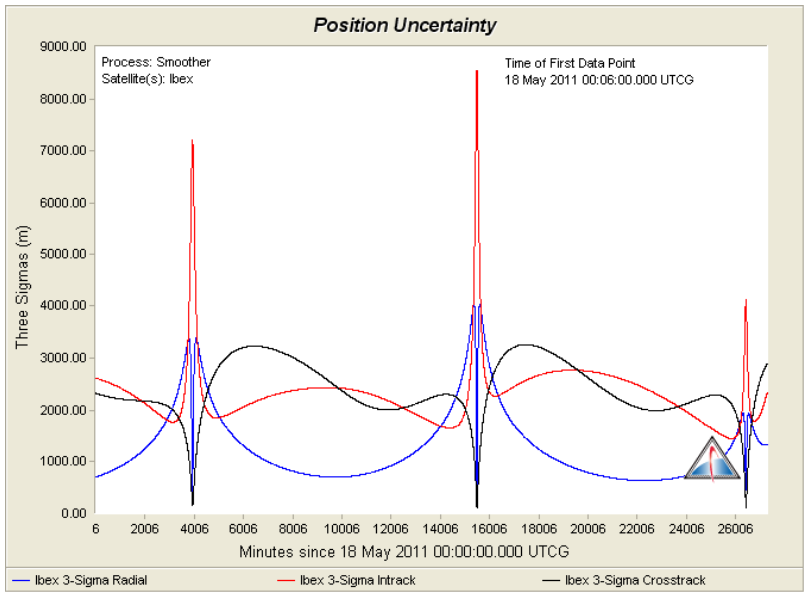
6 Jun 2011
2011 Day 157

Contents

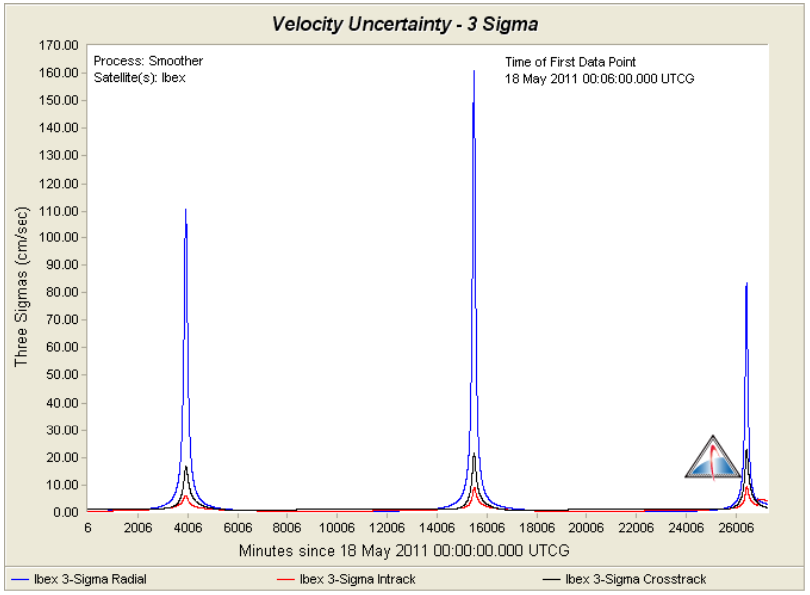
- Orbit Status
- Re-point/Spin-Up Status
- Shadow Uncertainty Predictions
- Current Burn Plan
- Fuel Estimate

Current Orbit Uncertainty

3-sigma Position Uncertainty



3-sigma Velocity Uncertainty



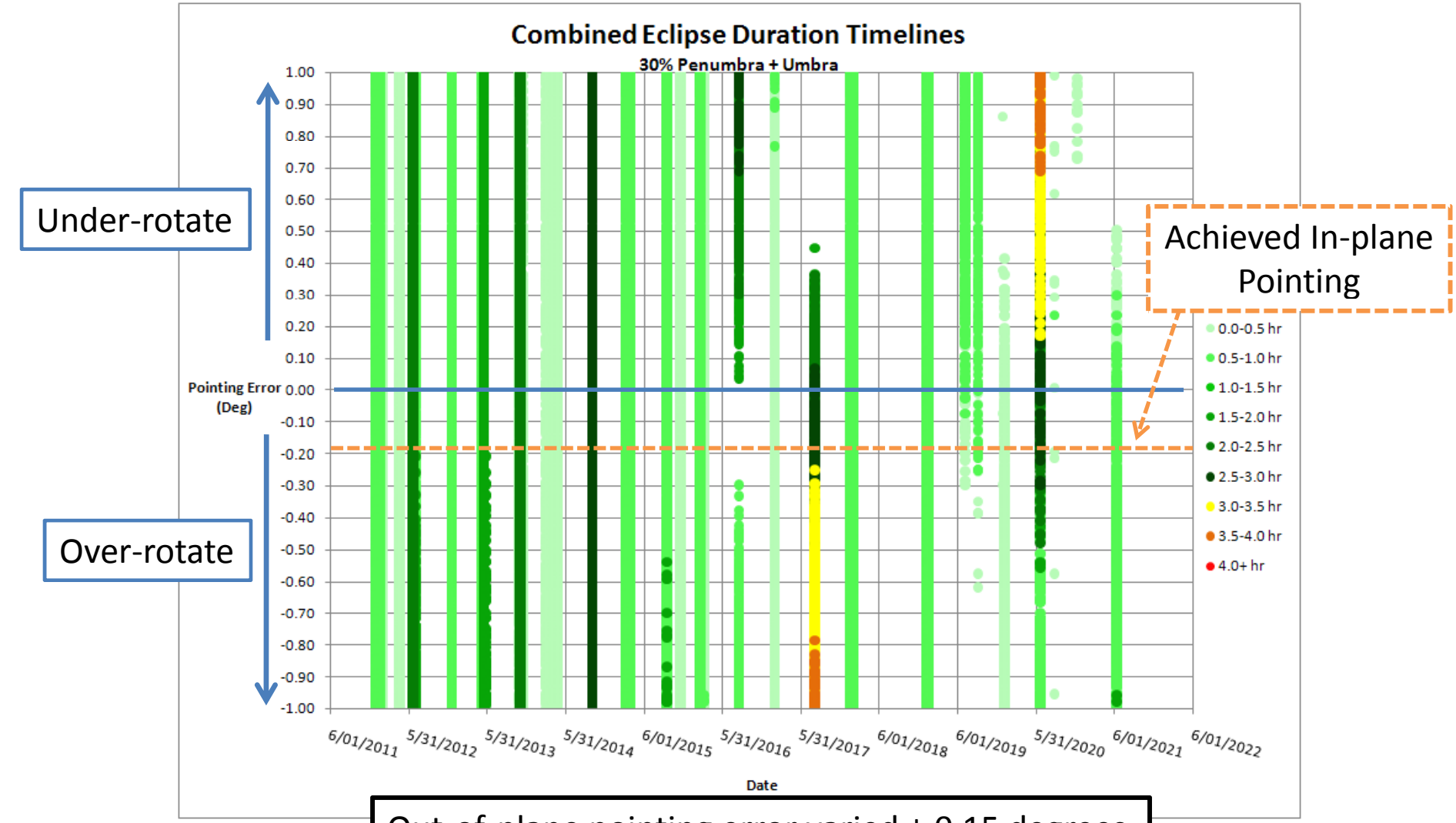
- The definitive 3-sigma uncertainty values are nominal
  - In-track 3-sigma position uncertainty at apogee ~ 3km
  - In-track 3-sigma position uncertainty at perigee ~ 9km

Maneuver Pointing

- **Target J2000 Spin Axis:**
  - X = 0.367310
  - Y = 0.634537
  - Z = 0.680034
- **Achieved J2000 Spin Axis:**
  - X = 0.3650257
  - Y = 0.6328483
  - Z = 0.6828318

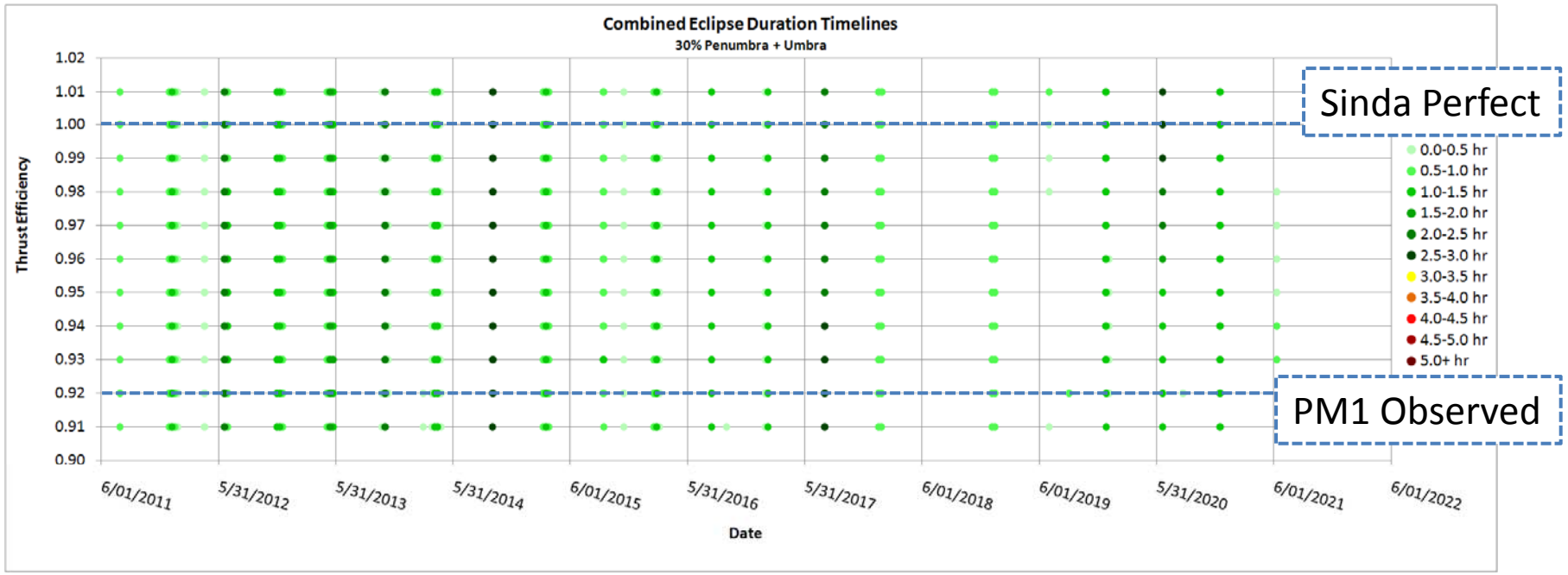
- In-plane difference = 0.19 deg (over-rotate)
- Out-of-plane difference= 0.12 deg

Monte Carlo - Pointing



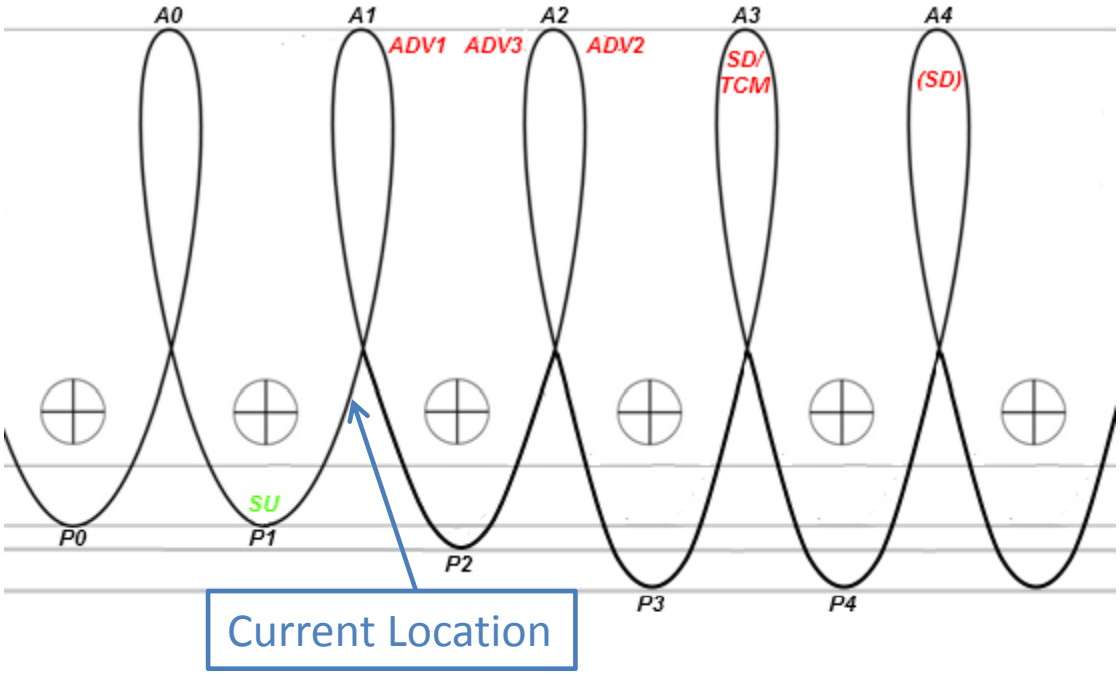
Out-of-plane pointing error varied ± 0.15 degrees

Engine Performance



- Predicted engine performance range of 91% - 101% (of Sinda performance)
  - All performance levels show shadows < 3 hours for 10 years
  - Assumes calibration and re-plan after ADV1

Current Burn Plan



- ADV1 Ignition = 08 Jun 2011 20:00 UTCG } A1
- ADV2 Ignition = 16 Jun 2011 19:00 UTCG } A2
- ADV3 Ignition = 17 Jun 2011 11:00 UTCG } A2
- Spin-down 24 Jun 2011 09:00 UTCG } A3
- Re-point 24 Jun 2011 15:30 UTCG } A3

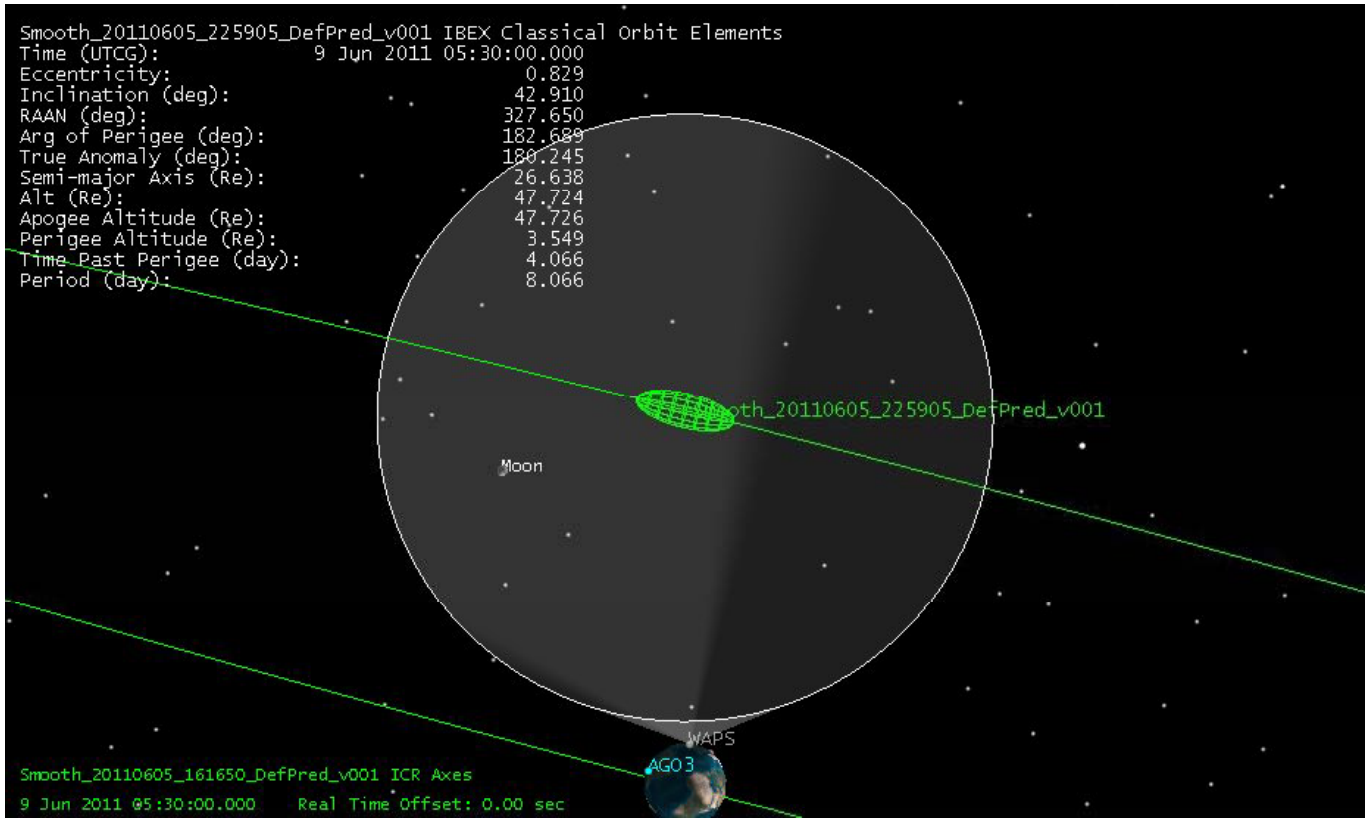
Last Orbit

- Apogee 0 (A0)
  - A0 time: 01 Jun 2011 13:20 UTCG
  - A0 radius: 48.46 Re
- Perigee 1 (P1)
  - P1 time: 5 Jun 2011 08:22 UTCG
  - P1 radius: 2.71 Re

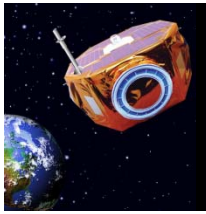
Next Orbit

- Apogee 1 (A1)
  - A1 time: 9 Jun 2011 04:42 UTCG
  - A1 radius: 48.73 Re
- Perigee 2 (P2)
  - P2 time: 13 Jun 2011 05:39 UTCG
  - P2 radius: 4.59 Re

Acquisition Check



- Image shown at the time of first AOS post-ADV1
  - APL – 09 Jun 2011 05:30 UTCG
- The predicted orbit uncertainty post-ADV1 (with 5% magnitude uncertainty) is entirely within the station FOV



Observed Tank Parameters

- **Observed (HPS):**
  - Post-Spinup Fuel Remaining = 16.408 kg
  - Post-Spinup Avg Tank Pressure = 172.55 psi
- **Sinda Initial Conditions:**
  - Pre-ADV1 Fuel Remaining = 16.26 kg
  - Pre-ADV1 Avg Tank Pressure = 170.8 psi

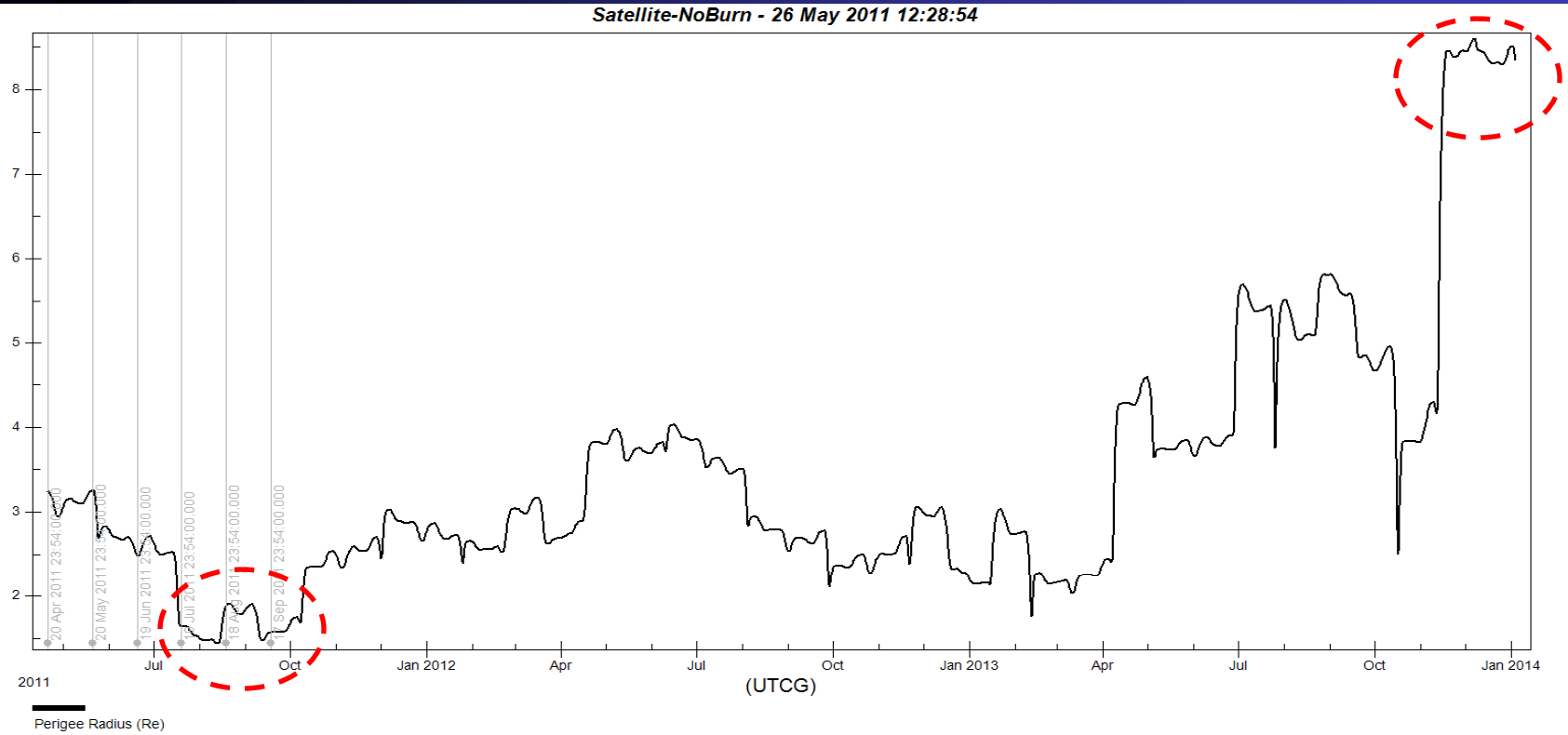
- Sensitivity Analysis by Steve Green indicates the 1.75 psi pressure difference will cause ~ 0.52% higher performance of ADV1 (delta-V)
  - Some offset due to the higher than expected fuel mass

Current Fuel Estimate

State	Fuel Mass (kg)	Wet Mass (kg)
Pre-ADV1	16.257	94.897
Pre-ADV2	12.081	90.721
Pre-ADV3	8.412	87.052
Pre-Spindown	5.844	84.484
Pre-Repoint	5.604	84.244
Final	**5.586**	**84.226**

- First line indicates the current fuel estimate used for planning
  - Differs by 0.148 kg from HPS estimate, but matches last run of Sinda model
- Yellow lines indicate estimated values throughout the burn sequence

No Burn Sequence



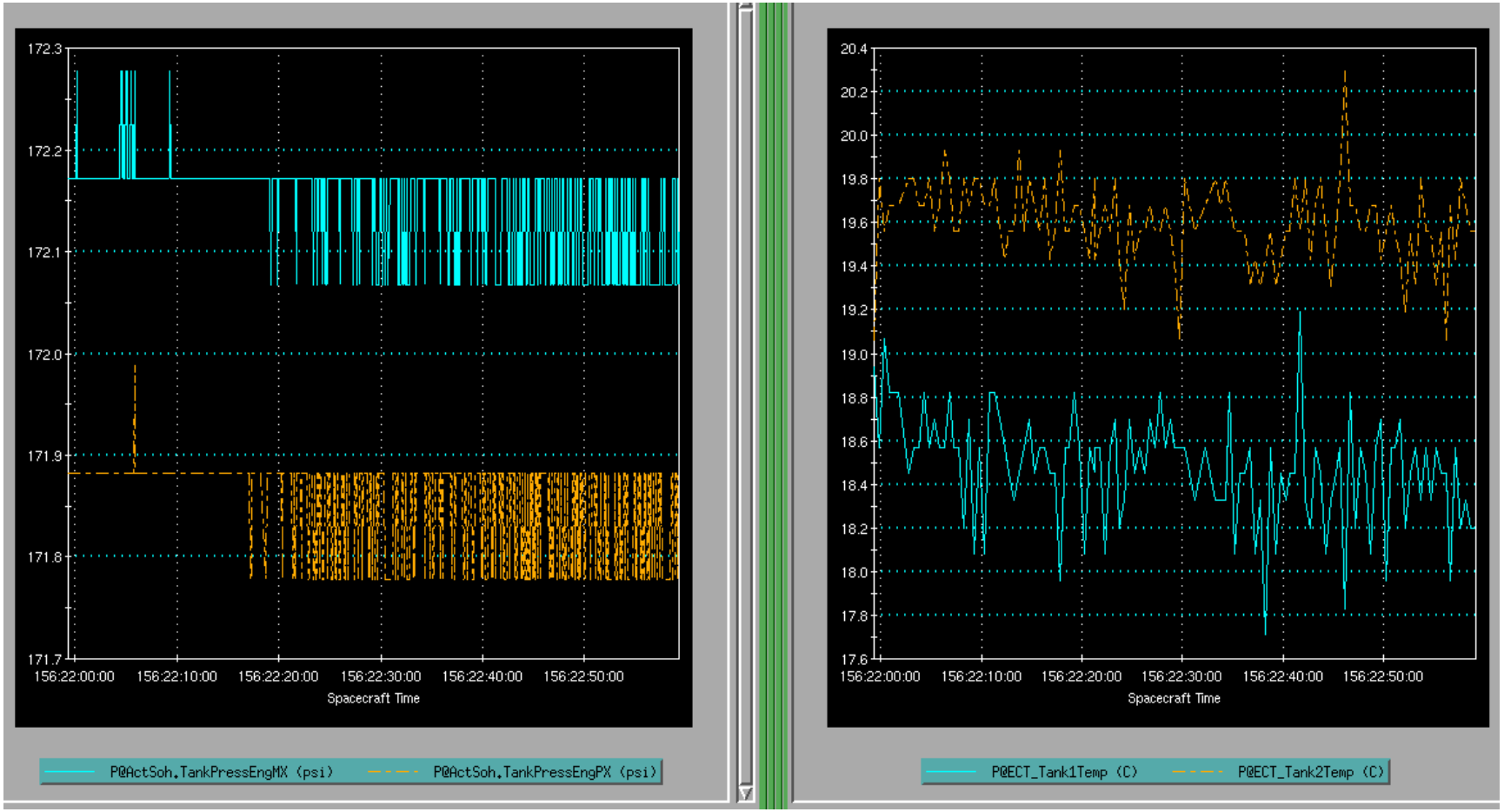
- IBEX experiences some perigees below 0.5 Re altitude in Aug – Sep 2011
- IBEX experiences a 6.98 hour eclipse (Umbra + 30% Penumbra) in Sep 2012
- IBEX begins to exit Earth orbit in January 2014

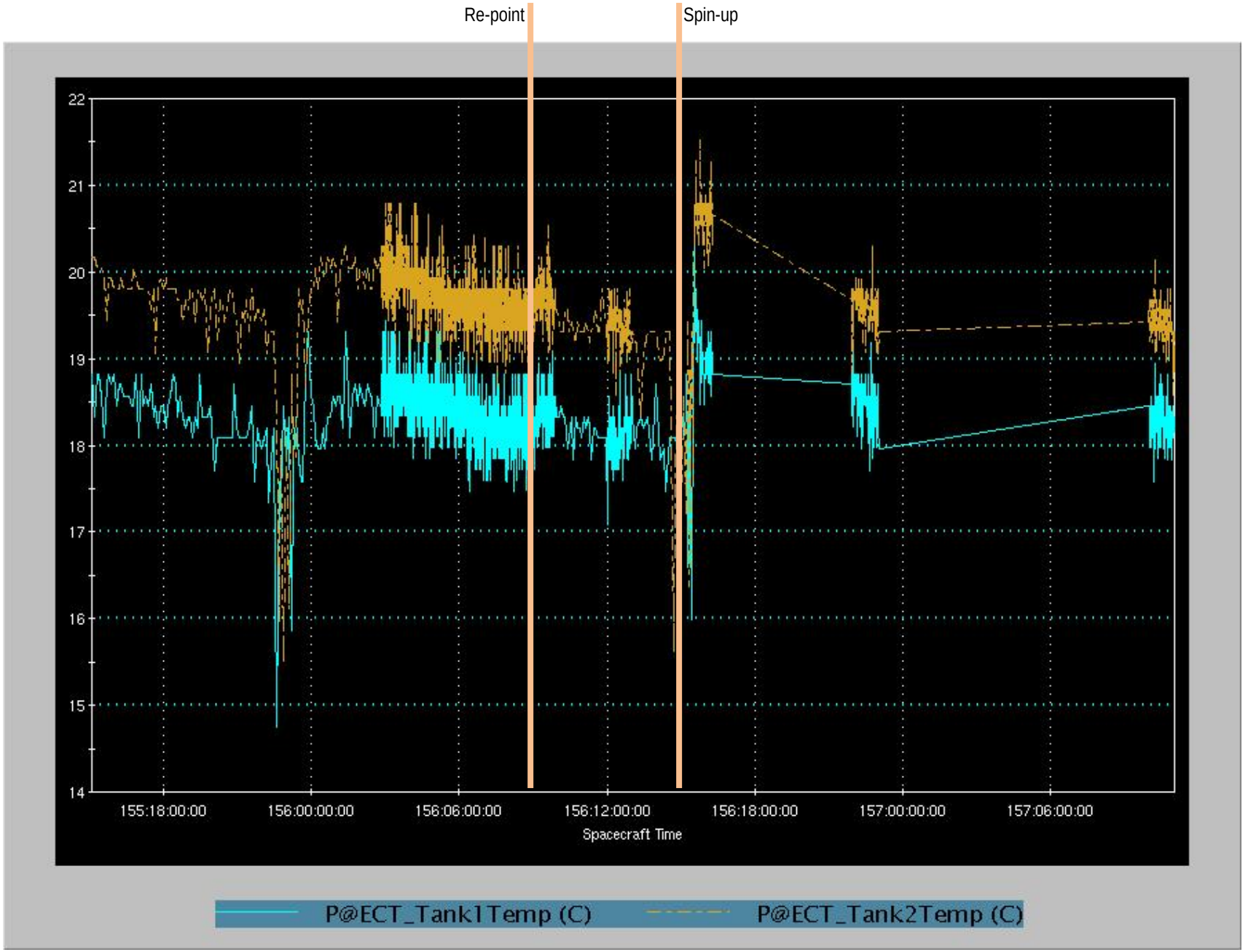
Same as Pre-Spinup

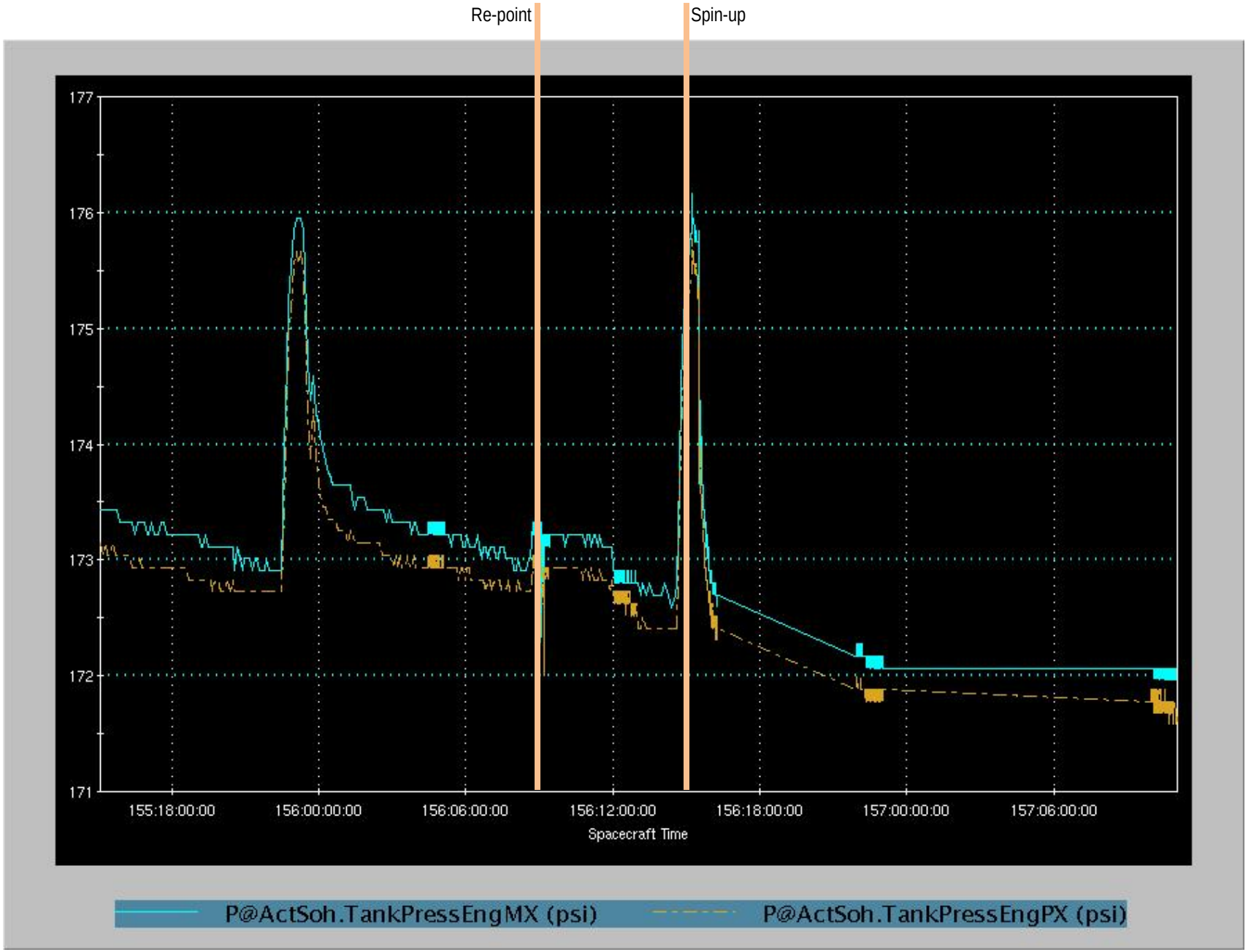
Summary

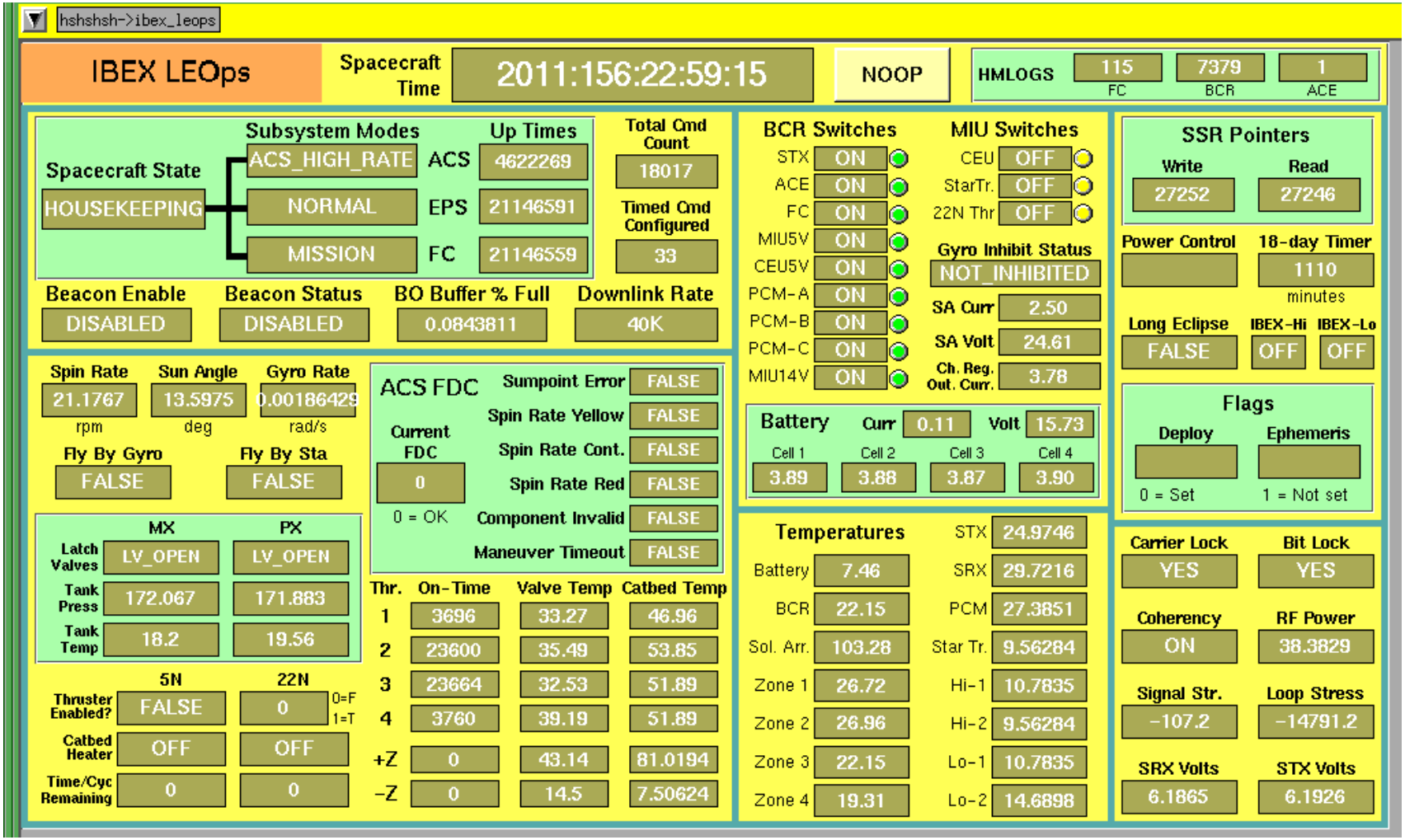
- The current orbit meets design criteria to continue as planned
- The current burn plan specifies the following:

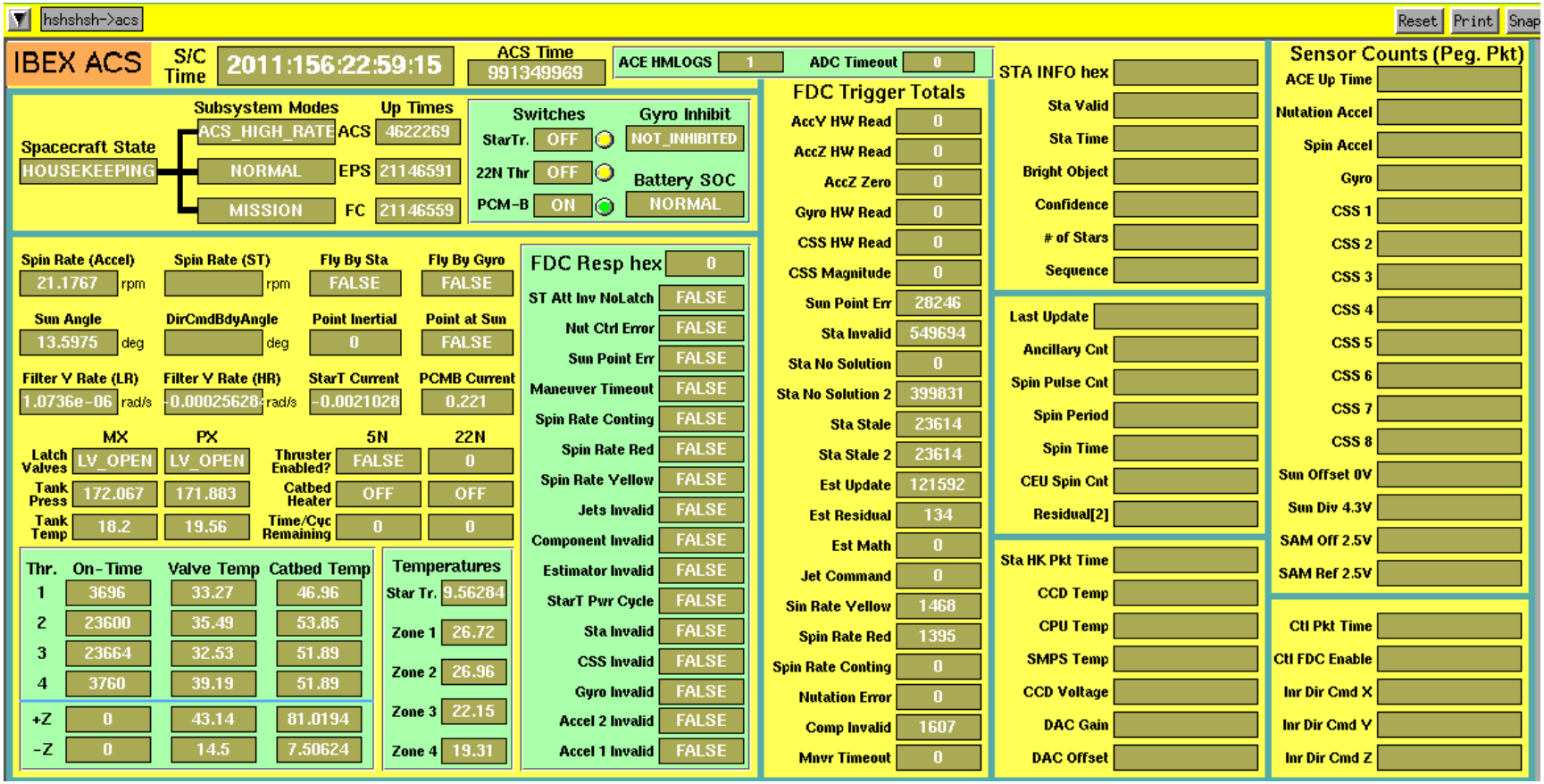
o **ADV1 Ignition**	**= 08 Jun 2011 20:00 UTCG**	**Duration = 600 sec**
o ADV2 Ignition	= 16 Jun 2011 19:00 UTCG	Duration = 600 sec
o ADV3 Ignition	= 17 Jun 2011 11:00 UTCG	Duration = 459.656 sec
o Spin-down	= 24 Jun 2011 09:00 UTCG	
o Re-point	= 26 Jun 2011 15:30 UTCG	

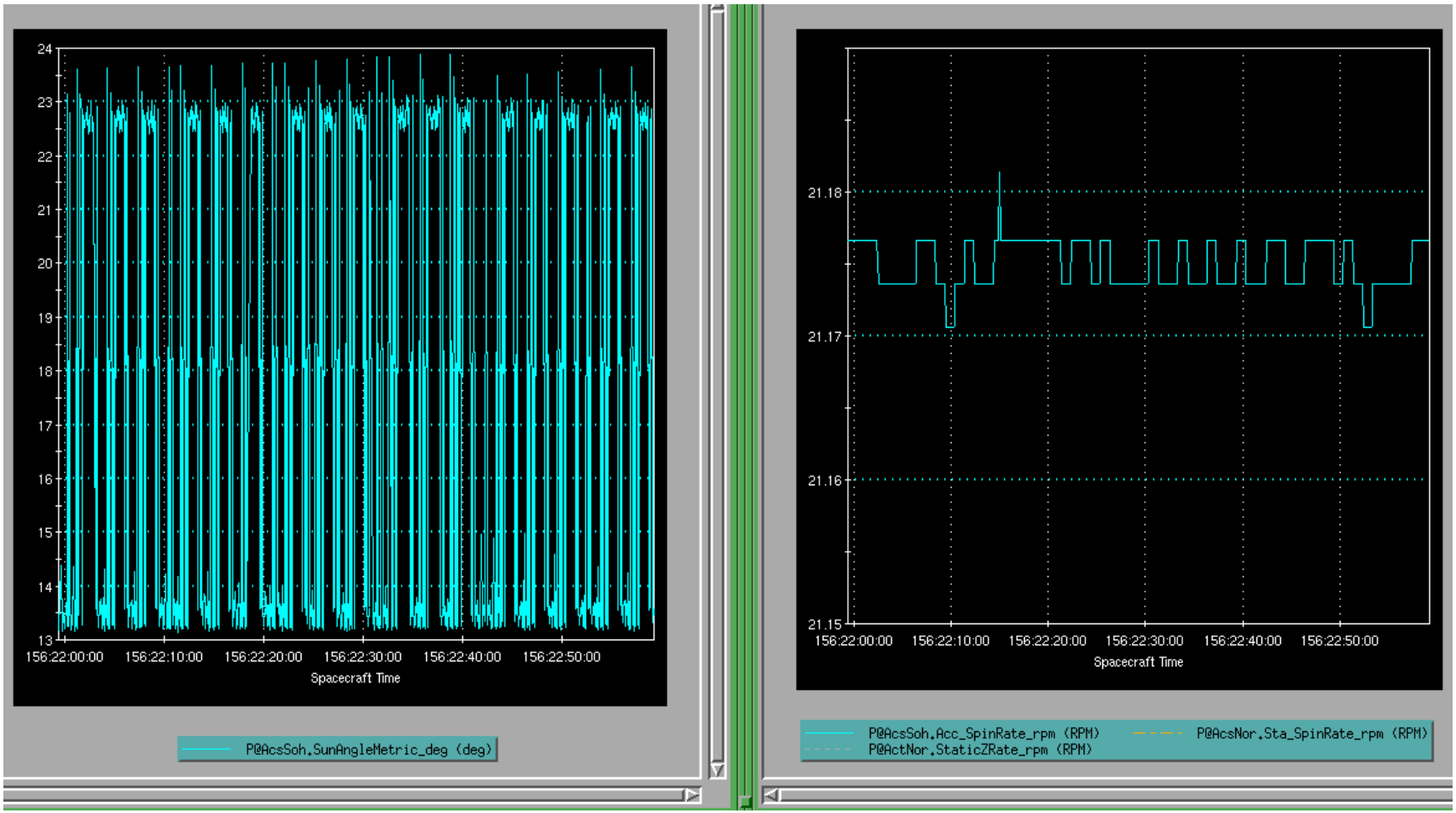

172.3
172.2
172.1
172.0
171.9
171.8
171.7
156:22:00:00
156:22:10:00
156:22:20:00
156:22:30:00
156:22:40:00
156:22:50:00
Spacecraft Time
P@ActSoh.TankPressEngMX (psi)
P@ActSoh.TankPressEngPX (psi)
20.4
20.2
20.0
19.8
19.6
19.4
19.2
19.0
18.8
18.6
18.4
18.2
18.0
17.8
17.6
156:22:00:00
156:22:10:00
156:22:20:00
156:22:30:00
156:22:40:00
156:22:50:00
Spacecraft Time
P@ECT_Tank1Temp (C)
P@ECT_Tank2Temp (C)

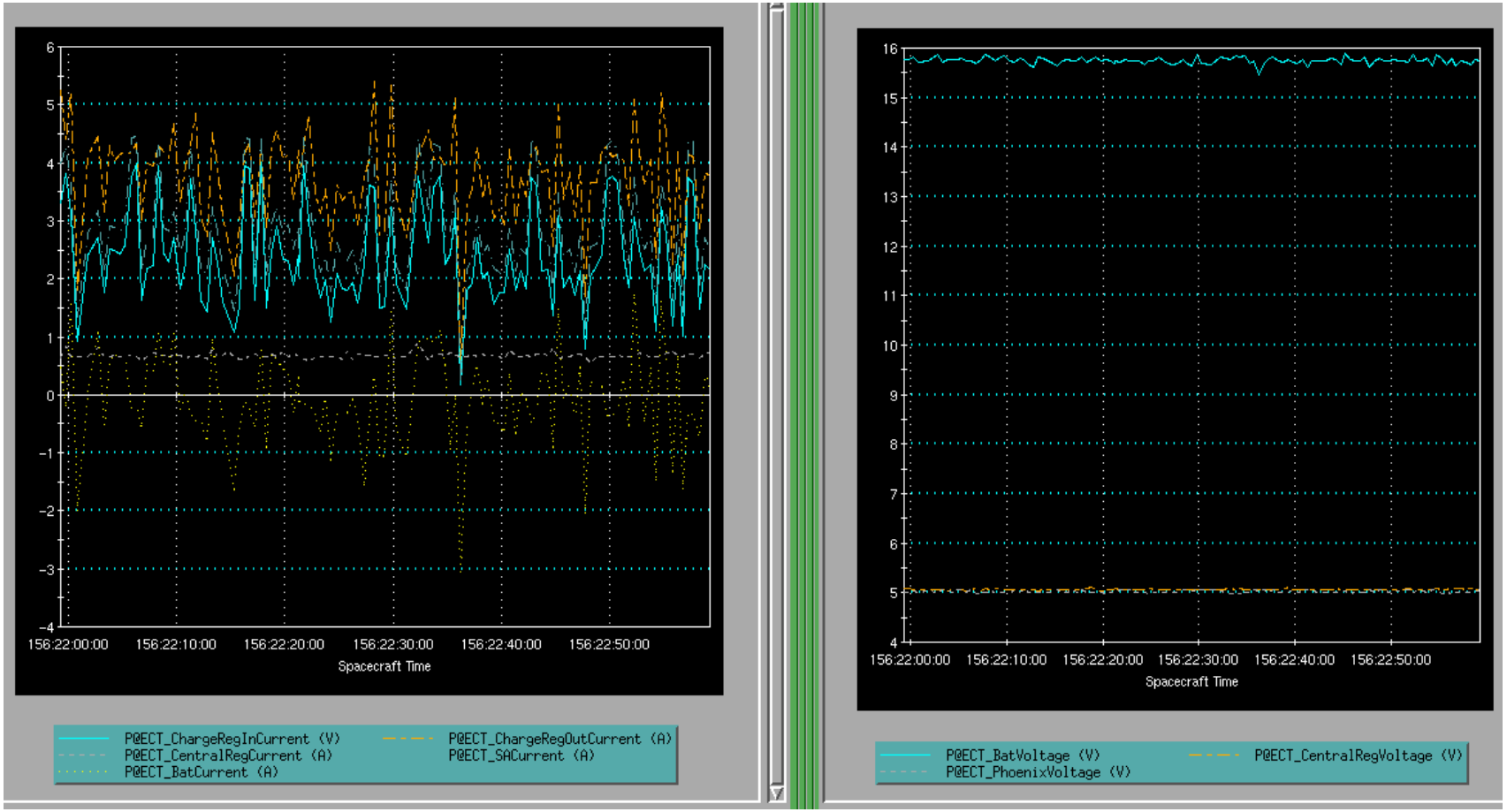

Re-point
Spin-up
22
21
20
19
18
17
16
15
14
155:18:00:00
156:00:00:00
156:06:00:00
156:12:00:00
156:18:00:00
157:00:00:00
157:06:00:00
Spacecraft Time
P@ECT_Tank1Temp (C)
P@ECT_Tank2Temp (C)

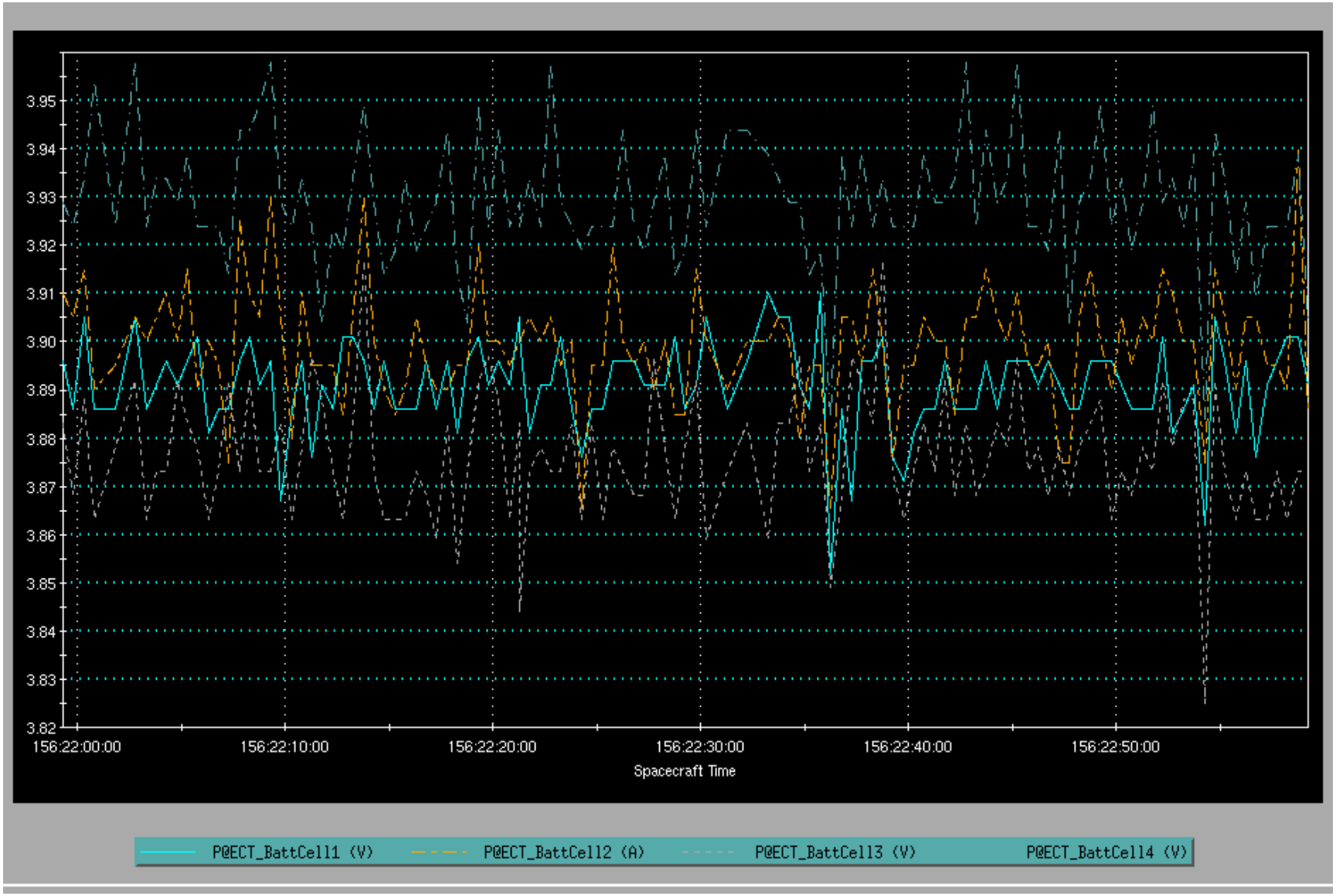

Re-point
Spin-up
177
176
175
174
173
172
171
155:18:00:00
156:00:00:00
156:06:00:00
156:12:00:00
156:18:00:00
157:00:00:00
157:06:00:00
Spacecraft Time
P@ActSoh.TankPressEngMX (psi)
P@ActSoh.TankPressEngPX (psi)

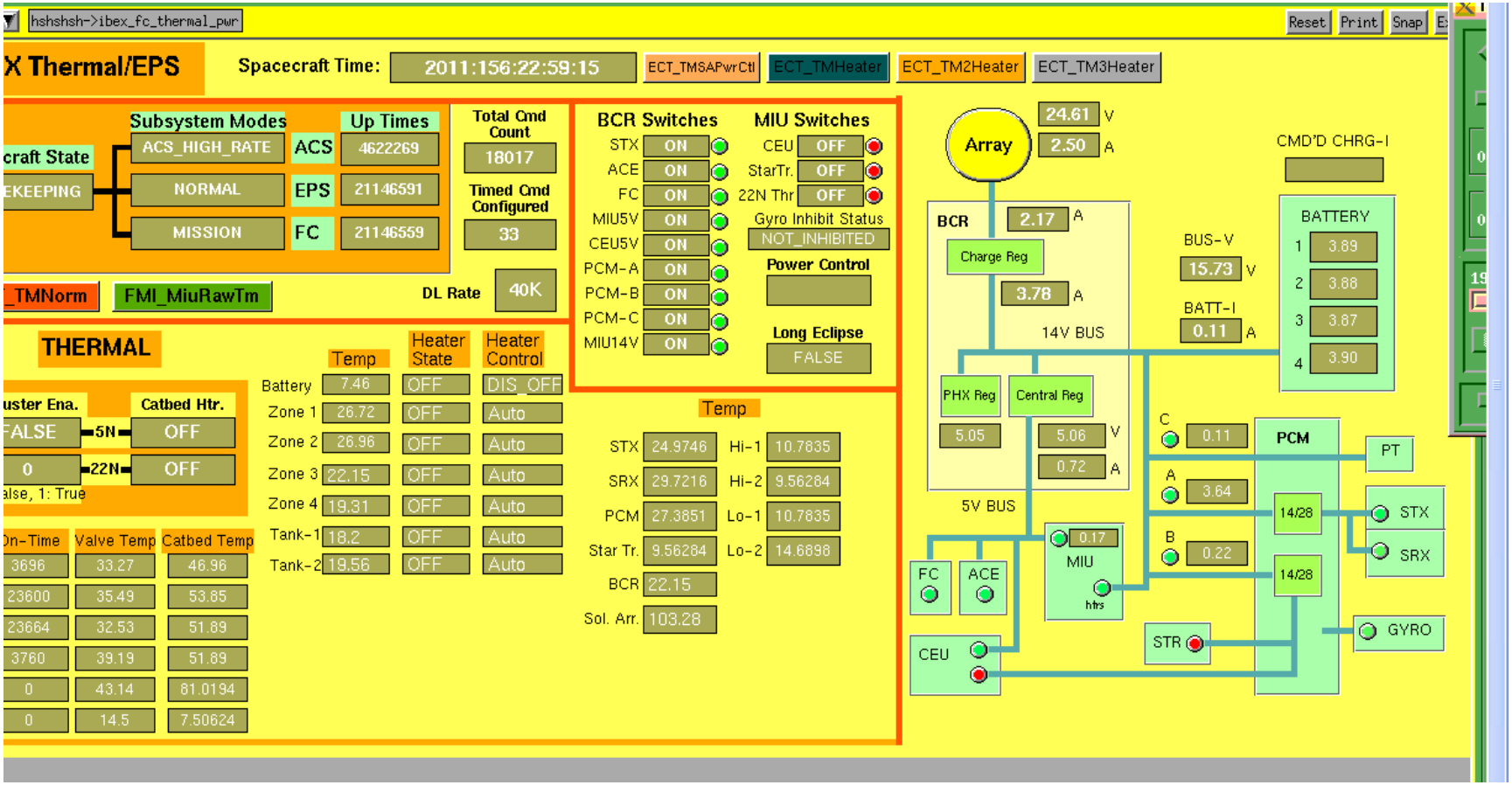

hshshsh->ibex_leops
IBEX LEOps
Spacecraft Time
2011:156:22:59:15
NOOP
HMLOGS
115
FC
7379
BCR
1
ACE
Subsystem Modes
Up Times
Spacecraft State
HOUSEKEEPING
ACS_HIGH_RATE
ACS
4622269
NORMAL
EPS
21146591
MISSION
FC
21146559
Total Cmd Count
18017
Timed Cmd Configured
33
Beacon Enable
DISABLED
Beacon Status
DISABLED
BO Buffer % Full
0.0843811
Downlink Rate
40K
Spin Rate
21.1767
rpm
Sun Angle
13.5975
deg
Gyro Rate
0.00186429
rad/s
Fly By Gyro
FALSE
Fly By Sta
FALSE
MX
PX
Latch Valves
LV_OPEN
LV_OPEN
Tank Press
172.067
171.883
Tank Temp
18.2
19.56
5N
22N
Thruster Enabled?
FALSE
0
0=F 1=T
Catbed Heater
OFF
OFF
Time/Cyc Remaining
0
0
ACS FDC
Current FDC
0
0 = OK
Sumpoint Error
FALSE
Spin Rate Yellow
FALSE
Spin Rate Cont.
FALSE
Spin Rate Red
FALSE
Component Invalid
FALSE
Maneuver Timeout
FALSE
Thr.
On-Time
Valve Temp
Catbed Temp
1
3696
33.27
46.96
2
23600
35.49
53.85
3
23664
32.53
51.89
4
3760
39.19
51.89
+Z
0
43.14
81.0194
-Z
0
14.5
7.50624
BCR Switches
STX ON
ACE ON
FC ON
MIU5V ON
CEU5V ON
PCM-A ON
PCM-B ON
PCM-C ON
MIU14V ON
MIU Switches
CEU OFF
StarTr. OFF
22N Thr OFF
Gyro Inhibit Status
NOT_INHIBITED
SA Curr
2.50
SA Volt
24.61
Ch. Reg. Out. Curr.
3.78
Battery
Curr
0.11
Volt
15.73
Cell 1
3.89
Cell 2
3.88
Cell 3
3.87
Cell 4
3.90
Temperatures
Battery
7.46
BCR
22.15
Sol. Arr.
103.28
Zone 1
26.72
Zone 2
26.96
Zone 3
22.15
Zone 4
19.31
STX
24.9746
SRX
29.7216
PCM
27.3851
Star Tr.
9.56284
Hi-1
10.7835
Hi-2
9.56284
Lo-1
10.7835
Lo-2
14.6898
SSR Pointers
Write
27252
Read
27246
Power Control
18-day Timer
1110
minutes
Long Eclipse
FALSE
IBEX-Hi
OFF
IBEX-Lo
OFF
Flags
Deploy
Ephemeris
0 = Set
1 = Not set
Carrier Lock
YES
Bit Lock
YES
Coherency
ON
RF Power
38.3829
Signal Str.
-107.2
Loop Stress
-14791.2
SRX Volts
6.1865
STX Volts
6.1926

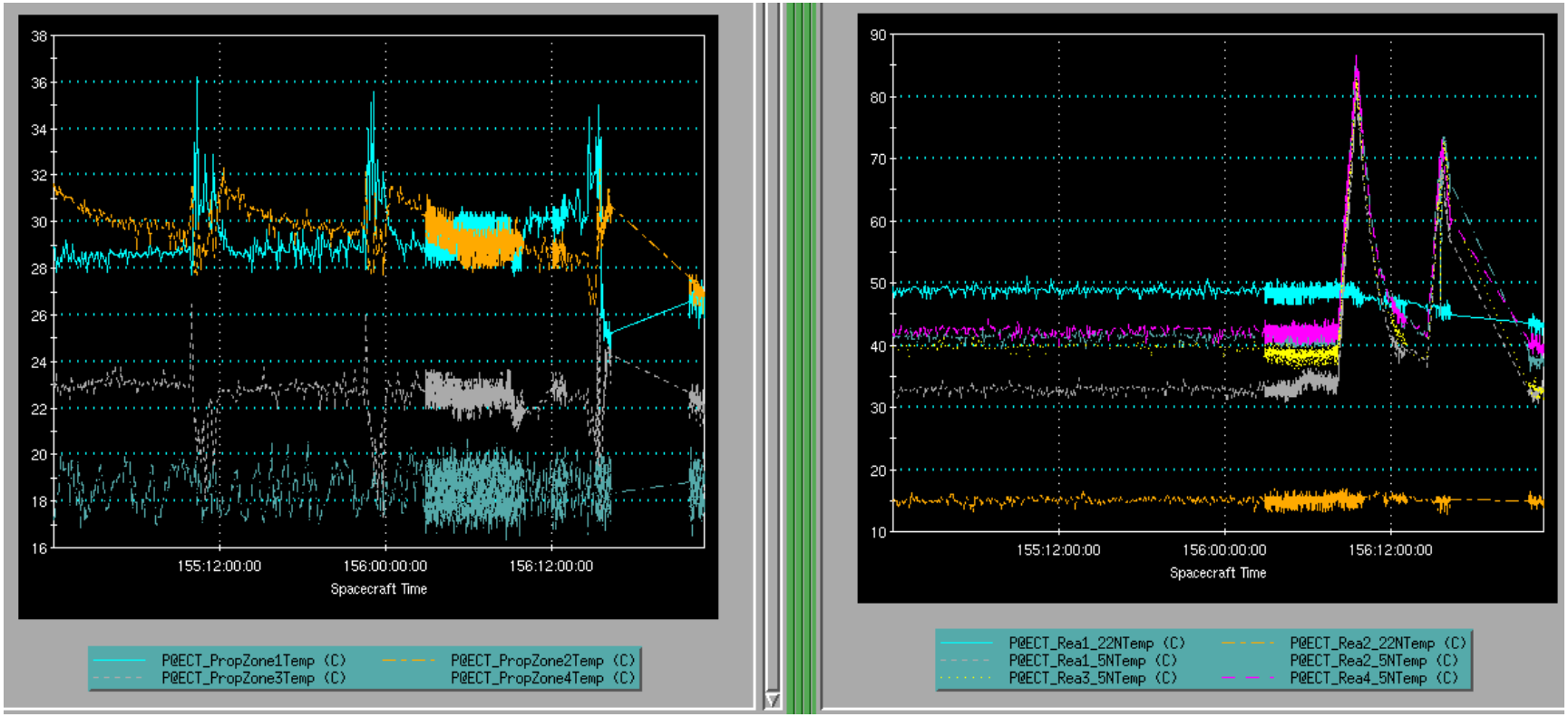

hshshsh->acs
Reset
Print
Snap
IBEX ACS
S/C Time
2011:156:22:59:15
ACS Time
991349969
ACE HMLOGS
1
ADC Timeout
0
Subsystem Modes
Up Times
Spacecraft State
HOUSEKEEPING
ACS_HIGH_RATE
ACS
4622269
NORMAL
EPS
21146591
MISSION
FC
21146559
Switches
Gyro Inhibit
StarTr.
OFF
NOT_INHIBITED
22N Thr
OFF
Battery SOC
PCM-B
ON
NORMAL
Spin Rate (Accel)
21.1767
rpm
Spin Rate (ST)
rpm
Fly By Sta
FALSE
Fly By Gyro
FALSE
Sun Angle
13.5975
deg
DirCmdBdyAngle
deg
Point Inertial
0
Point at Sun
FALSE
Filter V Rate (LR)
1.0736e-06
rad/s
Filter V Rate (HR)
-0.00025628
rad/s
StarT Current
-0.0021028
PCMB Current
0.221
MX
PX
5N
22N
Latch Valves
LV_OPEN
LV_OPEN
Thruster Enabled?
FALSE
0
Tank Press
172.067
171.883
Catbed Heater
OFF
OFF
Tank Temp
18.2
19.56
Time/Cyc Remaining
0
0
Thr.
On-Time
Valve Temp
Catbed Temp
1
3696
33.27
46.96
2
23600
35.49
53.85
3
23664
32.53
51.89
4
3760
39.19
51.89
+Z
0
43.14
81.0194
-Z
0
14.5
7.50624
Temperatures
Star Tr.
9.56284
Zone 1
26.72
Zone 2
26.96
Zone 3
22.15
Zone 4
19.31
FDC Resp hex
0
ST Att Inv NoLatch
FALSE
Nut Ctrl Error
FALSE
Sun Point Err
FALSE
Maneuver Timeout
FALSE
Spin Rate Conting
FALSE
Spin Rate Red
FALSE
Spin Rate Yellow
FALSE
Jets Invalid
FALSE
Component Invalid
FALSE
Estimator Invalid
FALSE
StarT Pwr Cycle
FALSE
Sta Invalid
FALSE
CSS Invalid
FALSE
Gyro Invalid
FALSE
Accel 2 Invalid
FALSE
Accel 1 Invalid
FALSE
FDC Trigger Totals
AccY HW Read
0
AccZ HW Read
0
AccZ Zero
0
Gyro HW Read
0
CSS HW Read
0
CSS Magnitude
0
Sun Point Err
28246
Sta Invalid
549694
Sta No Solution
0
Sta No Solution 2
399831
Sta Stale
23614
Sta Stale 2
23614
Est Update
121592
Est Residual
134
Est Math
0
Jet Command
0
Sin Rate Yellow
1468
Spin Rate Red
1395
Spin Rate Conting
0
Nutation Error
0
Comp Invalid
1607
Mnvr Timeout
0
STA INFO hex
Sta Valid
Sta Time
Bright Object
Confidence
# of Stars
Sequence
Last Update
Ancillary Cnt
Spin Pulse Cnt
Spin Period
Spin Time
CEU Spin Cnt
Residual[2]
Sta HK Pkt Time
CCD Temp
CPU Temp
SMPS Temp
CCD Voltage
DAC Gain
DAC Offset
Sensor Counts (Peg. Pkt)
ACE Up Time
Nutation Accel
Spin Accel
Gyro
CSS 1
CSS 2
CSS 3
CSS 4
CSS 5
CSS 6
CSS 7
CSS 8
Sun Offset 0V
Sun Div 4.3V
SAM Off 2.5V
SAM Ref 2.5V
Ctl Pkt Time
Ctl FDC Enable
Inr Dir Cmd X
Inr Dir Cmd Y
Inr Dir Cmd Z

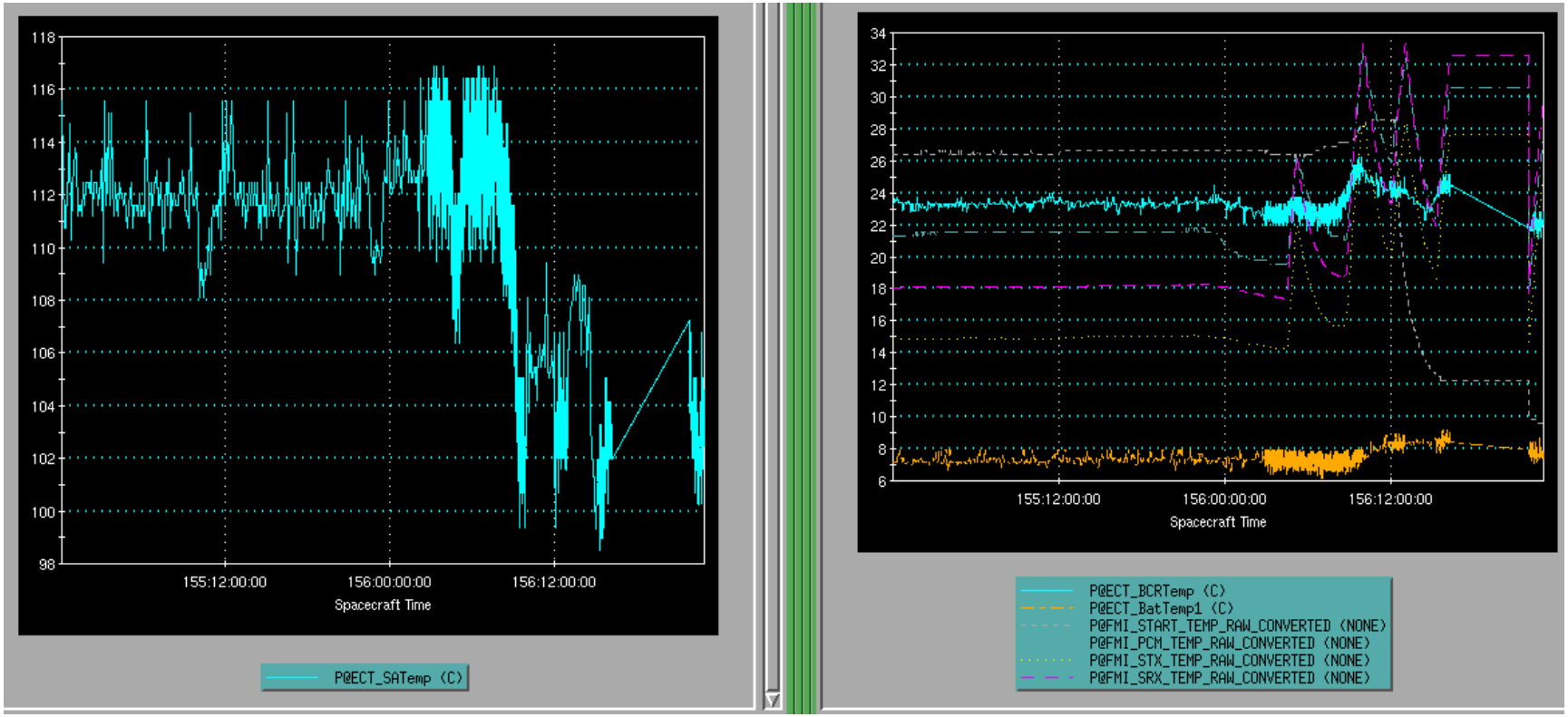

24
23
22
21
20
19
18
17
16
15
14
13
156:22:00:00
156:22:10:00
156:22:20:00
156:22:30:00
156:22:40:00
156:22:50:00
Spacecraft Time
P@AcsSoh.SunAngleMetric_deg (deg)
21.18
21.17
21.16
21.15
156:22:00:00
156:22:10:00
156:22:20:00
156:22:30:00
156:22:40:00
156:22:50:00
Spacecraft Time
P@AcsSoh.Acc_SpinRate_rpm (RPM)
P@AcsNor.Sta_SpinRate_rpm (RPM)
P@ActNor.StaticZRate_rpm (RPM)


6
5
4
3
2
1
0
-1
-2
-3
-4
156:22:00:00
156:22:10:00
156:22:20:00
156:22:30:00
156:22:40:00
156:22:50:00
Spacecraft Time
P@ECT_ChargeRegInCurrent (V)
P@ECT_CentralRegCurrent (A)
P@ECT_BatCurrent (A)
P@ECT_ChargeRegOutCurrent (A)
P@ECT_SACurrent (A)
16
15
14
13
12
11
10
9
8
7
6
5
4
156:22:00:00
156:22:10:00
156:22:20:00
156:22:30:00
156:22:40:00
156:22:50:00
Spacecraft Time
P@ECT_BatVoltage (V)
P@ECT_PhoenixVoltage (V)
P@ECT_CentralRegVoltage (V)


3.95
3.94
3.93
3.92
3.91
3.90
3.89
3.88
3.87
3.86
3.85
3.84
3.83
3.82
156:22:00:00
156:22:10:00
156:22:20:00
156:22:30:00
156:22:40:00
156:22:50:00
Spacecraft Time
P@ECT_BattCell1 (V)
P@ECT_BattCell2 (A)
P@ECT_BattCell3 (V)
P@ECT_BattCell4 (V)


hshshsh->ibex_fc_thermal_pwr
Reset
Print
Snap
X Thermal/EPS
Spacecraft Time:
2011:156:22:59:15
ECT_TMSAPwrCtl
ECT_TMHeater
ECT_TM2Heater
ECT_TM3Heater
craft State
EKEEPING
Subsystem Modes
Up Times
ACS_HIGH_RATE
ACS
4622269
NORMAL
EPS
21146591
MISSION
FC
21146559
Total Cmd Count
18017
Timed Cmd Configured
33
DL Rate
40K
_TMNorm
FMI_MiuRawTm
BCR Switches
MIU Switches
STX ON
ACE ON
FC ON
MIU5V ON
CEU5V ON
PCM-A ON
PCM-B ON
PCM-C ON
MIU14V ON
CEU OFF
StarTr. OFF
22N Thr OFF
Gyro Inhibit Status
NOT_INHIBITED
Power Control
Long Eclipse
FALSE
THERMAL
uster Ena.
FALSE
5N
OFF
0
22N
OFF
alse, 1: True
Catbed Htr.
Temp
Heater State
Heater Control
Battery 7.46 OFF DIS_OFF
Zone 1 26.72 OFF Auto
Zone 2 26.96 OFF Auto
Zone 3 22.15 OFF Auto
Zone 4 19.31 OFF Auto
Tank-1 18.2 OFF Auto
Tank-2 19.56 OFF Auto
On-Time
Valve Temp
Catbed Temp
3696 33.27 46.96
23600 35.49 53.85
23664 32.53 51.89
3760 39.19 51.89
0 43.14 81.0194
0 14.5 7.50624
Temp
STX 24.9746
Hi-1 10.7835
SRX 29.7216
Hi-2 9.56284
PCM 27.3851
Lo-1 10.7835
Star Tr. 9.56284
Lo-2 14.6898
BCR 22.15
Sol. Arr. 103.28
Array
24.61 V
2.50 A
BCR
2.17 A
Charge Reg
3.78 A
14V BUS
PHX Reg
5.05
Central Reg
5.06 V
0.72 A
5V BUS
FC
ACE
0.17
MIU
hrs
CEU
STR
BUS-V
15.73 V
BATT-I
0.11 A
CMD'D CHRG-I
BATTERY
1 3.89
2 3.88
3 3.87
4 3.90
C 0.11
PCM
A 3.64
B 0.22
14/28
14/28
PT
STX
SRX
GYRO


38
36
34
32
30
28
26
24
22
20
18
16
155:12:00:00
156:00:00:00
156:12:00:00
Spacecraft Time
P@ECT_PropZone1Temp (C)
P@ECT_PropZone2Temp (C)
P@ECT_PropZone3Temp (C)
P@ECT_PropZone4Temp (C)
90
80
70
60
50
40
30
20
10
155:12:00:00
156:00:00:00
156:12:00:00
Spacecraft Time
P@ECT_Rea1_22NTemp (C)
P@ECT_Rea2_22NTemp (C)
P@ECT_Rea1_5NTemp (C)
P@ECT_Rea2_5NTemp (C)
P@ECT_Rea3_5NTemp (C)
P@ECT_Rea4_5NTemp (C)


118
116
114
112
110
108
106
104
102
100
98
155:12:00:00
156:00:00:00
156:12:00:00
Spacecraft Time
P@ECT_SATemp (C)
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
155:12:00:00
156:00:00:00
156:12:00:00
Spacecraft Time
P@ECT_BCRTemp (C)
P@ECT_BatTemp1 (C)
P@FMI_START_TEMP_RAW_CONVERTED (NONE)
P@FMI_PCM_TEMP_RAW_CONVERTED (NONE)
P@FMI_STX_TEMP_RAW_CONVERTED (NONE)
P@FMI_SRX_TEMP_RAW_CONVERTED (NONE)