**IBEX Goat Herder 4 May 18 – 14 May 18**

**ORBIT# 405**

**RAZOR# 639**: Master Reset on 1 May 18 @ 0630 UTC

Spacecraft recovery during Orbit# 405 Perigee

**CAR# 972** Recover from Master Reset on 5/05/18

**CAR# 973** Orbit# 406 Payload Return to Science

**ORBIT# 406**

**RAZOR# 640**: Star Tracker Reset on 7 May 18 @1112 UTC

The start tracker reset before APOGEE in Orbit# 406.

CAR# 344 Reset FDC Totals and Response Latch Values was executed

Command/telemetry was nominal and the inertial maneuver was successful

The PERIGEE contacts were nominal and the inertial maneuver successful

***Date*** ***Jday*** ***Time***  ***Station*** ***Razor#*** ***USNPR#*** ***PASS/FAIL***

**Friday, May 04, 2018** 124 0630 AUWA Pass

***Controller*** ***CAR1*** ***CAR2*** ***CAR3*** ***Radius Earth*** ***S-Band Rate*** ***Station PWR***

SWesley 17 desc 2ksps

***EBNO Values*** ***EBNO Values 3*** ***AGC Strength***

***EBNO Values 2*** ***AGC Strength 2***

***VC 0*** ***VC 0 Seq Err*** ***VC 1*** ***VC 1 Seq Err***  ***VC 2*** ***VC 2 Seq Err***

183 5 0 0 0 0

***VC 2 Write Pointer Start*** 0 ***VC 2 Write Pointer End*** 0

***VC 2 Read Pointer Start*** 0 ***VC 2 Read Pointer End*** 0

Orbit# 405 Perigee Tracking Contact

Blind\_acq.scr (2k)

STX,off (571,05:04:07:32:00)

@FMI\_SetDownlink(40k)

@FMI\_SetDownlink(2k)

S/C contingency mode from a master reset

S924-OP31003 Contingency State Recovery Procedure

reset\_master\_timer.scr

@FTV\_enableBOTM/stx,off

***Date*** ***Jday*** ***Time***  ***Station*** ***Razor#*** ***USNPR#*** ***PASS/FAIL***

**Saturday, May 05, 2018** 125 0300 USHI01 Pass

***Controller*** ***CAR1*** ***CAR2*** ***CAR3*** ***Radius Earth*** ***S-Band Rate*** ***Station PWR***

SWesley 12 asc 2ksps

***EBNO Values*** ***EBNO Values 3*** ***AGC Strength***

***EBNO Values 2*** ***AGC Strength 2***

***VC 0*** ***VC 0 Seq Err*** ***VC 1*** ***VC 1 Seq Err***  ***VC 2*** ***VC 2 Seq Err***

1767 0 317 0 0 0

***VC 2 Write Pointer Start*** 0 ***VC 2 Write Pointer End*** 0

***VC 2 Read Pointer Start*** 0 ***VC 2 Read Pointer End*** 0

Orbit# 405 Recovery

Blind\_acq.scr (160k)

stx,off (693.05:05:04:32:00)

@FTG\_DumpBAckOrbitdata (from start,0,0,0,0)

CAR# 972 Recovery From MASTER RESET

1. S924-OP31004, BCR reset recovery (summarized in bullets below)

2. S924-OP31502, IBEX Change Heater Setpoints (tank1, tank1, zone1, zone2, zone3, and zone4 to each trip off to 18 and trip on to 16.

3. @ECT\_DisableSolarArrayRPT

4. @ECT\_TMSAPowerCntl – verify in telemetry that ECT\_PowControl is either CURRENT or VOLTAGE

5. . Contingency State Recovery Procedure, step 6 only. Use the following selections:

• ACS Mode = Low Rate

• Turn on PCM B = Turn ON

• Turn on gyro = Turn ON

• Turn on star tracker = Turn ON

• Turn on star tracker FDC = Turn ON

• Turn on estimator FDC = Turn ON

• Desired low rate spin sensor = ACCELEROMETER

• Turn on CEU = Leave OFF

• Spacecraft State = HOUSEKEEPING

6 . Upload ATS: IBEX\_2018\_124\_o0406a\_RecoveryContacts\_v001.scr

7. Upload ATS: IBEX\_2018\_forecast\_05may18\_05may18\_Recovery\_Man\_v001.scr

8 . Run script add\_del\_TG.scr and select “Add”.

• Enabled? = “Enabled”

• Qid = 0x3037

• Function = 0x08

• Subfunction = 0x4a

• Num\_params = 0

• Param\_0 = 0

• Param\_1 = 0

• Param\_2 = 0

• Param\_3 = 0

• Real-time period (sec) = 0

• Real-time start (sec) = 0

• Backorbit period (sec) = 10

• Backorbit start (sec) = 0

• Mode = "MISSION\_LR\_MODE"

***Date*** ***Jday*** ***Time***  ***Station*** ***Razor#*** ***USNPR#*** ***PASS/FAIL***

125 0530 USHI02 Pass

***Controller*** ***CAR1*** ***CAR2*** ***CAR3*** ***Radius Earth*** ***S-Band Rate*** ***Station PWR***

SWesley 973 14 asc 160ksps

***EBNO Values*** ***EBNO Values 3*** ***AGC Strength***

***EBNO Values 2*** ***AGC Strength 2***

***VC 0*** ***VC 0 Seq Err*** ***VC 1*** ***VC 1 Seq Err***  ***VC 2*** ***VC 2 Seq Err***

1840 1 0 0 0 0

***VC 2 Write Pointer Start*** 0 ***VC 2 Write Pointer End*** 6740

***VC 2 Read Pointer Start*** 0 ***VC 2 Read Pointer End*** 6500

Orbit# 406 Master Reset Recovery

CAR# 973 Payload Recovery

@FCT\_SetScState science

ceu\_on.scr ()

@CEU\_SSR\_SET\_WRT\_PTR 6500

@CEU\_SSR\_SET\_RD\_PTR 6500

%constraint off

%conversion off

@CEU\_SET\_PARAMETER 16, 123

%conversion on

%constraint on

@CEU\_SET\_PARAMETER 64, LO\_STAR\_HISTO\_CADENCE

@CEU\_SET\_PARAMETER 123, ROUND\_ROBIN\_START

@CEU\_SET\_PARAMETER 123, ROUND\_ROBIN\_END

@CEU\_SET\_PARAMETER 3, ROUND\_ROBIN\_START

@CEU\_SET\_PARAMETER 3, ROUND\_ROBIN\_END

@CEU\_SET\_PARAMETER 0, ROUND\_ROBIN\_START

@CEU\_SET\_PARAMETER 128, ROUND\_ROBIN\_END

sweep\_table\_upload\_160922.scr ()

LV\_Checkout.scr ()

%constraint off

%conversion off

@CEU\_SET\_PARAMETER 1, 127

@CEU\_SET\_PARAMETER 1, 128

%conversion on

%constraint on

@CEU\_SET\_PARAMETER 127, ROUND\_ROBIN\_START

@CEU\_SET\_PARAMETER 127, ROUND\_ROBIN\_END

@CEU\_SET\_PARAMETER 0, ROUND\_ROBIN\_START

@CEU\_SET\_PARAMETER 128, ROUND\_ROBIN\_END

@CEU\_MACRO\_EXEC OFF\_TO\_STANDBY\_PL1

@CEU\_MACRO\_EXEC OFF\_TO\_STANDBY\_LO

@CEU\_MACRO\_EXEC OFF\_TO\_STANDBY\_HI

@CEU\_MACRO\_EXEC OFF\_TO\_STANDBY\_PL2

stx,off

***Date*** ***Jday*** ***Time***  ***Station*** ***Razor#*** ***USNPR#*** ***PASS/FAIL***

**Saturday, May 05, 2018** 125 0800 USHI01 Pass

***Controller*** ***CAR1*** ***CAR2*** ***CAR3*** ***Radius Earth*** ***S-Band Rate*** ***Station PWR***

SWesley 973 15 asc 160ksps

***EBNO Values*** ***EBNO Values 3*** ***AGC Strength***

***EBNO Values 2*** ***AGC Strength 2***

***VC 0*** ***VC 0 Seq Err*** ***VC 1*** ***VC 1 Seq Err***  ***VC 2*** ***VC 2 Seq Err***

1373 1 0 0 0 0

***VC 2 Write Pointer Start*** 6781 ***VC 2 Write Pointer End*** 6990

***VC 2 Read Pointer Start*** 6500 ***VC 2 Read Pointer End*** 6500

Orbit# 406 Master Reset Recovery/

IBEX\_2018\_124\_o0406a\_Recovery\_v001.scr (823-898)

@CEU\_LO\_SCIENCE\_MODE NORMAL

@CEU\_MACRO\_EXEC ASCENDING\_PL1

@CEU\_MACRO\_EXEC ASCENDING\_HI

@CEU\_HI\_COL\_NEG\_LVL 1400

@CEU\_HI\_CEM\_1\_LVL 1780

@CEU\_HI\_CEM\_2\_LVL 1780

@CEU\_HI\_CEM\_3\_LVL 1780

@CEU\_HI\_CEM\_4\_LVL 1900

@CEU\_MACRO\_EXEC ASCENDING\_LO

@CEU\_MACRO\_EXEC ASCENDING\_PL2

IBEX\_2018\_133\_o0407a\_v002.scr (899-993)

***Date*** ***Jday*** ***Time***  ***Station*** ***Razor#*** ***USNPR#*** ***PASS/FAIL***

**Wednesday, May 09, 2018** 129 1300 USHI02

***Controller*** ***CAR1*** ***CAR2*** ***CAR3*** ***Radius Earth*** ***S-Band Rate*** ***Station PWR***

SWesley 344 44 asc 2ksps

***EBNO Values*** ***EBNO Values 3*** ***AGC Strength***

***EBNO Values 2*** ***AGC Strength 2***

***VC 0*** ***VC 0 Seq Err*** ***VC 1*** ***VC 1 Seq Err***  ***VC 2*** ***VC 2 Seq Err***

645 5 1431 30 0 0

***VC 2 Write Pointer Start*** 19430 ***VC 2 Write Pointer End*** 19510

***VC 2 Read Pointer Start*** 6500 ***VC 2 Read Pointer End*** 6500

Orbit# 406 Apogee Tracking Contact

@FMI\_SetDownlink (40k)

CAR# 344 Star Tracker Reset

@ACT\_ResetRespReqLatch(AC\_FDC,FDC\_STA,FDC\_STA\_STALETEST)

@ACT\_ResetRespReqLatch(AC\_FDC,FDC\_STA,FDC\_STA\_NOSOLUTIONTEST)

@ACT\_ResetTAskRawFailed(AC\_FDC)

@FTG\_DumpBAckorbit (from start,0,0,0,0)

IBEX Orbit# 406 APOGEE Target Vectors 9 May 18

J2000 Spin Axis

ECI X 0.748035

ECI Y 0.609142

ECI Z 0.263418

Precession Maneuver

MPS Diff 0.560 deg

\*MPS Diff should be < 1.5\*

-0.57725500 ActNor.EstInrToBdy[0]

0.18726300 ActNor.EstInrToBdy[1]

-0.43136700 ActNor.EstInrToBdy[2]

0.66755600 ActNor.EstInrToBdy[3]

1209540000.000 ActNor.EstTime

Right Ascension - RA 39.157 deg

Declination - DEC 15.273 deg

IBEX Spin Axis vs. Sun Vector

IBEX Sun Angle -3.201 deg

MPS Generated APOGEE Target Vecotrs

MPS Cmd Vector X 0.745068000

MPS Cmd Vector Y 0.615608000

MPS Cmd Vector Z 0.256711000

CSS Angle TLM 0.780344

CSS Sun-Pointing Angle 1.560688

5 May 18 @0530

CSS Angle TLM 0.780344

CSS Sun-Pointing Angle 1.560688

9 May 18 @1300

Pre-Burn

Thruster 1 288 5 May 18 @0530

Thruster 2 288

Thruster 3 288

Thruster 4 288

Post-Burn

Thruster 1 544 9 May 18 @1300

Thruster 2 544

Thruster 3 576

Thruster 4 576

Number of Pulses

Thruster 1 256

Thruster 2 256

Thruster 3 288

Thruster 4 288

Thruster Pairs

Thruster 1 & 2 512

Thruster 3 & 4 576

***Date*** ***Jday*** ***Time***  ***Station*** ***Razor#*** ***USNPR#*** ***PASS/FAIL***

**Sunday, May 13, 2018** 133 0845 AUWA Pass

***Controller*** ***CAR1*** ***CAR2*** ***CAR3*** ***Radius Earth*** ***S-Band Rate*** ***Station PWR***

SWesley 17 desc 2ksps 120 watts

***EBNO Values*** ***EBNO Values 3*** ***AGC Strength***

***EBNO Values 2*** ***AGC Strength 2***

***VC 0*** ***VC 0 Seq Err*** ***VC 1*** ***VC 1 Seq Err***  ***VC 2*** ***VC 2 Seq Err***

247 7 0 0 0 0

***VC 2 Write Pointer Start*** 29880 ***VC 2 Write Pointer End*** 29964

***VC 2 Read Pointer Start*** 6500 ***VC 2 Read Pointer End*** 6500

Orbit# 406 Perigee Tracking Contact

@FMI\_SetDownlink(40k)

@FMI\_SetDownlink (2k)

stf, off

***Date*** ***Jday*** ***Time***  ***Station*** ***Razor#*** ***USNPR#*** ***PASS/FAIL***

**Monday, May 14, 2018** 134 0500 USHI01 Pass

***Controller*** ***CAR1*** ***CAR2*** ***CAR3*** ***Radius Earth*** ***S-Band Rate*** ***Station PWR***

SWesley 12 asc 160ksps 170 watts

***EBNO Values*** ***EBNO Values 3*** ***AGC Strength***

***EBNO Values 2*** ***AGC Strength 2***

***VC 0*** ***VC 0 Seq Err*** ***VC 1*** ***VC 1 Seq Err***  ***VC 2*** ***VC 2 Seq Err***

1905 2 1309 0 24716 0

***VC 2 Write Pointer Start*** 31212 ***VC 2 Write Pointer End*** 31269

***VC 2 Read Pointer Start*** 6500 ***VC 2 Read Pointer End*** 31216

Orbit# 406 SSR\_Dump/Tracking Contact

@FMI\_SetDownlink(320k)

SSR\_Dump.scr (new)

CAR# 974 Upload Orbit# 408 ATS 1.IBEX\_2018\_143\_o0408a\_v001.scr (35-127)

ops\_set\_sc\_time.scr

@FTG\_DumpBackorbit (from start,0,0,0,0)

IBEX Orbit# 406 PERIGEE Target Vectors 14 May 18

J2000 Spin Axis

ECI X 0.640736

ECI Y 0.703665

ECI Z 0.307105

Precession Maneuver

MPS Diff 0.804 deg

\*MPS Diff should be < 1.5\*

-0.46011000 ActNor.EstInrToBdy[0]

-0.36707800 ActNor.EstInrToBdy[1]

-0.79825800 ActNor.EstInrToBdy[2]

0.12781600 ActNor.EstInrToBdy[3]

1210310000.000 ActNor.EstTime

Right Ascension - RA 47.680 deg

Declination - DEC 17.885 deg

IBEX Spin Axis vs. Sun Vector

IBEX Sun Angle -3.248 deg

MPS Generated PERIGEE Target Vector

MPS Cmd Vector X 0.634157000

MPS Cmd Vector Y 0.713064000

MPS Cmd Vector Z 0.298974000

CSS Angle TLM 0.5292813

CSS Sun-Pointing Angle 1.0585626

9 May 18 @1300

CSS Angle TLM 0.632729

CSS Sun-Pointing Angle 1.265458

14 May18 @0500

Pre-Burn

Thruster 1 544 9 May 18 @1300

Thruster 2 544

Thruster 3 576

Thruster 4 576

Post-Burn

Thruster 1 848 14 May18 @0500

Thruster 2 816

Thruster 3 880

Thruster 4 912

Number of Pulses

Thruster 1 304

Thruster 2 272

Thruster 3 304

Thruster 4 336

Thruster Pairs

Thruster 1 & 2 576

Thruster 3 & 4 640