COS SMOV Morning Update

13 June 2009
Agenda

• COS FUV HV Turn-on Visits 9 and 10 (of 13)
  – Ramp-up status
  – Dark and PtNe wavecal lamp exposures
• COS-to-FGS Alignment / Coarse Focus : 11468: Visit 1 of 2 (COS08)
• Upcoming COS SMOV Timeline
COS FUV HV Turn-on:  
Visit 9 and 10 (of 13) HVLOW to fourth ramp level

- On Fri 12 June:
  - HV successfully taken from HVLOW (-4069 v) to fourth intermediate ramp-up level (A/B HV -5199/-5152 volts)
  - The data collected during the latest FUV detector HV ramp step was nominal; All diagnostics remain nominal on both segments (see table on slide following)
    - HV/AUX current histograms dumped immediately after the HV ramp (visit 9) and just before the drop back to HVLOW (visit 10) were nominal; QE grid and rear field talk backs all remain nominal; no indications of transient behavior; PHDs nominal : see first plots on second slide following
  - Background rates are uniform and consistent with previous visits
    - Re-evaluation of TV06 backgrounds with ion gauge on and off show the gauge is responsible for bulk of modal background counts in the modal gain peak in PHDs (see plots on third slide following).
  - Wavecal spectra normal: count rates are consistent with previous visits and line positions are indistinguishable from last two visits
    - No indication of scattered light form wavecal spectra in non-spectral region of detector.

- Recommend ops request to clear event flag 3, continue with next step in FUV HV turn-on procedure – ramp to HVNOM (on Sun evening)
COS FUV HV Turn-on: 
Visit 9 and 10 (of 13) HVLOW to fourth ramp level

<table>
<thead>
<tr>
<th>Visit</th>
<th>HV A/B</th>
<th>Bkg A/B</th>
<th>Lamp A/B</th>
<th>PHD μ A/B</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>154/151</td>
<td>19.4/22.6</td>
<td>198.9/610.9</td>
<td>7.0/7.0</td>
</tr>
<tr>
<td>5</td>
<td>160/157</td>
<td>17.7/19.7</td>
<td>200.5/605.2</td>
<td>9.3/9.6</td>
</tr>
<tr>
<td>7</td>
<td>166/163</td>
<td>18.5/20.4</td>
<td>199.5/607.9</td>
<td>11.5/12.1</td>
</tr>
<tr>
<td>9</td>
<td>172/169</td>
<td>20.6/22.7</td>
<td>205.9/614.3</td>
<td>13.4/14.4</td>
</tr>
<tr>
<td>TV06</td>
<td>178/175</td>
<td>9.5/12.4</td>
<td>215.4/685.6</td>
<td>14/14</td>
</tr>
</tbody>
</table>

• Update and refinement to the table: Note the backgrounds and lamp rates (both SMOV and TV06) now exclude the warm strip at the bottom of the B segment (the warm strip adds about 7 cps to the global background rate, but is well out of the spectral area). PHDs are now given as weighted mean value rather than simply the peak bin.
COS FUV HV Turn-on:
Visit 9: PHDs for background exposure
COS FUV HV Turn-on:
TV06 PHDs for background exposures

TV06 - Segment A: DARK, HVcom = 178
Rate = 9.5 cps
Gauge = ON

TV06 - Segment B: DARK, HVcom = 175
Rate = 12.4 cps
Gauge = ON

TV06 - Segment A: DARK, HVcom = 178
Rate = 3.5 cps
Gauge = OFF

TV06 - Segment B: DARK, HVcom = 175
Rate = 3.1 cps
Gauge = OFF

TV06 - Segment A: WAVECAL, HVcom = 178
Mean = 12.5
FWHM = 40%
Rate = 255.4 cps

TV06 - Segment B: WAVECAL, HVcom = 175
Mean = 13.6
FWHM = 32%
Rate = 685.6 cps
COS-to-FGS Alignment / Coarse Focus:
Continuing Analysis - Visit 1 (of 2)

- STScI POS-TARG x-coordinate movements applied with opposite sign
  - Source understood: incorrect “P parity” matrix applied in front-end of ground system (TRANS); definition of orientation of COS POS-TARG (USER) frame wrt sky was incorrectly applied
  - PR filed; quickfix completed testing on Friday;
  - Implementation for 11469 visit 7 to be performed via intercept to SMS 166
- “Get-ahead” ACQ/SEARCH and ACQ/IMAGE anomalies
  - ACQ/SEARCH: an update of the background patchable constant is being evaluated; test of revised background is planned
  - ACQ/IMAGE: source of incorrect slew direction continues under investigation
Upcoming COS SMOV Timeline

- **Day 164: Sat 13 June**
  - 11468 visit 2 of 2 (COS08) COS-to-FGS Alignment / Coarse Focus
    - s/c visit to facilitate real-time uplink of offset pointing information to be used in as OFFSET 11469A in 1146901 (which follows within ~1 hour); uplink nominal focus, aperture mechanism, and other mechanism position updates based on analysis of 1146801;
  - 11469 visit 1 of 12 (COS09) COS Fine Optical Alignment
    - Use same astrometric target as 11468 visit 1
    - Apply uplinked offset (from 1146802) to blind pointing position to approximately center target in PSA; use same orient and same astrometric guide stars (GS) as 1146801; no target acquisition
    - Obtain MIRRORA images at each of 15 moderately-spaced focus positions (from +525 to -525 in steps of 75 units)
    - 1146901 164:14:00:24 - 164:15:02:44
    - After analysis of imagery uplink refined nominal focus value, offset pointing, and possible mechanism position updates via real-time contact in 11469 visit 2 on Mon
Upcoming COS SMOV Timeline

• Day 165: Sun 14 June
  – 11356 visit 11 of 13 (COS23) FUV HV Turn-on
    • Slow ramp from HVLOW to HVNOM value, dump DCE, wave, dark exp
    • OPS request required: clear NSSC-1 COS event flag 3 set in 1135610
    • 1135611 165:19:00:00 - 165:19:38:28
    • No event flag set; leave SI at HV level for 8 hours; then execute 1135612
      – Contingency OPS request in place to place FUV in INHIBIT if anomaly
    • science data

• Day 166: Mon 15 June
  – 11356 visit 12 of 13 (COS23) FUV HV Turn-on
    • After ~8-hour wait at final ramp value, dump DCE RAM, return to HVLOW
    • sets event flag 3
    • 1135612 166:03:20:00 - 166:03:43:24
    • clear NSSC-1 COS event flag 3 prior to visit 13
Upcoming COS SMOV Timeline

- Day 166: Mon 15 June (continued)
  - 11469 visit 2 of 12 (COS09) COS Fine Optical Alignment
    - s/c visit to facilitate real-time uplink of offset pointing information to be used in as OFFSET 11469B in 1146903 (which follows within ~1 hour); uplink nominal focus, aperture mechanism, and other mechanism position updates based on analysis of 1146901;
    - 1146902 166:17:10:15 - 166:17:33:48
  - 11469 visit 3 of 12 (COS09) COS Fine Optical Alignment
    - Use same astrometric target as 11468 visit 1
    - Apply uplinked offset (from 1146902) to blind pointing position to approximately center target in PSA; use same orient and same astrometric guide stars (GS) as 1146801/1146901; no target acquisition
    - Obtain MIRRORA images at each of 15 moderately-spaced focus positions (from +525 to -525 in steps of 75 units)
    - 1146903 166:17:41:18 - 166:19:19:32
    - After analysis of imagery uplink refined nominal focus value, offset pointing , and possible mechanism position updates via real-time contact in 11469 visit 4 on Wed (Day 168)