



## 12431 - COS FUV Recovery from Anomalous Shutdown

Cycle: 18, Proposal Category: CAL/COS

(Availability Mode: RESTRICTED)

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
<b>Mr. Thomas Wheeler (PI)</b>	<b>Space Telescope Science Institute</b>	<b>wheeler@stsci.edu</b>
Dr. Alan D. Welty (CoI)	Space Telescope Science Institute	welty@stsci.edu
Dr. David J. Sahnou (CoI)	The Johns Hopkins University	sahnou@pha.jhu.edu
Dr. Jason Mcphate (CoI)	University of California - Berkeley	mcphate@ssl.berkeley.edu

### VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	DARK	S/C	1	11-Jul-2011 21:03:12.0	yes
02	DARK	S/C	1	11-Jul-2011 21:03:15.0	yes
03	DARK	COS/FUV S/C	1	11-Jul-2011 21:03:17.0	yes
04	DARK	COS/FUV S/C	1	11-Jul-2011 21:03:20.0	yes
05	DARK	COS/FUV S/C	1	11-Jul-2011 21:03:22.0	yes
06	DARK	S/C	1	11-Jul-2011 21:03:23.0	yes
11	DARK	S/C	1	11-Jul-2011 21:03:25.0	yes
12	DARK	S/C	1	11-Jul-2011 21:03:26.0	yes

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
13	DARK	COS/FUV S/C	1	11-Jul-2011 21:03:28.0	yes
14	DARK	COS/FUV S/C	1	11-Jul-2011 21:03:30.0	yes
15	DARK	COS/FUV S/C	1	11-Jul-2011 21:03:32.0	yes
16	DARK	S/C	1	11-Jul-2011 21:03:34.0	yes

12 Total Orbits Used

### **ABSTRACT**

This proposal consists of the steps for turning on and ramping up the COS FUV high voltage in a conservative manner after a HV anomalous shutdown. This proposal executes the same steps as Cycle 17 proposal 11893 and is based upon SMOV4 proposal 11356. It is divided into two distinct parts with the first consisting of a slow rampup with diagnostics and darks performed, followed by a ramp-down, HV off, and setting Flag 3. (Flag 3 is used as a deadman switch to protect the FUV detector from inadvertant HV operations and usage.) Time is allotted for UC Berkeley, COS Instrument Scientist, and STScI engineers to examine data dumps, science exposures, and housekeeping telemetry. If all is well, the go-ahead will be given to proceed with the second HV rampup.

The second part consists of a normal rampup with diagnostics and darks, followed by a ramp-down, HV off, and setting Flag 3. Again, UC Berkeley, COS Instrument Scientist, and STScI engineers will examine data dumps, science exposures, and housekeeping telemetry. If all is well, this time the go-ahead will be given to clear Flag 3 and precede with normal FUV science programs.

### **OBSERVING DESCRIPTION**

This proposal contains the steps for turning on and ramping up the COS FUV high voltage in a conservative manner after a HV anomalous shutdown. This proposal executes the same steps as Cycle 17 proposal 11893 and is based upon SMOV4 proposal 11356. This proposal is divided into two distinct parts with the first consisting of a slow ramp-up with diagnostics and darks, followed by a ramp-down, HV off, and setting Flag 3. (Flag 3 is used as a deadman switch to protect the FUV detector from inadvertant HV operations and usage.) Time is allotted for UC Berkeley, COS Instrument Scientist, and STScI engineers to examine data dumps, science exposures, and housekeeping telemetry. If all is well, the go-ahead will be given to clear Flag 3 by the ground and proceed with the second HV ramp-up.

The second part consists of a normal ramp-up with diagnostics and darks, followed by a ramp-down, HV off, and again setting Flag 3. As previously, UC Berkeley, COS Instrument Scientist, and STScI engineers will examine data dumps, science exposures, and housekeeping telemetry. If all is well, this time the go-ahead will be given to clear Flag 3 by the ground and precede with normal FUV science programs.

Prior to the beginning of Visit 1, Flag 3 must be cleared by the ground via real-time commanding. This can be done as soon as the anomalous HV shutdown is understood and the go-ahead is given to proceed with the recovery.

An outline of the visits and activities of each is presented below:

- 1) Uninhibit the DCE. This visit uninhibits the DCE (sets `dce_FUVInhibitMode = FALSE` and does some other CS cleanup), takes diagnostic data (DCE RAM dump), and transitions the FUV detector from Boot to Operate. (Boot will be the state of the detector after being Inhibited.) Special commanding is used to uninhibit the DCE and to dump the DCE RAM. Regular recon commanding is used for the Boot to Operate transition.
- 2) FUV HV turn-on and ramp to HVLOW. Special commanding will be used to execute the FUV Operate to HVLow reconfiguration. Diagnostics are taken (DCE RAM dumps) after each transition.
- 3) Dark exposure. A 1-hour dark exposure is taken followed by diagnostics (DCE RAM dump). This 1-hour dark also enforces a 1-hour wait between HVLOW and HVNOM.
- 4) Ramp FUV HV from HVLOW to HVNOM. Ramp the HV to its nominal value for each segment during a 1080.0 second DARK exposure. Diagnostics are taken (DCE RAM dumps) after.
- 5) Dark exposure. A 2nd 1-hour dark exposure is taken followed by diagnostics (DCE RAM dump).
- 6) Ramp the HV down and turn it off. Set Flag 3.

UC Berkeley, COS Instrument Scientist, and STScI engineers will examine data dumps, science exposures, and housekeeping telemetry. If all is well, this time the go-ahead will be given to proceed with the 2nd part that starts with Visit 11. It is requested that diagnostic and science data be fast-

tracked to the Science Team.

11) Diagnostics are taken (DCE RAM dumps). Flag 3 must be cleared by the ground via real-time commanding before the start of Visit 12.

12) FUV HV turn-on and ramp to HVLOW. Diagnostics are taken (DCE RAM dumps).

13) Dark exposure. A 1-hour dark exposure is taken followed by diagnostics (DCE RAM dump). This 1-hour dark also enforces a 1-hour wait between HVLOW and HVNOM.

14) Ramp FUV HV from HVLOW to HVNOM. Ramp the HV to its nominal value for each segment during a 1000.0 second DARK exposure. Diagnostics are taken (DCE RAM dumps) after.

15) Dark exposure. A 2nd 1-hour dark exposure is taken followed by diagnostics (DCE RAM dump).

16) Ramp the HV down and turn it off. Set Flag 3.

UC Berkeley, COS Instrument Scientist, and STScI engineers will examine data dumps, science exposures, and housekeeping telemetry. If all is well, this time the go-ahead will be given to clear Flag 3 and proceed with normal FUV science. It is requested that diagnostic and science data be fast-tracked to the Science Team. No FUV activities should be scheduled within 48 hours after the completion of Visit 16 to allow for data analysis and the clearing of Flag 3.

#### **REAL TIME JUSTIFICATION**

Real-time commanding is required to clear NSSC-1 COS event flag 3 prior to visit 01 to go ahead with visits 01-06, between visits 06 and 11 to go ahead with visits 11-16, and after visit 16 to allow subsequent FUV commanding. Visit 11 starts with a scheduled uplink opportunity.

#### **ADDITIONAL COMMENTS**

This a recovery from a HV anomalous shutdown. No regular or calibration FUV science exposures are allowed during recovery.

Proposal 12431 (STScI Edit Number: 1, Created: Monday, July 11, 2011 8:03:37 PM EST) - Overview

This is not a requirement but it is desirable to have real-time engineering telemetry (MA return) during the execution of this proposal.

A contingency Operations Request to place to command the FUV detector into its Inhibit mode must be in place in case a significant anomaly occurs.

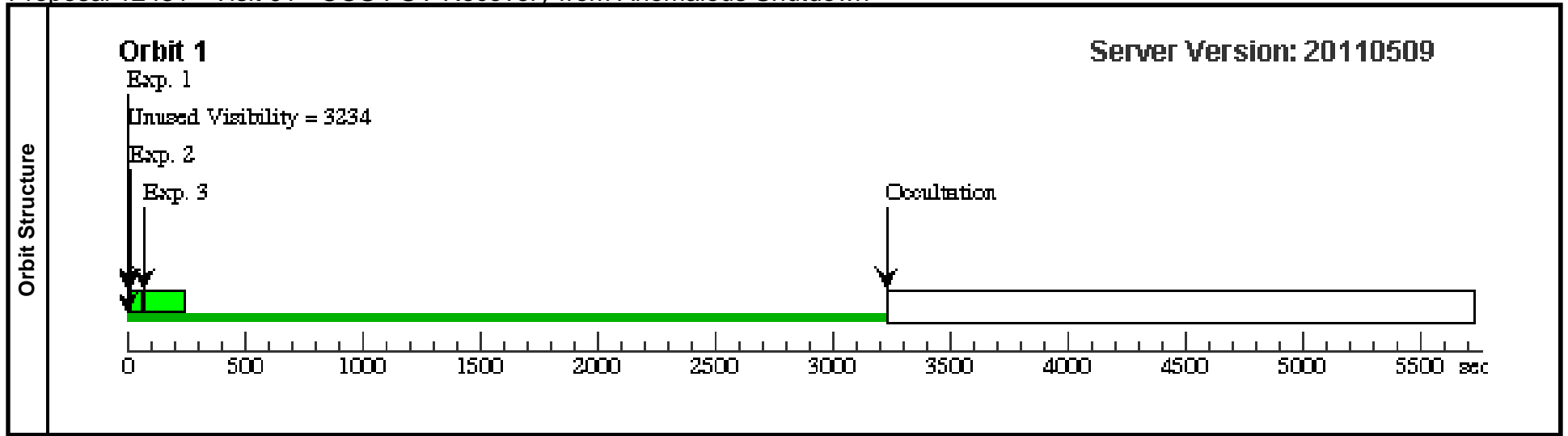
ISQL is required to Id S/C exposures as COS, to set the SI interleave flag properly, to adjust SI states on DUMP and HOME alignments, and to model readouts for the DCE dump exposures . See visits/exposures for detail.

This proposal requires Special Commanding.

# Proposal 12431 - Visit 01 - COS FUV Recovery from Anomalous Shutdown

Tue Jul 12 01:03:37 GMT 2011

Visit	Proposal 12431, Visit 01, implementation									
	Diagnostic Status: No Diagnostics									
Exposures	Scientific Instruments: S/C									
	Special Requirements: GYRO MODE 3GOBAD; ON HOLD ; PARALLEL									
	<p>Comments: Uninhibit the DCE.                      This visit uninhibits the DCE (sets <code>dce_FUVInhibitMode == FALSE</code> and does other CS cleanup, thus ensuring the DCE is in its nominal Boot state), takes diagnostics (DCE RAM dump), and transitions the FUV detector from Boot to Operate. Special commanding is used to uninhibit the DCE and to dump the DCE RAM. Regular recon commanding is used for the Boot to Operate transition.</p> <p>Prior to the beginning of this visit, Flag 3 must be cleared by the ground via real-time commanding. This can be done as soon as the anomalous HV shutdown is understood an the go-ahead is given to proceed with the recovery.</p> <p>On Hold Comments: To be used only after an anomalous shutdown of the FUV high voltage.</p>									
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	
1	FUV Inhibit to Boot	DARK	S/C, DATA, NONE			SPEC COM INSTR ELRECOVERF;  QASISTATES COS SI OBSERVE OBSE RVE;  QASISTATES COS FUV HVLOW OPE RATE	Sequence 1-3 Non-Int in Visit 01	10 Secs [==>]	[1]	
<p>Comments: Unhibit the DCE for commanding by setting <code>dce_FUVInhibitMode == FALSE</code> in the CS FSW. Several other houskeeping tasks are also cleaned up.</p> <p>It is assumed that this will be the first FUV activity on an SMS and that the CS is in Operate state. Therefore, the starting FUV state is set to HVLOW, which is the nominal SMS boundary state.</p> <p>SQL: tag as COS (si_used and si_intrlv)</p>										
2	DCE RAM dump	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV OPERATE OPERATE	Sequence 1-3 Non-Int in Visit 01	60.0 Secs [==>]	[1]	
<p>Comments: Copy and dump DCE RAM. From Jason McPhate (Berkeley FUV detector expert, who defined the FUV initial turn-on procedure):                      "[I'm after] the procedure to get a memory dump of the FUV HV and AUX power current monitors (HVIA, HVIB, AUXI). Each of these has a 1000 (possibly 1024) sample buffer that monitors the current at 1ms sampling (looping through, overwriting the data that is 1 second old), and a cumulative histogram of the current values (this would be a buffer of 256 values for each monitor)."                      This information is in a DCE RAM dump.</p> <p>SQL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si_used and si_intrlv)</p>										
3	FUV Boot to Operate	DARK	S/C, DATA, NONE			SPEC COM INSTR RLBTTOPF; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV OPERATE OPERATE	Sequence 1-3 Non-Int in Visit 01	180 Secs [==>]	[1]	
<p>Comments: Transition the DCE from Boot to Operate. Use standard recon.</p> <p>SQL: tag as COS (si_used and si_intrlv)</p>										



# Proposal 12431 - Visit 02 - COS FUV Recovery from Anomalous Shutdown

<b>Visit</b>	<b>Proposal 12431, Visit 02, implementation</b>	Tue Jul 12 01:03:39 GMT 2011
	<b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: S/C Special Requirements: GYRO MODE 3GOBAD; AFTER 01; ON HOLD ; PARALLEL <i>Comments: FUV HV turn-on and ramp to HVLOW. FUV Qasi_states will be set to start_state=OPERATE. From there, special commanding will be used to execute the FUV Operate to HVLow reconfiguration. Diagnostics are taken (DCE RAM dumps) after each transition.</i> <i>On Hold Comments: To be used only after an anomalous shutdown of the FUV high voltage.</i>	



Proposal 12431 - Visit 02 - COS FUV Recovery from Anomalous Shutdown

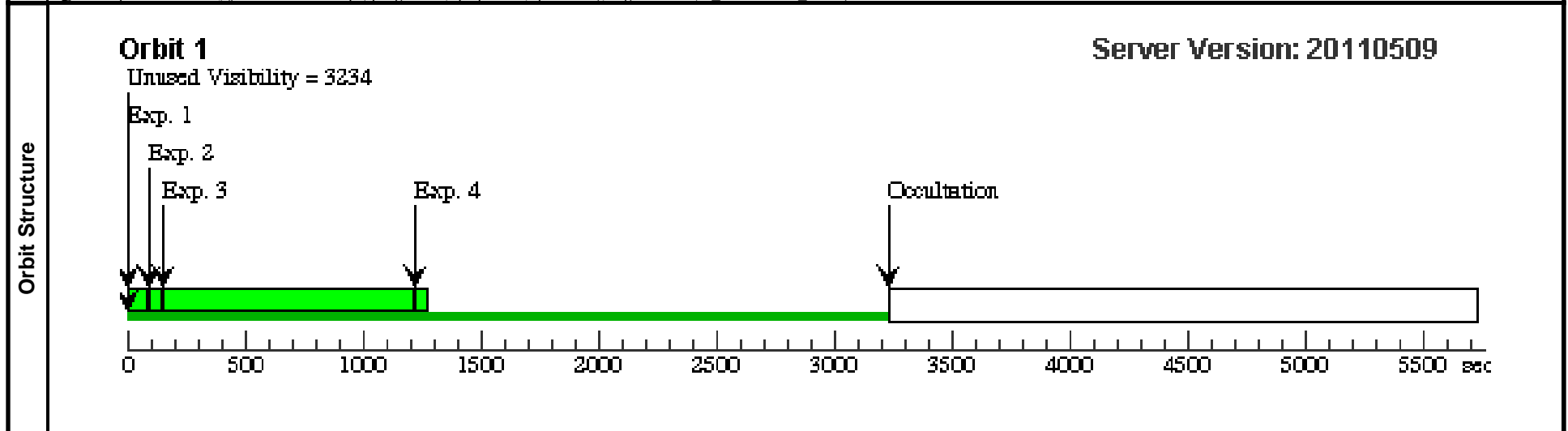
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	
Exposures	1	Turn FUV H V on	DARK	S/C, DATA, NONE		SAA CONTOUR 31; SPEC COM INSTR ELOPTHOF; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV OPERATE HV LOW	Sequence 1-4 Non-In- t in Visit 02	90.0 Secs [==>]	[1]	
	<p>Comments: Turn on the FUV high voltage, but do not ramp it up. Exp time has 50s added to model AFTER BY on exp 2.</p> <p>SQL: tag as COS (si_used and si_intrlv)</p>									
	2	DCE RAM dump	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-4 Non-In- t in Visit 02	60.0 Secs [==>]	[1]
<p>Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.</p> <p>SQL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si_used and si_intrlv)</p>										
3	Ramp FUV HV to HVL ow	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHOTHLF; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-4 Non-In- t in Visit 02	1070.0 Secs [==>]	[1]	
<p>Comments: Ramp the FUV high voltage to the HVLOW value at 10 sec/step. The end state is HVLOW to reflect this. Visit 03's start state is set to match this end state. Exp time has 45s added to simulate AFTER BY on exp 2.</p> <p>SQL: tag as COS (si_used and si_intrlv)</p>										

Proposal 12431 - Visit 02 - COS FUV Recovery from Anomalous Shutdown

4	DCE RAM DARK dump	S/C, DATA, NONE	SAA CONTOUR 31; Sequence 1-4 Non-In- t in Visit 02 SPEC COM INSTR ELCOPYDCE; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	60.0 Secs [==>]	[!]
---	----------------------	-----------------	---	--------------------	-----

Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.

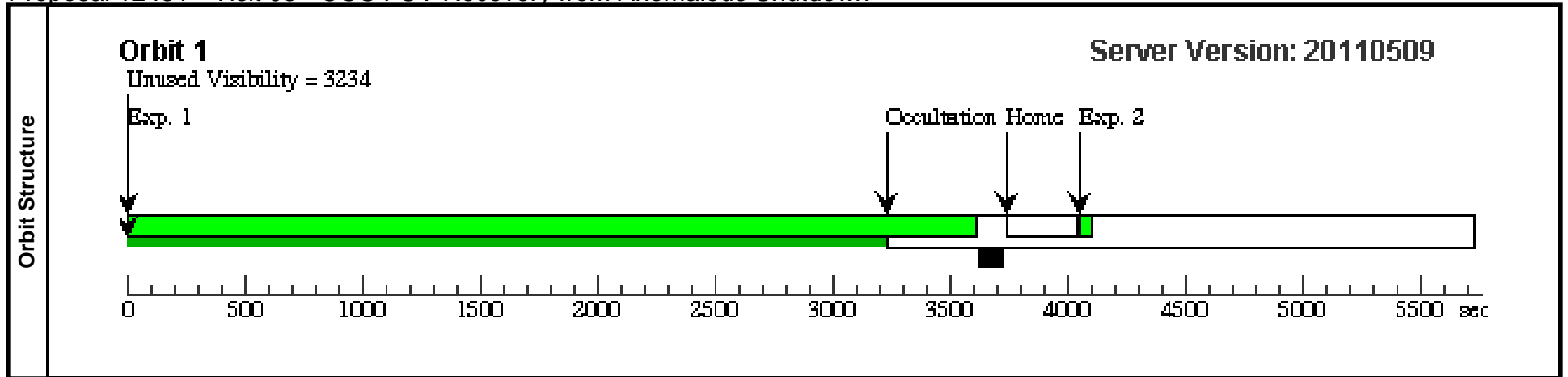
SQL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si\_used and si\_intrlv)



Proposal 12431 - Visit 03 - COS FUV Recovery from Anomalous Shutdown

Tue Jul 12 01:03:40 GMT 2011

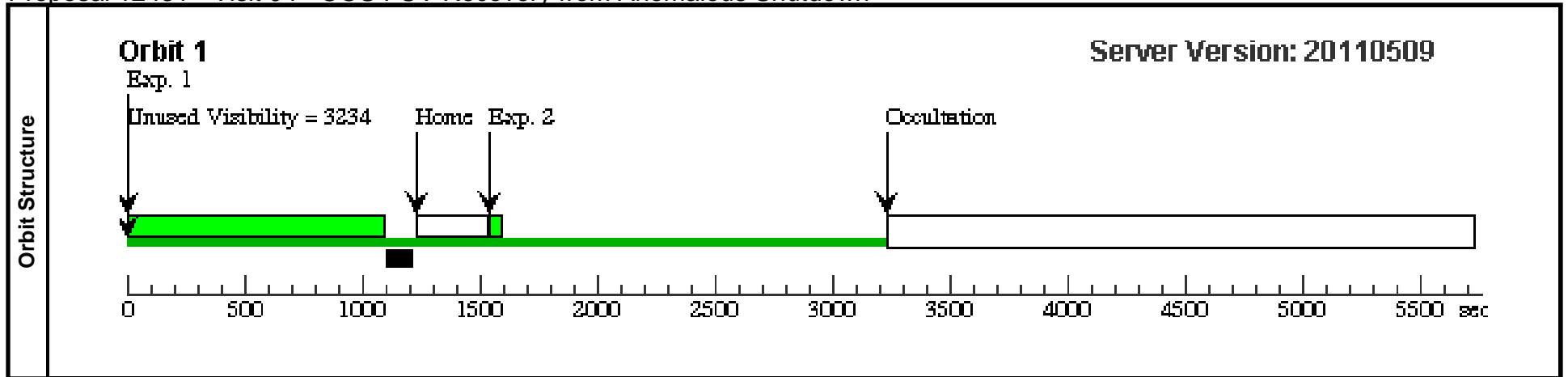
<b>Visit</b>	<p><b>Proposal 12431, Visit 03, implementation</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: S/C, COS/FUV</p> <p>Special Requirements: GYRO MODE 3GOBAD; AFTER 02; ON HOLD ; PARALLEL</p> <p><i>Comments: Dark 3600.0 second exposure. Diagnostics are taken (DCE RAM dumps) after the exposure.</i></p> <p><i>On Hold Comments: To be used only after an anomalous shutdown of the FUV high voltage.</i></p>									
	<p>(Visit 03) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU</p>									
<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	FUV Dark	DARK	COS/FUV, TIME-TAG, DEF	DEF	BUFFER-TIME=3600	SAA CONTOUR 31; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 03	3600.0 Secs [==>]	[1]
	<p><i>Comments: Take a 1-hour dark exposure with the HV at HVLOW.</i></p> <p><i>ISQL required for the DUMP and HOME created by this exposure...update QASISTATE: COS FUV HVLOW HVLOW, tag as COS (si_used and si_intrlv).</i></p>									
2	DCE RAM dump	DARK	S/C, DATA, NONE				SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 03	60.0 Secs [==>]	[1]
<p><i>Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.</i></p> <p><i>SQL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si_used and si_intrlv)</i></p>										



Proposal 12431 - Visit 04 - COS FUV Recovery from Anomalous Shutdown

Tue Jul 12 01:03:40 GMT 2011

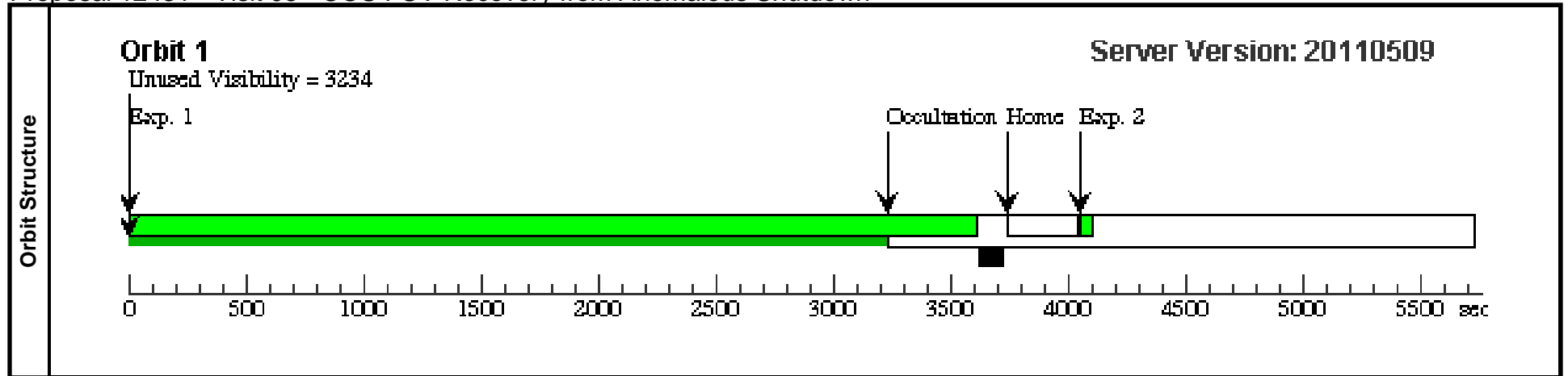
Visit	<p><b>Proposal 12431, Visit 04, implementation</b></p> <p><b>Diagnostic Status: No Diagnostics</b></p> <p>Scientific Instruments: S/C, COS/FUV</p> <p>Special Requirements: GYRO MODE 3GOBAD; AFTER 03; ON HOLD ; PARALLEL</p> <p><i>Comments: Ramp FUV HV from HVLOW to HVNOM.</i></p> <p><i>Ramp the HV to it nominal value for each segment (defined by Qesiparms ENDCTSA and ENDCTSB) during a 1080.0 second DARK exposure. Diagnostics are taken (DCE RAM dumps) after. FUV Qasi_states will be set to start_state=HVLOW. From there, special commanding will be used to execute the FUV HVLOW to HVNOM reconfiguration, but we set end_state to HVLOW to prevent 10.2 from inserting unwanted recons between this and visit 05.</i></p> <p><i>No SAA 31 passages from the start of Visit 04 through the end of Visit 06.</i></p> <p><i>On Hold Comments: To be used only after an anomalous shutdown of the FUV high voltage.</i></p>									
	Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]
1		HVLow to HVNom w/ FUV Dark	DARK	COS/FUV, TIME-TAG, DEF	DEF	BUFFER-TIME=1000	SAA CONTOUR 31; SPEC COM INSTR ELHLTHVFX; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSERVE; QASISTATES COS FUV HVLOW HVLOW; QESIPARM ENDC TSA 169; QESIPARM ENDC TSB 175; QESIPARM SECPECT 10	Sequence 1-2 Non-Int in Visit 04	1080.0 Secs [==>]	[1]
<p><i>Comments: Ramp the FUV HV from HVLow to HVNom at 10 sec/step during this exposure.</i></p>										
<p><i>ISQL required for the DUMP and HOME created by this exposure...update QASISTATE: COS FUV HVLOW HVLOW, tag as COS (si_used and si_intrlv).</i></p>										
2	DCE RAM dump	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSERVE; QASISTATES COS FUV HVLOW HVLOW	Sequence 1-2 Non-Int in Visit 04	60.0 Secs [==>]	[1]	
<p><i>Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.</i></p>										
<p><i>SQL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si_used and si_intrlv)</i></p>										



Proposal 12431 - Visit 05 - COS FUV Recovery from Anomalous Shutdown

Tue Jul 12 01:03:40 GMT 2011

<b>Visit</b>	<p><b>Proposal 12431, Visit 05, implementation</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: S/C, COS/FUV</p> <p>Special Requirements: GYRO MODE 3GOBAD; AFTER 04; ON HOLD ; PARALLEL</p> <p>Comments: Dark 3600.0 second exposure. Diagnostics are taken (DCE RAM dumps) after the exposure.</p> <p>After the completion of Visit 5, all diagnostic and science data from Visits 1-5 should be fast-tracked to the COS Science Team.</p> <p>No SAA 31 passages from the start of Visit 04 through the end of Visit 06.</p> <p>On Hold Comments: To be used only after an anomalous shutdown of the FUV high voltage.</p>																																																			
	<p>(Visit 05) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU</p>																																																			
<b>Diagnostics</b>																																																				
<b>Exposures</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Label</th> <th>Target</th> <th>Config,Mode,Aperture</th> <th>Spectral Els.</th> <th>Opt. Params.</th> <th>Special Reqs.</th> <th>Groups</th> <th>Exp. Time/[Actual Dur.]</th> <th>Orbit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>FUV Dark</td> <td>DARK</td> <td>COS/FUV, TIME-TAG, DEF</td> <td>DEF</td> <td>BUFFER-TIME=3600</td> <td>SAA CONTOUR 31; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW</td> <td>Sequence 1-2 Non-Int in Visit 05</td> <td>3600.0 Secs [==&gt;]</td> <td>[1]</td> </tr> <tr> <td colspan="10"> <p>Comments: Take a 1-hour dark exposure with the HV at HVNOM.</p> <p>ISQL required for the DUMP and HOME created by this exposure...update QASISTATE: COS FUV HVLOW HVLOW, tag as COS (si_used and si_intrlv).</p> </td> </tr> <tr> <td>2</td> <td>DCE RAM dump</td> <td>DARK</td> <td>S/C, DATA, NONE</td> <td></td> <td></td> <td>SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW</td> <td>Sequence 1-2 Non-Int in Visit 05</td> <td>60.0 Secs [==&gt;]</td> <td>[1]</td> </tr> <tr> <td colspan="10"> <p>Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.</p> <p>SOL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si_used and si_intrlv)</p> </td> </tr> </tbody> </table>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	1	FUV Dark	DARK	COS/FUV, TIME-TAG, DEF	DEF	BUFFER-TIME=3600	SAA CONTOUR 31; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 05	3600.0 Secs [==>]	[1]	<p>Comments: Take a 1-hour dark exposure with the HV at HVNOM.</p> <p>ISQL required for the DUMP and HOME created by this exposure...update QASISTATE: COS FUV HVLOW HVLOW, tag as COS (si_used and si_intrlv).</p>										2	DCE RAM dump	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 05	60.0 Secs [==>]	[1]	<p>Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.</p> <p>SOL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si_used and si_intrlv)</p>										
	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit																																										
1	FUV Dark	DARK	COS/FUV, TIME-TAG, DEF	DEF	BUFFER-TIME=3600	SAA CONTOUR 31; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 05	3600.0 Secs [==>]	[1]																																											
<p>Comments: Take a 1-hour dark exposure with the HV at HVNOM.</p> <p>ISQL required for the DUMP and HOME created by this exposure...update QASISTATE: COS FUV HVLOW HVLOW, tag as COS (si_used and si_intrlv).</p>																																																				
2	DCE RAM dump	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 05	60.0 Secs [==>]	[1]																																											
<p>Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.</p> <p>SOL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si_used and si_intrlv)</p>																																																				



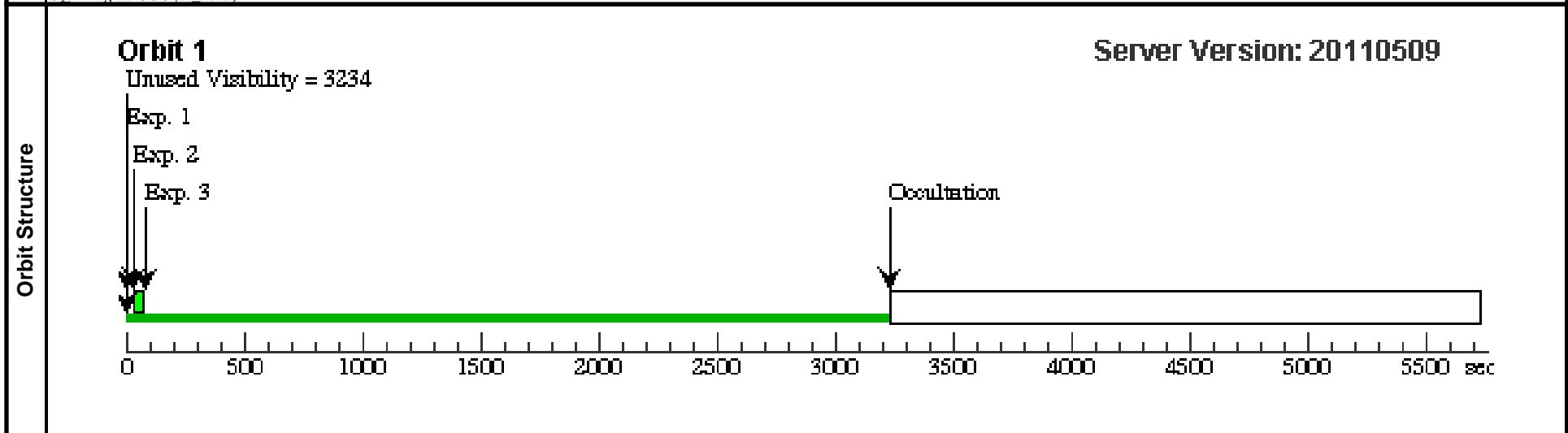


Proposal 12431 - Visit 06 - COS FUV Recovery from Anomalous Shutdown

Tue Jul 12 01:03:41 GMT 2011

**Visit**  
**Proposal 12431, Visit 06, implementation**  
**Diagnostic Status: No Diagnostics**  
 Scientific Instruments: S/C  
 Special Requirements: GYRO MODE 3GOBAD; AFTER 05; ON HOLD ; PARALLEL  
 Comments: Ramp the HV down and turn it off. Set Flag 3.  
 No SAA 31 passages from the start of Visit 04 through the end of Visit 06.  
 On Hold Comments: To be used only after an anomalous shutdown of the FUV high voltage.

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	FUV HVNom to HVLow	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR RLHNTHLF; QASISTATES COS SI OPERATE OPERATE; QASISTATES COS FUV HVLOW OPERATE	Same Alignment in Visit 06	35 Secs [==>]	[1]
Comments: SQL: tag as COS (si_used)									
2	FUV HVLow to Operate	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR RLHLTOPF	Same Alignment in Visit 06	50 Secs [==>]	[1]
Comments: SQL: tag as COS (si_used)									
3	Set COS Event Flag 3	DARK	S/C, DATA, NONE			SPEC COM INSTR ELFLAG3	Same Alignment in Visit 06	1.0 Secs [==>]	[1]
Comments: Set COS event flag 3. This will prevent FUV commanding unless it is cleared first. SQL: tag as COS (si_used)									



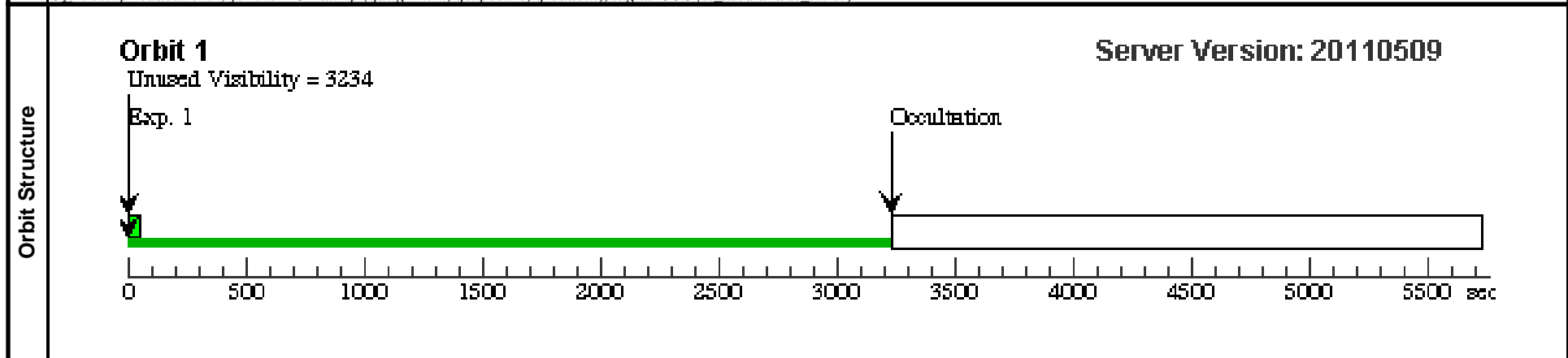
Proposal 12431 - Visit 11 - COS FUV Recovery from Anomalous Shutdown

Tue Jul 12 01:03:41 GMT 2011

**Proposal 12431, Visit 11, implementation**  
**Diagnostic Status: No Diagnostics**  
 Scientific Instruments: S/C  
 Special Requirements: GYRO MODE 3GOBAD; AFTER 06 BY 48 H TO 72 H; ON HOLD ; PARALLEL  
 Comments: Diagnostics are taken (DCE RAM dumps).  
 UC Berkeley, COS Instrument Scientist, and engineering will examine data dumps, science exposures, and housekeeping telemetry. If all is well, the go-ahead will be given to proceed with the second HV ramp-up. This time normal ramping parameters will be used. Flag 3 must be cleared by the ground via real-time commanding (using a generic opportunity) before the start of Visit 12.  
 This visit should be scheduled during a time-of-day where the FOT is scheduled to be physically present in the MOR.  
 On Hold Comments: To be used only after an anomalous shutdown of the FUV high voltage.

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	DCE RAM dump	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV OPERATE OP ERATE		60.0 Secs [==>]	[1]

Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.  
 SOL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si\_used and si\_intrlv)



# Proposal 12431 - Visit 12 - COS FUV Recovery from Anomalous Shutdown

<b>Visit</b>	<p><b>Proposal 12431, Visit 12, implementation</b></p> <p><b>Diagnostic Status: No Diagnostics</b></p> <p>Scientific Instruments: S/C</p> <p>Special Requirements: GYRO MODE 3GOBAD; AFTER 11; ON HOLD ; PARALLEL</p> <p><i>Comments: FUV HV turn-on and ramp to HVLOW. FUV Qasi_states will be set to start_state=OPERATE. From there, special commanding will be used to execute the FUV Operate to HVLow reconfiguration. Diagnostics are taken (DCE RAM dumps) after each transition.</i></p> <p><i>On Hold Comments: To be used only after an anomalous shutdown of the FUV high voltage.</i></p>	Tue Jul 12 01:03:41 GMT 2011
--------------	--	------------------------------

Proposal 12431 - Visit 12 - COS FUV Recovery from Anomalous Shutdown

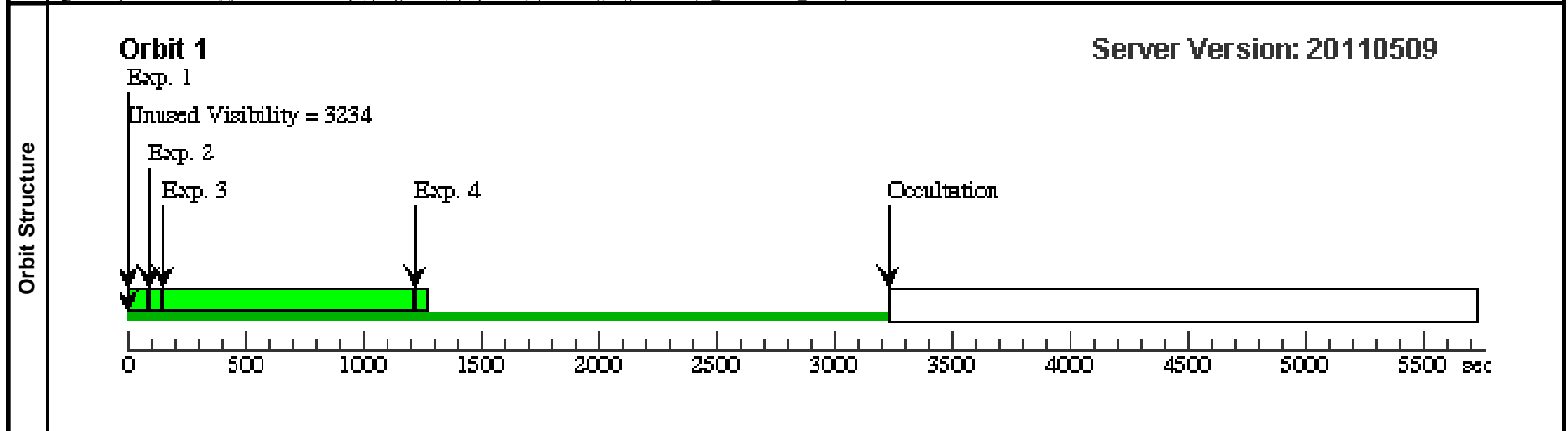
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	
Exposures	1	Turn FUV H V on	DARK	S/C, DATA, NONE		SAA CONTOUR 31; SPEC COM INSTR ELOPTHOF; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV OPERATE HV LOW	Sequence 1-4 Non-In- t in Visit 12	90.0 Secs [==>]	[1]	
	<p>Comments: Turn on the FUV high voltage, but do not ramp it up. Exp time has 50s added to model AFTER BY on exp 2.</p> <p>SQL: tag as COS (si_used and si_intrlv)</p>									
	2	DCE RAM dump	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-4 Non-In- t in Visit 12	60.0 Secs [==>]	[1]
<p>Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.</p> <p>SQL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si_used and si_intrlv)</p>										
3	Ramp FUV HV to HVL ow	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHOTHLF; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-4 Non-In- t in Visit 12	1070.0 Secs [==>]	[1]	
<p>Comments: Ramp the FUV high voltage to the HVLOW value at 10 sec/step. The end state is HVLOW to reflect this. Visit 13's start state is set to match this end state. Exp time has 45s added to simulate AFTER BY on exp 2.</p> <p>SQL: tag as COS (si_used and si_intrlv)</p>										

Proposal 12431 - Visit 12 - COS FUV Recovery from Anomalous Shutdown

4	DCE RAM DARK dump	S/C, DATA, NONE	SAA CONTOUR 31; Sequence 1-4 Non-In- t in Visit 12 SPEC COM INSTR ELCOPYDCE; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	60.0 Secs [==>]	[!]
---	----------------------	-----------------	---	--------------------	-----

Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.

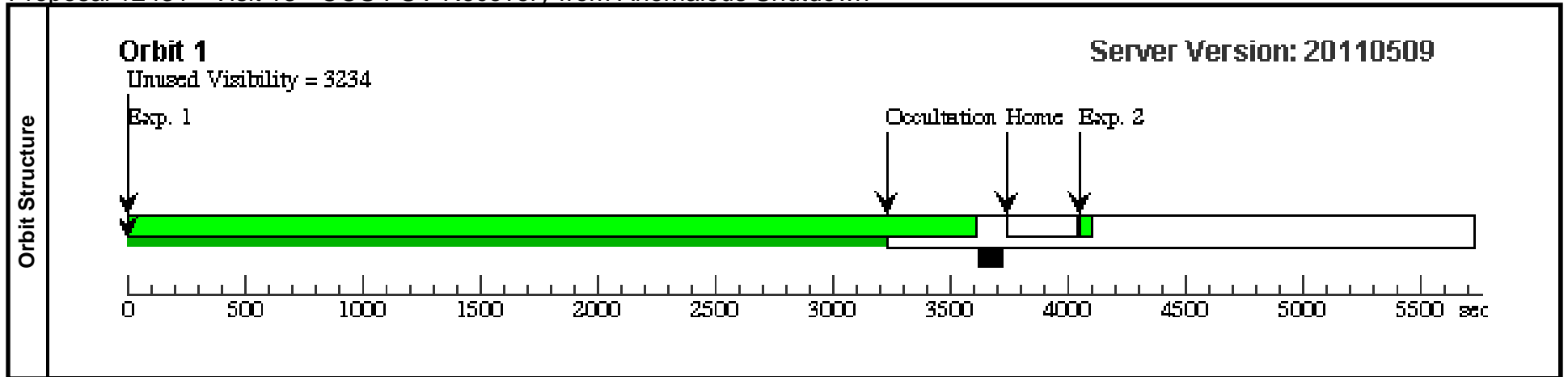
SQL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si\_used and si\_intrlv)



Proposal 12431 - Visit 13 - COS FUV Recovery from Anomalous Shutdown

Tue Jul 12 01:03:42 GMT 2011

<b>Visit</b>	<b>Proposal 12431, Visit 13, implementation</b> <b>Diagnostic Status: Warning</b> Scientific Instruments: S/C, COS/FUV Special Requirements: GYRO MODE 3GOBAD; AFTER 12; ON HOLD ; PARALLEL Comments: Dark 3600.0 second exposure. Diagnostics are taken (DCE RAM dumps) after the exposure. On Hold Comments: To be used only after an anomalous shutdown of the FUV high voltage.																																																											
	<b>Diagnostics</b> (Visit 13) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU																																																											
<b>Exposures</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Label</th> <th>Target</th> <th>Config,Mode,Aperture</th> <th>Spectral Els.</th> <th>Opt. Params.</th> <th>Special Reqs.</th> <th>Groups</th> <th>Exp. Time/[Actual Dur.]</th> <th>Orbit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>FUV Dark</td> <td>DARK</td> <td>COS/FUV, TIME-TAG, DEF</td> <td>DEF</td> <td>BUFFER-TIME=3600</td> <td>SAA CONTOUR 31; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW</td> <td>Sequence 1-2 Non-Int in Visit 13</td> <td>3600.0 Secs [==&gt;]</td> <td>[1]</td> </tr> <tr> <td colspan="10">                     Comments: Take a 1-hour dark exposure with the HV at HVLOW.                      ISQL required for the DUMP and HOME created by this exposure...update QASISTATE: COS FUV HVLOW HVLOW.                 </td> </tr> <tr> <td>2</td> <td>DCE RAM dump</td> <td>DARK</td> <td>S/C, DATA, NONE</td> <td></td> <td></td> <td>SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW</td> <td>Sequence 1-2 Non-Int in Visit 13</td> <td>60.0 Secs [==&gt;]</td> <td>[1]</td> </tr> <tr> <td colspan="10">                     Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.                      SQL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si used and si intrlv)                 </td> </tr> </tbody> </table>										#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	1	FUV Dark	DARK	COS/FUV, TIME-TAG, DEF	DEF	BUFFER-TIME=3600	SAA CONTOUR 31; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 13	3600.0 Secs [==>]	[1]	Comments: Take a 1-hour dark exposure with the HV at HVLOW. ISQL required for the DUMP and HOME created by this exposure...update QASISTATE: COS FUV HVLOW HVLOW.										2	DCE RAM dump	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 13	60.0 Secs [==>]	[1]	Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump. SQL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si used and si intrlv)									
	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit																																																		
1	FUV Dark	DARK	COS/FUV, TIME-TAG, DEF	DEF	BUFFER-TIME=3600	SAA CONTOUR 31; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 13	3600.0 Secs [==>]	[1]																																																			
Comments: Take a 1-hour dark exposure with the HV at HVLOW. ISQL required for the DUMP and HOME created by this exposure...update QASISTATE: COS FUV HVLOW HVLOW.																																																												
2	DCE RAM dump	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 13	60.0 Secs [==>]	[1]																																																			
Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump. SQL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si used and si intrlv)																																																												

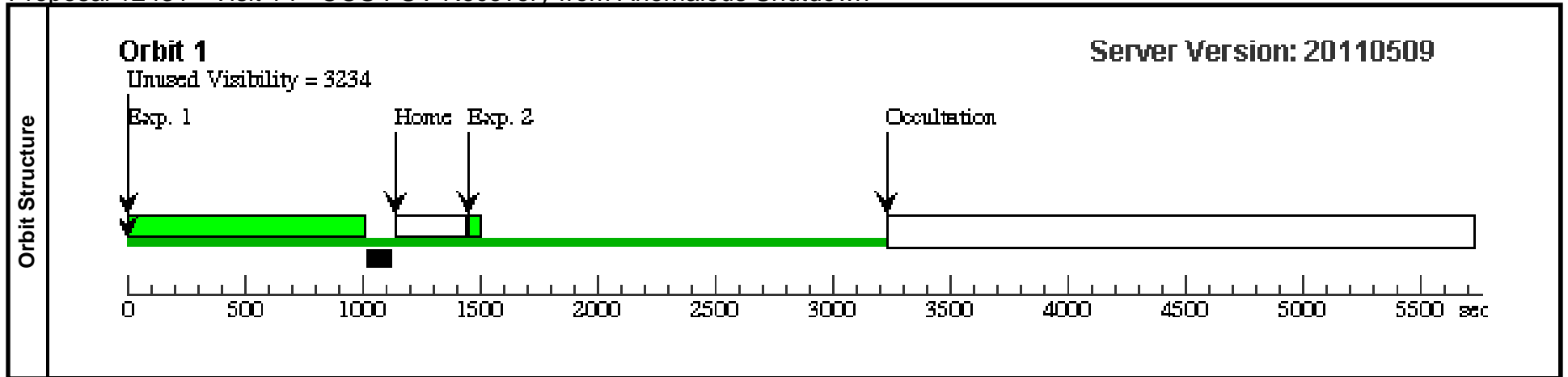


Proposal 12431 - Visit 14 - COS FUV Recovery from Anomalous Shutdown

Tue Jul 12 01:03:42 GMT 2011

Visit	Proposal 12431, Visit 14, implementation									
	Diagnostic Status: No Diagnostics Scientific Instruments: S/C, COS/FUV Special Requirements: GYRO MODE 3GOBAD; AFTER 13; ON HOLD ; PARALLEL Comments: Ramp FUV HV from HVLOW to HVNOM. Ramp the HV to it nominal value for each segment (defined by Qesiparms ENDCTSA and ENDCTSB) during a 1000.0 second DARK exposure. Diagnostics are taken (DCE RAM dumps) after. FUV Qasi_states will be set to start_state=HVLOW. From there, special commanding will be used to execute the FUV HVLOW to HVNOM reconfiguration, but we set end_state to HVLOW to prevent 10.2 from inserting unwanted recons between this and visit 15.  No SAA 31 passages from the start of Visit 14 through the end of Visit 16. On Hold Comments: To be used only after an anomalous shutdown of the FUV high voltage.									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
		1	FUV Dark	DARK	COS/FUV, TIME-TAG, DEF	DEF	BUFFER-TIME=1000	SAA CONTOUR 31; Sequence 1-2 Non-Int in Visit 14 SPEC COM INSTR ELHLTHVFX; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSERVE; QASISTATES COS FUV HVLOW HVLOW; QESIPARM ENDC TSA 169; QESIPARM ENDC TSB 175; QESIPARM SECPE RCT 3		1000.0 Secs [==>]
	Comments: Ramp the FUV HV from HVLow to HVNom at 3 sec/step during this exposure. ISQL required for the DUMP and HOME created by this exposure...update QASISTATE: COS FUV HVLOW HVLOW.									
	2	DCE RAM dump	DARK	S/C, DATA, NONE			SAA CONTOUR 31; Sequence 1-2 Non-Int in Visit 14 SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSERVE; QASISTATES COS FUV HVLOW HVLOW		60.0 Secs [==>]	[1]
	Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump. SQL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si_used and si_intrlv)									

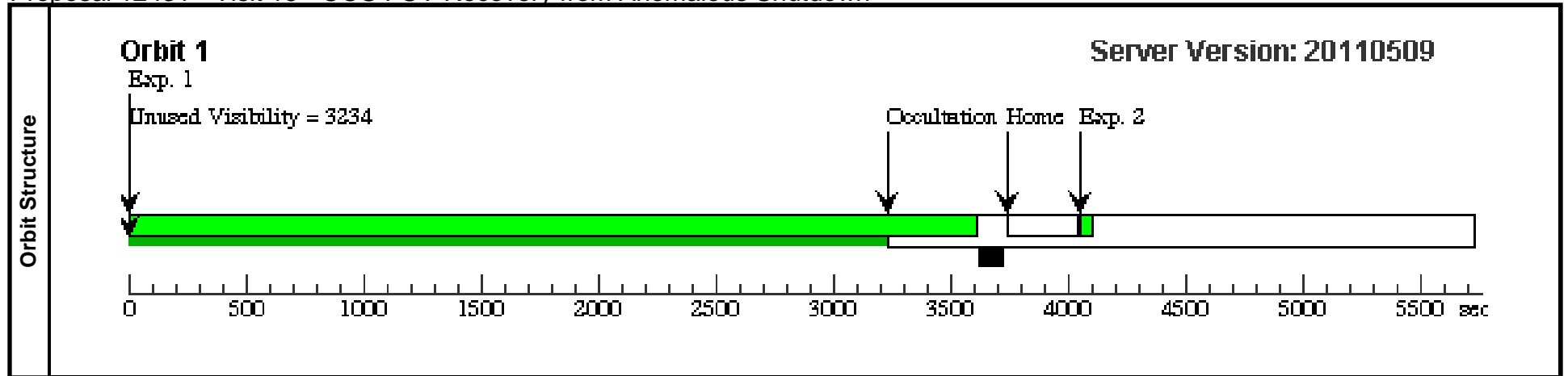




# Proposal 12431 - Visit 15 - COS FUV Recovery from Anomalous Shutdown

Tue Jul 12 01:03:42 GMT 2011

<b>Visit</b>	<p><b>Proposal 12431, Visit 15, implementation</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: S/C, COS/FUV</p> <p>Special Requirements: GYRO MODE 3GOBAD; AFTER 14; ON HOLD ; PARALLEL</p> <p>Comments: Dark 3600.0 second exposure. Diagnostics are taken (DCE RAM dumps) after the exposure.</p> <p>After the completion of Visit 15, all diagnostic and science data from Visits 6-15 should be fast-tracked to the COS Science Team.</p> <p>No SAA 31 passages from the start of Visit 14 through the end of Visit 16.</p> <p>On Hold Comments: To be used only after an anomalous shutdown of the FUV high voltage.</p>																																																			
	<p>(Visit 15) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU</p>																																																			
<b>Diagnostics</b>																																																				
<b>Exposures</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Label</th> <th>Target</th> <th>Config,Mode,Aperture</th> <th>Spectral Els.</th> <th>Opt. Params.</th> <th>Special Reqs.</th> <th>Groups</th> <th>Exp. Time/[Actual Dur.]</th> <th>Orbit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>FUV Dark</td> <td>DARK</td> <td>COS/FUV, TIME-TAG, DEF</td> <td>DEF</td> <td>BUFFER-TIME=3600</td> <td>SAA CONTOUR 31; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW</td> <td>Sequence 1-2 Non-Int in Visit 15</td> <td>3600.0 Secs [==&gt;]</td> <td>[1]</td> </tr> <tr> <td colspan="10"> <p>Comments: Take a 1-hour dark exposure with the HV at HVNOM.</p> <p>ISQL required for the DUMP created by this exposure...update QASISTATE: COS FUV HVLOW HVLOW.</p> </td> </tr> <tr> <td>2</td> <td>DCE RAM dump</td> <td>DARK</td> <td>S/C, DATA, NONE</td> <td></td> <td></td> <td>SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW</td> <td>Sequence 1-2 Non-Int in Visit 15</td> <td>60.0 Secs [==&gt;]</td> <td>[1]</td> </tr> <tr> <td colspan="10"> <p>Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.</p> <p>SOL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si_used and si_intrlv)</p> </td> </tr> </tbody> </table>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	1	FUV Dark	DARK	COS/FUV, TIME-TAG, DEF	DEF	BUFFER-TIME=3600	SAA CONTOUR 31; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 15	3600.0 Secs [==>]	[1]	<p>Comments: Take a 1-hour dark exposure with the HV at HVNOM.</p> <p>ISQL required for the DUMP created by this exposure...update QASISTATE: COS FUV HVLOW HVLOW.</p>										2	DCE RAM dump	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 15	60.0 Secs [==>]	[1]	<p>Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.</p> <p>SOL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si_used and si_intrlv)</p>										
	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit																																										
1	FUV Dark	DARK	COS/FUV, TIME-TAG, DEF	DEF	BUFFER-TIME=3600	SAA CONTOUR 31; NEW ALIGNMENT ; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 15	3600.0 Secs [==>]	[1]																																											
<p>Comments: Take a 1-hour dark exposure with the HV at HVNOM.</p> <p>ISQL required for the DUMP created by this exposure...update QASISTATE: COS FUV HVLOW HVLOW.</p>																																																				
2	DCE RAM dump	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVLOW HVL OW	Sequence 1-2 Non-Int in Visit 15	60.0 Secs [==>]	[1]																																											
<p>Comments: DCE RAM copy and dump. See Visit 1, Exposure 2 for a complete description of the dump.</p> <p>SOL: setup readout entry for the DCE dump (qalignment, qexposure, qreadout), tag as COS (si_used and si_intrlv)</p>																																																				



Proposal 12431 - Visit 16 - COS FUV Recovery from Anomalous Shutdown

Tue Jul 12 01:03:43 GMT 2011

**Visit**

**Proposal 12431, Visit 16, implementation**

**Diagnostic Status: No Diagnostics**

Scientific Instruments: S/C

Special Requirements: GYRO MODE 3GOBAD; AFTER 15; ON HOLD ; PARALLEL

Comments: Ramp the HV down and turn it off. Set Flag 3.

DO NOT schedule any COS FUV activities within 48 hours after this visit.

No SAA 31 passages from the start of Visit 14 through the end of Visit 16.

On Hold Comments: To be used only after an anomalous shutdown of the FUV high voltage.

**Exposures**

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	FUV HVNom to HVLow	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR RLHNTHLF; QASISTATES COS SI OPERATE OPERATE; QASISTATES COS FUV HVLOW OPERATE	Same Alignment in Visit 16	35 Secs [==>]	[1]
Comments: SQL: tag as COS (si_used)									
2	FUV HVLow to Operate	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR RLHLTOPF	Same Alignment in Visit 16	50 Secs [==>]	[1]
Comments: SQL: tag as COS (si_used)									
3	Set COS Event Flag 3	DARK	S/C, DATA, NONE			SPEC COM INSTR ELFLAG3	Same Alignment in Visit 16	1.0 Secs [==>]	[1]
Comments: Set COS event flag 3. This will prevent FUV commanding unless it is cleared first.									
SQL: tag as COS (si_used)									

