

# 12431 - COS FUV Recovery from Anomalous Shutdown

Cycle: 18, Proposal Category: CAL/COS (Availability Mode: RESTRICTED)

## **INVESTIGATORS**

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## **VISITS**

Visit	Targets used in Visit	Configurations used in Visit	Orbits Used	Last Orbit Planner Run	OP Current with Visit?
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

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

Visit	Targets used in Visit	Configurations used in Visit	Orbits Used	Last Orbit Planner Run	OP Current with Visit?
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 perfomed, 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.

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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-

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- 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.

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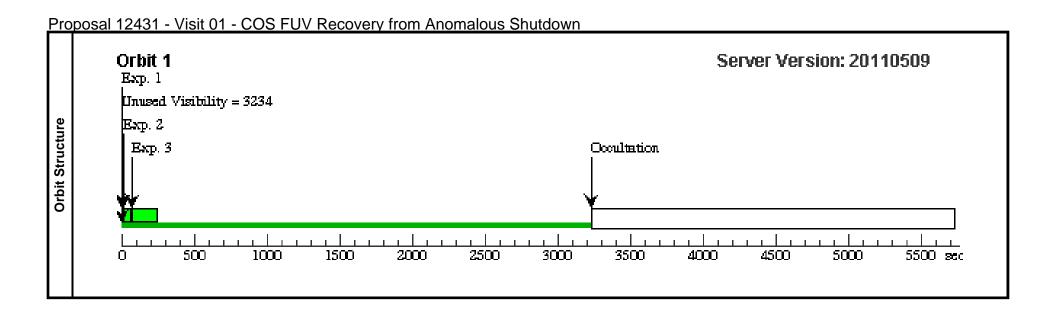
This is not a requirement but it is desirable to have real-time engineering telemetry (MA return) during the execution of this proposal.

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.

Pro	posal 12431 - Visit 01	- COS FUV Recovery	from Anomalo	<u>us Shutdown</u>				
	Proposal 12431, Visit 01, impleme	entation					Tue Jul 12 01:0	03:37 GMT 201
	Diagnostic Status: No Diagnostics	ı						
	Scientific Instruments: S/C							
<u>.</u>	Special Requirements: GYRO MOI	DE 3GOBAD; ON HOLD ; PARALL	EL					
Visit	Comments: Uninhibit the DCE. This visit uninhibits the DCE (sets a detector from Boot to Operate. Spec	lce_FUVInhibitMode == FALSE and cial commanding is used to uninhibit t	does other CS cleanup, the DCE and to dump th	thus ensuring the DC e DCE RAM. Regular	E is in its nominal Boot store recon commanding is use	nte), takes diagnostics ( d for the Boot to Opera	(DCE RAM dump), and transition ate transition.	is the FUV
	recovery.	Flag 3 must be cleared by the ground		ng. This can be done o	as soon as the anomalous	HV shutdown is unders	stood an the go-ahead is given to	proceed with th
	On Hold Comments: To be used onl   # Label Target	ly after an anomalous shutdown of the Config, Mode, Aperture	Spectral Els.	Opt. Params.	Special Regs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1 FUV Inhibit DARK	S/C, DATA, NONE	Spectral Lis.	Opt. 1 arams.		Sequence 1-3 Non-In	T .	Orbit
	to Boot	5, 6, 51111, 1, 61, 2			ELRECOVERF;	t in Visit 01	[==>]	
					QASISTATES COS SI OBSERVE OBSE RVE;			[1]
					QASISTATES COS FUV HVLOW OPE RATE			
	Comments: Unhibit the DCE for con	mmanding by setting dce_FUVInhibit	Mode == FALSE in the	CS FSW. Several other	er houskeeping tasks are a	lso cleaned up.		
	It is assumed that this will be the fir SOL: tag as COS (si used and si in	est FUV activity on an SMS and that th	he CS is in Operate state	e. Therefore, the starti	ing FUV state is set to HVI	LOW, which is the nom	inal SMS boundary state.	
	2 DCE RAM DARK	S/C, DATA, NONE			SAA CONTOUR 31:	Sequence 1-3 Non-In	60.0 Secs	
	dump	S/C, DATA, NONE			SPEC COM INSTR ELCOPYDCE;	t in Visit 01	[==>]	
					NEW ALIGNMENT ;			
Exposures					QASISTATES COS SI OBSERVE OBSE RVE;			[1]
Exp					QASISTATES COS FUV OPERATE OP ERATE			
	"[I'm after] the procedure to get a	AM. From Jason McPhate (Berkeley , memory dump of the FUV HV and AU he data that is I second old), and a cu dump.	X power current monito	ors (HVIA, HVIB, AUX	XI). Each of these has a 10	000 (possibly 1024) sar values for each monito	nple buffer that monitors the curr rr)."	rent at 1ms sam
		CE dump (qalignment, qexposure, qre	adout), tag as COS (si_t	used and si_intrlv)			1	
	3 FUV Boot t DARK o Operate	S/C, DATA, NONE			SPEC COM INSTR RLBTTOPF;	Sequence 1-3 Non-In t in Visit 01		
					NEW ALIGNMENT		[==>]	
					; QASISTATES COS SI OBSERVE OBSE RVE;			[1]
					QASISTATES COS FUV OPERATE OP ERATE			
	Comments: Transition the DCE from	m Boot to Operate. Use standard reco	n.					
	SQL: tag as COS (si_used and si_in	atrlv)						



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

Proposal 12431, Visit 02, implementation Tue Jul 12 01:03:39 GMT 201

Diagnostic Status: No Diagnostics

Scientific Instruments: S/C

Special Requirements: GYRO MODE 3GOBAD; AFTER 01; ON HOLD; PARALLEL

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

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

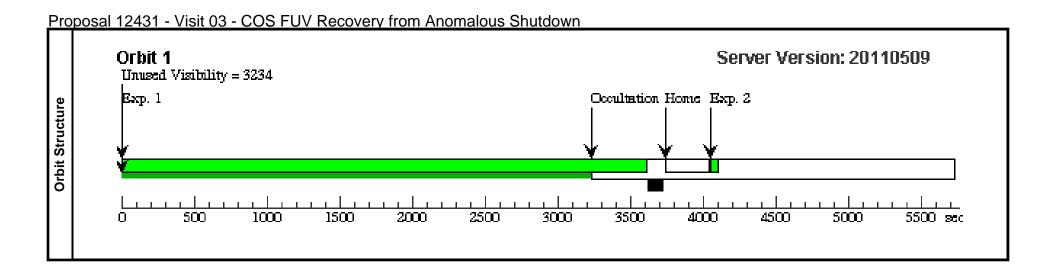
Proposal 12431 - Visit 02 - COS FUV Recovery from Anomalous Shutdown

#	Label	Target		Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Regs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Turn FUV V on	H DARK		S/C, DATA, NONE				Sequence 1-4 Non-In t in Visit 02		
	v on						SPEC COM INSTR ELOPTHOF;	t III VISIt 02	[==>]	
							QASISTATES COS SI OBSERVE OBSE RVE;			[1]
							QASISTATES COS FUV OPERATE HV LOW			
				but do not ramp it up. Exp tim	e has 50s added to mod	el AFTER BY on exp 2.				
	L: tag as CO			S/C, DATA, NONE			CAA CONTOLID 21	C 1 4 N I	CO O C	
2	DCE RAM dump	I DAKK		S/C, DATA, NONE			SPEC COM INSTR	Sequence 1-4 Non-In t in Visit 02	[==>]	
							ELCOPYDCE; NEW ALIGNMENT			
							; QASISTATES COS SI OBSERVE OBSE RVE;			[1]
							QASISTATES COS FUV HVLOW HVL OW			
Coi	mments: DCI	E RAM copy	and dump. See	e Visit 1, Exposure 2 for a comp	lete description of the d	ump.				· · · · · · · · · · · · · · · · · · ·
SQ.	L: setup read	out entry fo	r the DCE dum	np (qalignment, qexposure, qrea	dout), tag as COS (si_u	sed and si_intrlv)				
3	Ramp FUV	DARK		S/C, DATA, NONE			SAA CONTOUR 31:	Sequence 1-4 Non-In	1070.0 Secs	
<u>SQ</u> .	HV to HV	L					SPEC COM INSTR ELHOTHLF;	t in Visit 02	[==>]	
							NEW ALIGNMENT;			
							QASISTATES COS SI OBSERVE OBSE RVE;			[1]
							QASISTATES COS FUV HVLOW HVL OW			
Con	mments: Ram exp 2.	p the FUV	high voltage to	the HVLOW value at 10 sec/ste	p. The end state is HVI	LOW to reflect this. Vis		o match this end state.	Exp time has 45s added to simula	ite AFTER BY
SQ.	L: tag as CO	S (si_used a	nd si_intrlv)							

Proposal 12431 - Visit 02 - COS FUV Recovery from Anomalous Shutdown SAA CONTOUR 31; Sequence 1-4 Non-In 60.0 Secs DCE RAM DARK S/C, DATA, NONE dump t in Visit 02 SPEC COM INSTR ELCOPYDCE; [==>] NEW ALIGNMENT QASISTATES COS [1] SI OBSERVE OBSE RVE; **QASISTATES COS** FUV HVLOW HVL OW 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\_intrly) Server Version: 20110509 Orbit 1 Unused Visibility = 3234 Exp. 1 Orbit Structure Exp. 2 Exp. 3 Occultation Exp. 4 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 sec

	Proposal 12431,	Visit 03, impleme	entation					Tue Jul 12 01:03	:40 GMT 201
	Diagnostic Statu	ıs: Warning							
Visit	Scientific Instrum	nents: S/C, COS/F	UV						
>	Special Requiren	nents: GYRO MO	DE 3GOBAD; AFTER 02; ON HOLD ; I	PARALLEL					
	Comments: Dark	3600.0 second ex	posure. Diagnostics are taken (DCE RAM	l dumps) after the exp	oosure.				
	On Hold Comme	nts: To be used on	ly after an anomalous shutdown of the FU	JV high voltage.					
Diagnostics	(Visit 05) Warmi	ig (Orbit Plaimer):	: MAXIMUM DURATION EXCEEDED	FOR INTERNAL O	R EARTH CALIB SU				
	# 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		SAA CONTOUR 31;	Sequence 1-2 Non-In	3600.0 Secs	
					00	NEW ALIGNMENT	t in Visit 03	[==>]	
						QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS			[1]
						FUV HVLOW HVL OW			
	Comments: Take	a 1-hour dark exp	oosure with the HV at HVLOW.						
es		r the DUMP and i	HOME created by this exposureupdate <b>Q</b>	OACICTATE, COC E	W INTOW INTOW And	a as COS (si used and	si_intrlv).		
sares	ISQL required fo	inc Doni ana i	томъ стешей <i>ду ии</i> з ехрозитеираше <u>с</u>	JASISTATE: COS F	JV HVLOW HVLOW, IAS	g as COS (si_usea ana i			
posures	ISQL required fo 2 DCE RAM		S/C, DATA, NONE	<u>JASISTATE: COS FI</u>	ov hvlow hvlow, tag		Sequence 1-2 Non-In	60.0 Secs	
Exposures	ISQL required fo  DCE RAM dump			gasistate: Cos Fo	ov hvlow hvlow, ш	SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE;		60.0 Secs [==>]	
Exposures	ISQL required fo  DCE RAM dump			gasistate: cos ro	OV HVLOW HVLOW, IAŞ	SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET;	Sequence 1-2 Non-In		
Exposures	ISQL required fo  2 DCE RAM dump			ASISIATE: COS FO	OV HVLOW HVLOW, IAŞ	SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE;	Sequence 1-2 Non-In		[1]

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



Proposal 12431 - Visit 04 - COS FUV Re	ecovery from Anomalous	Shutdown
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Proposal 12431, Visit 04, implementation Tue Jul 12 01:03:40 GMT 2011

Diagnostic Status: No Diagnostics

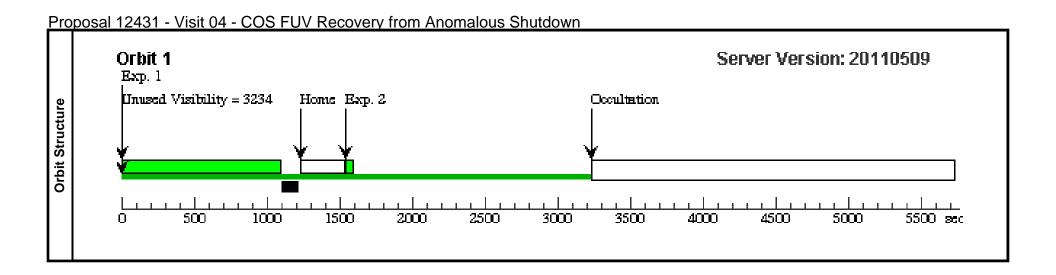
Scientific Instruments: S/C, COS/FUV

Special Requirements: GYRO MODE 3GOBAD; AFTER 03; ON HOLD; PARALLEL

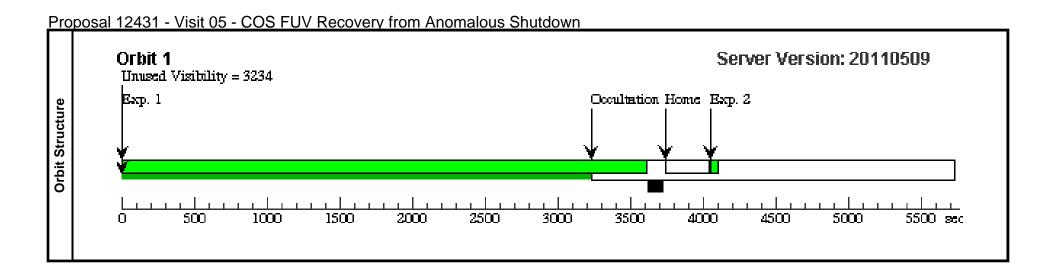
Comments: Ramp FUV HV from HVLOW to HVNOM.
Ramp the HV to it nominal value for each segment (defined by Qesiparms ENDCTSA and ENDCTSB) during a 1080.0 second DARK exposure. Diagnostics are taken (DCE RAM dumps) after. FUV Qasi\_states will be set to start\_state=HVLOW. From there, special commanding 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.

No SAA 31 passages from the start of Visit 04 through the end of Visit 06.

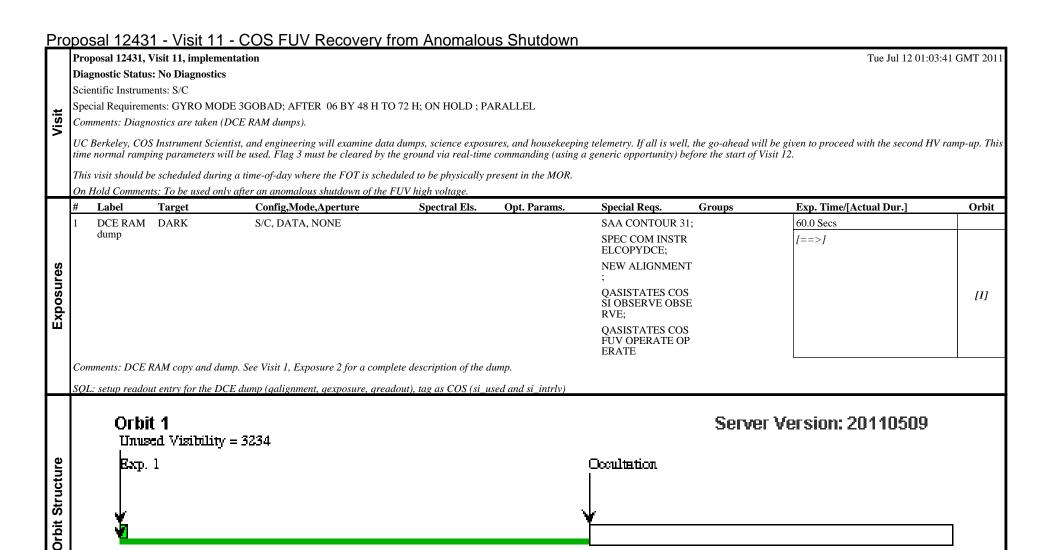
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	HVLow to	DARK	COS/FUV, TIME-TAG, DEF	DEF		SAA CONTOUR 31;	Sequence 1-2 Non-In	1080.0 Secs	
	HVNom w/ FUV Dark				00	SPEC COM INSTR ELHLTHVFX;	t in Visit 04	[==>]	
						NEW ALIGNMENT ;			
						QASISTATES COS SI OBSERVE OBSE RVE;			
						QASISTATES COS FUV HVLOW HVL OW;			[1]
						QESIPARM ENDC TSA 169;			
3						QESIPARM ENDC TSB 175;			
Coi						QESIPARM SECPE RCT 10			
•			m HVLow to HVNom at 10 sec/step during						
1SQ 2	OL required for DCE RAM		HOME created by this exposureupdate of S/C, DATA, NONE	QASISTATE: COS FU	JV HVLOW HVLOW, tag		<u>si_intrlv).</u> Sequence 1-2 Non-In	CO O G	
	dump	DAKK	5/C, DATA, NONE			SPEC COM INSTR ELCOPYDCE;	t in Visit 04	[==>]	
						NEW OBSET;			
						QASISTATES COS SI OBSERVE OBSE RVE;			[1]
						QASISTATES COS FUV HVLOW HVL OW			
Coi	mments: DCE F	RAM copy and di	ump. See Visit 1, Exposure 2 for a complet	te description of the a	lump.				



	Proposal 12431,	Visit 05, impleme	entation					Tue Jul 12 01:03	:40 GMT 2011
	Diagnostic Status	s: Warning							
	Scientific Instrum	nents: S/C, COS/F	UV						
<b>∺</b>	Special Requirem	ents: GYRO MOI	DE 3GOBAD; AFTER 04; ON HOLD;	PARALLEL					
Visit	Comments: Dark	3600.0 second exp	posure. Diagnostics are taken (DCE RAM	I dumps) after the exp	posure.				
	After the completi	ion of Visit 5, all d	liagnostic and science data from Visits 1-	5 should be fast-trace	ked to the COS Science T	Геат.			
	No SAA 31 passas	ges from the start	of Visit 04 through the end of Visit 06.						
	On Hold Commen	ıts: To be used onl	ly after an anomalous shutdown of the FU	JV high voltage.					
Diagnostics									
	# 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=36	,		3600.0 Secs	
					00	NEW ALIGNMENT	t in Visit 05	[==>]	
						, QASISTATES COS			
						SI OBSERVE OBSE RVE;			[1]
						QASISTATES COS			
						FUV HVLOW HVL OW			
	C . T. 1	a 1-hour dark exp	osure with the HV at HVNOM.						
S	Comments: Take of	_							
nres		r the DUMP and F	HOME created by this exposure undate t	PASISTATE: COS FI	UV HVLOW HVLOW, ta	g as COS (si_used and	si intrlv)		
osnres	ISQL required for		HOME created by this exposureupdate ( S/C, DATA, NONE	QASISTATE: COS FI	UV HVLOW HVLOW, ta			60.0 Secs	
Exposures			HOME created by this exposureupdate ( S/C, DATA, NONE	QASISTATE: COS F	UV HVLOW HVLOW, ta	SAA CONTOUR 31; SPEC COM INSTR	si_intrlv). Sequence 1-2 Non-In t in Visit 05	60.0 Secs [==>]	
Exposures	ISQL required for 2 DCE RAM			QASISTATE: COS F	UV HVLOW HVLOW, ta,	SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE;	Sequence 1-2 Non-In		
Exposures	ISQL required for 2 DCE RAM			<u>QASISTATE: COS F</u> 1	UV HVLOW HVLOW, ta,	SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET;	Sequence 1-2 Non-In		
Exposures	ISQL required for 2 DCE RAM			<u>QASISTATE: COS F</u>	UV HVLOW HVLOW, ta,	SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE	Sequence 1-2 Non-In t in Visit 05		[1]
Exposures	ISQL required for 2 DCE RAM			QASISTATE: COS F	UV HVLOW HVLOW, ta,	SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE RVE;	Sequence 1-2 Non-In t in Visit 05		[1]
Exposures	ISQL required for 2 DCE RAM			QASISTATE: COS F	UV HVLOW HVLOW, ta,	SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE; NEW OBSET; QASISTATES COS SI OBSERVE OBSE	Sequence 1-2 Non-In t in Visit 05		[1]



Proposal 12431 - Visit 06 - COS FUV Recovery from Anomalous Shutdown Proposal 12431, Visit 06, implementation Tue Jul 12 01:03:41 GMT 201 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 Regs. Groups Exp. Time/[Actual Dur.] Orbit FUV HVNo DARK S/C, DATA, NONE SAA CONTOUR 31; Same Alignment in 35 Secs m to HVLo Visit 06 [==>] SPEC COM INSTR RLHNTHLF; **OASISTATES COS** SI OPERATE OPER [1] ATE; **QASISTATES COS** Exposures **FUV HVLOW OPE RATE** Comments: SQL: tag as COS (si\_used) FUV HVLo DARK S/C, DATA, NONE SAA CONTOUR 31; Same Alignment in 50 Secs w to Operate Visit 06 SPEC COM INSTR *[==>1* [1] RLHLTOPF Comments: SOL: tag as COS (si used) Set COS Ev DARK SPEC COM INSTR Same Alignment in S/C, DATA, NONE 1.0 Secs ELFLAG3 Visit 06 ent Flag 3 [1] Comments: Set COS event flag 3. This will prevent FUV commanding unless it is cleared first. SQL: tag as COS (si\_used) Orbit 1 Server Version: 20110509 Unused Visibility = 3234 Exp. 1 **Orbit Structure** Exp. 2 Occultation Exp. 3 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 sec



5500 scc

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

Proposal 12431, Visit 12, implementation Tue Jul 12 01:03:41 GMT 201

Diagnostic Status: No Diagnostics

Scientific Instruments: S/C

Special Requirements: GYRO MODE 3GOBAD; AFTER 11; ON HOLD; PARALLEL

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

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

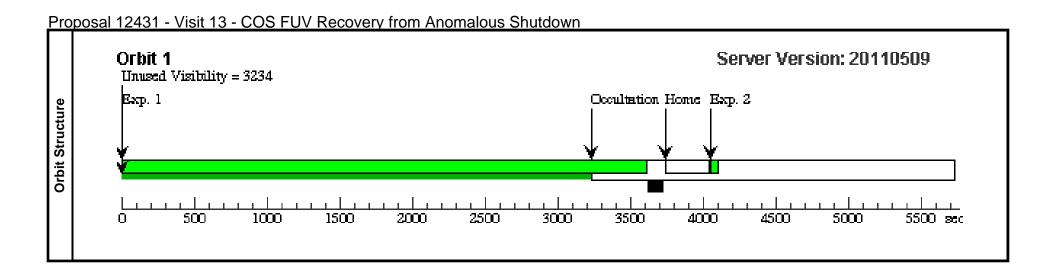
Proposal 12431 - Visit 12 - COS FUV Recovery from Anomalous Shutdown

	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	Turn FUV H	DARK	S/C, DATA, NONE			SAA CONTOUR 31;	Sequence 1-4 Non-In	90.0 Secs	
	V on					SPEC COM INSTR ELOPTHOF;	t in Visit 12	[==>]	
						QASISTATES COS SI OBSERVE OBSE RVE;			[1]
						QASISTATES COS FUV OPERATE HV LOW			
		on the FUV high v (si_used and si_in	voltage, but do not ramp it up. Exp time atrly)	e has 50s added to mod	el AFTER BY on exp 2	2.			
	DCE RAM		S/C, DATA, NONE			SAA CONTOUR 31;	Sequence 1-4 Non-In	60.0 Secs	
(	dump					SPEC COM INSTR	t in Visit 12	[==>]	
						ELCOPYDCE; NEW ALIGNMENT			
						;			
						QASISTATES COS SI OBSERVE OBSE RVE;			[1]
						QASISTATES COS FUV HVLOW HVL OW			
3 1	Ramp FUV	DARK	S/C, DATA, NONE				Sequence 1-4 Non-In		
SQL:	HV to HVL	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR	t in Visit 12	[=>]	
i   '	ow					ELHOTHLF;			
						NEW ALIGNMENT ;			
						QASISTATES COS			[1]
						SI OBSERVE OBSE RVE;			
						QASISTATES COS FUV HVLOW HVL OW			
Common exp	nents: Ramp o 2.	the FUV high vol	ltage to the HVLOW value at 10 sec/ste	p. The end state is HVI	LOW to reflect this. V		o match this end state.	Exp time has 45s added to simula	ite AFTER B
SQL:	tag as COS (	si_used and si_in	atrlv)						

Proposal 12431 - Visit 12 - COS FUV Recovery from Anomalous Shutdown DCE RAM DARK S/C, DATA, NONE SAA CONTOUR 31; Sequence 1-4 Non-In 60.0 Secs dump t in Visit 12 SPEC COM INSTR ELCOPYDCE; [==>] NEW ALIGNMENT QASISTATES COS [1] SI OBSERVE OBSE RVE; **QASISTATES COS** FUV HVLOW HVL OW 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\_intrly) Server Version: 20110509 Orbit 1 Exp. 1 Unused Visibility = 3234 Orbit Structure Exp. 2 Exp. 3 Occultation Exp. 4 500 1000 1500 2500 3000 2000 3500 4500 5000 5500 sec 4000

			Visit 13, impleme	- COS FUV Recovery fro					Tue Jul 12 01:03	42 GMT 2011
	_	ostic Status		entation					Tue Jul 12 01:03	.42 GWH 2011
<u>:</u> =	_		ents: S/C, COS/F	TIV						
Visit			*	DE 3GOBAD; AFTER 12; ON HOLD ; 1	PARALIFI					
	_	-		posure. Diagnostics are taken (DCE RAM		nosura				
			-	y after an anomalous shutdown of the FU		жите.				
S				MAXIMUM DURATION EXCEEDED		R FARTH CALIB SII				
Diagnostics										
	# ]	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1 1	FUV Dark	DARK	COS/FUV, TIME-TAG, DEF	DEF		SAA CONTOUR 31;	Sequence 1-2 Non-In	3600.0 Secs	
						00	NEW ALIGNMENT	t in Visit 13	[==>]	
							QASISTATES COS SI OBSERVE OBSE RVE;			[1]
							QASISTATES COS FUV HVLOW HVL OW			
			1 hour dark orn	osure with the HV at HVLOW.						•
es	Comm	ients: Take d	і 1-нойі аағк ехр							
enres	Comm		_		OASISTATE: COS FI	UV HVLOW HVLOW				
osnres	Comm	required for	the DUMP and H	IOME created by this exposureupdate (	QASISTATE: COS FU	UV HVLOW HVLOW.	SAA CONTOUR 31:	Sequence 1-2 Non-In	60.0 Secs	
Exposures	Comm		the DUMP and H		QASISTATE: COS FU	UV HVLOW HVLOW.	SAA CONTOUR 31; SPEC COM INSTR ELCOPYDCE;	Sequence 1-2 Non-In t in Visit 13	60.0 Secs [==>]	
Exposures	Common ISQL:	required for DCE RAM	the DUMP and H	IOME created by this exposureupdate (	QASISTATE: COS FU	UV HVLOW HVLOW.	SPEC COM INSTR			
Exposures	Comm ISQL 2	required for DCE RAM	the DUMP and H	IOME created by this exposureupdate (	QASISTATE: COS F	UV HVLOW HVLOW.	SPEC COM INSTR ELCOPYDCE;			[1]

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



Proposal 12431, Visit 14, implementation Tue Jul 12 01:03:42 GMT 201

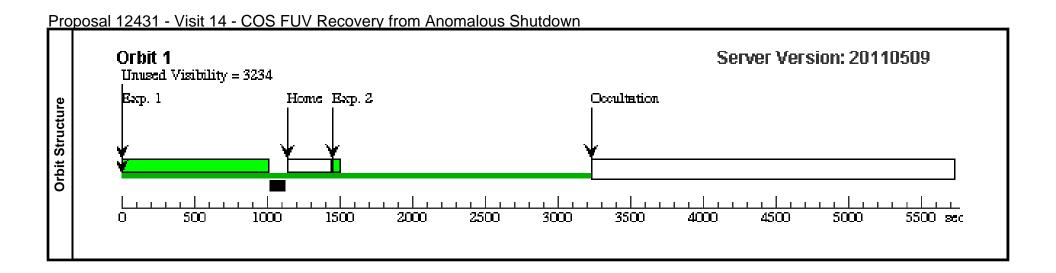
Diagnostic Status: No Diagnostics Scientific Instruments: S/C, COS/FUV

Special Requirements: GYRO MODE 3GOBAD; AFTER 13; ON HOLD; PARALLEL

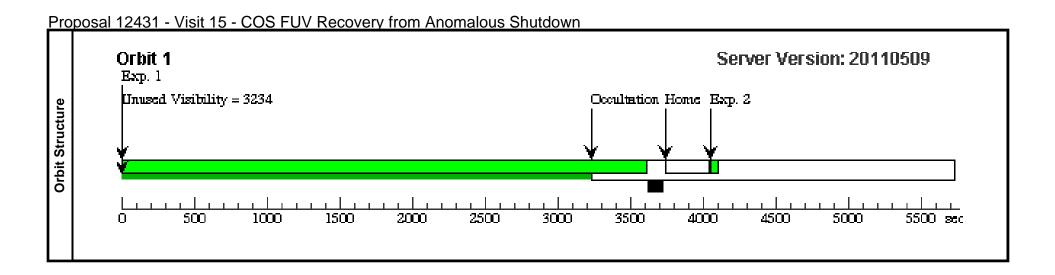
Comments: Ramp FUV HV from HVLOW to HVNOM.
Ramp the HV to it nominal value for each segment (defined by Qesiparms ENDCTSA and ENDCTSB) during a 1000.0 second DARK exposure. Diagnostics are taken (DCE RAM dumps) after. FUV Qasi\_states will be set to start\_state=HVLOW. From there, special commanding 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.

#	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=10		Sequence 1-2 Non-In	1000.0 Secs	
					00	SPEC COM INSTR ELHLTHVFX;	t in Visit 14	[==>]	
						NEW ALIGNMENT;			
						QASISTATES COS SI OBSERVE OBSE RVE;			
						QASISTATES COS FUV HVLOW HVL OW;			[1]
						QESIPARM ENDC TSA 169;			
:						QESIPARM ENDC TSB 175;			
Cor						QESIPARM SECPE RCT 3			
Cor	mments: Ramp	the FUV HV from	HVLow to HVNom at 3 sec/step during	this exposure.					
ISQ	QL required for	the DUMP and H	OME created by this exposureupdate (	QASISTATE: COS FU	JV HVLOW HVLOW.				
2	DCE RAM	DARK	S/C, DATA, NONE			SAA CONTOUR 31:	Sequence 1-2 Non-In	60.0 Secs	
	dump					SPEC COM INSTR ELCOPYDCE;	t in Visit 14	[==>]	
						NEW OBSET;			
						QASISTATES COS SI OBSERVE OBSE RVE;			[1]
						QASISTATES COS FUV HVLOW HVL OW			
Cor	mments: DCE I	RAM copy and dur	np. See Visit 1, Exposure 2 for a complet	e description of the a	lump.				
	T . 1		EE dump (qalignment, qexposure, qreado						



Pro	posal 1243	31 - Visit 1	5 - COS FUV Recovery fro	m Anomaloi	ıs Shutdown				
$\Box$	Proposal 12431, Visit 15, implementation  Tue Jul 12 01:03:42 GMT								
	Diagnostic Status: Warning Scientific Instruments: S/C, COS/FUV								
±									
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.								
Diagnostics	(Visit 15) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU								
	# 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=36	SAA CONTOUR 31;		3600.0 Secs	
					00	NEW ALIGNMENT	t in Visit 15	[==>]	
						QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS			[1]
						FUV HVLOW HVL OW			
Exposures	ISQL required for the DUMP created by this exposureupdate QASISTATE: COS FUV HVLOW HVLOW.								
Ιő	2 DCE RAM		S/C, DATA, NONE				1; Sequence 1-2 Non-In t in Visit 15	60.0 Secs	
ΙÄ	dump					SPEC COM INSTR ELCOPYDCE;		[==>]	
						NEW OBSET;			
						QASISTATES COS SI OBSERVE OBSE RVE;			[1]
						QASISTATES COS FUV HVLOW HVL OW			
	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 (galignment, qexposure, greadout), tag as COS (si_used and si_intrly)								



Proposal 12431 - Visit 16 - COS FUV Recovery from Anomalous Shutdown Proposal 12431, Visit 16, implementation Tue Jul 12 01:03:43 GMT 201 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. Label Target Config, Mode, Aperture Spectral Els. Opt. Params. Special Regs. Exp. Time/[Actual Dur.] Orbit Groups FUV HVNo DARK S/C. DATA, NONE SAA CONTOUR 31; Same Alignment in 35 Secs m to HVLo Visit 16 SPEC COM INSTR *[==>]* RLHNTHLF; **OASISTATES COS** SI OPERATE OPER [1] ATE: **QASISTATES COS** Exposures **FUV HVLOW OPE RATE** Comments: SQL: tag as COS (si\_used) FUV HVLo DARK S/C, DATA, NONE SAA CONTOUR 31; Same Alignment in 50 Secs w to Operate Visit 16 SPEC COM INSTR *[==>1* [1] RLHLTOPF Comments: SQL: tag as COS (si\_used) Set COS Ev DARK S/C, DATA, NONE SPEC COM INSTR Same Alignment in 1.0 Secs ent Flag 3 ELFLAG3 Visit 16 [==>] [1] Comments: Set COS event flag 3. This will prevent FUV commanding unless it is cleared first. SQL: tag as COS (si\_used) Server Version: 20110509 Orbit 1 Exp. 1 Unused Visibility = 3234 Orbit Structure Exp. 2 Exp. 3 Occultation 500 1500 2500 1000 2000 3000 3500 4000 4500 5000 5500 sec