



# 12433 - Coordinated HST, Venus Express, and Venus Climate Orbiter Observations of Venus

Cycle: 18, Proposal Category: NASA

(Availability Mode: AVAILABLE)

## INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
<b>Dr. Kandis Lea Jessup (PI)</b>	<b>Southwest Research Institute</b>	<b>jessup@boulder.swri.edu</b>
Dr. Franklin P. Mills (CoI)	Australian National University	frank.mills@anu.edu.au
Dr. Yuk Yung (CoI)	California Institute of Technology	yly@gps.caltech.edu
Mr. Tony Roman (CoI)	Space Telescope Science Institute	aroman@stsci.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	(4) VENUS-15-SOUTH (5) VENUS-32-SOUTH (10) VENUS+5P5DEGREES WAVE	S/C STIS/CCD	3	07-Jan-2011 21:01:58.0	yes
02	(6) VENUS-45-SOUTH-V02 (7) VENUS-65-SOUTH-V02 (11) VENUS+5P4DEGREES WAVE	S/C STIS/CCD	3	07-Jan-2011 21:02:13.0	yes
03	(8) VENUS-45-SOUTH-V03 (9) VENUS-65-SOUTH-V03 (11) VENUS+5P4DEGREES WAVE	S/C STIS/CCD	3	07-Jan-2011 21:02:31.0	yes

9 Total Orbits Used

## **ABSTRACT**

Currently, there is an unprecedented opportunity to observe the atmosphere of Venus. The Japanese Venus Climate Orbiter (VCO) mission, successfully launched on May 21, 2010, will be observing Venus simultaneously with Venus Express (VEx) Mission from December 2010 onward. A campaign for Earth-based observations coincident with the arrival of VCO at Venus is currently under-way. Fortunately, the window for observing Venus with HST at a solar elongation greater than 45 degrees is December 25, 2010, thru January 28, 2011. Thus, we are applying to use HST/STIS during that time to observe Venus upper cloud deck (65-75 km) in the ultraviolet (200-600 nm) at high spectral (0.3-0.6 nm) and spatial (40-60 km/pixel) resolution using the G230LB (0.17-0.31 microns) and G430L (0.30-0.57 microns) gratings, with the 52x0.1 slit and the CCD detector. By observing Venus with the slit in its nominal 45 degree orientation, we will map, as a function of latitude, longitude, and time of day, variations in the spatial distribution of the SO<sub>2</sub>, SO and S<sub>2</sub> gases, which absorb strongly between 200 and 320 nm, and an un-identified ultraviolet (UV) absorber known to absorb strongly above 320 nm. Because the spatial distribution of all of the UV absorbers (named and un-named) is tied to the motion of the upper cloud, VCO plans to image the spatial distribution of the UV absorbers and their relationship with the cloud structure and the wind field, in order to derive the wind vectors at the cloud top (Rossow et al., 1990). However, neither VEx nor VCO has the capability to obtain high spectral and spatial resolution spectroscopy of Venus upper clouds at 200-600 nm. The proposed HST observations will characterize and quantify the absorbers responsible for the cloud features recorded in the UV (200-600 nm) images to be obtained by the VCO/UVI and VEx/VIRTIS instruments, mapping the spatial distribution of these UV absorbers as function of the zonal cloud motion. Additionally, photodissociation of each of the identified UV absorbers is a key component of the system of reactions that leads to the formation of sulfur-oxides, the loss of atomic oxygen, and the subsequent formation of Venus H<sub>2</sub>SO<sub>4</sub> clouds via the reaction of the sulfur-oxides with H<sub>2</sub>O. The density of H<sub>2</sub>O and OCS, the remaining atmospheric species that directly impact the rate of sulfur-oxide production and H<sub>2</sub>SO<sub>4</sub> cloud formation within Venus atmosphere, will be obtained via ground-based and VEx/SOIR measurements. Thus, the proposed HST observations, when combined with VCO, VEx, and ground-based observations, will provide a complete picture of the latitudinal, longitudinal, time of day, and wind-driven variation of each of the key species involved in the sulfur-oxidation cycle. These results will be used to inform and develop models designed to i) investigate outstanding questions regarding the formation of Venus global sulfuric acid clouds and the abundance of oxygen in the atmosphere and ii) investigate the climatic evolution of Venus atmosphere.

## **OBSERVING DESCRIPTION**

## Proposal 12433 (STScI Edit Number: 70, Created: Friday, January 7, 2011 9:02:38 PM EST) - Overview

The main objective of our observing proposal is to support and enhance the science return of the VEx and VCO missions; thus, investigators from both these teams are eager to coordinate with any observations granted by HST (see appended letters). Our goals are to obtain HST observations that can be directly compared to VEx/VIRTIS and VCO/UVI images of Venus upper cloud deck, the low spectral resolution VEx/SPICAV observations, and the high-spectral resolution NIR VEx/SOIR occultation observations, so that the spatial distribution of the Venus dominant UV absorbers can be quantified and mapped as a function of altitude, latitude, time of day, and the zonal cloud motion. While VCO plans to make continuous measurements of Venus low latitude regions, coordination of the observations with the VEx observations requires more precise planning. For example, the VEx/SOIR team has already committed to obtaining solar occultation observations of the lowlatitude regions of Venus during the HST observing window; but, the VEx/SOIR observations can only be obtained during the time period extending from December 25-December 30, 2010, when Venus is at a solar elongation angle of 45.8-46.3 degrees. The VEx/SPICAV and VEx/VIRTIS observations of Venus Earth-facing sunlit hemisphere can be made throughout the HST observing window. However, in late December VEx observations of Venus Earth-facing sunlit atmosphere can only be made at a high emission angle, while VEx observations made later in January (e.g. between January 25-28, when Venus is at a solar elongation angle of 45.9-45.6 degrees) can be obtained near nadir viewing, which will result in a significantly broader spatial coverage.

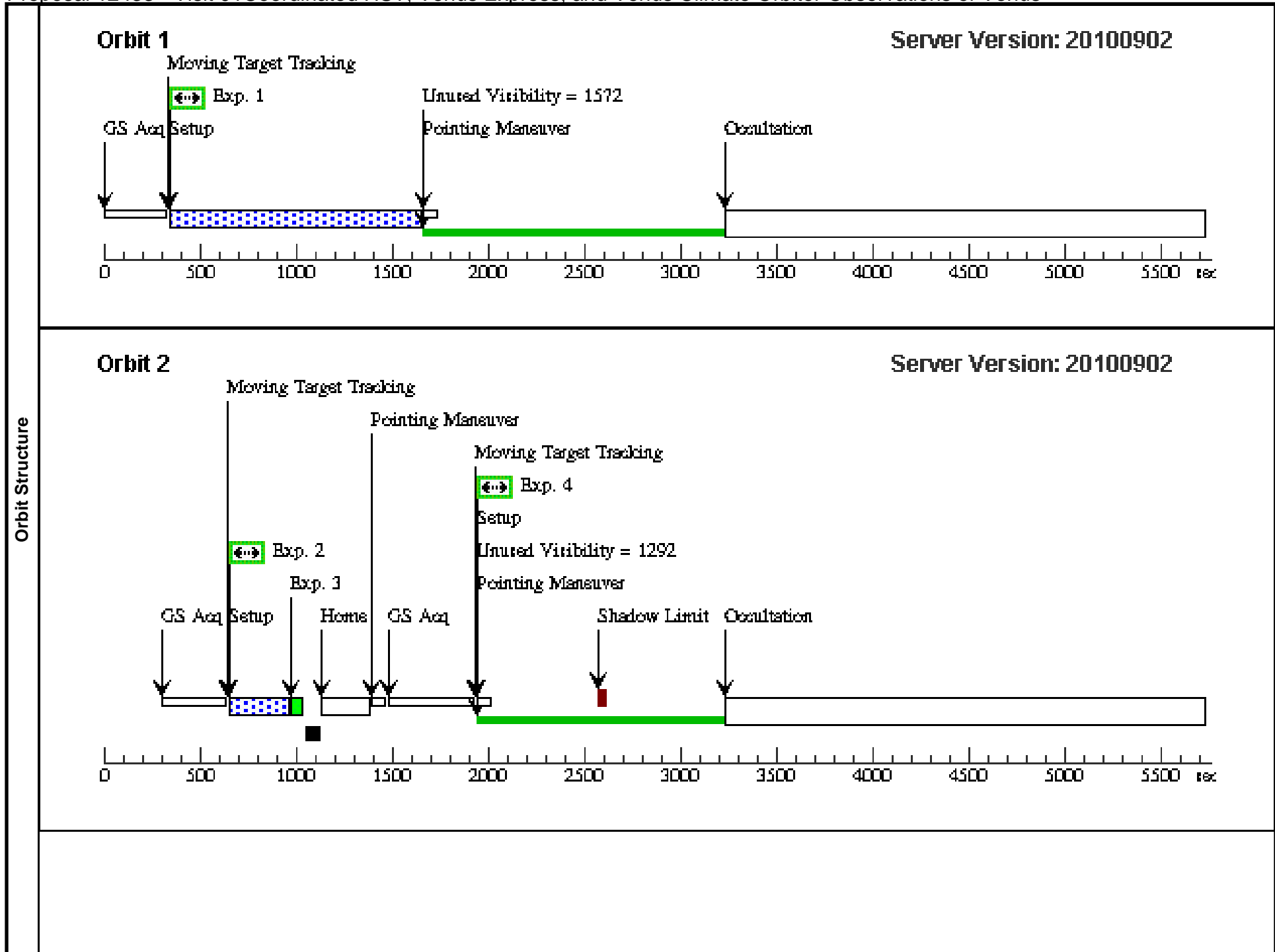
To achieve the highest level of science return from our proposed observations we request 6 orbits of observations of Venus over 3 days (i.e. 2 orbits per day). This would allow us to track changes in the atmospheric density within Venus upper cloud deck along with the zonal (or E-W) motion of the clouds during Venus 5-day cloud rotation period. VCO/UVI plans to track the spatial distribution of the Venus characteristic ultraviolet absorption features and their relationships with the cloud structure and the wind field. The proposed HST observations would provide distinct measurement of the density of each of the UV absorbers that produce the UV albedo pattern of Venus clouds as a function of the zonal motion of the clouds that could be compared directly with the VCO/UVI images. Implementation of this program would allow us to achieve all of our primary science goals. However, if 3 consecutive days of observation are not possible then 2 days of observation in late December sometime within the VEx/SOIR observing window, using 2 orbits per day, plus 2 orbits of observation acquired on a single visit in late January to coincide with the VEx/SPICAV nadir observing window would be of great value.

Proposal 12433 - Visit 01 Coordinated HST, Venus Express, and Venus Climate Orbiter Observations of Venus

<b>Visit</b>	<p><b>Proposal 12433, Visit 01, completed</b> <span style="float: right;">Sat Jan 08 02:02:39 GMT 2011</span></p> <p><b>Diagnostic Status: Error</b></p> <p>Scientific Instruments: STIS/CCD, S/C</p> <p>Special Requirements: BETWEEN 27-DEC-2010:23:00:00 AND 28-DEC-2010:01:00:00</p> <p><i>Comments: BETWEEN for simultaneous observing with Venus Express.</i></p>					
	<p>(Exposure 2 (Sequence 2-4 Non-Int in Visit 01) special requirements) Error (Form): Must supply 2 10-digit Guide Star IDs, separated by FGS numbers. &lt;br&gt;E.g. 1234567890F11234567890F2</p> <p>(Exposure 5 (Sequence 5-7 Non-Int in Visit 01) special requirements) Error (Form): Must supply 2 10-digit Guide Star IDs, separated by FGS numbers. &lt;br&gt;E.g. 1234567890F11234567890F2</p> <p>(Visit 01) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronagraphy with STIS or COS.</p>					
<b>Diagnosics</b>						
<b>Solar System Targets</b>	<b>#</b>	<b>Name</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Ephem Center</b>
	(4)	VENUS-15-SOUTH	STD=VENUS	TYPE=PGRAPHIC, LONG=61, LAT=-15		SEP OF VENUS SUN FROM EARTH EARTH GT 45.5D
	<i>Comments: Venus 15 degrees south latitude on central meridian. The longitude value specified here is the CML for visit 01 observing time (28-Dec-2010 0:00-2:00UT). The longitude value must be updated if a new observing time is selected.</i>					
	(5)	VENUS-32-SOUTH	STD=VENUS	TYPE=PGRAPHIC, LONG=61, LAT=-32		SEP OF VENUS SUN FROM EARTH EARTH GT 45.5D
<i>Comments: Venus 32 degrees south latitude on central meridian. The longitude value specified here is the CML for visit 01 observing time (28-Dec-2010 0:00-2:00UT). The longitude value must be updated if a new observing time is selected.</i>						
(10)	VENUS+5P5DEGR EES	STD=VENUS	TYPE=POS_ANGLE, RAD=19800, ANG=180, REF=SUN		EARTH	
<i>Comments: 5.5 degree offset from Venus in the anti-sunward direction.</i>						

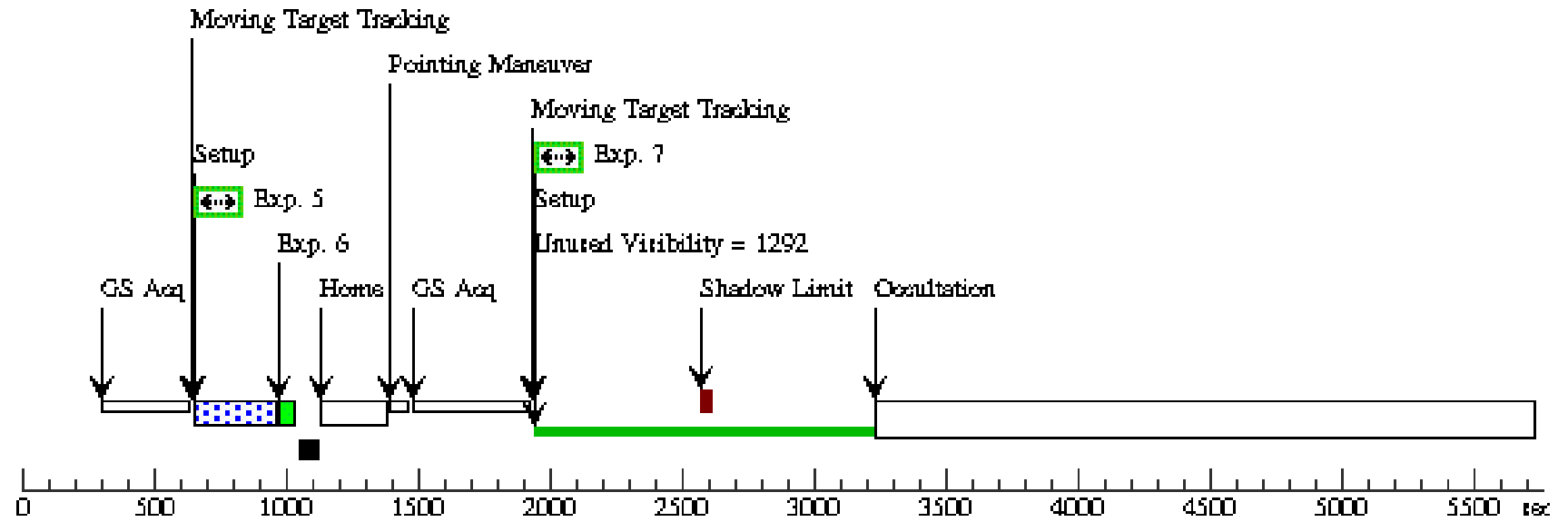
Proposal 12433 - Visit 01 Coordinated HST, Venus Express, and Venus Climate Orbiter Observations of Venus

#	Label	Target	Config, Mode, Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	
Exposures	1	(10) VENUS+5P5D EGREES	S/C, POINTING, V1			GS ACQ SCENARI O BASE1B3		1320 Secs [==>]	[1]	
	<p><i>Comments: This exposure establishes a pointing near Venus but outside of HST's solar avoidance zone. Doing this minimizes the slew distance when slewing to Venus. This is a precautionary measure to protect against an unusually large pointing error after the slew to Venus. While such an error is unlikely in general, it is even more unlikely for a small slew.</i></p> <p><i>The 22 minute exposure time ensures a gyro bias update will take place.</i></p>									
	2	(4) VENUS-15-SOU TH	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A	WAVECAL=NO; CR-SPLIT=NO	SHADOW; SPEC COM INSTR EOITDFMAIN; GSPAIR S92400012 9F1000000000F0; GS ACQ SCENARI O SINGLE	Sequence 2-4 Non-Int in Visit 01	153 Secs [==>]	[2]	
	<p><i>Comments: Observe Venus while HST is within the Earth's shadow.</i></p> <p><i>Exposure time for Venus will be severely constrained, and this observation is designed to maximize the time available for the Venus science exposure.</i></p> <p><i>No wavecal requested (WAVECAL=NO). Use single star guiding. These are both specified to increase the limited time available for this science exposure.</i></p> <p><i>Special commanding to ignore STIS "take data" flag and still proceed with science observation in the case of a guide star acquisition failure.</i></p>									
	3	WAVE	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A			Sequence 2-4 Non-Int in Visit 01	[==>]	[2]	
	4	(10) VENUS+5P5D EGREES	S/C, POINTING, V1			NEW OBSET FULL ACQ; GS ACQ SCENARI O BASE1B3	Sequence 2-4 Non-Int in Visit 01	1 Secs [==>]	[2]	
	<p><i>Comments: Return to safe pointing that is more than 50 degrees from the Sun.</i></p>									
	5	(5) VENUS-32-SOU TH	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A	WAVECAL=NO; CR-SPLIT=NO	SHADOW; SPEC COM INSTR EOITDFMAIN; GSPAIR S92400012 9F1000000000F0; GS ACQ SCENARI O SINGLE	Sequence 5-7 Non-Int in Visit 01	153 Secs [==>]	[3]	
<p><i>Comments: Observe Venus while HST is within the Earth's shadow.</i></p> <p><i>Exposure time for Venus will be severely constrained, and this observation is designed to maximize the time available for the Venus science exposure.</i></p> <p><i>No wavecal requested (WAVECAL=NO). Use single star guiding. These are both specified to increase the limited time available for this science exposure.</i></p> <p><i>Special commanding to ignore STIS "take data" flag and still proceed with science observation in the case of a guide star acquisition failure.</i></p>										
6	WAVE	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A			Sequence 5-7 Non-Int in Visit 01	[==>]	[3]		
7	(10) VENUS+5P5D EGREES	S/C, POINTING, V1			NEW OBSET FULL ACQ; GS ACQ SCENARI O BASE1B3	Sequence 5-7 Non-Int in Visit 01	1 Secs [==>]	[3]		
<p><i>Comments: Return to safe pointing that is more than 50 degrees from the Sun.</i></p>										



**Orbit 3**

**Server Version: 20100902**

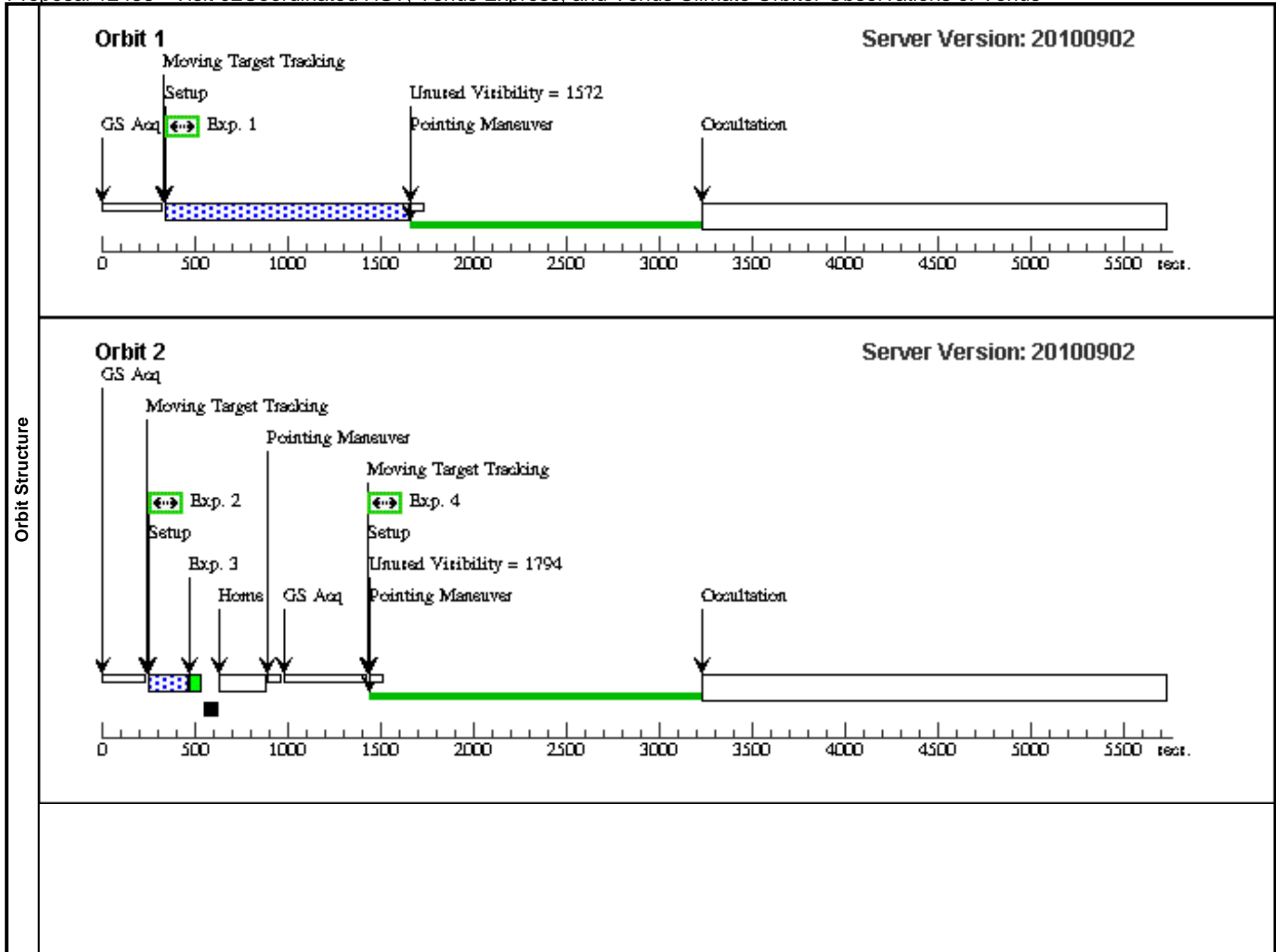


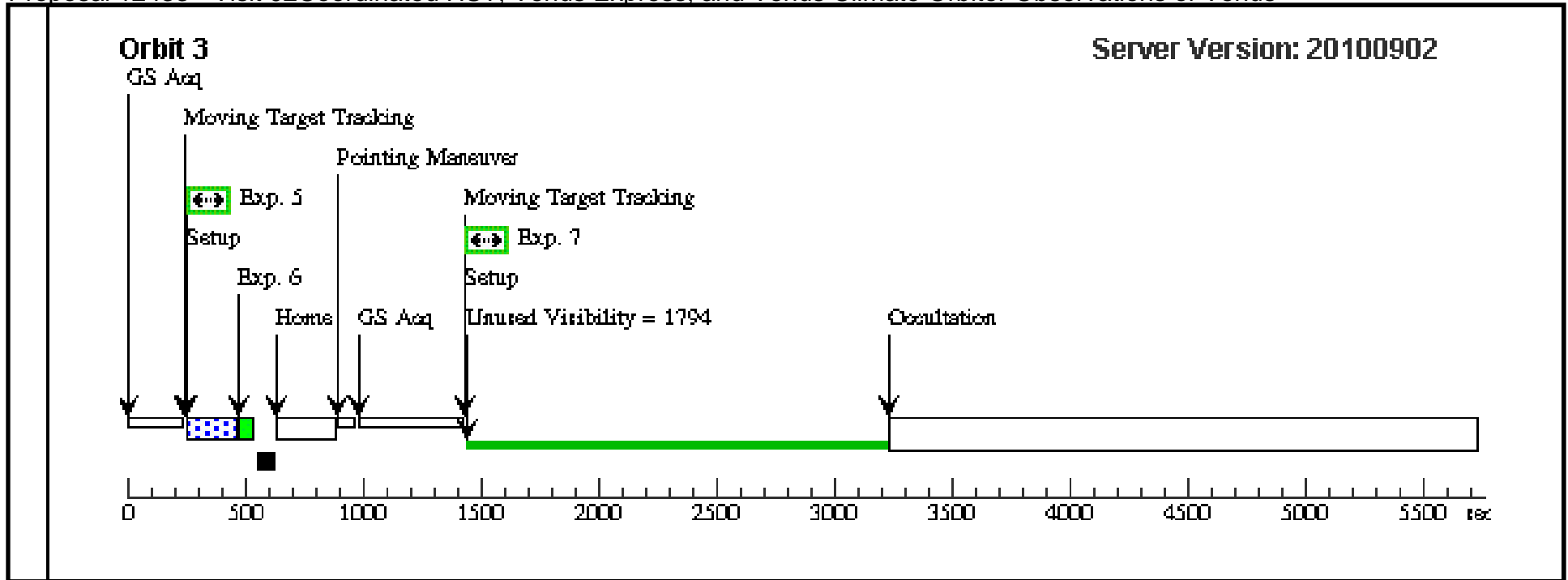
Proposal 12433 - Visit 02 Coordinated HST, Venus Express, and Venus Climate Orbiter Observations of Venus

<b>Visit</b>	<p><b>Proposal 12433, Visit 02, scheduling</b> <span style="float: right;">Sat Jan 08 02:02:43 GMT 2011</span></p> <p><b>Diagnostic Status: Error</b></p> <p>Scientific Instruments: STIS/CCD, S/C</p> <p>Special Requirements: BETWEEN 22-JAN-2011:14:00:00 AND 22-JAN-2011:17:00:00</p> <p><i>Comments: BETWEEN for simultaneous observing with Akatsuki.</i></p>					
	<p>(Exposure 2 (Sequence 2-4 Non-Int in Visit 02) special requirements) Error (Form): Must supply 2 10-digit Guide Star IDs, separated by FGS numbers. &lt;br&gt;E.g. 1234567890F11234567890F2</p> <p>(Exposure 5 (Sequence 5-7 Non-Int in Visit 02) special requirements) Error (Form): Must supply 2 10-digit Guide Star IDs, separated by FGS numbers. &lt;br&gt;E.g. 1234567890F11234567890F2</p> <p>(Visit 02) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronagraphy with STIS or COS.</p>					
<b>Diagnosics</b>						
<b>Solar System Targets</b>	<b>#</b>	<b>Name</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Window</b> <b>Ephem Center</b>
	(6)	VENUS-45-SOUTH-V02	STD=VENUS	TYPE=PGRAPHIC, LONG=136.5, LA T=-45		SEP OF VENUS SUN FROM EARTH EARTH GT 45.5D
	<i>Comments: Venus 45 degrees south latitude on central meridian. The longitude value specified here is the CML for visit 02 observing time (22-Jan-2011 15:00-17:00UT). The longitude value must be updated if a new observing time is selected.</i>					
	(7)	VENUS-65-SOUTH-V02	STD=VENUS	TYPE=PGRAPHIC, LONG=136.5, LA T=-65		SEP OF VENUS SUN FROM EARTH EARTH GT 45.5D
<i>Comments: Venus 65 degrees south latitude on central meridian. The longitude value specified here is the CML for visit 02 observing time (22-Jan-2011 15:00-17:00UT). The longitude value must be updated if a new observing time is selected.</i>						
(11)	VENUS+5P4DEGR EES	STD=VENUS	TYPE=POS_ANGLE, RAD=19440, ANG=180, REF=SUN			EARTH
<i>Comments: 5.4 degree offset from Venus in the anti-sunward direction.</i>						

Proposal 12433 - Visit 02 Coordinated HST, Venus Express, and Venus Climate Orbiter Observations of Venus

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	
Exposures	1	(11) VENUS+5P4D EGREES	S/C, POINTING, V1			GS ACQ SCENARI O BASE1B3		1320 Secs [==>]	[1]	
	<p><i>Comments: This exposure establishes a pointing near Venus but outside of HST's solar avoidance zone. Doing this minimizes the slew distance when slewing to Venus. This is a precautionary measure to protect against an unusually large pointing error after the slew to Venus. While such an error is unlikely in general, it is even more unlikely for a small slew.</i></p> <p><i>The 22 minute exposure time ensures a gyro bias update will take place.</i></p>									
	2	(6) VENUS-45-SOU TH-V02	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A	WAVECAL=NO; CR-SPLIT=NO	SPEC COM INSTR EOITDFMAIN; GSPAIR S8OF0006 50F1000000000F0; GS ACQ SCENARI O SINGLE	Sequence 2-4 Non-Int in Visit 02	58 Secs [==>]	[2]	
	<p><i>Comments: Observe Venus while HST is within the Earth's shadow.</i></p> <p><i>Exposure time for Venus will be severely constrained, and this observation is designed to maximize the time available for the Venus science exposure.</i></p> <p><i>No wavecal requested (WAVECAL=NO). Use single star guiding. These are both specified to increase the limited time available for this science exposure.</i></p> <p><i>Special commanding to ignore STIS "take data" flag and still proceed with science observation in the case of a guide star acquisition failure.</i></p>									
	3	WAVE	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A		NEW ALIGNMENT	Sequence 2-4 Non-Int in Visit 02	[==>]	[2]	
	4	(11) VENUS+5P4D EGREES	S/C, POINTING, V1			NEW OBSET FULL ACQ; GS ACQ SCENARI O BASE1B3	Sequence 2-4 Non-Int in Visit 02	1 Secs [==>]	[2]	
	<p><i>Comments: Return to safe pointing that is more than 50 degrees from the Sun.</i></p>									
5	(7) VENUS-65-SOU TH-V02	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A	WAVECAL=NO; CR-SPLIT=NO	SPEC COM INSTR EOITDFMAIN; GSPAIR S8OF0006 50F1000000000F0; GS ACQ SCENARI O SINGLE	Sequence 5-7 Non-Int in Visit 02	58 Secs [==>]	[3]		
<p><i>Comments: Observe Venus while HST is within the Earth's shadow.</i></p> <p><i>Exposure time for Venus will be severely constrained, and this observation is designed to maximize the time available for the Venus science exposure.</i></p> <p><i>No wavecal requested (WAVECAL=NO). Use single star guiding. These are both specified to increase the limited time available for this science exposure.</i></p> <p><i>Special commanding to ignore STIS "take data" flag and still proceed with science observation in the case of a guide star acquisition failure.</i></p>										
6	WAVE	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A		NEW ALIGNMENT	Sequence 5-7 Non-Int in Visit 02	[==>]	[3]		
7	(11) VENUS+5P4D EGREES	S/C, POINTING, V1			NEW OBSET FULL ACQ; GS ACQ SCENARI O BASE1B3	Sequence 5-7 Non-Int in Visit 02	1 Secs [==>]	[3]		
<p><i>Comments: Return to safe pointing that is more than 50 degrees from the Sun.</i></p>										





Proposal 12433 - Visit 03 Coordinated HST, Venus Express, and Venus Climate Orbiter Observations of Venus

Sat Jan 08 02:02:45 GMT 2011

<b>Visit</b>	<b>Proposal 12433, Visit 03, implementation</b> <b>Diagnostic Status: Error</b> Scientific Instruments: STIS/CCD, S/C Special Requirements: BETWEEN 27-JAN-2011:13:30:00 AND 27-JAN-2011:14:30:00 <i>Comments: BETWEEN for simultaneous observing with both Akatsuki and Venus Express.</i>						
	(Venus G430L (03.002) special requirements) Error (Form): Must supply 2 10-digit Guide Star IDs, separated by FGS numbers.  E.g. 1234567890F11234567890F2 (Venus G430L (03.006) special requirements) Error (Form): Must supply 2 10-digit Guide Star IDs, separated by FGS numbers.  E.g. 1234567890F11234567890F2 (Visit 03) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronagraphy with STIS or COS.						
<b>Diagnosics</b>							
<b>Solar System Targets</b>	<b>#</b>	<b>Name</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Window</b>	<b>Ephem Center</b>
	(8)	VENUS-45-SOUTH-V03	STD=VENUS	TYPE=PGRAPHIC, LONG=160, LAT=-45		SEP OF VENUS SUN FROM EARTH GT 45.5D	EARTH
	<i>Comments: Venus 45 degrees south latitude on central meridian. The longitude value specified here is the CML for visit 03 observing time (27-Jan-2011 14:30-15:30UT). The longitude value must be updated if a new observing time is selected.</i>						
	(9)	VENUS-65-SOUTH-V03	STD=VENUS	TYPE=PGRAPHIC, LONG=160, LAT=-65		SEP OF VENUS SUN FROM EARTH GT 45.5D	EARTH
<i>Comments: Venus 65 degrees south latitude on central meridian. The longitude value specified here is the CML for visit 03 observing time (27-Jan-2011 14:30-15:30UT). The longitude value must be updated if a new observing time is selected.</i>							
(11)	VENUS+5P4DEGR EES	STD=VENUS	TYPE=POS_ANGLE, RAD=19440, ANG=180, REF=SUN				EARTH
<i>Comments: 5.4 degree offset from Venus in the anti-sunward direction.</i>							

Proposal 12433 - Visit 03 Coordinated HST, Venus Express, and Venus Climate Orbiter Observations of Venus

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Offset	(11) VENUS+5P4D EGREES	S/C, POINTING, V1					1320 Secs [==>]	[1]
<p><i>Comments: This exposure establishes a pointing near Venus but outside of HST's solar avoidance zone. Doing this minimizes the slew distance when slewing to Venus. This is a precautionary measure to protect against an unusually large pointing error after the slew to Venus. While such an error is unlikely in general, it is even more unlikely for a small slew.</i></p> <p><i>The 22 minute exposure time ensures a gyro bias update will take place.</i></p>									
2	Venus G430 L	(8) VENUS-45-SOU TH-V03	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A	WAVECAL=NO; CR-SPLIT=NO	SPEC COM INSTR EOITDFMAIN; GSPAIR S8L200001 7F1000000000F0; GS ACQ SCENARI O SINGLE	Sequence 2-5 Non-In- t in Visit 03	2.5 Secs [==>]	[2]
<p><i>Comments: Observe Venus while HST is within the Earth's shadow.</i></p> <p><i>Exposure time for Venus will be severely constrained, and this observation is designed to maximize the time available for the Venus science exposure.</i></p> <p><i>No wavecal requested (WAVECAL=NO). Use single star guiding. These are both specified to increase the limited time available for this science exposure.</i></p> <p><i>Special commanding to ignore STIS "take data" flag and still proceed with science observation in the case of a guide star acquisition failure.</i></p>									
3	Venus G230 LB	(8) VENUS-45-SOU TH-V03	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A	WAVECAL=NO; CR-SPLIT=2	SPEC COM INSTR EOITDFMAIN	Sequence 2-5 Non-In- t in Visit 03	116 Secs [==>(Split 1)] [==>(Split 2)]	[2]
<p><i>Comments: Observe Venus while HST is within the Earth's shadow.</i></p> <p><i>Exposure time for Venus will be severely constrained, and this observation is designed to maximize the time available for the Venus science exposure.</i></p> <p><i>No wavecal requested (WAVECAL=NO). Use single star guiding. These are both specified to increase the limited time available for this science exposure.</i></p> <p><i>Special commanding to ignore STIS "take data" flag and still proceed with science observation in the case of a guide star acquisition failure.</i></p>									
4	WAVE	WAVE	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A		NEW ALIGNMENT	Sequence 2-5 Non-In- t in Visit 03	[==>]	[2]
5	Offset	(11) VENUS+5P4D EGREES	S/C, POINTING, V1			NEW OBSET FULL ACQ	Sequence 2-5 Non-In- t in Visit 03	1 Secs [==>]	[2]
<p><i>Comments: Return to safe pointing that is more than 50 degrees from the Sun.</i></p>									
6	Venus G430 L	(9) VENUS-65-SOU TH-V03	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A	WAVECAL=NO; CR-SPLIT=NO; GAIN=4	SPEC COM INSTR EOITDFMAIN; GSPAIR S8LA0454 71F2000000000F0; GS ACQ SCENARI O SINGLE	Sequence 6-9 Non-In- t in Visit 03	2.5 Secs [==>]	[3]
<p><i>Comments: Observe Venus while HST is within the Earth's shadow.</i></p> <p><i>Exposure time for Venus will be severely constrained, and this observation is designed to maximize the time available for the Venus science exposure.</i></p> <p><i>No wavecal requested (WAVECAL=NO). Use single star guiding. These are both specified to increase the limited time available for this science exposure.</i></p> <p><i>Special commanding to ignore STIS "take data" flag and still proceed with science observation in the case of a guide star acquisition failure.</i></p>									

Exposures

Proposal 12433 - Visit 03 Coordinated HST, Venus Express, and Venus Climate Orbiter Observations of Venus

7	Venus G230 LB	(9) VENUS-65-SOU TH-V03	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4	POS TARG 0,0; SPEC COM INSTR EOITDFMAIN	Sequence 6-9 Non-Int in Visit 03	116 Secs	
								[==>(Split 1)]	[3]
								[==>(Split 2)]	
<p><i>Comments: Observe Venus while HST is within the Earth's shadow.</i></p> <p><i>Exposure time for Venus will be severely constrained, and this observation is designed to maximize the time available for the Venus science exposure.</i></p> <p><i>No wavecal requested (WAVECAL=NO). Use single star guiding. These are both specified to increase the limited time available for this science exposure.</i></p> <p><i>Special commanding to ignore STIS "take data" flag and still proceed with science observation in the case of a guide star acquisition failure.</i></p>									
8	WAVE	WAVE	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A		NEW ALIGNMENT	Sequence 6-9 Non-Int in Visit 03	[==>]	[3]
9	Offset	(11) VENUS+5P4D EGREES	S/C, POINTING, V1			NEW OBSET FULL ACQ	Sequence 6-9 Non-Int in Visit 03	1 Secs	
								[==>]	[3]
<p><i>Comments: Return to safe pointing that is more than 50 degrees from the Sun.</i></p>									

