15830 - A Planet is Born: Investigating the Accretion Process of PDS70b with WFC3/UVIS Direct Imaging Observations

Cycle: 27, Proposal Category: GO

(Availability Mode: SUPPORTED)

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	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:21.0	yes
02	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:23.0	yes
03	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:25.0	yes
04	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:27.0	yes
05	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:29.0	yes
06	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:30.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
07	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:33.0	yes
08	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:34.0	yes
09	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:36.0	yes
10	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:38.0	yes
11	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:40.0	yes
12	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:42.0	yes
13	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:43.0	yes
14	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:45.0	yes
15	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:47.0	yes
16	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:49.0	yes
17	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:50.0	yes
18	(1) V-V1032-CEN	WFC3/UVIS	1	17-Jun-2020 21:00:52.0	yes

18 Total Orbits Used

ABSTRACT

Recent direct imaging detection of H alpha emission from PDS70b, a giant young planet, revealed its rapid ongoing accretion. This discovery offers an exciting opportunity for constraining PDS70b's mass accretion rate, a critical parameter for studying its formation process. However, the correlation between the hydrogen line luminosity and the total accretion luminosity has not been established for Jovian mass objects. Therefore, both hydrogen line and continuum accretion luminosity for PDS70b are required to derive its mass accretion rate accurately.

We propose WFC3/UVIS direct imaging observations of PDS70b. Using HST's unique capability of high-contrast observations in the ultraviolet (UV) and optical wavelengths, we will measure the accretion-induced excess emissions of PDS70b in the F336W (Balmer break, UV continuum) and the F656N (H alpha) bands, and derive its mass accretion rate. We optimize the observations to enable KLIP-based angular differential imaging data reduction and maximize HST's high-contrast imaging capacity. This proposal will have three key results. 1) We will directly measure the total accretion luminosity of PDS70b and accurately derive its mass accretion rate. 2) By enabling the comparison of accretion luminosity in the UV and the H alpha bands, results from this proposal will advance our understanding of the accretion process of PDS70b. 3) By comparing the measured mass accretion rate to the empirical mass vs. accretion rate relationship, we will assess the formation pathway of PDS70b. The wavelengths used in

this proposal also maximize the probability of detecting yet unknown accreting planets in this system.

OBSERVING DESCRIPTION

Observation Plan: We request 18 orbits WFC3/UVIS direct-imaging observation for PDS70b. We will observe PDS70b in the F336W (Balmer jump) and F656N (H-alpha) bands to directly measure its accretion luminosity. The photospheric emission is negligible at these wavelengths, we therefore do not request filters in the photospheric continuum. Each orbit will include ten 120 seconds F336W exposures and nine 20 seconds F656N exposures. For each filter, nine exposures will have unique dithering positions and one more F336W 120s exposure per orbit is added to increase signal-to-noise ratio (SNR). The WFC3/UVIS channel is chosen because it is the only instrument that is capable of multi-band UV-optical direct-imaging observations, and thus is the only one that can observe both of the accretion-induced Balmer jump and H-alpha emissions. The UVIS2-C512C-SUB subarray (20arcsec by 20arcsec) will be used to reduce detector readout time and to avoid buffer download overhead. We do not apply CRSPLIT to reduce the overheads of the observations. The multi-band and multiple dithering samples will provide sufficient information to remove cosmic rays.

We follow the recommendations in the instrument handbook and require FLASH=12 pre-flash to mitigate potential CTE-loss in the observations. We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures. CTE-loss will be negligible. Not scheduling pre-flash improves the total integration time and signal-to-noise.

Nyquist sampling: Nyquist sampling a critical requirement for building accurate PSF models to aid primary star subtraction. It is achieved through a nine-point 0.02arcsec spiral dithering strategy. At each of the nine pointing positions, we will take one F336W exposure and one F656N exposure. This dithering strategy will allow us to reconstruct Nyquist-sampled PSFs (0.02arcsec/pixel resolution) in both the F336W filter and the F656N filter in each orbit. To ensure pointing accuracy, we choose "Fine" guiding mode with 0.005 arcsec guiding tolerance. The gyro mode is 3GOBAD

Telescope roll angle: For angular differential imaging, we require each orbit to have 10-20 degrees roll angle difference from its previous orbit. We schedule the roll angle constraints through a "orient from" chain. With the possible range of schedulable observations, we request the roll angle difference between two orbits to be as close to 20 degrees as possible. This request mitigates self-subtraction in angular differential imaging reduciton.

Schedulability: We group our 18 orbits observations into 6 epochs. Each epoch has three orbits that are connected through Timing Requirements "after visit" chain. We do not place timing constraint for each epoch to increase flexibility. However, we prefer pairs of epochs (Epoch one and two, three and four, five and six) can be executed back-to-back to increase temproal coherence of the PSFs, if such observations can be scheduled.

High-Contrast Direct-Imaging Observations with WFC3/UVIS: Direct-imaging observations in the optical and UV wavelengths have an intrinsic advantage over direct-imaging observations in the near-infrared due to the sharper PSFs. In the proposed observations, the 0.18 arcsec separation between PDS70A and b corresponds to 9-10 resolution elements in the reconstructed and up-sampled images. In the observations of HR8799 with WFC3/IR (Rajan et al. 2015), the $5-\sigma$ contrast curve reached ~11.5 magnitudes at 0.5 arcsec separation corresponded to ~8 resolution elements (0.64 arcsec/resolution element). We therefore expect our proposed observation to achieve at least comparable contrast (11.5 mag) to Rajan et al. (2015), as we exceed the requirement of ~10 magnitude at 0.18 arcsec separation. Importantly, unlike the observations of HR8799, PDS70 (V ~12.2) will not saturate the detector and will not limit the inner working angle of the observation. This advantage further aids the success of this observation.

Visit

Proposal 15830, Visit 01, completed Thu Jun 18 01:00:53 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 1-3 are chained by Time Requirement constraint.

Diagnostics

(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 01)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

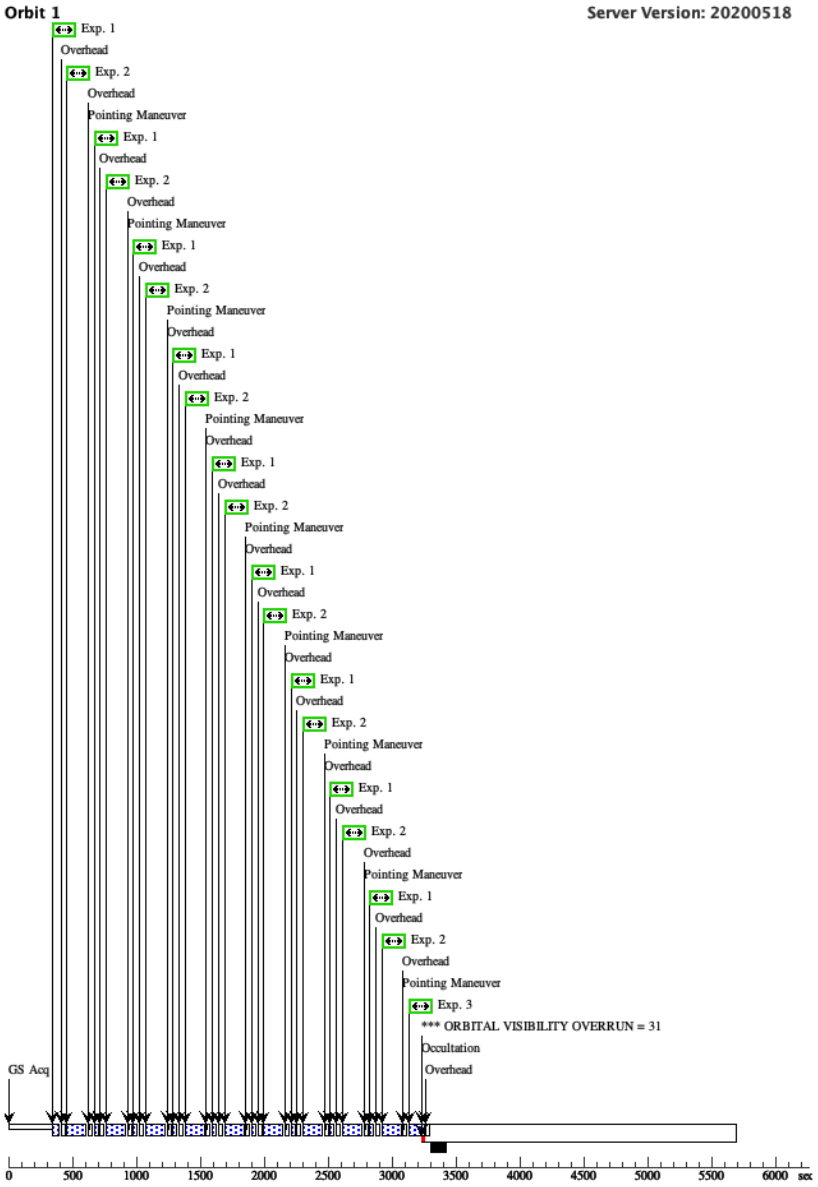
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 01 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 01 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 02, completed Thu Jun 18 01:00:53 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 01; AFTER 01 BY 0.5 Orbits TO 1.5 Orbits

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 1-3 are chained by Time Requirement constraint.

Diagnostics

(Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 02)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

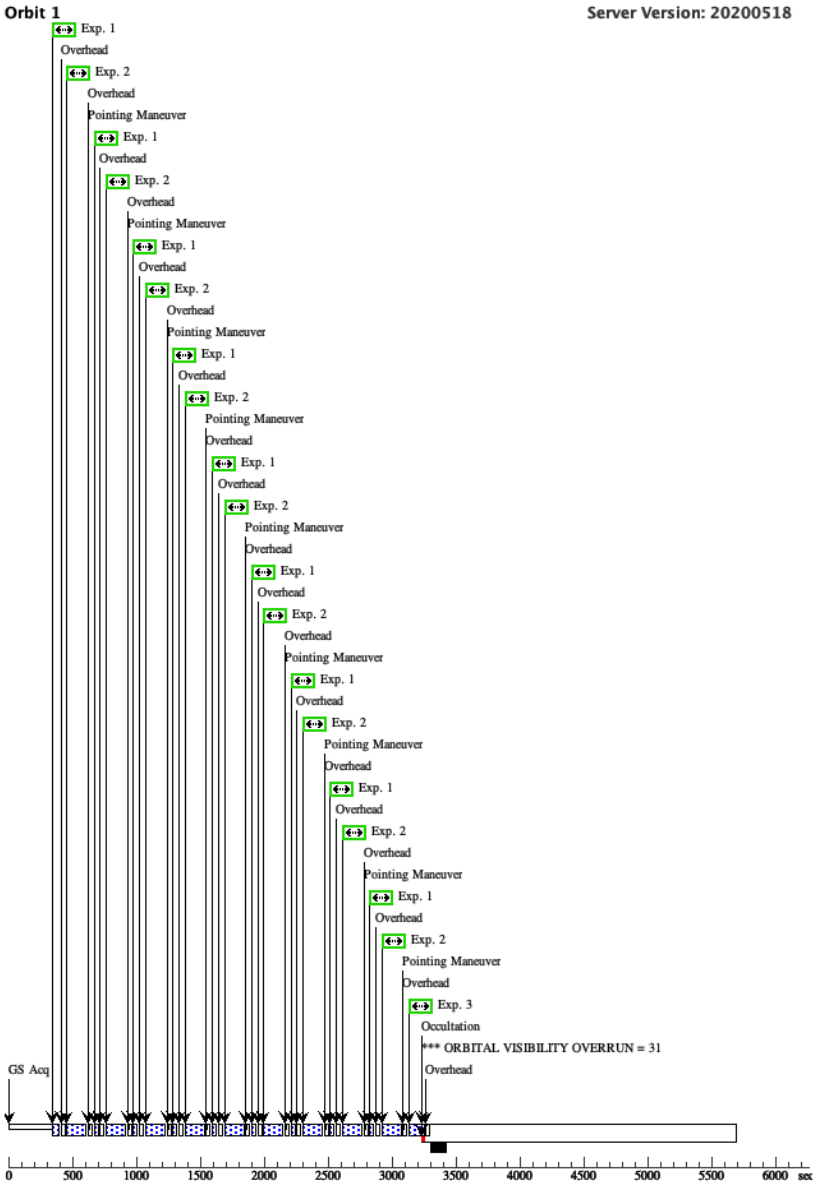
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 02 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 02 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 03, completed Thu Jun 18 01:00:53 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 02; AFTER 02 BY 0.5 Orbits TO 1.5 Orbits

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 1-3 are chained by Time Requirement constraint.

Diagnostics

(Visit 03) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 03)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

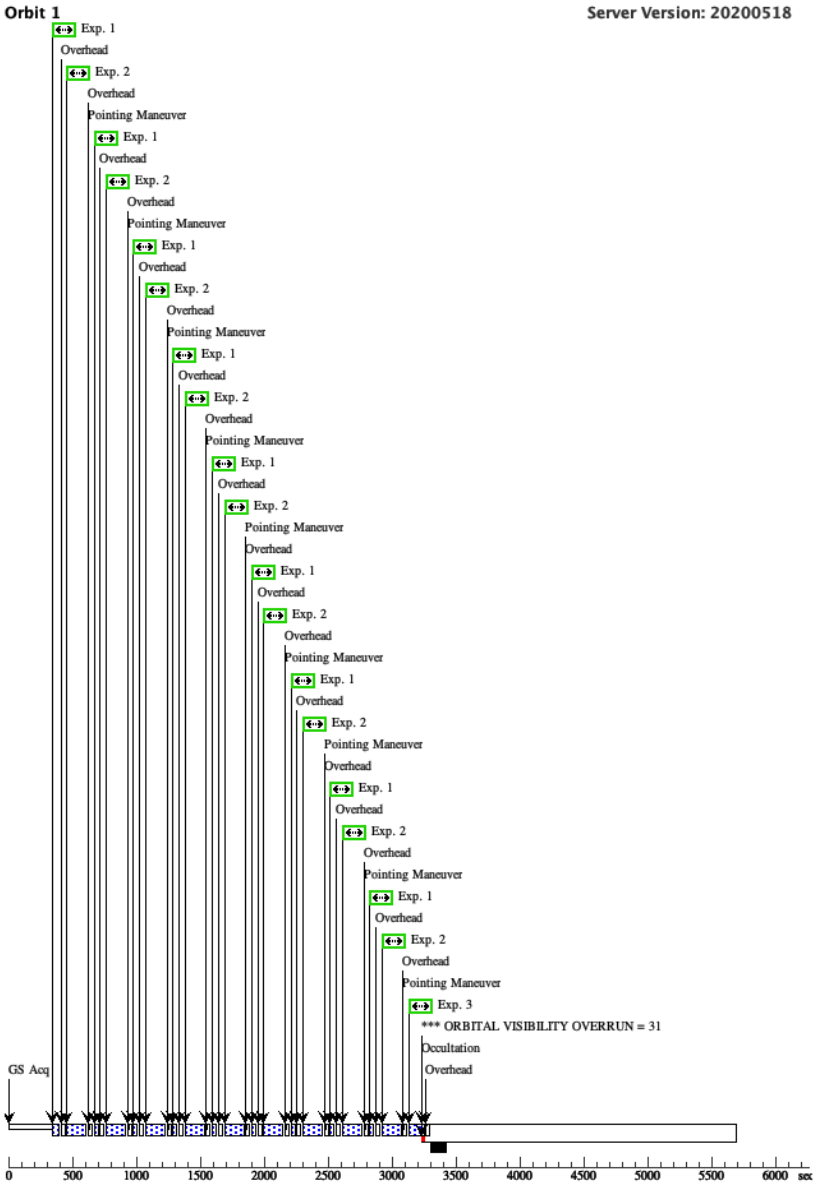
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 03 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 03 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 04, completed Thu Jun 18 01:00:54 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 03

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 4-6 are chained by Time Requirement constraint.

We do not place timing constraint between visit 4 and visit 3 for flexibility. However, it is preferrable that these two visits are scheduled as close as possible.

Diagnostics

(Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 04)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 04 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
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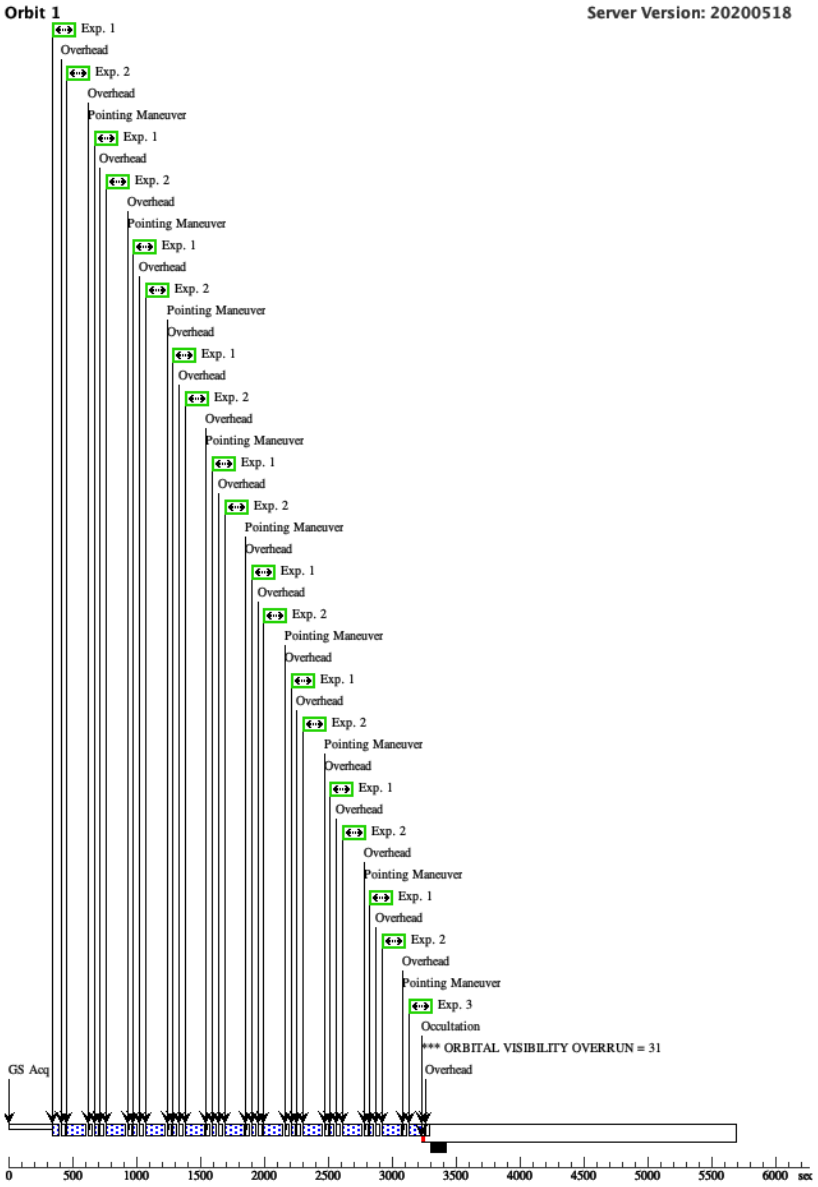
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 04 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 05, completed Thu Jun 18 01:00:54 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 04; AFTER 04 BY 0.5 Orbits TO 1.5 Orbits

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 4-6 are chained by Time Requirement constraint.

Diagnostics

(Visit 05) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 05)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

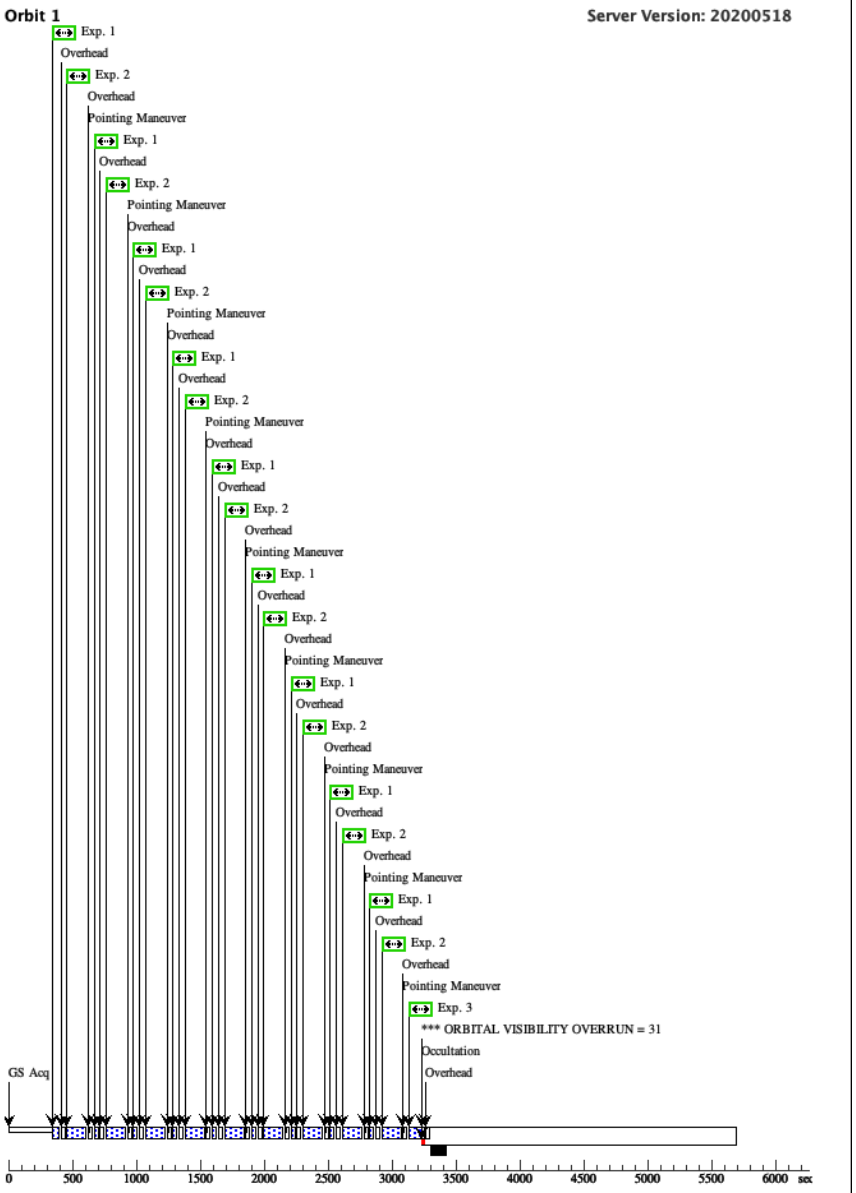
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 05 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 05 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 06, completed Thu Jun 18 01:00:54 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 05; AFTER 05 BY 0.5 Orbits TO 1.5 Orbits

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 4-6 are chained by Time Requirement constraint.

Diagnostics

(Visit 06) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 06)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

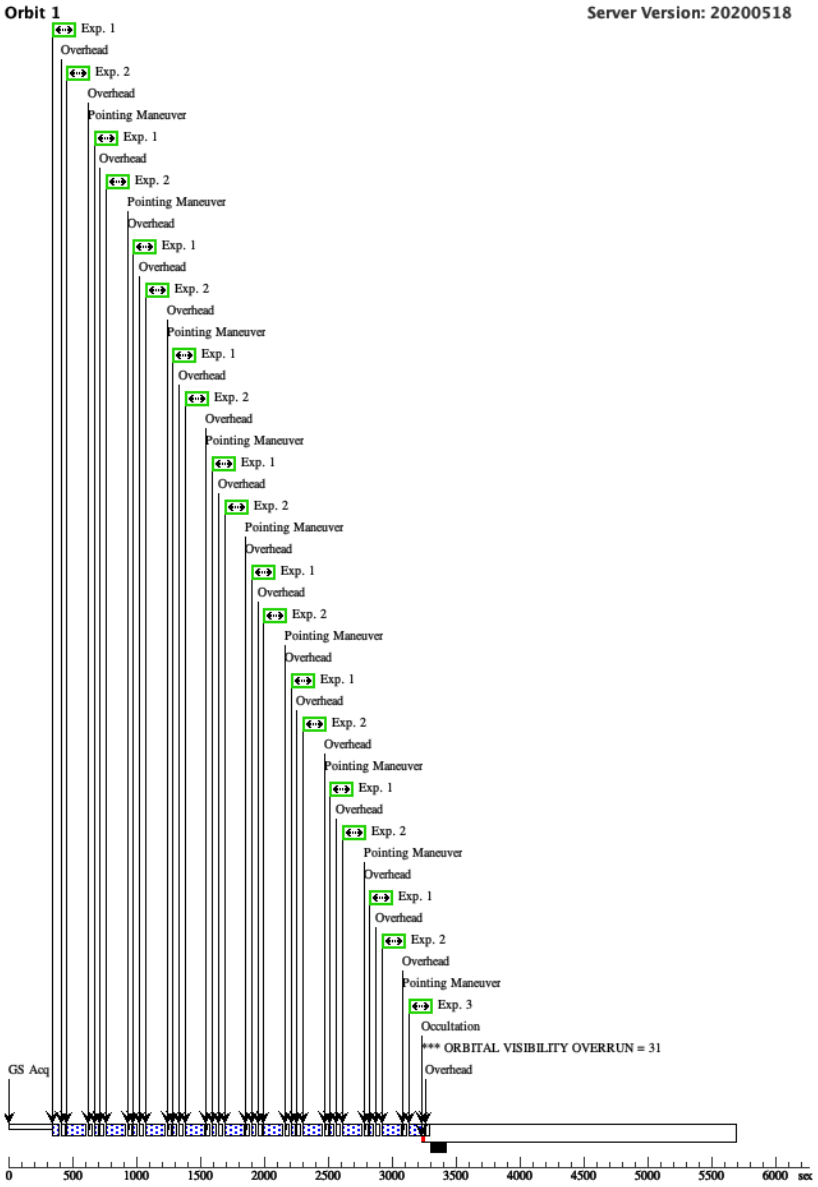
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 06 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 06 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 07, completed Thu Jun 18 01:00:54 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 06

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 7-9 are chained by Time Requirement constraint.

We do not place timing constraint between Visit 6 and Visit 7 for flexibility. However, it is preferrable that these two visits are scheduled as close as possible

Diagnostics

(Visit 07) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 07)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

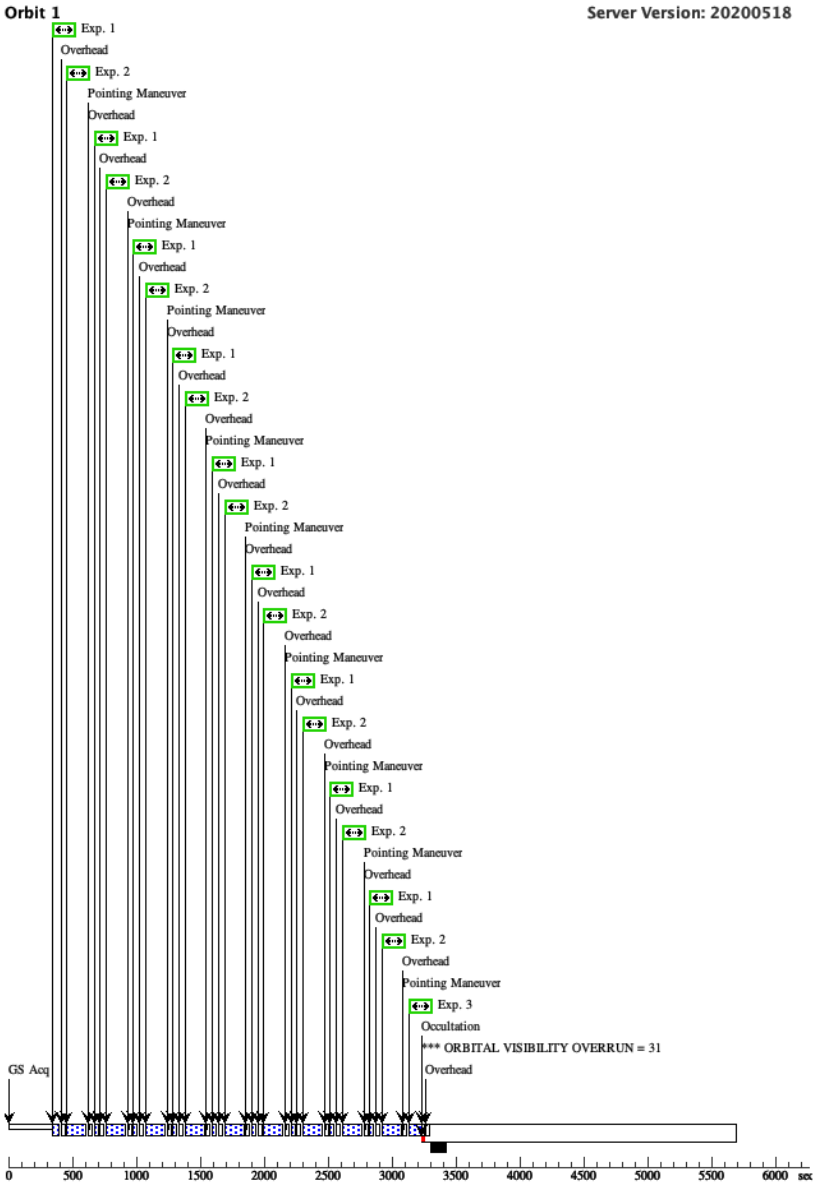
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 07 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 07 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 08, completed Thu Jun 18 01:00:54 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 07; AFTER 07 BY 0.5 Orbits TO 1.5 Orbits

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 7-9 are chained by Time Requirement constraint.

Diagnostics

(Visit 08) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 08)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

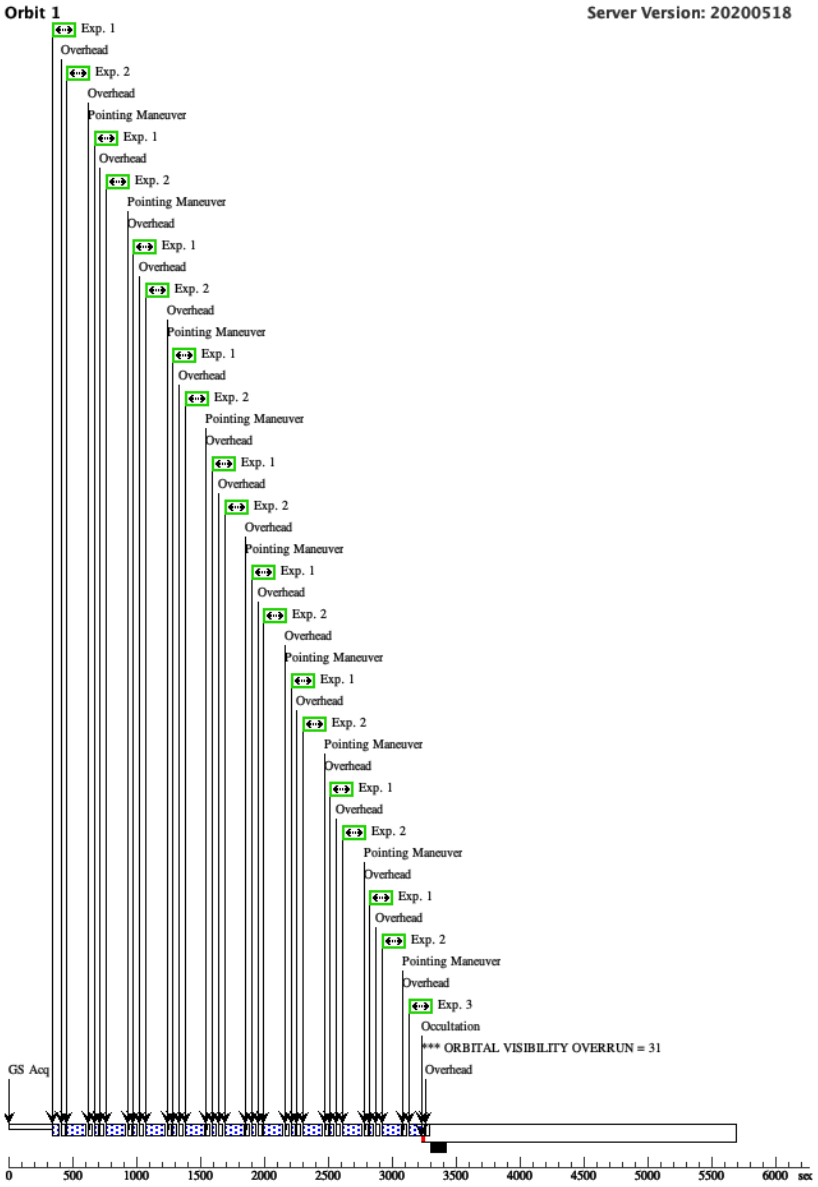
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 08 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 08 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 09, completed Thu Jun 18 01:00:54 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 08; AFTER 08 BY 0.5 Orbits TO 1.5 Orbits

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 7-9 are chained by Time Requirement constraint.

Diagnostics

(Visit 09) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 09)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

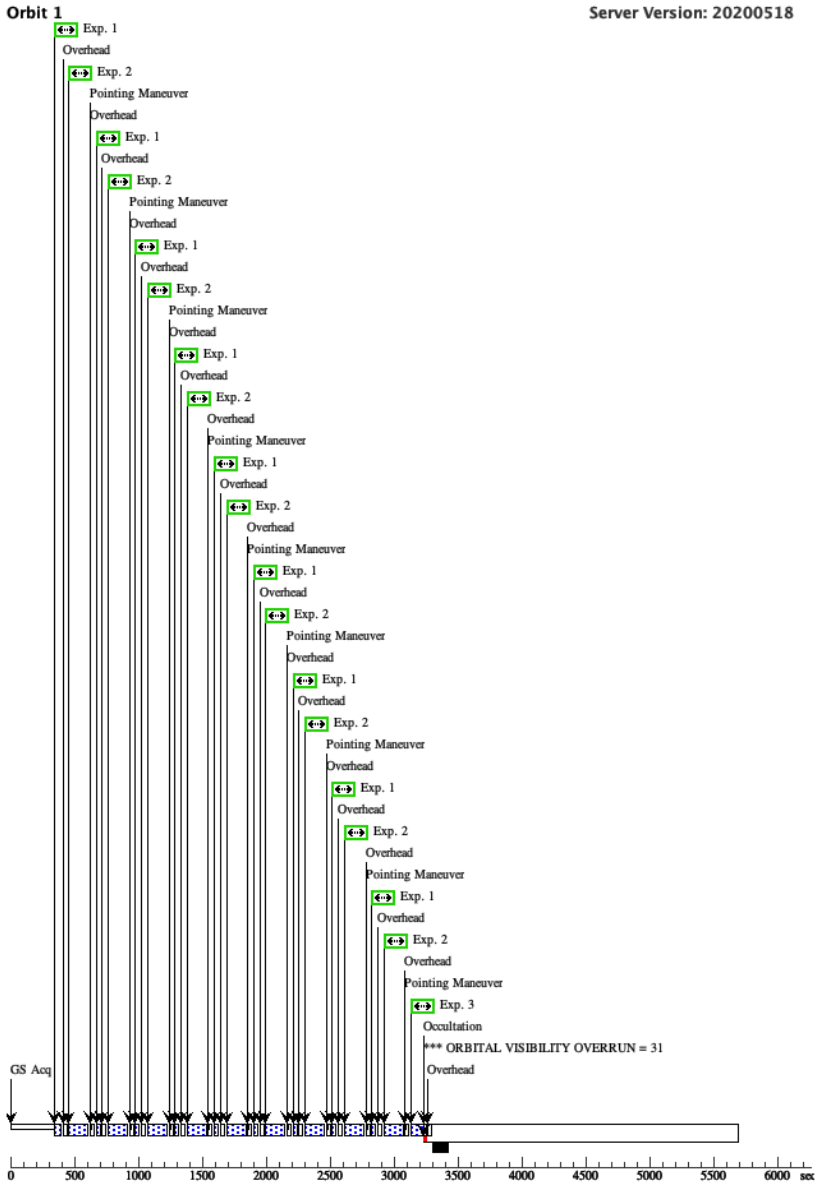
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 09 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 09 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 10, completed Thu Jun 18 01:00:54 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 10D TO 20D FROM 09

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 10-12 are chained by Time Requirement constraint.

We do not place timing constraint between Visit 9 and Visit 10 for flexibility. However, it is preferrable that these two visits are scheduled as close as possible

Diagnostics

(Visit 10) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 10)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

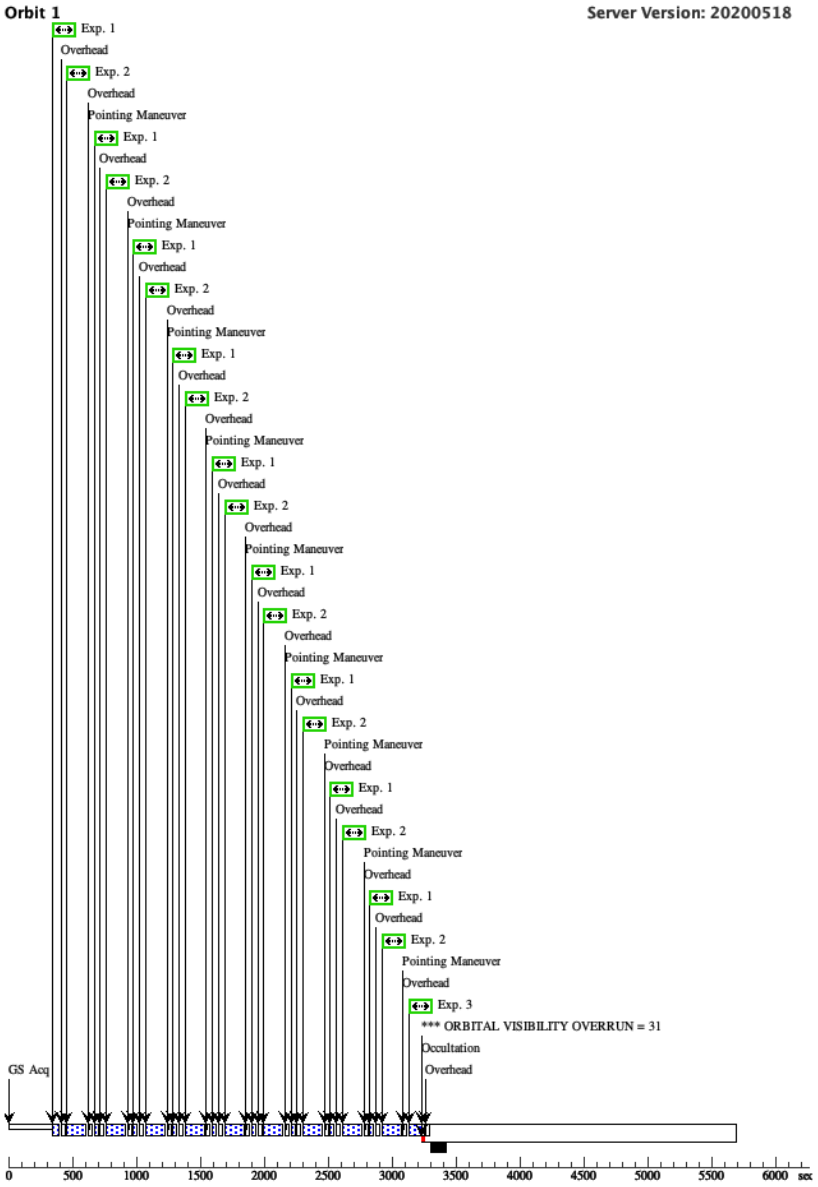
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 10 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 10 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 11, completed Thu Jun 18 01:00:54 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 10; AFTER 10 BY 0.5 Orbits TO 1.5 Orbits

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 10-12 are chained by Time Requirement constraint.

Diagnostics

(Visit 11) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 11)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

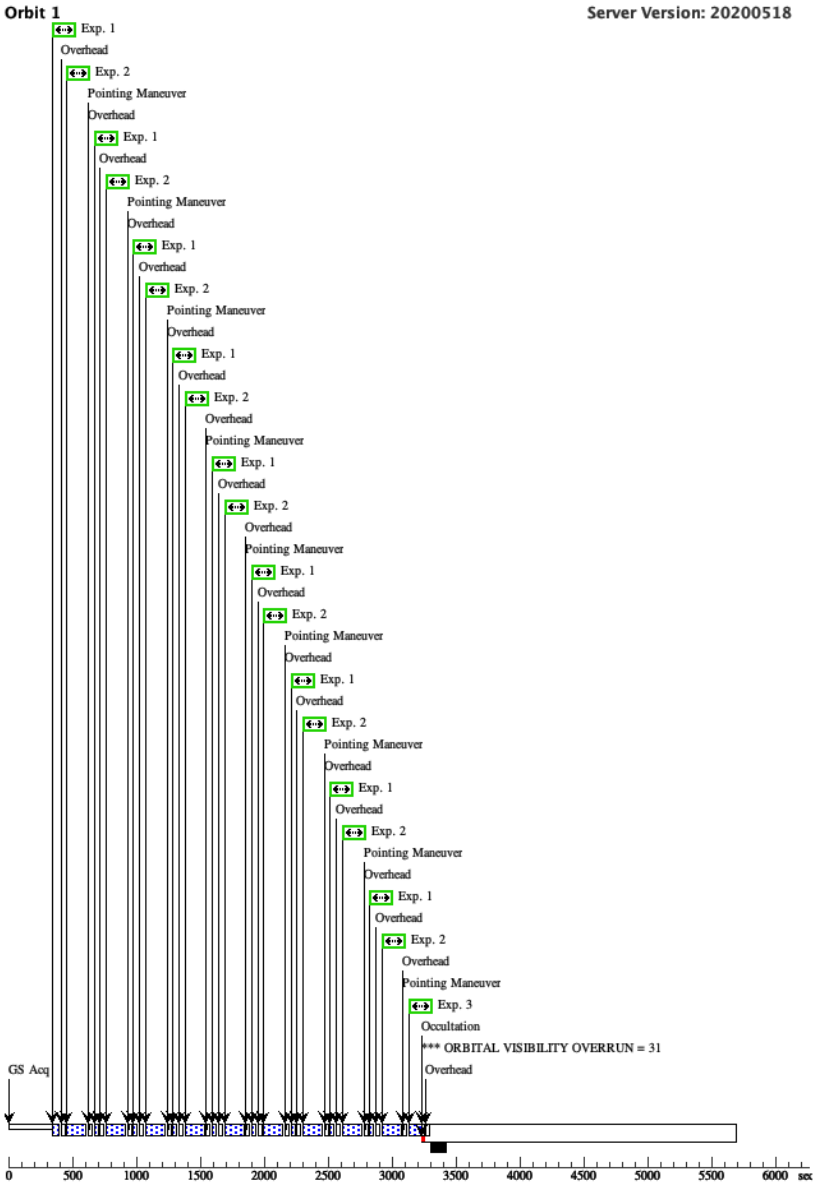
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 11 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 11 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 12, completed Thu Jun 18 01:00:54 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 11; AFTER 11 BY 0.5 Orbits TO 1.5 Orbits

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 10-12 are chained by Time Requirement constraint.

Diagnostics

(Visit 12) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 12)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

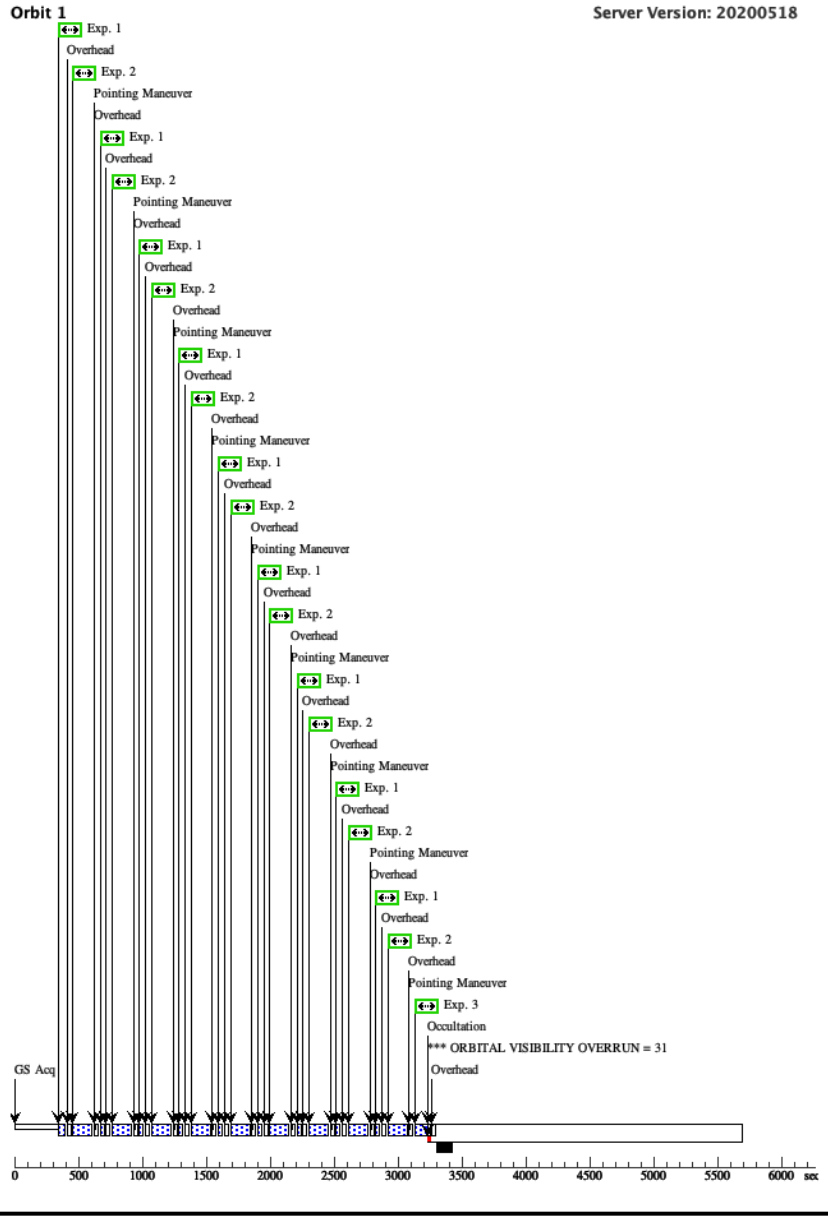
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 12 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 12 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 13, scheduled Thu Jun 18 01:00:55 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 12

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 13-15 are chained by Time Requirement constraint.

We do not place timing constraint between Visit 12 and Visit 13 for flexibility. However, it is preferrable that these two visits are scheduled as close as possible

Diagnostics

(Visit 13) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 13)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

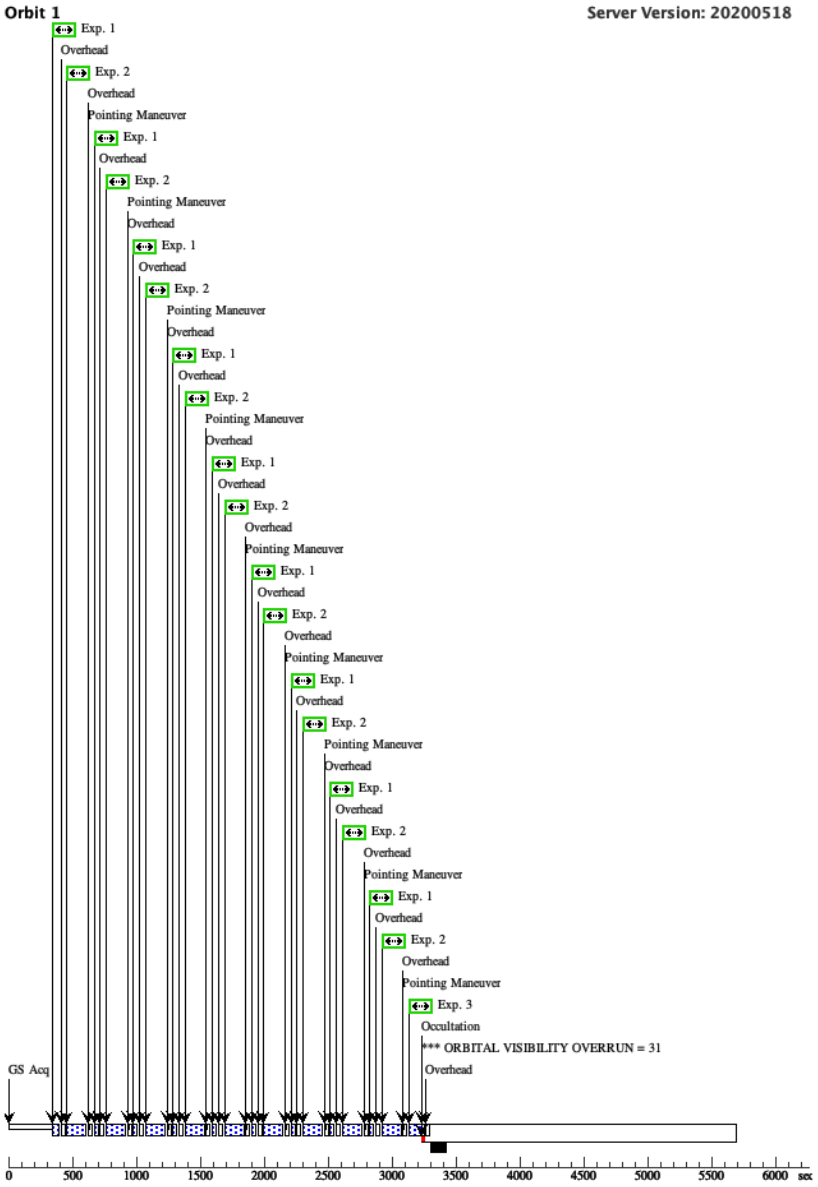
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 13 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 13 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 14, scheduled Thu Jun 18 01:00:55 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 13; AFTER 13 BY 0.5 Orbits TO 1.5 Orbits

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 13-15 are chained by Time Requirement constraint.

Diagnostics

(Visit 14) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 14)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

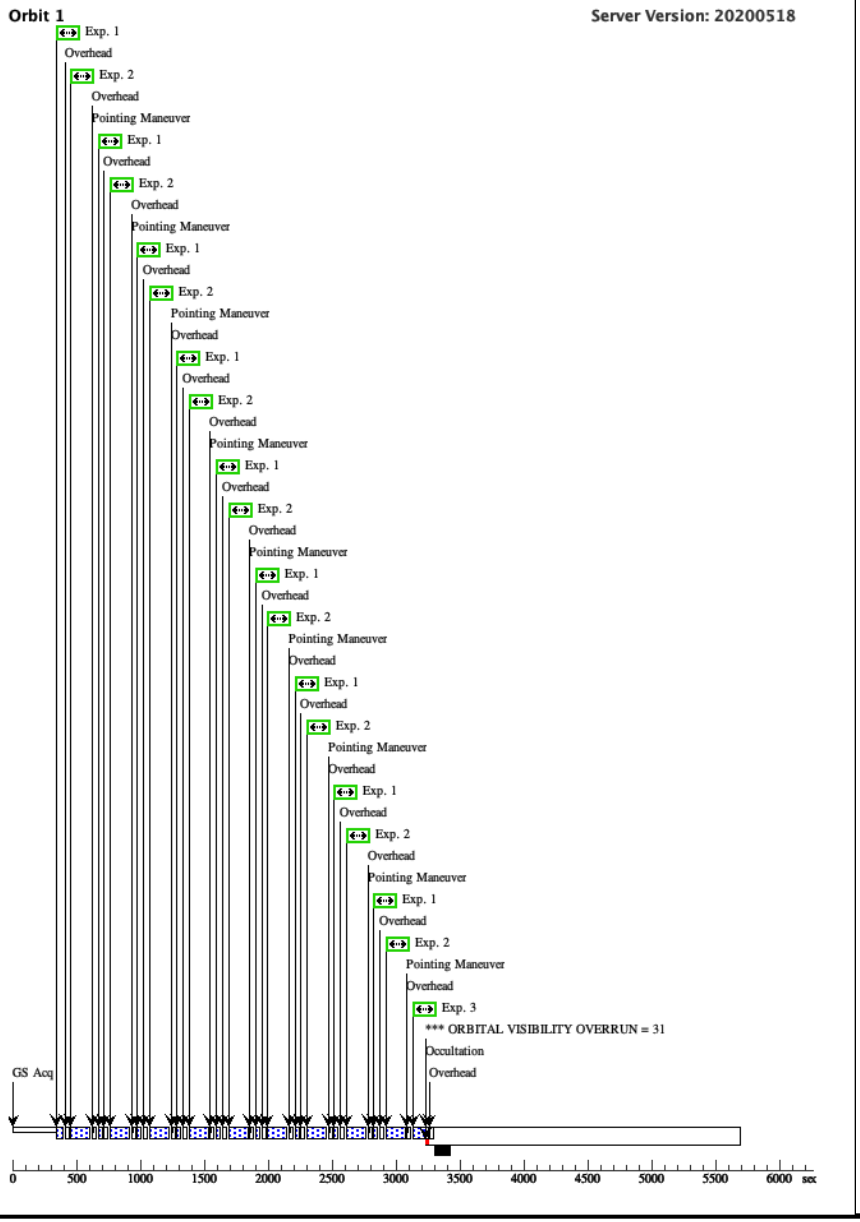
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 14 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 14 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 15, scheduled Thu Jun 18 01:00:55 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 14; AFTER 14 BY 0.5 Orbits TO 1.5 Orbits

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 13-15 are chained by Time Requirement constraint.

Diagnostics

(Visit 15) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 15)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

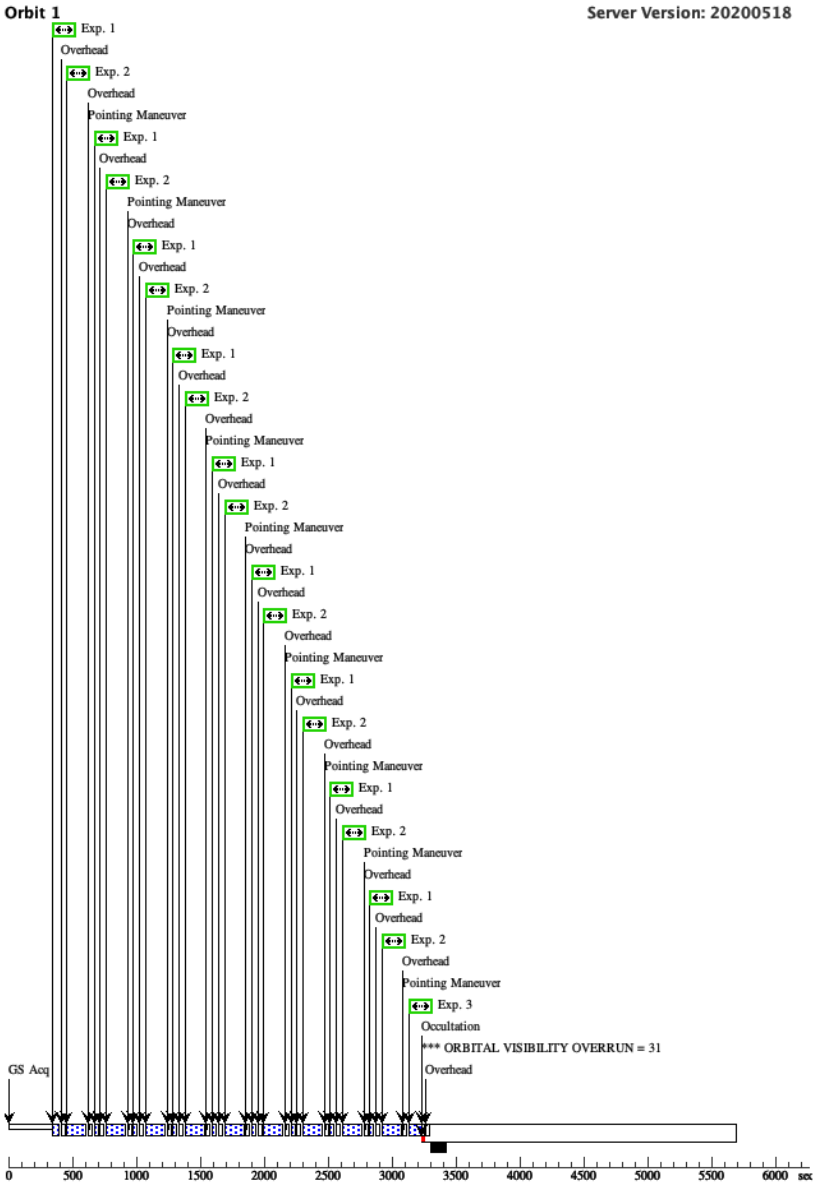
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 15 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 15 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 16, scheduling Thu Jun 18 01:00:55 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; ORIENT 10D TO 20D FROM 15

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 16-18 are chained by Time Requirement constraint.

We do not place timing constraint between Visit 15 and Visit 16 for flexibility. However, it is preferrable that these two visits are scheduled as close as possible

Diagnostics

(Visit 16) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 16)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

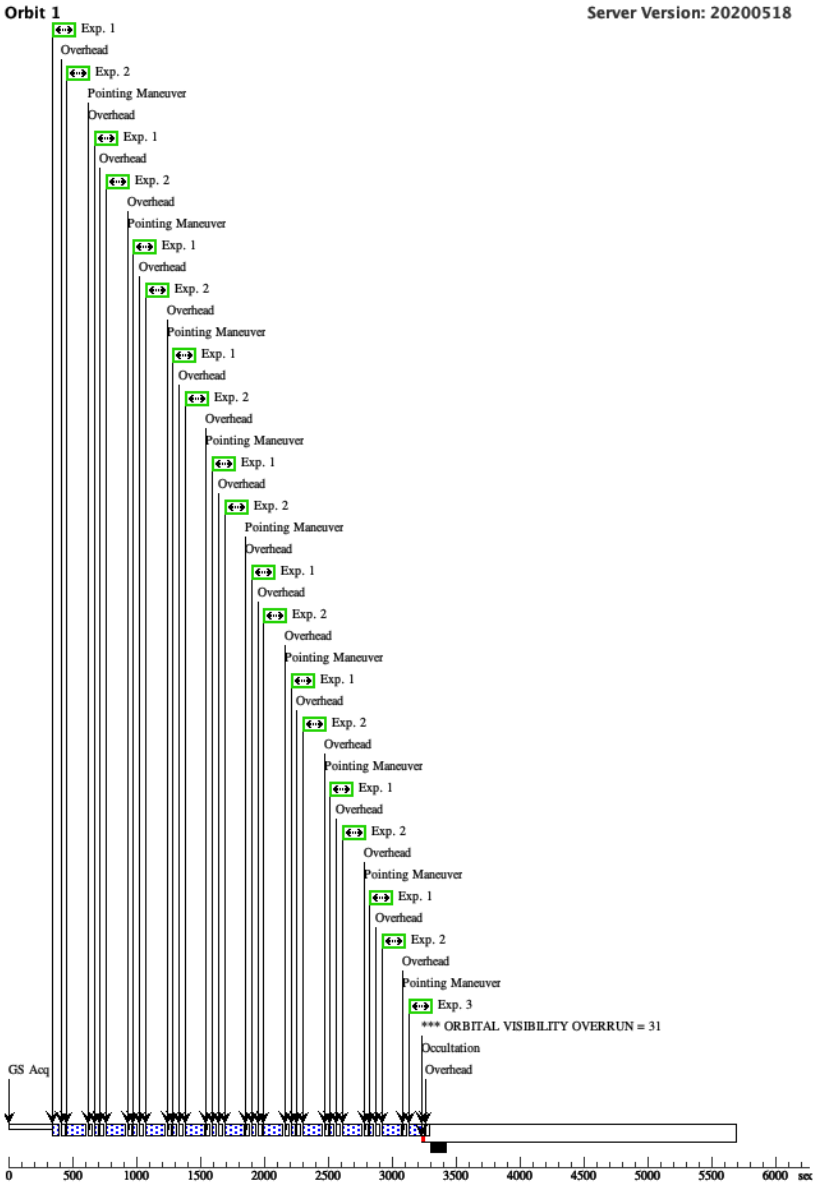
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 16 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 16 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 17, scheduling Thu Jun 18 01:00:55 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 10D TO 20D FROM 16; AFTER 16 BY 0.5 Orbits TO 1.5 Orbits

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 16-18 are chained by Time Requirement constraint.

Diagnostics

(Visit 17) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 17)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

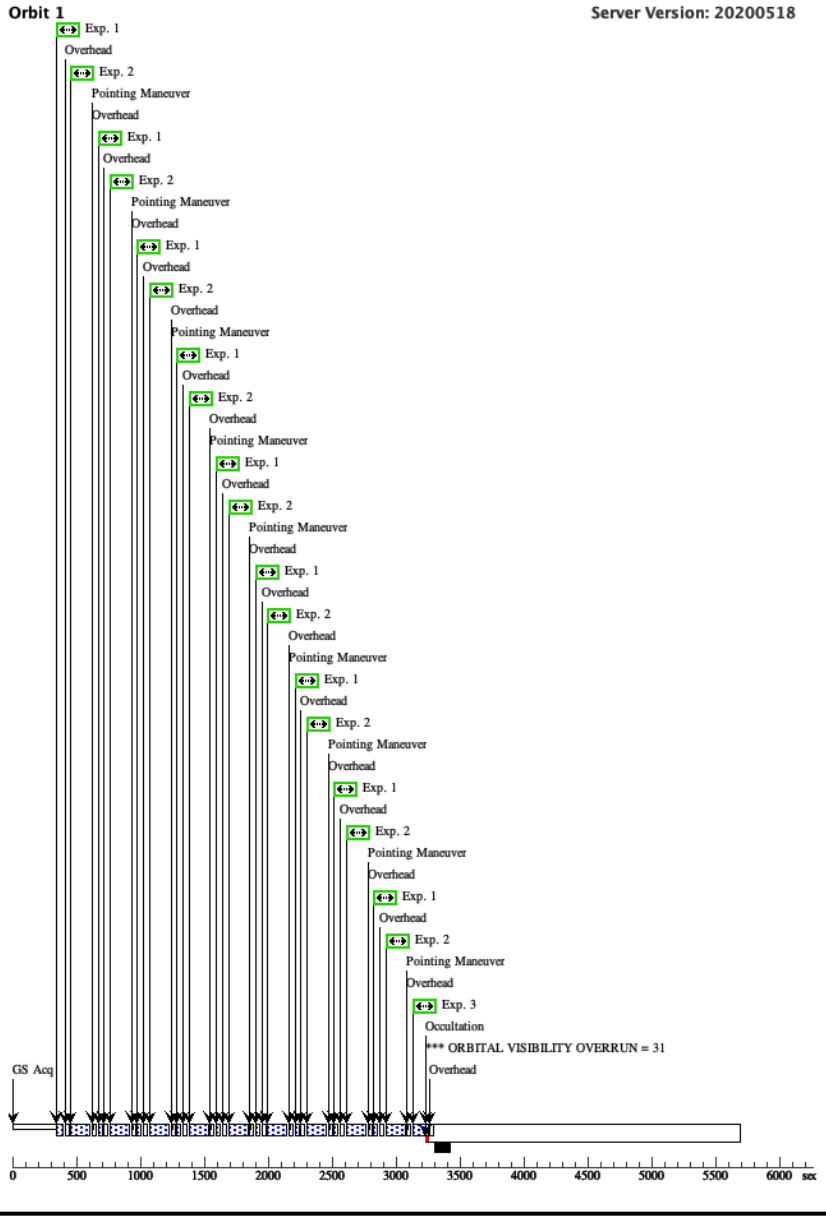
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 17 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 17 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 15830, Visit 18, scheduling Thu Jun 18 01:00:55 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE FINE; GUID TOL 0.005"; GYRO MODE 3GOBAD; ORIENT 8D TO 20D FROM 17; AFTER 17 BY 0.5 Orbits TO 1.5 Orbits

Comments: We choose to ignore the warning of low fresh level for the last exposure in each orbit and do not schedule pre-flash for these exposures. These exposures will be taken at the same pointing as their previous adjacent exposures.

Visit 16-18 are chained by Time Requirement constraint.

Diagnostics

(Visit 18) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Exposure 3 (Visit 18)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=SPIRAL	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=9	Angle Between Sides=		
	Point Spacing=0.02	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-V1032-CEN	RA: 14 08 10.1137 (212.0421404d) Dec: -41 23 52.95 (-41.39804d) Equinox: J2000	Proper Motion RA: -0.0026360634619137357 sec of time/yr Proper Motion Dec: -0.02382299996952497 arcsec/yr Epoch of Position: 2015.5	V=12.199	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANET, STAR FORMING REGION]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVIS.im.1342857)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F656N	FLASH=12		Pattern 2, Exps 1-2 in Visit 18 (2)	20 Secs (180 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
2	(WFC3UVIS.im.1342868)	(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W	FLASH=12		Pattern 2, Exps 1-2 in Visit 18 (2)	120 Secs (1080 Secs)	
								[==>(Pattern 1)]	
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
								[==>(Pattern 5)]	***[1]***
								[==>(Pattern 6)]	
								[==>(Pattern 7)]	
								[==>(Pattern 8)]	
								[==>(Pattern 9)]	
3		(1) V-V1032-CEN	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F336W				120 Secs (120 Secs)	
								[==>]	***[1]***

Orbit Structure