15111 - The UV reflectance of Patroclus: Exploring the surface composition and origins of Jupiter Trojans

Cycle: 25, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
Dr. Pippa Molyneux (PI) (Contact)	**Southwest Research Institute**	**pmolyneux@swri.edu**
Dr. Tracy M Becker (CoI)	Southwest Research Institute	tbecker@swri.edu
Dr. Marc W. Buie (CoI)	Southwest Research Institute	buie@boulder.swri.edu
Dr. Amanda R. Hendrix (CoI)	Planetary Science Institute	arh@psi.edu
Dr. Joel W. Parker (CoI)	Southwest Research Institute	joel@boulder.swri.edu
Dr. Simon Porter (CoI)	Southwest Research Institute	porter@boulder.swri.edu
Dr. Kurt David Retherford (CoI)	Southwest Research Institute	kretherford@swri.edu
Dr. Lorenz Roth (CoI) (ESA Member)	Royal Institute of Technology	lorenzr@kth.se

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) PATROCLUS	STIS/CCD STIS/NUV-MAMA	1	08-Feb-2019 15:00:15.0	yes
02	(1) PATROCLUS	STIS/CCD STIS/NUV-MAMA	1	08-Feb-2019 15:00:16.0	yes
03	(1) PATROCLUS	STIS/CCD STIS/NUV-MAMA	1	08-Feb-2019 15:00:16.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
04	(1) PATROCLUS	STIS/CCD STIS/NUV-MAMA	1	08-Feb-2019 15:00:17.0	yes
05	(1) PATROCLUS	STIS/CCD STIS/NUV-MAMA	1	08-Feb-2019 15:00:18.0	yes
06	(1) PATROCLUS	STIS/CCD STIS/NUV-MAMA	1	08-Feb-2019 15:00:18.0	yes
51	(1) PATROCLUS	STIS/CCD STIS/NUV-MAMA	1	08-Feb-2019 15:00:19.0	yes
55	(1) PATROCLUS	STIS/CCD STIS/NUV-MAMA	1	08-Feb-2019 15:00:20.0	yes
56	(1) PATROCLUS	STIS/CCD STIS/NUV-MAMA	1	08-Feb-2019 15:00:20.0	yes

9 Total Orbits Used

ABSTRACT

(617) Patroclus is a binary system comprising two almost equally sized Trojan asteroids, Patroclus and Menoetius. (617) Patroclus has never been observed in the UV spectral region, which contains important diagnostic features of major Trojan surface constituents inferred from fits to visible-near IR spectra. Previous spectral observations have not been spatially resolved, precluding a direct spectral comparison of the two bodies. We propose to obtain full surface UV reflectance maps of both Patroclus and Menoetius using the STIS G230L mode, to search for characteristic absorption features of silicates, carbons/graphites and NH3, which together make up the major inferred Jupiter Trojan surface constituents, and for signs of "spectral bluing" that occurs for space-weathered objects. The Jupiter Trojans are believed to represent the most readily accessible Kuiper Belt material in the solar system, having been scattered from that region to their current orbits following a dynamical instability. A direct spectral comparison of Patroclus and Menoetius, indicating whether the objects share a common origin and evolution, will explore the hypothesis that the system is a rare binary survivor of this scattering. (617) Patroclus is also a target of the upcoming Lucy mission, and constraints on surface composition would represent a valuable input to instrument configuration and observation planning work for the mission. As Lucy will not carry a UV instrument, the proposed observations would remain unique and complementary to the results of the mission.

OBSERVING DESCRIPTION

The Patroclus-Menoetius binary system will be observed in six single-orbit visits. The time between visits should correspond to 60 +/- 10 degree orbital longitude intervals, but may span multiple Patroclus-Menoetius orbits. The orbital period of the system is ~103 hours, so the offset between visits should be ~17 +/- 3 hours (+ n*103 hours).

The STIS slit should be oriented to allow the spectra of the two asteroids, which will appear in the East-West plane in cycle 25, to be separated. If possible, the observations should take place when Patroclus is within 5.2 AU of Earth to optimise the apparent size, brightness and separation of the asteroids, but the slit angle requirement is the more important constraint.

Visit

Proposal 15111, Visit 01, failed Fri Feb 08 20:00:21 GMT 2019

Diagnostic Status: Warning

Scientific Instruments: STIS/NUV-MAMA, STIS/CCD

Special Requirements: ORIENT 105D TO 165 D; ORIENT 285D TO 345 D; BEFORE 13-JUN-2018:00:00:00

Comments: During Cycle 25, the Patroclus-Menoetius mutual orbit will be oriented approximately in the East-West plane. The STIS slit should be positioned to allow the spectra of the two objects to be separated, ideally as close to 135 degrees or 315 degrees as possible.

The timing interval shown here covers the period when Patroclus is within 5.2 AU of the Earth to maximize the size and separation of the objects. The slit orientation is the more important requirement.

*Subsequent visits should be offset to obtain observations at 60 degree +/- 10 degree orbital longitude intervals but the visits do not need to occur in a single orbital period. The orbital period is ~103 hours so the interval between visits should be 17 +/- 3 hours (+ n*103 hours if necessary, where n is any integer).*

Diagnostics

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

Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	PATROCLUS	TYPE=ASTEROID,A=5.21849969455 3197,E=0.1399500456355474,I=22.05 269861079197,O=44.36596299545594 ,W=307.8595259822105,M=325.1954 514012491,EQUINOX=J2000,EPOCH =08-JUN- 2011:00:00:00,EpochTimeScale=TDB				EARTH

Comments: Description=Asteroid Patroclus

Exposures

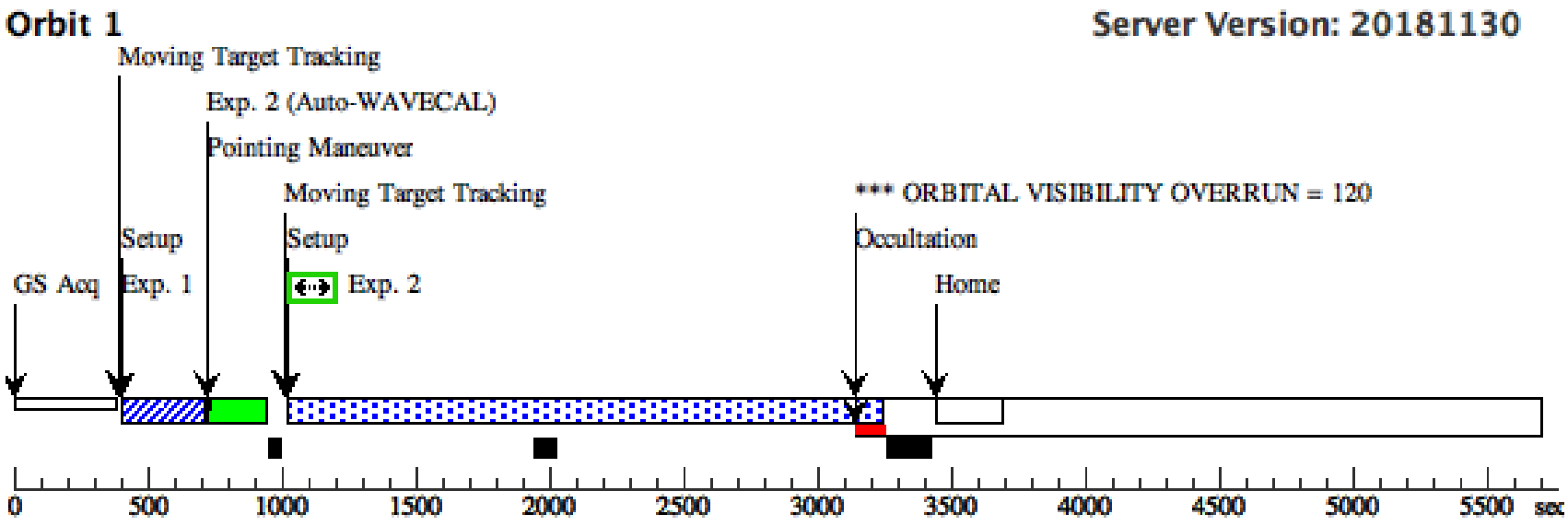
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.100 7420)	(1) PATROCLUS	STIS/CCD, ACQ, F28X50LP	MIRROR				10 Secs (10 Secs)	
								[==>]	***[1]***

Comments: The exposure time was calculated using a Castelli-Kurucz Model G2V spectrum renormalized to vegamag = 15.9. The minimum exposure time for S:N = 40 is 0.64 seconds and the time to saturation is 98 seconds. A 10 second exposure will give S:N ~178.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	(STIS.sp.93 7007)	(1) PATROCLUS	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	BUFFER-TIME=90 0			1800 Secs (2184 Secs)	
								[==>2184.0 Secs]	***[1]***

Comments: The ETC run used here assumes that the UV albedo of Patroclus is similar to that of Ganymede to ensure that no count rate limits will be exceeded. It is very unlikely that Patroclus will be brighter than this since its albedo is ~9 times smaller than that of Ganymede at visible wavelengths. (ETC run STIS.sp.937012 assumes a UV albedo a factor of ten lower than Ganymede's). Buffer time is Tex/2.

Orbit Structure



Visit

Proposal 15111, Visit 02, completed Fri Feb 08 20:00:21 GMT 2019

Diagnostic Status: Warning

Scientific Instruments: STIS/NUV-MAMA, STIS/CCD

Special Requirements: ORIENT 105D TO 165 D; ORIENT 285D TO 345 D; AFTER 01 BY 117 H TO 123 H; BEFORE 13-JUN-2018:00:00:00

Comments: Orientation and timing requirements are identical to Visit 1.

*This visit should be offset from Visit 1 by 17 +/- 3 hours (+ n*103 hours)*

Diagnostics

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

Solar System Targets

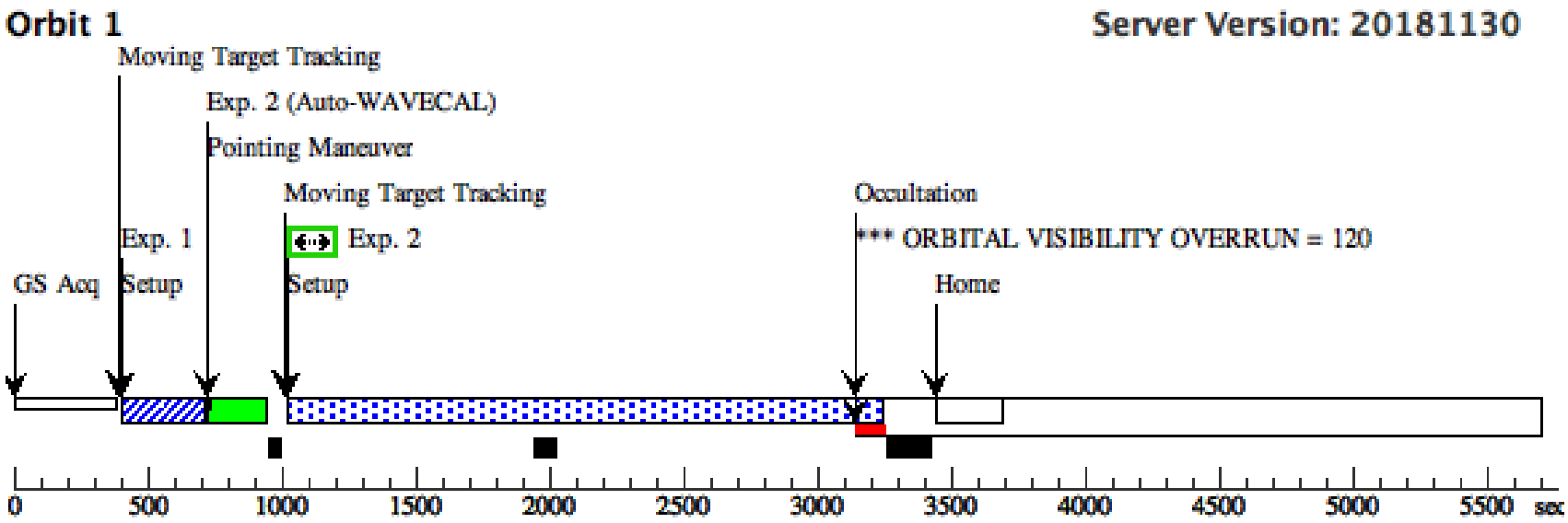
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	PATROCLUS	TYPE=ASTEROID,A=5.21849969455 3197,E=0.1399500456355474,I=22.05 269861079197,O=44.36596299545594 ,W=307.8595259822105,M=325.1954 514012491,EQUINOX=J2000,EPOCH =08-JUN- 2011:00:00:00,EpochTimeScale=TDB				EARTH

Comments: Description=Asteroid Patroclus

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.100 7420)	(1) PATROCLUS	STIS/CCD, ACQ, F28X50LP	MIRROR				10 Secs (10 Secs)	
								[==>]	***[1]***
Comments: Identical to Visit 1, Exposure 1									
2	(STIS.sp.93 7007)	(1) PATROCLUS	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	BUFFER-TIME=90 0			1800 Secs (2184 Secs)	
								[==>2184.0 Secs]	***[1]***
Comments: Identical to Visit 1, Exposure 2									

Orbit Structure



Visit

Proposal 15111, Visit 03, completed Fri Feb 08 20:00:21 GMT 2019

Diagnostic Status: Warning

Scientific Instruments: STIS/NUV-MAMA, STIS/CCD

Special Requirements: ORIENT 105D TO 165 D; ORIENT 285D TO 345 D; AFTER 01 BY 237 H TO 243 H; BEFORE 13-JUN-2018:00:00:00

Comments: Orientation and timing requirements are identical to Visit 1.

*This visit should be offset from Visit 1 by 34 +/- 3 hours (+ n*103 hours)*

Diagnostics

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

Solar System Targets

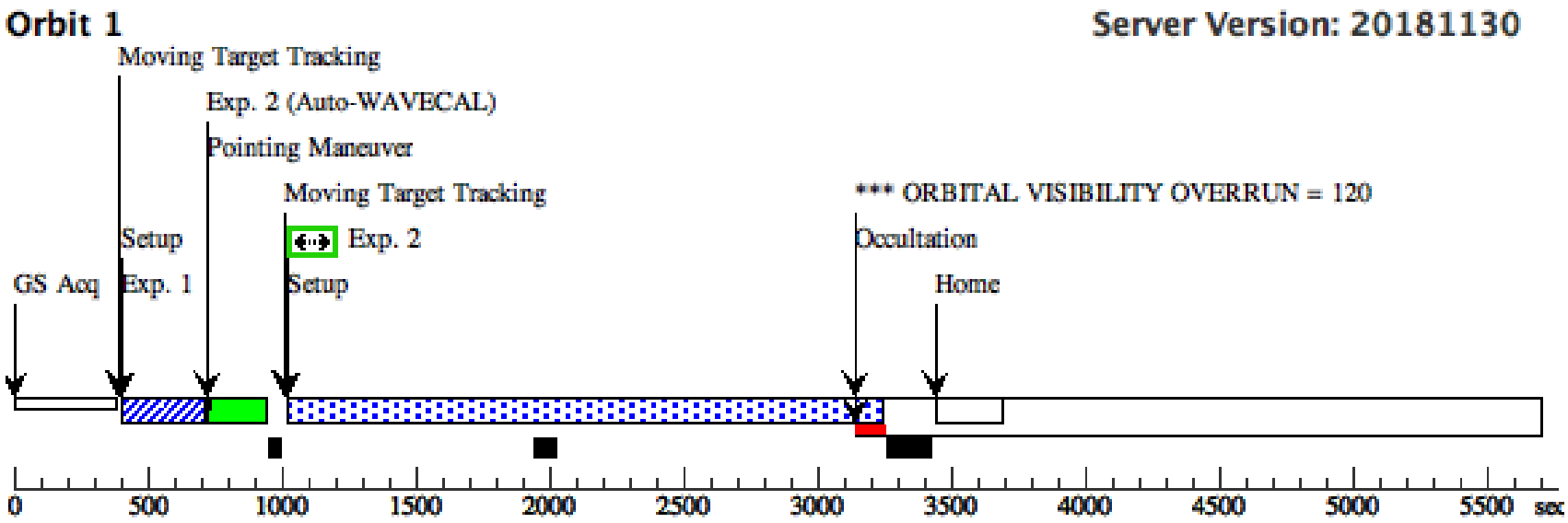
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	PATROCLUS	TYPE=ASTEROID,A=5.21849969455 3197,E=0.1399500456355474,I=22.05 269861079197,O=44.36596299545594 ,W=307.8595259822105,M=325.1954 514012491,EQUINOX=J2000,EPOCH =08-JUN- 2011:00:00:00,EpochTimeScale=TDB				EARTH

Comments: Description=Asteroid Patroclus

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.100 7420)	(1) PATROCLUS	STIS/CCD, ACQ, F28X50LP	MIRROR				10 Secs (10 Secs)	
								[==>]	***[1]***
Comments: Identical to Visit 1, Exposure 1									
2	(STIS.sp.93 7007)	(1) PATROCLUS	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	BUFFER-TIME=90 0			1800 Secs (2184 Secs)	
								[==>2184.0 Secs]	***[1]***
Comments: Identical to Visit 1, Exposure 2									

Orbit Structure



Visit

Proposal 15111, Visit 04, completed Fri Feb 08 20:00:21 GMT 2019

Diagnostic Status: Warning

Scientific Instruments: STIS/NUV-MAMA, STIS/CCD

Special Requirements: ORIENT 105D TO 165 D; ORIENT 285D TO 345 D; AFTER 01 BY 357 H TO 363 H; BEFORE 13-JUN-2018:00:00:00

Comments: Orientation and timing requirements are identical to Visit 1.

*This visit should be offset from Visit 1 by 51 +/- 3 hours (+ n*103 hours)*

Diagnostics

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

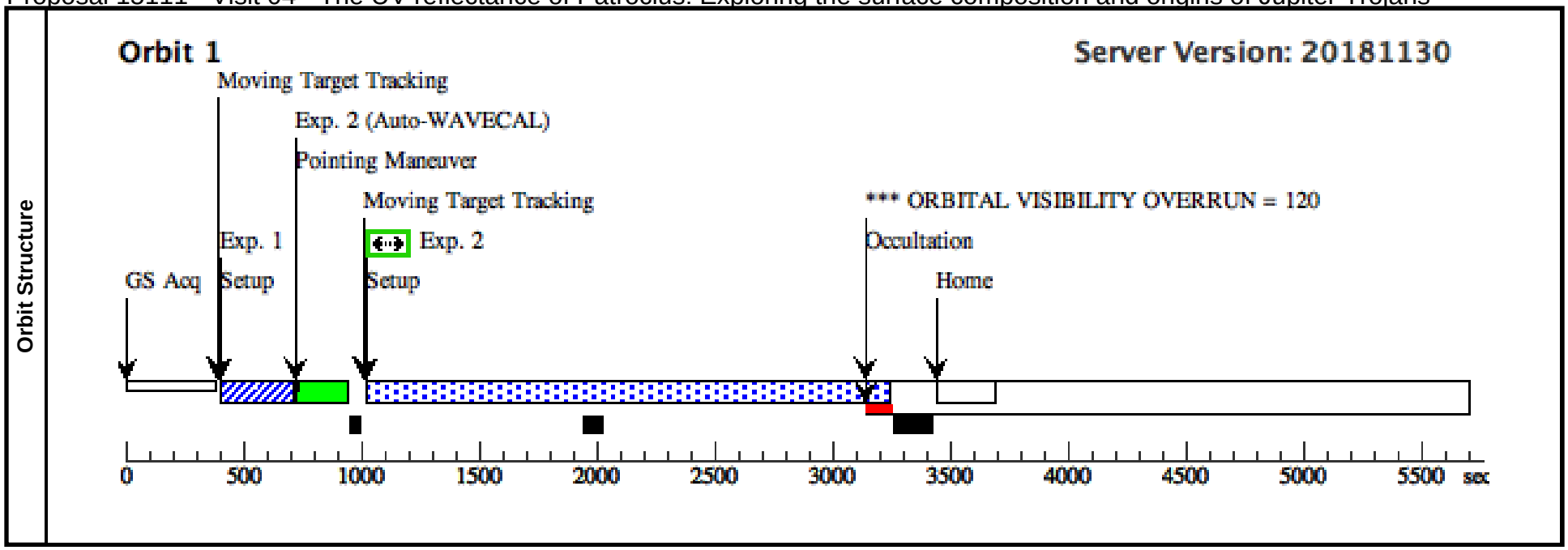
Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	PATROCLUS	TYPE=ASTEROID,A=5.21849969455 3197,E=0.1399500456355474,I=22.05 269861079197,O=44.36596299545594 ,W=307.8595259822105,M=325.1954 514012491,EQUINOX=J2000,EPOCH =08-JUN- 2011:00:00:00,EpochTimeScale=TDB				EARTH

Comments: Description=Asteroid Patroclus

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.100 7420)	(1) PATROCLUS	STIS/CCD, ACQ, F28X50LP	MIRROR				10 Secs (10 Secs)	
								[==>]	***[1]***
Comments: Identical to Visit 1, Exposure 1									
2	(STIS.sp.93 7007)	(1) PATROCLUS	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	BUFFER-TIME=90 0			1800 Secs (2184 Secs)	
								[==>2184.0 Secs]	***[1]***
Comments: Identical to Visit 1, Exposure 2									


Orbit Structure
Orbit 1
Server Version: 20181130
Moving Target Tracking
Exp. 2 (Auto-WAVECAL)
Pointing Maneuver
Moving Target Tracking
*** ORBITAL VISIBILITY OVERRUN = 120
Exp. 1
Exp. 2
Occultation
GS Acq
Setup
Setup
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15111, Visit 05, failed Fri Feb 08 20:00:21 GMT 2019

Diagnostic Status: Warning

Scientific Instruments: STIS/NUV-MAMA, STIS/CCD

Special Requirements: ORIENT 105D TO 165 D; ORIENT 285D TO 345 D; AFTER 01 BY 477 H TO 483 H; BEFORE 13-JUN-2018:00:00:00

Comments: Orientation and timing requirements are identical to Visit 1.

*This visit should be offset from Visit 1 by 68 +/- 3 hours (+ n*103 hours)*

Diagnostics

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

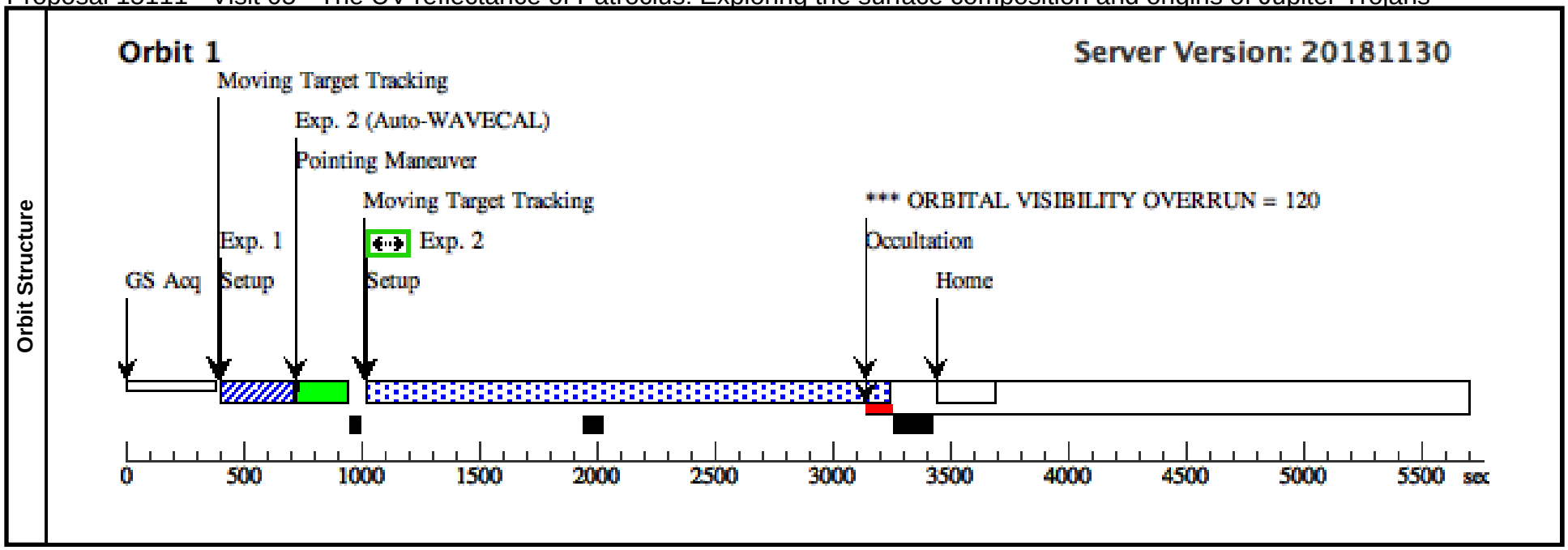
Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	PATROCLUS	TYPE=ASTEROID,A=5.21849969455 3197,E=0.1399500456355474,I=22.05 269861079197,O=44.36596299545594 ,W=307.8595259822105,M=325.1954 514012491,EQUINOX=J2000,EPOCH =08-JUN- 2011:00:00:00,EpochTimeScale=TDB				EARTH

Comments: Description=Asteroid Patroclus

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.100 7420)	(1) PATROCLUS	STIS/CCD, ACQ, F28X50LP	MIRROR				10 Secs (10 Secs)	
								[==>]	***[1]***
Comments: Identical to Visit 1, Exposure 1									
2	(STIS.sp.93 7007)	(1) PATROCLUS	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	BUFFER-TIME=90 0			1800 Secs (2184 Secs)	
								[==>2184.0 Secs]	***[1]***
Comments: Identical to Visit 1, Exposure 2									


Orbit Structure
Orbit 1
Server Version: 20181130
Moving Target Tracking
Exp. 2 (Auto-WAVECAL)
Pointing Maneuver
Moving Target Tracking
*** ORBITAL VISIBILITY OVERRUN = 120
Exp. 1
Exp. 2
Occultation
GS Acq
Setup
Setup
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15111, Visit 06, failed Fri Feb 08 20:00:21 GMT 2019

Diagnostic Status: Warning

Scientific Instruments: STIS/NUV-MAMA, STIS/CCD

Special Requirements: ORIENT 105D TO 165 D; ORIENT 285D TO 345 D; AFTER 01 BY 597 H TO 603 H; BEFORE 13-JUN-2018:00:00:00

Comments: Orientation and timing requirements are identical to Visit 1.

*This visit should be offset from Visit 1 by 85 +/- 3 hours (+ n*103 hours)*

Diagnostics

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

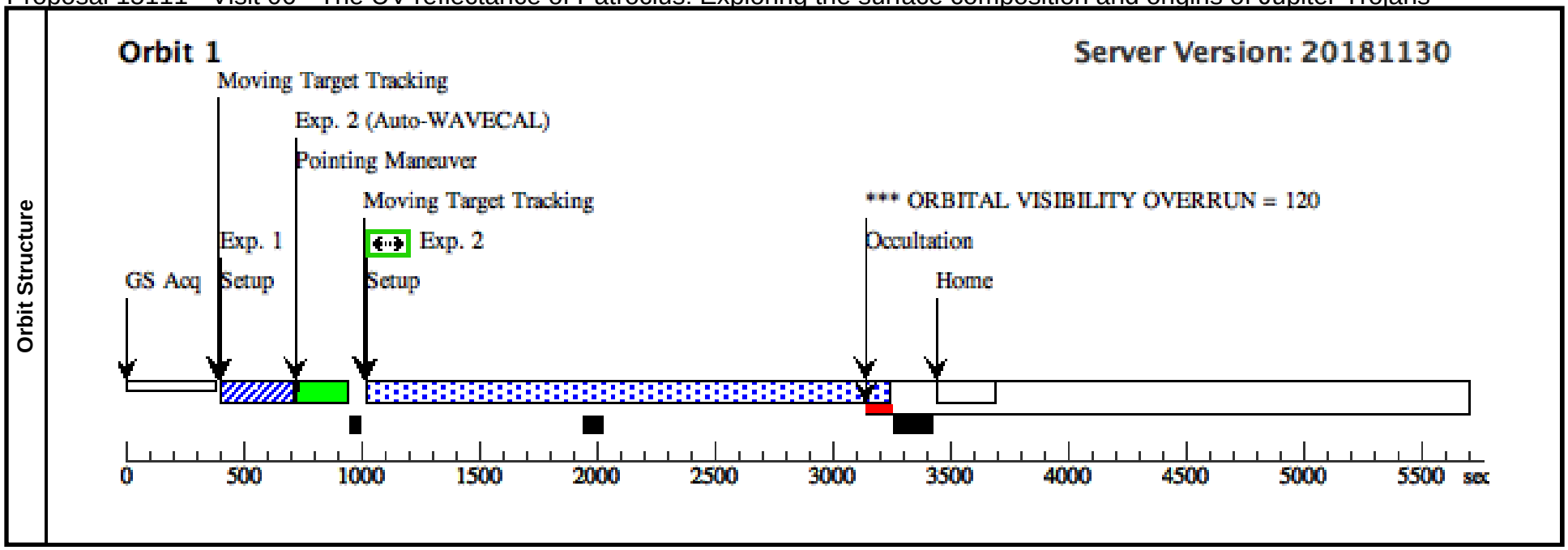
Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	PATROCLUS	TYPE=ASTEROID,A=5.21849969455 3197,E=0.1399500456355474,I=22.05 269861079197,O=44.36596299545594 ,W=307.8595259822105,M=325.1954 514012491,EQUINOX=J2000,EPOCH =08-JUN- 2011:00:00:00,EpochTimeScale=TDB				EARTH

Comments: Description=Asteroid Patroclus

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.100 7420)	(1) PATROCLUS	STIS/CCD, ACQ, F28X50LP	MIRROR				10 Secs (10 Secs)	
								[==>]	***[1]***
Comments: Identical to Visit 1, Exposure 1									
2	(STIS.sp.93 7007)	(1) PATROCLUS	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	BUFFER-TIME=90 0			1800 Secs (2184 Secs)	
								[==>2184.0 Secs]	***[1]***
Comments: Identical to Visit 1, Exposure 2									


Orbit Structure
Orbit 1
Server Version: 20181130
Moving Target Tracking
Exp. 2 (Auto-WAVECAL)
Pointing Maneuver
Moving Target Tracking
*** ORBITAL VISIBILITY OVERRUN = 120
Exp. 1
Exp. 2
Occultation
GS Acq
Setup
Setup
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Proposal 15111 - Visit 51 - The UV reflectance of Patroclus: Exploring the surface composition and origins of Jupiter Trojans

Visit

Proposal 15111, Visit 51, implementation Fri Feb 08 20:00:21 GMT 2019

Diagnostic Status: Warning

Scientific Instruments: STIS/NUV-MAMA, STIS/CCD

Special Requirements: ORIENT 105D TO 165 D; ORIENT 285D TO 345 D; BETWEEN 27-JAN-2019:00:00:00 AND 10-JUN-2019:00:00:00

Comments: Repeat of failed visit 01

The Patroclus-Menoetius mutual orbit will be oriented approximately in the East-West plane. The STIS slit should be positioned to allow the spectra of the two objects to be separated, ideally as close to 135 degrees or 315 degrees as possible.

The timing interval shown here covers the period when Patroclus is within 5.5 AU of the Earth to maximize the size and separation of the objects. This requirement will ensure we get similar count rates to those we expected from the earlier failed observation.

Diagnostics

(Visit 51) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	PATROCLUS	TYPE=ASTEROID,A=5.21849969455 3197,E=0.1399500456355474,I=22.05 269861079197,O=44.36596299545594 ,W=307.8595259822105,M=325.1954 514012491,EQUINOX=J2000,EPOCH =08-JUN- 2011:00:00:00,EpochTimeScale=TDB				EARTH

Comments: Description=Asteroid Patroclus

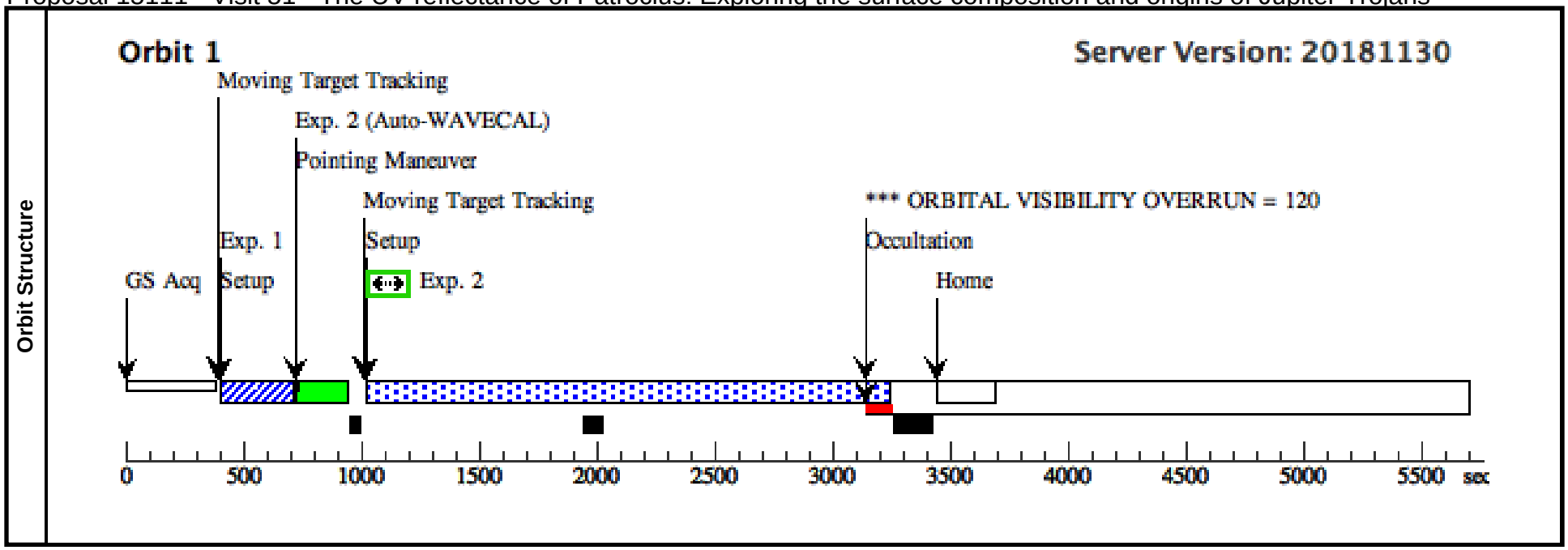
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.100 7420)	(1) PATROCLUS	STIS/CCD, ACQ, F28X50LP	MIRROR		GS ACQ SCENARI O BASE1BE		10 Secs (10 Secs)	
								[==>]	***[1]***

Comments: The exposure time was calculated using a Castelli-Kurucz Model G2V spectrum renormalized to vegamag = 15.9. The minimum exposure time for S:N = 40 is 0.64 seconds and the time to saturation is 98 seconds. A 10 second exposure will give S:N ~178.

2	(STIS.sp.93 7007)	(1) PATROCLUS	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	BUFFER-TIME=90 0			1800 Secs (2184 Secs)	
								[==>2184.0 Secs]	***[1]***

Comments: The ETC run used here assumes that the UV albedo of Patroclus is similar to that of Ganymede to ensure that no count rate limits will be exceeded. It is very unlikely that Patroclus will be brighter than this since its albedo is ~9 times smaller than that of Ganymede at visible wavelengths. (ETC run STIS.sp.937012 assumes a UV albedo a factor of ten lower than Ganymede's). Buffer time is Tex/2.


Orbit Structure
Orbit 1
Server Version: 20181130
Moving Target Tracking
Exp. 2 (Auto-WAVECAL)
Pointing Maneuver
Moving Target Tracking
*** ORBITAL VISIBILITY OVERRUN = 120
Exp. 1
Setup
Setup
Occultation
GS Acq
Exp. 2
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Proposal 15111 - Visit 55 - The UV reflectance of Patroclus: Exploring the surface composition and origins of Jupiter Trojans

Visit

Proposal 15111, Visit 55, implementation Fri Feb 08 20:00:21 GMT 2019

Diagnostic Status: Warning

Scientific Instruments: STIS/NUV-MAMA, STIS/CCD

Special Requirements: ORIENT 105D TO 165 D; ORIENT 285D TO 345 D; BETWEEN 27-JAN-2019:00:00:00 AND 10-JUN-2019:00:00:00

Comments: Repeat of failed visit 05

The Patroclus-Menoetius mutual orbit will be oriented approximately in the East-West plane. The STIS slit should be positioned to allow the spectra of the two objects to be separated, ideally as close to 135 degrees or 315 degrees as possible.

The timing interval shown here covers the period when Patroclus is within 5.5 AU of the Earth to maximize the size and separation of the objects. This requirement will ensure we get similar count rates to those we expected from the earlier failed observation.

Diagnostics

(Visit 55) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

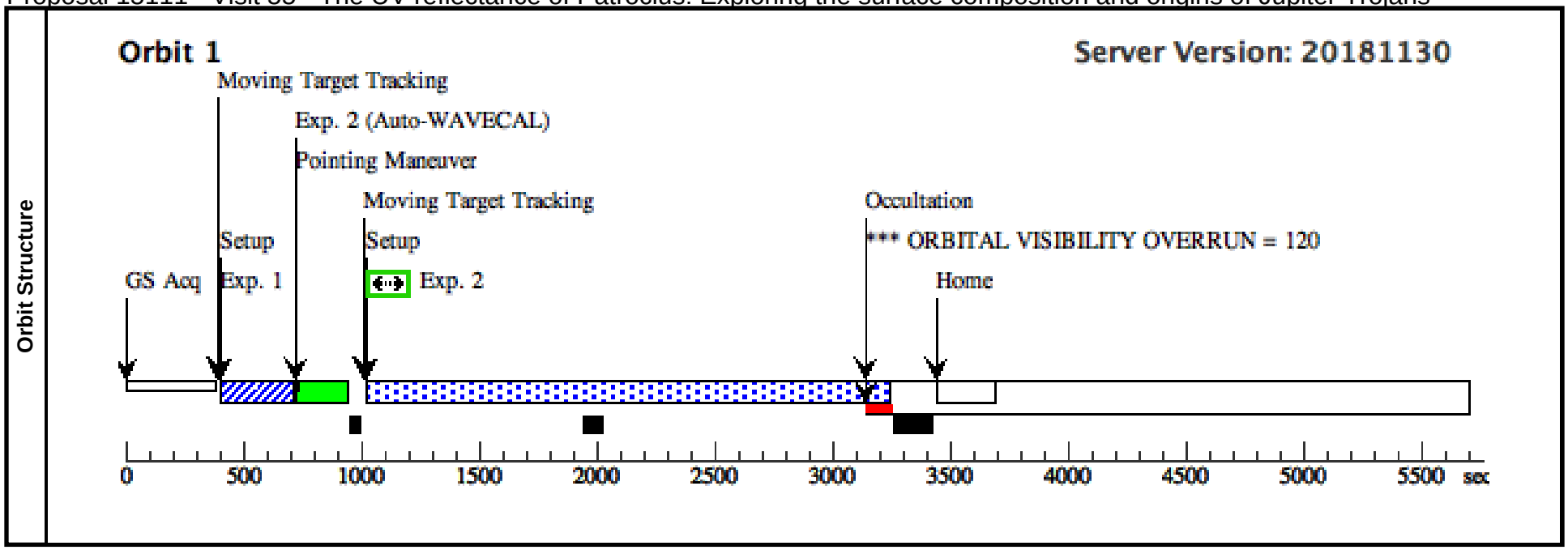
Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	PATROCLUS	TYPE=ASTEROID,A=5.21849969455 3197,E=0.1399500456355474,I=22.05 269861079197,O=44.36596299545594 ,W=307.8595259822105,M=325.1954 514012491,EQUINOX=J2000,EPOCH =08-JUN- 2011:00:00:00,EpochTimeScale=TDB				EARTH

Comments: Description=Asteroid Patroclus

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.100 7420)	(1) PATROCLUS	STIS/CCD, ACQ, F28X50LP	MIRROR		GS ACQ SCENARI O BASE1BE		10 Secs (10 Secs)	
								[==>]	***[1]***
	Comments: The exposure time was calculated using a Castelli-Kurucz Model G2V spectrum renormalized to vegamag = 15.9. The minimum exposure time for S:N = 40 is 0.64 seconds and the time to saturation is 98 s econds. A 10 second exposure will give S:N ~178.								
2	(STIS.sp.93 7007)	(1) PATROCLUS	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	BUFFER-TIME=90 0			1800 Secs (2184 Secs)	
								[==>2184.0 Secs]	***[1]***
	Comments: The ETC run used here assumes that the UV albedo of Patroclus is similar to that of Ganymede to ensure that no count rate limits will be exceeded. It is very unlikely that Patroclus will be brighter than thi s since its albedo is ~9 times smaller than that of Ganymede at visible wavelengths. (ETC run STIS.sp.937012 assumes a UV albedo a factor of ten lower than Ganymede's). Buffer time is Tex/2.								


Orbit Structure
Orbit 1
Server Version: 20181130
Moving Target Tracking
Exp. 2 (Auto-WAVECAL)
Pointing Maneuver
Moving Target Tracking
Occultation
Setup
Setup
*** ORBITAL VISIBILITY OVERRUN = 120
GS Acq
Exp. 1
Exp. 2
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15111, Visit 56, implementation Fri Feb 08 20:00:21 GMT 2019

Diagnostic Status: Warning

Scientific Instruments: STIS/NUV-MAMA, STIS/CCD

Special Requirements: ORIENT 105D TO 165 D; ORIENT 285D TO 345 D; BETWEEN 27-JAN-2019:00:00:00 AND 10-JUN-2019:00:00:00

Comments: Repeat of failed visit 06

The Patroclus-Menoetius mutual orbit will be oriented approximately in the East-West plane. The STIS slit should be positioned to allow the spectra of the two objects to be separated, ideally as close to 135 degrees or 315 degrees as possible.

The timing interval shown here covers the period when Patroclus is within 5.5 AU of the Earth to maximize the size and separation of the objects. This requirement will ensure we get similar count rates to those we expected from the earlier failed observation.

Diagnostics

(Visit 56) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	PATROCLUS	TYPE=ASTEROID,A=5.21849969455 3197,E=0.1399500456355474,I=22.05 269861079197,O=44.36596299545594 ,W=307.8595259822105,M=325.1954 514012491,EQUINOX=J2000,EPOCH =08-JUN- 2011:00:00:00,EpochTimeScale=TDB				EARTH

Comments: Description=Asteroid Patroclus

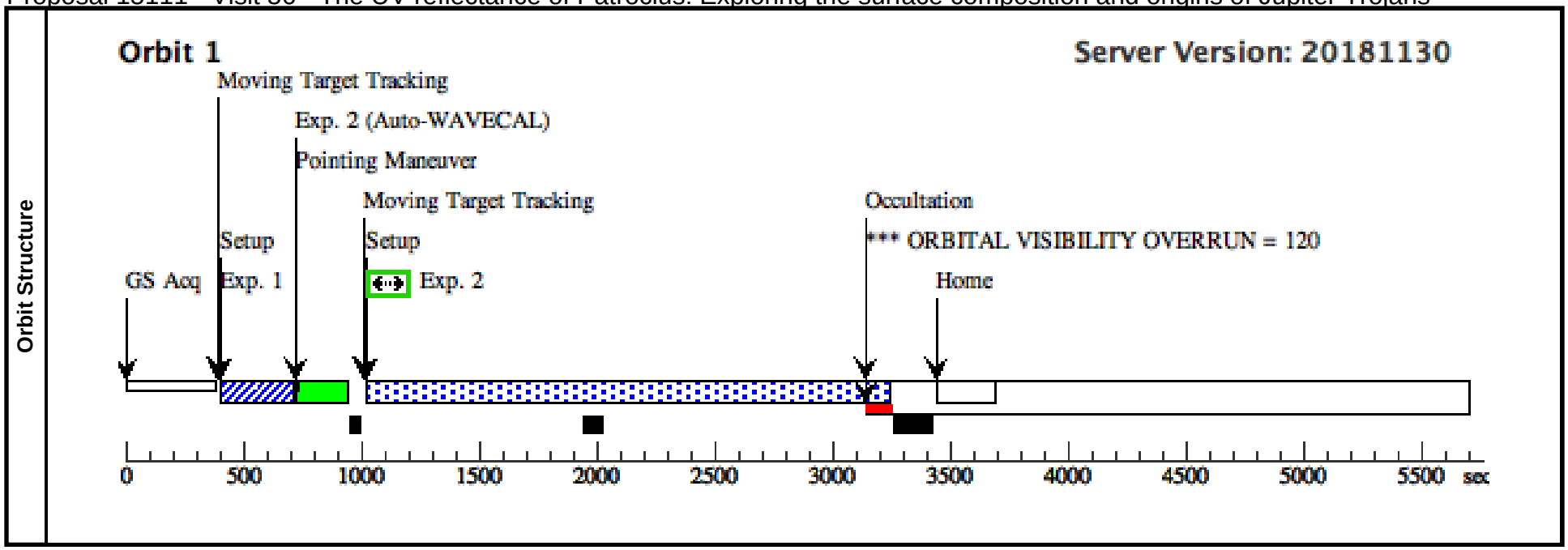
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.100 7420)	(1) PATROCLUS	STIS/CCD, ACQ, F28X50LP	MIRROR		GS ACQ SCENARI O BASE1BE		10 Secs (10 Secs)	
								[==>]	***[1]***

Comments: The exposure time was calculated using a Castelli-Kurucz Model G2V spectrum renormalized to vegamag = 15.9. The minimum exposure time for S:N = 40 is 0.64 seconds and the time to saturation is 98 seconds. A 10 second exposure will give S:N ~178.

2	(STIS.sp.93 7007)	(1) PATROCLUS	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	BUFFER-TIME=90 0			1800 Secs (2184 Secs)	
								[==>2184.0 Secs]	***[1]***

Comments: The ETC run used here assumes that the UV albedo of Patroclus is similar to that of Ganymede to ensure that no count rate limits will be exceeded. It is very unlikely that Patroclus will be brighter than this since its albedo is ~9 times smaller than that of Ganymede at visible wavelengths. (ETC run STIS.sp.937012 assumes a UV albedo a factor of ten lower than Ganymede's). Buffer time is Tex/2.


Orbit Structure
Orbit 1
Server Version: 20181130
Moving Target Tracking
Exp. 2 (Auto-WAVECAL)
Pointing Maneuver
Moving Target Tracking
Occultation
Setup
Setup
*** ORBITAL VISIBILITY OVERRUN = 120
GS Acq
Exp. 1
Exp. 2
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec