13675 - Comet Siding Spring at Mars: Using MRO to Interpret HST Imaging of Comets

Cycle: 22, Proposal Category: GO

(Availability Mode: AVAILABLE)

INVESTIGATORS

Name	*Institution*	*E-Mail*
Dr. Jian-Yang Li (PI) (Contact)	**Planetary Science Institute**	**jyli@psi.edu**
Tony L. Farnham (CoI)	University of Maryland	farnham@astro.umd.edu
Dr. Michael S Kelley (CoI)	University of Maryland	msk@astro.umd.edu
Dr. Nalin H. Samarasinha (CoI)	Planetary Science Institute	nalin@psi.edu
Dr. Dennis Bodewits (CoI)	University of Maryland	dennis@astro.umd.edu
Dr. Michael F. A'Hearn (CoI)	University of Maryland	ma@astro.umd.edu
Dr. Carey M Lisse (CoI) (Contact)	The Johns Hopkins University Applied Physics Laboratory	carey.lisse@jhuapl.edu
Dr. W. A. Delamere (CoI)	Delamere Support Services	alan@delamere.biz
Max Mutchler (CoI) (Contact)	Space Telescope Science Institute	mutchler@stsci.edu

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
11	(1) C2013A1	WFC3/UVIS	1	01-Oct-2014 21:04:23.0	yes
12	(1) C2013A1	WFC3/UVIS	1	01-Oct-2014 21:04:26.0	yes
13	(1) C2013A1	WFC3/UVIS	1	01-Oct-2014 21:04:29.0	yes
14	(1) C2013A1	WFC3/UVIS	1	01-Oct-2014 21:04:31.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
15	(1) C2013A1	S/C WFC3/UVIS	1	01-Oct-2014 21:04:33.0	yes
16	(1) C2013A1	S/C WFC3/UVIS	1	01-Oct-2014 21:04:36.0	yes
17	(1) C2013A1	S/C WFC3/UVIS	1	01-Oct-2014 21:04:38.0	yes

7 Total Orbits Used

ABSTRACT

Comet C/Siding Spring is a dynamically new (DN) comet, and will approach Mars to within 135,000 km on October 19, 2014. This encounter presents the first ever opportunity for us to observe a DN comet from close distances. The planned observations from the Mars Reconnaissance Orbiter (MRO) can potentially resolve the nucleus to 140 m/pix, and trace the dust and gas activity to their sources on the nucleus. This "natural flyby" will allow us to directly compare a DN comet with previous comet flyby mission targets (all highly evolved comets), and generalize those mission results to more comets. We propose to observe C/Siding Spring with seven HST orbits during its Mars encounter. These observations will take advantage of this rare opportunity to study the evolution of C/Siding Spring, use the MRO observations to help us interpret HST observations of comets in general, and put the MRO observations into a broader context. We plan to image the dust coma with filters F689M and F845M, and the cyanogen coma with filter FQ387N. Comparisons with previous HST observations when the comet was far from the Sun, combined with MRO observations, will allow us to study the evolution of the coma of C/Siding Spring, and tie it to the sources on the nucleus. Putting MRO and HST observations together, we can reconstruct the 3-D structure in the inner coma, and study the possible chemical heterogeneity on the nucleus. HST is needed because of the unfavorable observing conditions from the ground, the specific timing of our observations, and its high resolution and high sensitivity. This proposal is part of a coordinated observing campaign of C/Siding Spring both from the ground and from space.

OBSERVING DESCRIPTION

The observations are extremely time sensitive tied to the close encounter of Comet C/Siding Spring with Mars, occurring at 2014-10-19T18:33:18.432, or Earth receiving time 2014-10-19T18:46:50.600. One major scientific goal of this program is to study the structure of the inner coma of this comet using both HST and MRO/HiRISE observations performed at the same time during its close Mars encounter.

Out of the total of 7 orbits, we would like to schedule the 1st and 7th orbits -/+15.5 hrs from the encounter, the 2nd and the 6th -/+6.5 hrs from the encounter, and 3rd, 4th, and 5th orbit consecutively and centered at the close encounter. This timing strategy provides both the best coverage in the rapidly varying observing geometry for the comet as seen from Mars, and a total duration of ~31 hrs that should accomodate at least a large fraction of the rotation of the cometary nucleus, which is completely unknown at this time. We do realize that such stringent scheduling requirement could be difficult to implement. Therefore we can accept a shift of 1 orbit in time for the 2nd and 6th orbits, and a shift of 3 orbits for the 1st and 7th orbits. The whole sequence does not have to be strictly symmetric in structure before and after the comet-Mars encounter.

Within each orbit, we will alternate between mid-band filters and the narrow-band quad filter, and take two exposures for each filter position. As our goal is to study the inner coma of the comet, we plan to use 2k-by-2k subframe to save overhead from readout and buffer dump. On the other hand, to accomodate the tail of the comet, we plan to shift the ephemeris position of the comet from the reference point in the subframe aperture towards the sunward direction by ~12" to 20" (300-500 pixels) using POS TARG parameter. For each filter, we also use a two point dither pattern along the perpendicular direction of the sun-antisun line with a spacing of 0.5".

The current positional uncertainty of C/Siding Spring is about 7" during its close encounter with Mars. We have considered this uncertainty in the plan. On the other hand, with the ephemeris of the comet continuously improved over time, we plan to update the orbital elements of the target. In addition, the brightness predictions of comets are generally poor. Therefore we expect to confirm or update the exposure times at the latest opportunity before the actual scheduling of this program, expected to be in mid to late September 2014.

Visit

Proposal 13675, Visit 11, implementation Thu Oct 02 01:04:40 GMT 2014

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE GYRO; BETWEEN 19-OCT-2014:11:30:00 AND 19-OCT-2014:13:30:00; VISIBILITY INTERVAL 2950 S

Diagnostics

(Exposure 4 (Visit 11)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 7 (Visit 11)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 8 (Visit 11)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

Solar System Targets

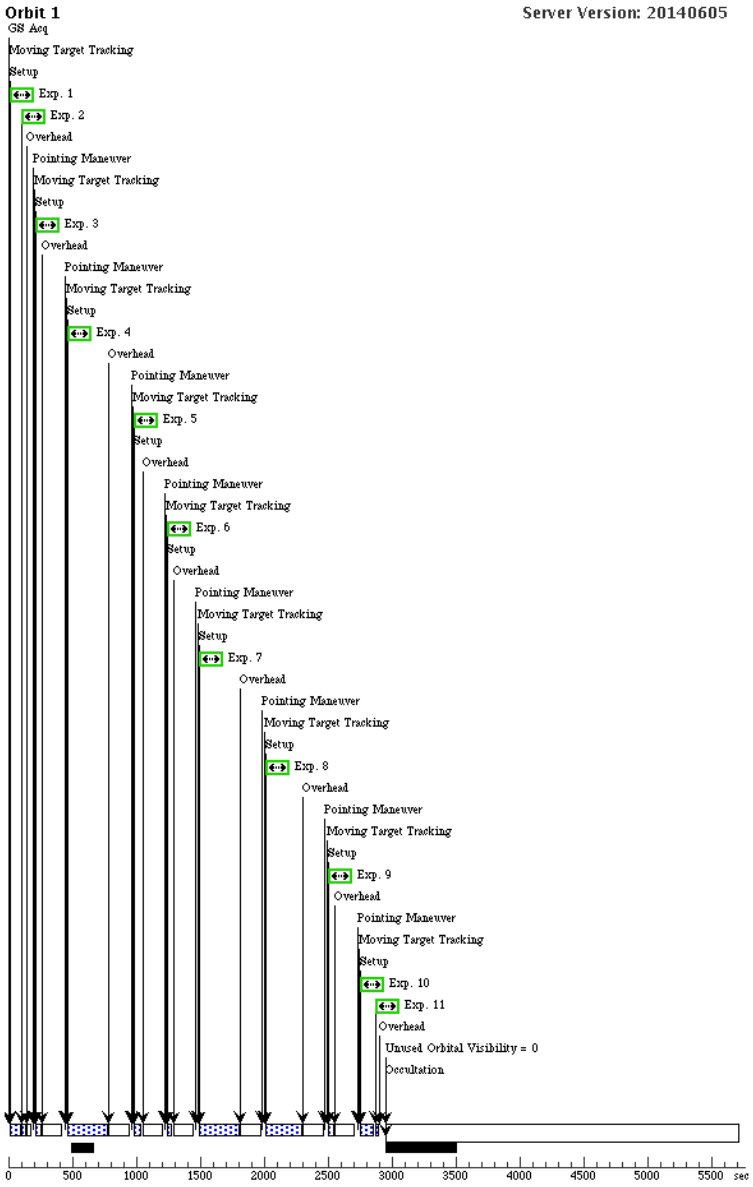
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	C2013A1	TYPE=COMET,Q=1.398647410389588,E=1.000688626405008,I=129.0273584753412,O=300.9763462911545,W=2.442757978652319,T=25-OCT-2014:08:09:09,TTimeScale=TDB,EQUINOX=J2000,EPOCH=09-DEC-2013,EpochTimeScale=TDB			MOSS Planning Start: 19-OCT-2014 MOSS Planning End: 21-OCT-2014	EARTH

Comments: Reference: JPL 85

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F775W	CR-SPLIT=NO; BIN=3; FLASH=6	POS TARG 39,30; SAA CONTOUR 11		3 Secs (3 Secs) *[==>]*	*[1]*
2		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F547M	CR-SPLIT=NO; BIN=3; FLASH=7	POS TARG 39,30; SAA CONTOUR 11		4 Secs (4 Secs) *[==>]*	*[1]*
3		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	CR-SPLIT=NO	POS TARG 10,11; SAA CONTOUR 11		24 Secs (24 Secs) *[==>]*	*[1]*
4		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 9.5,-9.5; SAA CONTOUR 11		279 Secs (279 Secs) *[==>]*	*[1]*
5		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F845M	CR-SPLIT=NO	POS TARG 10,11; SAA CONTOUR 11		35 Secs (35 Secs) *[==>]*	*[1]*
6		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F845M	CR-SPLIT=NO	POS TARG 11,10; SAA CONTOUR 11		35 Secs (35 Secs) *[==>]*	*[1]*
7		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 8.5,-8.5; SAA CONTOUR 11		279 Secs (279 Secs) *[==>]*	*[1]*
8		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 9.5,-9.5; SAA CONTOUR 11		279 Secs (279 Secs) *[==>]*	*[1]*
9		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	CR-SPLIT=NO	POS TARG 11,10; SAA CONTOUR 11		24 Secs (24 Secs) *[==>]*	*[1]*
10		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F390M	CR-SPLIT=NO; BIN=3; FLASH=7	POS TARG 36,33; SAA CONTOUR 11		32 Secs (32 Secs) *[==>]*	*[1]*
11		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F775W	CR-SPLIT=NO; BIN=3; FLASH=6	POS TARG 36,33; SAA CONTOUR 11		3 Secs (3 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 13675, Visit 12, implementation Thu Oct 02 01:04:41 GMT 2014

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE GYRO; AFTER 11 BY 1.8 Orbits TO 2.2 Orbits; SEQ 12,13,14,15 WITHIN 4.2 Orbits; VISIBILITY INTERVAL 2980 S

Diagnostics

(Exposure 2 (Visit 12)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 3 (Visit 12)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 5 (Visit 12)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 6 (Visit 12)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

Solar System Targets

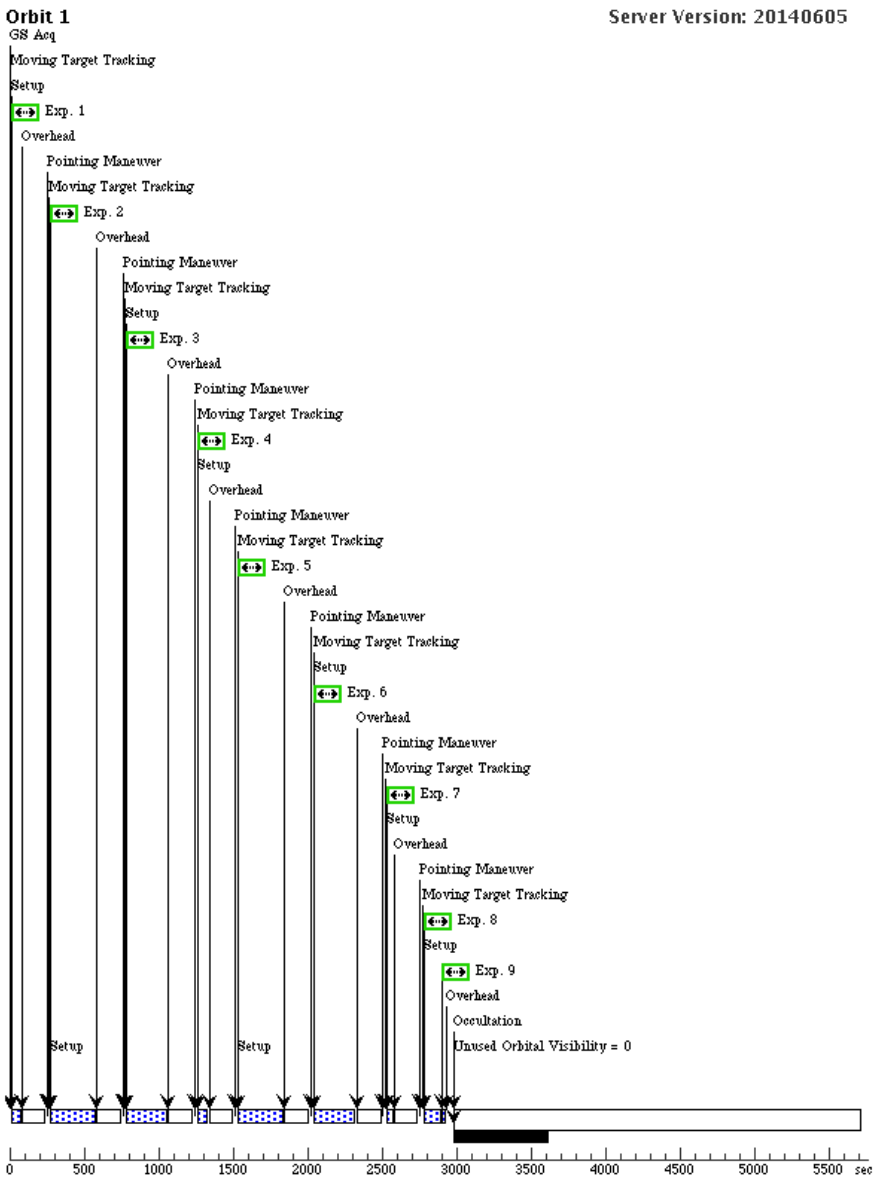
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	C2013A1	TYPE=COMET,Q=1.3986474103895 88,E=1.000688626405008,I=129.0273 584753412,O=300.9763462911545,W =2.442757978652319,T=25-OCT-2014:08:09:09,TTimeScale=TDB,EQ UINOX=J2000,EPOCH=09-DEC-2013,EpochTimeScale=TDB			MOSS Planning Start: 19-OCT-2014 MOSS Planning End: 21-OCT-2014	EARTH

Comments: Reference: JPL 85

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	CR-SPLIT=NO	POS TARG 10,11; SAA CONTOUR 11		24 Secs (24 Secs) *[==>]*	 ***[1]***
2		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 9.5,-9.5; SAA CONTOUR 11		269 Secs (269 Secs) *[==>]*	 ***[1]***
3		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 8.5,-8.5; SAA CONTOUR 11		269 Secs (269 Secs) *[==>]*	 ***[1]***
4		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F845M	CR-SPLIT=NO	POS TARG 10,11; SAA CONTOUR 11		43 Secs (43 Secs) *[==>]*	 ***[1]***
5		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 9.5,-9.5; SAA CONTOUR 11		269 Secs (269 Secs) *[==>]*	 ***[1]***
6		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 8.5,-8.5; SAA CONTOUR 11		269 Secs (269 Secs) *[==>]*	 ***[1]***
7		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	CR-SPLIT=NO	POS TARG 11,10; SAA CONTOUR 11		24 Secs (24 Secs) *[==>]*	 ***[1]***
8		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F390M	CR-SPLIT=NO; BIN=3; FLASH=7	POS TARG 39,30; SAA CONTOUR 11		34 Secs (34 Secs) *[==>]*	 ***[1]***
9		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F775W	CR-SPLIT=NO; BIN=3; FLASH=6	POS TARG 39,30; SAA CONTOUR 11		3 Secs (3 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 13675, Visit 13, implementation Thu Oct 02 01:04:41 GMT 2014

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE GYRO; SEQ 12,13,14,15 WITHIN 4.2 Orbits; VISIBILITY INTERVAL 2980 S

Diagnostics

(Exposure 2 (Visit 13)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 3 (Visit 13)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 5 (Visit 13)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 6 (Visit 13)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

Solar System Targets

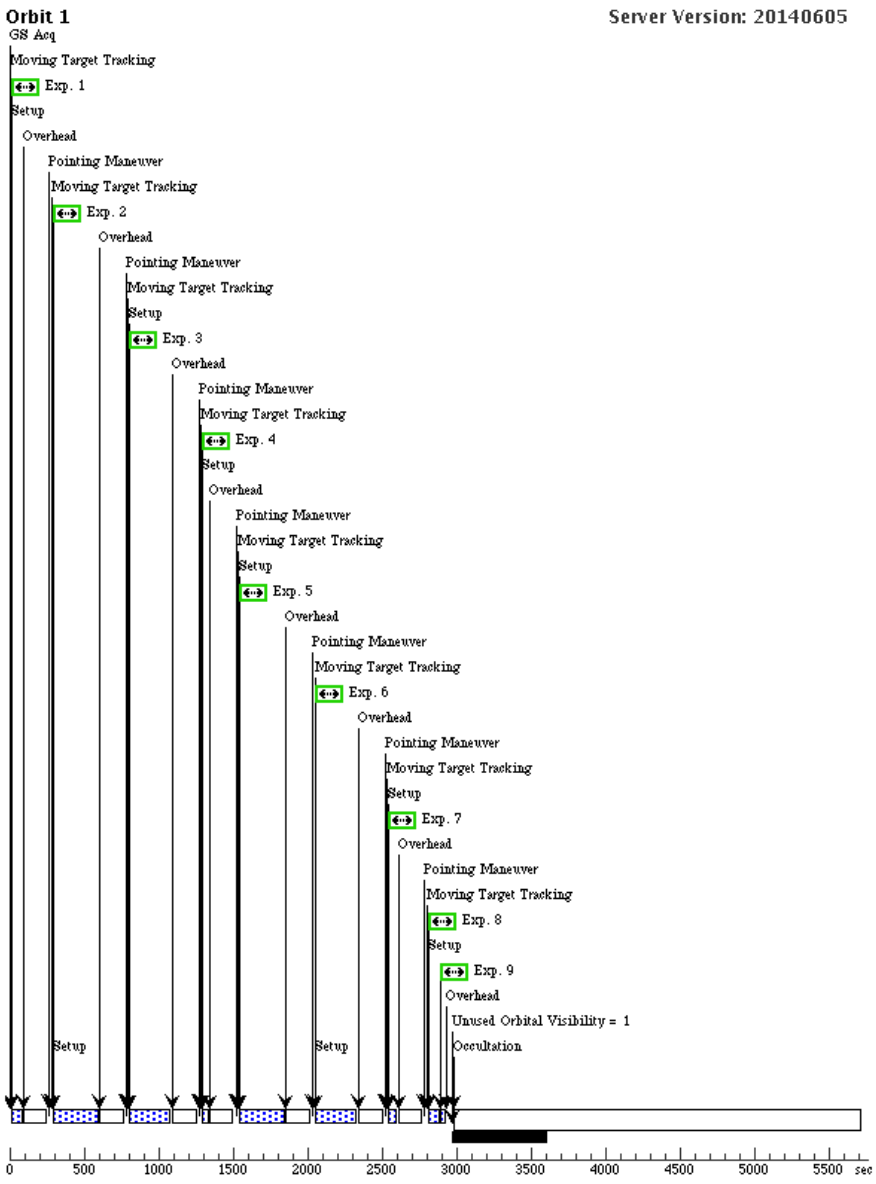
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	C2013A1	TYPE=COMET,Q=1.3986474103895 88,E=1.000688626405008,I=129.0273 584753412,O=300.9763462911545,W =2.442757978652319,T=25-OCT-2014:08:09:09,TTimeScale=TDB,EQ UINOX=J2000,EPOCH=09-DEC-2013,EpochTimeScale=TDB			MOSS Planning Start: 19-OCT-2014 MOSS Planning End: 21-OCT-2014	EARTH

Comments: Reference: JPL 85

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F845M	CR-SPLIT=NO	POS TARG 10,11; SAA CONTOUR 11		38 Secs (38 Secs) *[==>]*	 ***[1]***
2		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 9.5,-9.5; SAA CONTOUR 11		274 Secs (274 Secs) *[==>]*	 ***[1]***
3		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 8.5,-8.5; SAA CONTOUR 11		274 Secs (274 Secs) *[==>]*	 ***[1]***
4		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	CR-SPLIT=NO	POS TARG 10,11; SAA CONTOUR 11		24 Secs (24 Secs) *[==>]*	 ***[1]***
5		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 9.5,-9.5; SAA CONTOUR 11		274 Secs (274 Secs) *[==>]*	 ***[1]***
6		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 8.5,-8.5; SAA CONTOUR 11		274 Secs (274 Secs) *[==>]*	 ***[1]***
7		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F845M	CR-SPLIT=NO	POS TARG 11,10; SAA CONTOUR 11		38 Secs (38 Secs) *[==>]*	 ***[1]***
8		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F547M	CR-SPLIT=NO; BIN=3; FLASH=7	POS TARG 36,33; SAA CONTOUR 11		4 Secs (4 Secs) *[==>]*	 ***[1]***
9		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F775W	CR-SPLIT=NO; BIN=3; FLASH=6	POS TARG 36,33; SAA CONTOUR 11		3 Secs (3 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 13675, Visit 14, implementation Thu Oct 02 01:04:41 GMT 2014

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: PCS MODE GYRO; SEQ 12,13,14,15 WITHIN 4.2 Orbits; VISIBILITY INTERVAL 2980 S

Diagnostics

(Exposure 2 (Visit 14)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 3 (Visit 14)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 5 (Visit 14)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 6 (Visit 14)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

Solar System Targets

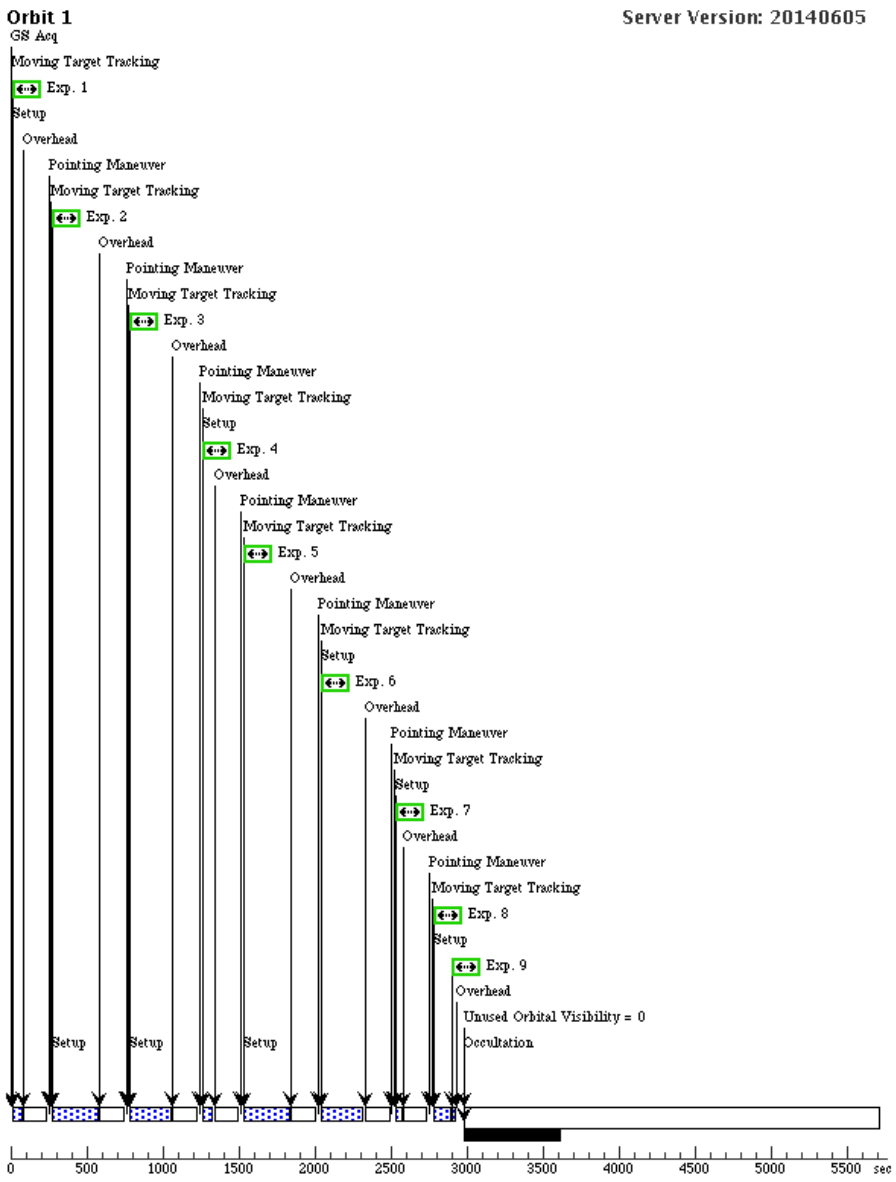
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	C2013A1	TYPE=COMET,Q=1.3986474103895 88,E=1.000688626405008,I=129.0273 584753412,O=300.9763462911545,W =2.442757978652319,T=25-OCT-2014:08:09:09,TTimeScale=TDB,EQ UINOX=J2000,EPOCH=09-DEC-2013,EpochTimeScale=TDB			MOSS Planning Start: 19-OCT-2014 MOSS Planning End: 21-OCT-2014	EARTH

Comments: Reference: JPL 85

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2D-SUB	F689M	CR-SPLIT=NO	POS TARG -7.5,9.5; SAA CONTOUR 11		24 Secs (24 Secs) *[==>]*	 ***[1]***
2		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 9.5,-9.5; SAA CONTOUR 11		269 Secs (269 Secs) *[==>]*	 ***[1]***
3		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 8.5,-8.5; SAA CONTOUR 11		269 Secs (269 Secs) *[==>]*	 ***[1]***
4		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2D-SUB	F845M	CR-SPLIT=NO	POS TARG -7.5,9.5; SAA CONTOUR 11		43 Secs (43 Secs) *[==>]*	 ***[1]***
5		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 9.5,-9.5; SAA CONTOUR 11		269 Secs (269 Secs) *[==>]*	 ***[1]***
6		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=8	POS TARG 8.5,-8.5; SAA CONTOUR 11		269 Secs (269 Secs) *[==>]*	 ***[1]***
7		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2D-SUB	F689M	CR-SPLIT=NO	POS TARG -8.5,10. 5; SAA CONTOUR 11		24 Secs (24 Secs) *[==>]*	 ***[1]***
8		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F390M	CR-SPLIT=NO; BIN=3; FLASH=7	POS TARG 36,33; SAA CONTOUR 11		34 Secs (34 Secs) *[==>]*	 ***[1]***
9		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F775W	CR-SPLIT=NO; BIN=3; FLASH=6	POS TARG 36,33; SAA CONTOUR 11		3 Secs (3 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 13675, Visit 15, implementation Thu Oct 02 01:04:41 GMT 2014

Diagnostic Status: Warning

Scientific Instruments: S/C, WFC3/UVIS

Special Requirements: SEQ 12,13,14,15 WITHIN 4.2 Orbits; VISIBILITY INTERVAL 3075 S

Diagnostics

(Visit 15) Warning (Orbit Planner): EXPOSURE WITH SAA CONTOUR 11 WILL EXECUTE ON GYRO
(Visit 15) Warning (Orbit Planner): EXPOSURE WITH SAA CONTOUR 11 WILL EXECUTE ON GYRO
(Visit 15) Warning (Orbit Planner): EXPOSURE WITH SAA CONTOUR 11 WILL EXECUTE ON GYRO
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(Visit 15) Warning (Orbit Planner): EXPOSURE WITH SAA CONTOUR 11 WILL EXECUTE ON GYRO
(Visit 15) Warning (Orbit Planner): EXPOSURE WITH SAA CONTOUR 11 WILL EXECUTE ON GYRO
(Exposure 3 (Visit 15)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.
(Exposure 4 (Visit 15)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.
(Exposure 6 (Visit 15)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.
(Exposure 7 (Visit 15)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

Solar System Targets

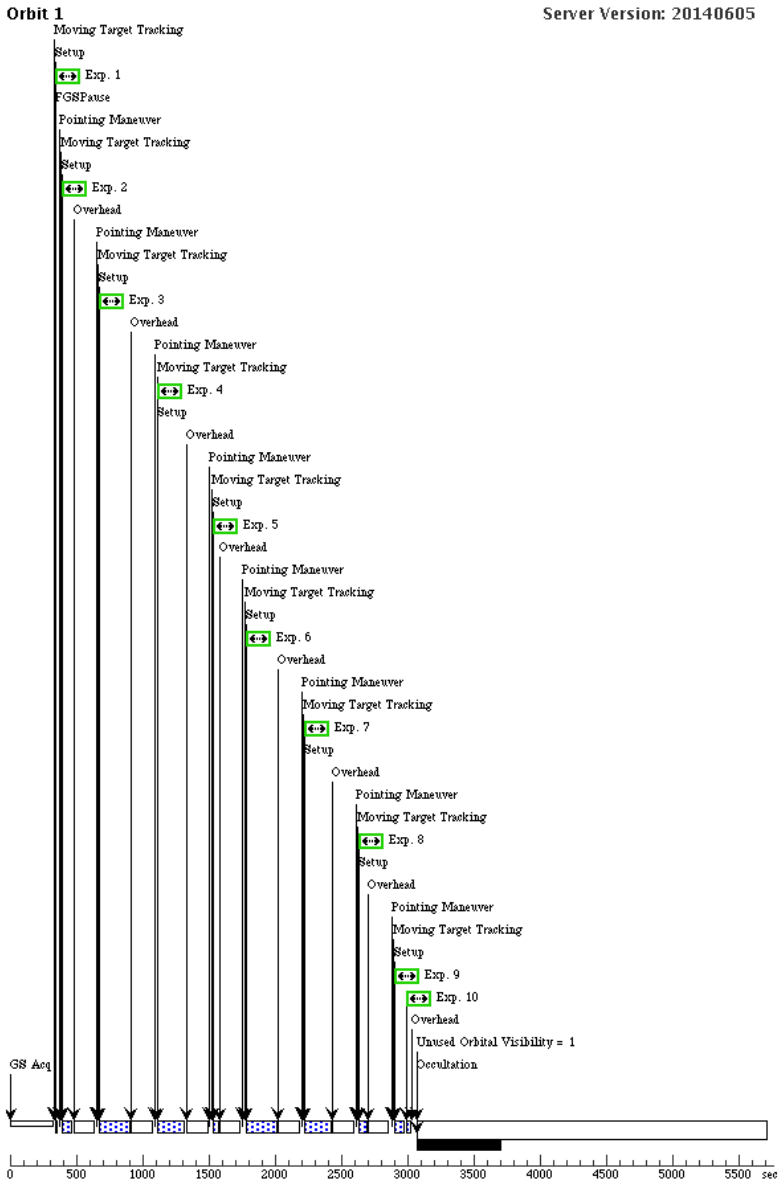
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	C2013A1	TYPE=COMET,Q=1.398647410389588,E=1.000688626405008,I=129.0273584753412,O=300.9763462911545,W=2.442757978652319,T=25-OCT-2014:08:09:09,TTimeScale=TDB,EQUINOX=J2000,EPOCH=09-DEC-2013,EpochTimeScale=TDB			MOSS Planning Start: 19-OCT-2014 MOSS Planning End: 21-OCT-2014	EARTH

Comments: Reference: JPL 85

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) C2013A1	S/C, POINTING, V1			GS ACQ SCENARIO BASE1B3		1 Secs (1 Secs) *[==>]*	 ***[1]***
2		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F845M	CR-SPLIT=NO	POS TARG 18,17; SAA CONTOUR 11		43 Secs (43 Secs) *[==>]*	 ***[1]***
3		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=9	POS TARG 9.5,-9.5; SAA CONTOUR 11		200 Secs (200 Secs) *[==>]*	 ***[1]***
4		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=9	POS TARG 8.5,-8.5; SAA CONTOUR 11		200 Secs (200 Secs) *[==>]*	 ***[1]***
5		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	CR-SPLIT=NO	POS TARG 18,17; SAA CONTOUR 11		24 Secs (24 Secs) *[==>]*	 ***[1]***
6		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=9	POS TARG 9.5,-9.5; SAA CONTOUR 11		200 Secs (200 Secs) *[==>]*	 ***[1]***
7		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=9	POS TARG 8.5,-8.5; SAA CONTOUR 11		200 Secs (200 Secs) *[==>]*	 ***[1]***
8		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F845M	CR-SPLIT=NO	POS TARG 17,18; SAA CONTOUR 11		43 Secs (43 Secs) *[==>]*	 ***[1]***
9		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F547M	CR-SPLIT=NO; BIN=3; FLASH=7	POS TARG 39,30; SAA CONTOUR 11		4 Secs (4 Secs) *[==>]*	 ***[1]***
10		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F775W	CR-SPLIT=NO; BIN=3; FLASH=6	POS TARG 39,30; SAA CONTOUR 11		3 Secs (3 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 13675, Visit 16, implementation Thu Oct 02 01:04:41 GMT 2014

Diagnostic Status: Warning

Scientific Instruments: S/C, WFC3/UVIS

Special Requirements: AFTER 15 BY 1.8 Orbits TO 2.2 Orbits; VISIBILITY INTERVAL 3050 S

Diagnostics

(Exposure 5 (Visit 16)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 6 (Visit 16)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 8 (Visit 16)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

Solar System Targets

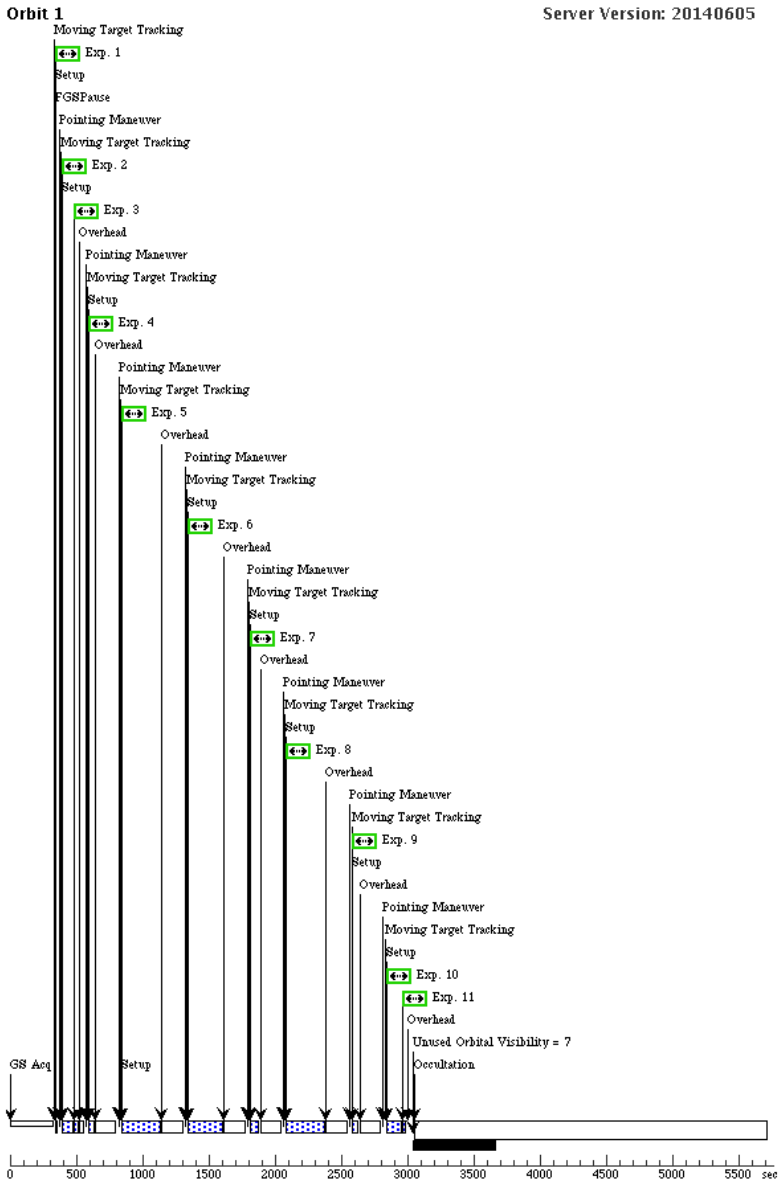
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	C2013A1	TYPE=COMET,Q=1.398647410389588,E=1.000688626405008,I=129.0273584753412,O=300.9763462911545,W=2.442757978652319,T=25-OCT-2014:08:09:09,TTimeScale=TDB,EQUINOX=J2000,EPOCH=09-DEC-2013,EpochTimeScale=TDB			MOSS Planning Start: 19-OCT-2014 MOSS Planning End: 21-OCT-2014	EARTH

Comments: Reference: JPL 85

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) C2013A1	S/C, POINTING, V1			GS ACQ SCENARIO BASE1B3		1 Secs (1 Secs) *[==>]*	 ***[1]***
2		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F775W	CR-SPLIT=NO; BIN=3; FLASH=6	POS TARG 39,30; EXP PCS MODE GYRO		3 Secs (3 Secs) *[==>]*	 ***[1]***
3		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F547M	CR-SPLIT=NO; BIN=3; FLASH=6	POS TARG 39,30; EXP PCS MODE GYRO		4 Secs (4 Secs) *[==>]*	 ***[1]***
4		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	CR-SPLIT=NO	POS TARG 18,17; EXP PCS MODE GYRO		24 Secs (24 Secs) *[==>]*	 ***[1]***
5		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=9	POS TARG 9.5,-9.5; EXP PCS MODE GYRO		260 Secs (260 Secs) *[==>]*	 ***[1]***
6		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=9	POS TARG 8.5,-8.5; EXP PCS MODE GYRO		260 Secs (260 Secs) *[==>]*	 ***[1]***
7		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F845M	CR-SPLIT=NO	POS TARG 18,17; EXP PCS MODE GYRO		43 Secs (43 Secs) *[==>]*	 ***[1]***
8		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=9	POS TARG 9.5,-9.5; EXP PCS MODE GYRO		260 Secs (260 Secs) *[==>]*	 ***[1]***
9		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	CR-SPLIT=NO	POS TARG 17,18; EXP PCS MODE GYRO		24 Secs (24 Secs) *[==>]*	 ***[1]***
10		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F390M	CR-SPLIT=NO; BIN=3; FLASH=7	POS TARG 36,33; EXP PCS MODE GYRO		38 Secs (38 Secs) *[==>]*	 ***[1]***
11		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F775W	CR-SPLIT=NO; BIN=3; FLASH=6	POS TARG 36,33; EXP PCS MODE GYRO		3 Secs (3 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 13675, Visit 17, implementation Thu Oct 02 01:04:42 GMT 2014

Diagnostic Status: Warning

Scientific Instruments: S/C, WFC3/UVIS

Special Requirements: AFTER 16 BY 1.8 Orbits TO 2.2 Orbits; VISIBILITY INTERVAL 3050 S

Diagnostics

(Exposure 5 (Visit 17)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 6 (Visit 17)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(Exposure 8 (Visit 17)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	C2013A1	TYPE=COMET,Q=1.398647410389588,E=1.000688626405008,I=129.0273584753412,O=300.9763462911545,W=2.442757978652319,T=25-OCT-2014:08:09:09,TTimeScale=TDB,EQUINOX=J2000,EPOCH=09-DEC-2013,EpochTimeScale=TDB			MOSS Planning Start: 19-OCT-2014 MOSS Planning End: 21-OCT-2014	EARTH

Comments: Reference: JPL 85

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) C2013A1	S/C, POINTING, V1			GS ACQ SCENARIO BASE1B3		1 Secs (1 Secs) *[==>]*	 ***[1]***
2		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F775W	CR-SPLIT=NO; BIN=3; FLASH=6	POS TARG 36,33; EXP PCS MODE GYRO		3 Secs (3 Secs) *[==>]*	 ***[1]***
3		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F547M	CR-SPLIT=NO; BIN=3; FLASH=7	POS TARG 36,33; EXP PCS MODE GYRO		4 Secs (4 Secs) *[==>]*	 ***[1]***
4		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F845M	CR-SPLIT=NO	POS TARG 17,18; EXP PCS MODE GYRO		43 Secs (43 Secs) *[==>]*	 ***[1]***
5		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=9	POS TARG 9.5,-9.5; EXP PCS MODE GYRO		250 Secs (250 Secs) *[==>]*	 ***[1]***
6		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=9	POS TARG 8.5,-8.5; EXP PCS MODE GYRO		250 Secs (250 Secs) *[==>]*	 ***[1]***
7		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	CR-SPLIT=NO	POS TARG 18,17; EXP PCS MODE GYRO		24 Secs (24 Secs) *[==>]*	 ***[1]***
8		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ387N	CR-SPLIT=NO; FLASH=9	POS TARG 9.5,-9.5; EXP PCS MODE GYRO		265 Secs (265 Secs) *[==>]*	 ***[1]***
9		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F845M	CR-SPLIT=NO	POS TARG 17,18; EXP PCS MODE GYRO		43 Secs (43 Secs) *[==>]*	 ***[1]***
10		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F390M	CR-SPLIT=NO; BIN=3; FLASH=7	POS TARG 39,30; EXP PCS MODE GYRO		31 Secs (31 Secs) *[==>]*	 ***[1]***
11		(1) C2013A1	WFC3/UVIS, ACCUM, UVIS	F775W	CR-SPLIT=NO; BIN=3; FLASH=6	POS TARG 39,30; EXP PCS MODE GYRO		3 Secs (3 Secs) *[==>]*	 ***[1]***

Orbit Structure