



15507 - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

Cycle: 26, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
Dr. Sangmo Tony Sohn (PI) (Contact)	Space Telescope Science Institute	tsohn@stsci.edu
Dr. Marcel Pawlowski (CoI) (ESA Member)	Leibniz-Institut für Astrophysik Potsdam (AIP)	marcel.pawlowski@uci.edu
Dr. Gurtina Besla (CoI)	University of Arizona	gbesla@email.arizona.edu
Dr. Roeland P. van der Marel (CoI)	Space Telescope Science Institute	marel@stsci.edu
Prof. Stacy S. McGaugh (CoI)	Case Western Reserve University	ssm69@case.edu

VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) CRATER-1 ANY	ACS/WFC WFC3/UVIS	3	16-Dec-2019 14:00:15.0	yes
02	(2) CRATER-2 ANY	ACS/WFC WFC3/UVIS	3	16-Dec-2019 14:00:18.0	yes
52	(2) CRATER-2 ANY	ACS/WFC WFC3/UVIS	3	16-Dec-2019 14:00:21.0	yes
03	(3) LEO-V ANY	ACS/WFC WFC3/UVIS	5	16-Dec-2019 14:00:25.0	yes

14 Total Orbits Used

ABSTRACT

While substantial progress has been made in studying the dynamical properties of individual Milky Way (MW) satellites, groups of satellites have gained much interests only recently although such groups have long been predicted by cosmological simulations. Testing the picture of group infall requires the identification of candidate systems and measurement of their full 6D phase-space coordinates to assess the validity of a common orbital history. The Crater-Leo group of MW satellites (Crater 1/2, Leo II, IV, and V) constitute the best such candidates. Their numbers, positions, distances, line-of-sight velocities, and star formation histories (SFHs) are all indicative of a common origin. However, proper motion (PM) is the one key ingredient missing to study these valuable objects in great detail. Leo II has existing multi-epoch data in the archive and Leo IV will soon have PMs from our ongoing HST program. We propose to measure the PMs of the other 3 objects that belong to the Crater-Leo Group: Crater 1/2 and Leo V. These PMs will allow us to definitively confirm or rule out associations. There is a high chance that our measurements will identify the first known group of low-mass MW satellites, a key milestone towards ratifying LCDM theory. This finding will revolutionize research in near field cosmology by allowing to study the formation histories of dwarf galaxy having originated from, and interacted with, the same group environment. Regardless of the outcome, the newly defined orbits of these systems will furthermore place powerful constraints on the potential of the MW halo at distances where few probes exist. In Cycle 24, we will obtain first-epoch images for the two galaxies Crater 2 and Leo V. The deep F606W and F814W observations will allow us to create astrometric/photometric catalogs, construct CMDs, and study SFHs of the target galaxies in detail.

OBSERVING DESCRIPTION

The final goal of this program is to measure absolute proper motions for 3 target objects: globular cluster Crater 1, and dwarf galaxies Crater 2 and Leo V. In the current Cycle 26 program (GO-15507), we will obtain second-epoch data for Crater 1, Crater 2, and Leo V. We will observe the three target objects using the F606W filter to measure proper motions. Crater 1 and 2 will be observed for 3 orbits, and Leo V will be observed for 5 orbits. Each orbit will be split into one short and two long exposures. Individual exposures will be dithered via POS-TARG following a customized dithered pattern. To maximize the time baseline between existing first-epoch (Cycle 24) and these second-epoch observations, we added Timing Requirements for all visits. We also added Orientation Requirements for all visits to align with the first-epoch images.

Proposal 15507 - CRATER1-F606W-EP2 (01) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

Mon Dec 16 19:00:26 GMT 2019

Visit	<p>Proposal 15507, CRATER1-F606W-EP2 (01), scheduled</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/UVIS, ACS/WFC</p> <p>Special Requirements: ORIENT 288.42D TO 289.42 D; AFTER 01-SEP-2019:00:00:00</p> <p><i>Comments: This is the second-epoch visit for the globular cluster Crater 1. In this visit, we will image Crater 1 using the F606W filter for both primary ACS/WFC and parallel WFC3/UVIS observations. Three orbits are required to complete this visit. Each orbit will consist of one short and two long exposures. To maximize the time baseline between the first-epoch (Nov 2014) and these second-epoch observations, we added Timing Requirements of "After 01-SEP-2019" for this visit. This will ensure that our second-epoch observations are carried as late as possible. We have also added Orient Ranges requirements to align our second-epoch images with the first-epoch ones. We implemented a custom-designed dither pattern via the POS-TARG requirement.</i></p>					
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
(1)		CRATER-1	RA: 11 36 15.8530 (174.0660542d) Dec: -10 51 32.95 (-10.85915d) Equinox: J2000		V=15.8+/-0.2	Reference Frame: ICRS
<p><i>Comments:</i> Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER]</p>						

Proposal 15507 - CRATER1-F606W-EP2 (01) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

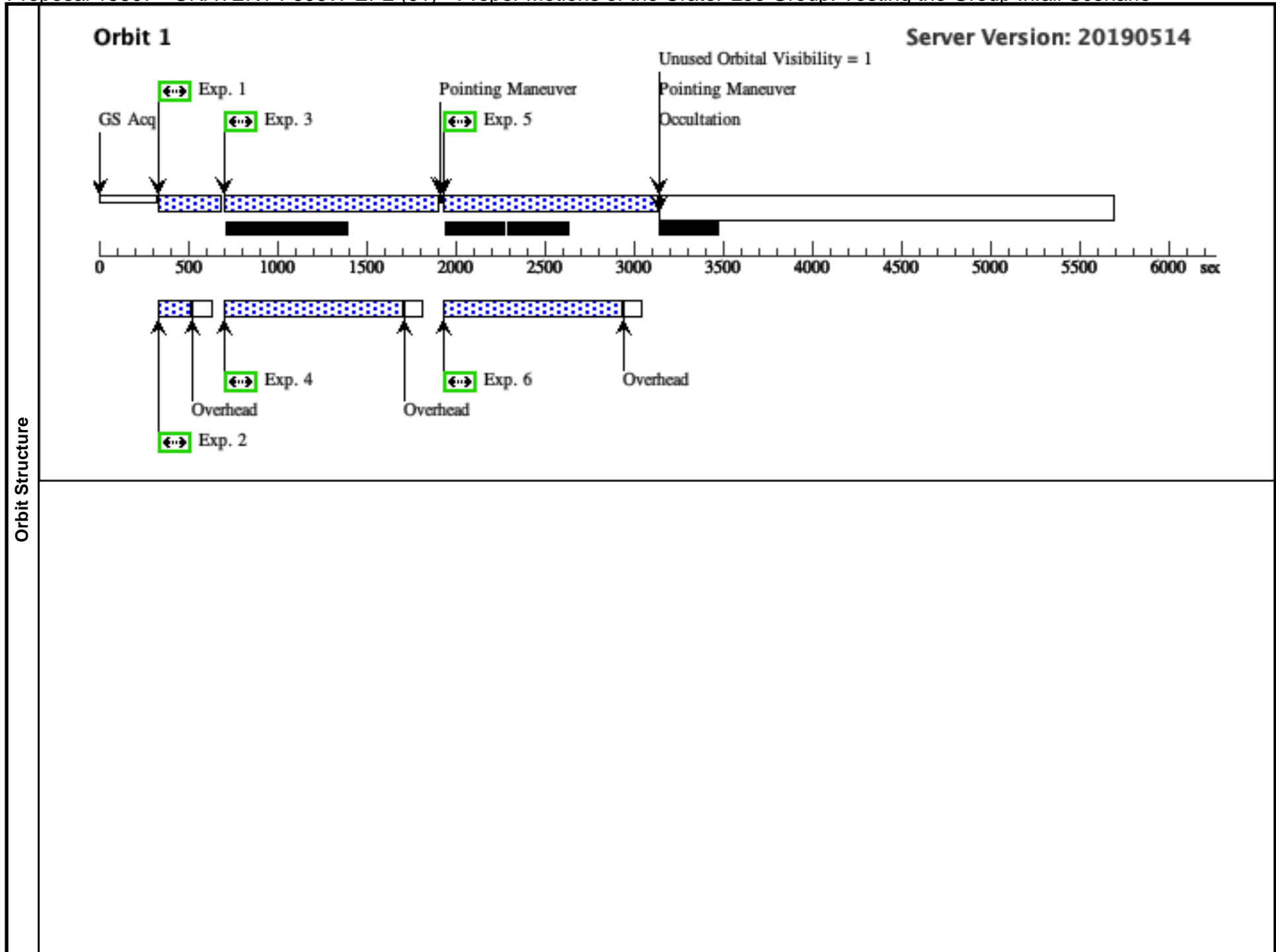
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
Exposures	1	(1) CRATER-1	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.0000,0.0000	Sequence 1-6 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 1-2 in Sequence 1-6 Non-Int in CRATER1-F606W-EP2 (01)	145 Secs (145 Secs) [==>]	[1]
	2	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0		Sequence 1-6 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 1-2 in Sequence 1-6 Non-Int in CRATER1-F606W-EP2 (01)	150 Secs (150 Secs) [==>]	[1]
	3	(1) CRATER-1	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.0000,0.0000	Sequence 1-6 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 3-4 in Sequence 1-6 Non-Int in CRATER1-F606W-EP2 (01)	1075 Secs (1075 Secs) [==>]	[1]
	4	ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Sequence 1-6 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 3-4 in Sequence 1-6 Non-Int in CRATER1-F606W-EP2 (01)	1000 Secs (1000 Secs) [==>]	[1]
	5	(1) CRATER-1	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.1647,0.0124	Sequence 1-6 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 5-6 in Sequence 1-6 Non-Int in CRATER1-F606W-EP2 (01)	1075 Secs (1075 Secs) [==>]	[1]
	6	ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Sequence 1-6 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 5-6 in Sequence 1-6 Non-Int in CRATER1-F606W-EP2 (01)	1000 Secs (1000 Secs) [==>]	[1]
	7	(1) CRATER-1	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.3293,0.0248	Sequence 7-12 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 7-8 in Sequence 7-12 Non-Int in CRATER1-F606W-EP2 (01)	149 Secs (149 Secs) [==>]	[2]

Proposal 15507 - CRATER1-F606W-EP2 (01) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

8	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0	Sequence 7-12 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 7-8 in Sequence 7-12 Non-Int in CRATER1-F606W-EP2 (01)	150 Secs (150 Secs) [==>]	[2]
9	(1) CRATER-1	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.3293,0.0248	Sequence 7-12 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 9-10 in Sequence 7-12 Non-Int in CRATER1-F606W-EP2 (01)	1130 Secs (1130 Secs) [==>]	[2]
10	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 7-12 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 9-10 in Sequence 7-12 Non-Int in CRATER1-F606W-EP2 (01)	1100 Secs (1100 Secs) [==>]	[2]
11	(1) CRATER-1	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.0747,0.1294	Sequence 7-12 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 11-12 in Sequence 7-12 Non-Int in CRATER1-F606W-EP2 (01)	1130 Secs (1130 Secs) [==>]	[2]
12	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 7-12 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 11-12 in Sequence 7-12 Non-Int in CRATER1-F606W-EP2 (01)	1100 Secs (1100 Secs) [==>]	[2]
13	(1) CRATER-1	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.2393,0.1418	Sequence 13-18 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 13-14 in Sequence 13-18 Non-Int in CRATER1-F606W-EP2 (01)	149 Secs (149 Secs) [==>]	[3]
14	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0	Sequence 13-18 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 13-14 in Sequence 13-18 Non-Int in CRATER1-F606W-EP2 (01)	150 Secs (150 Secs) [==>]	[3]

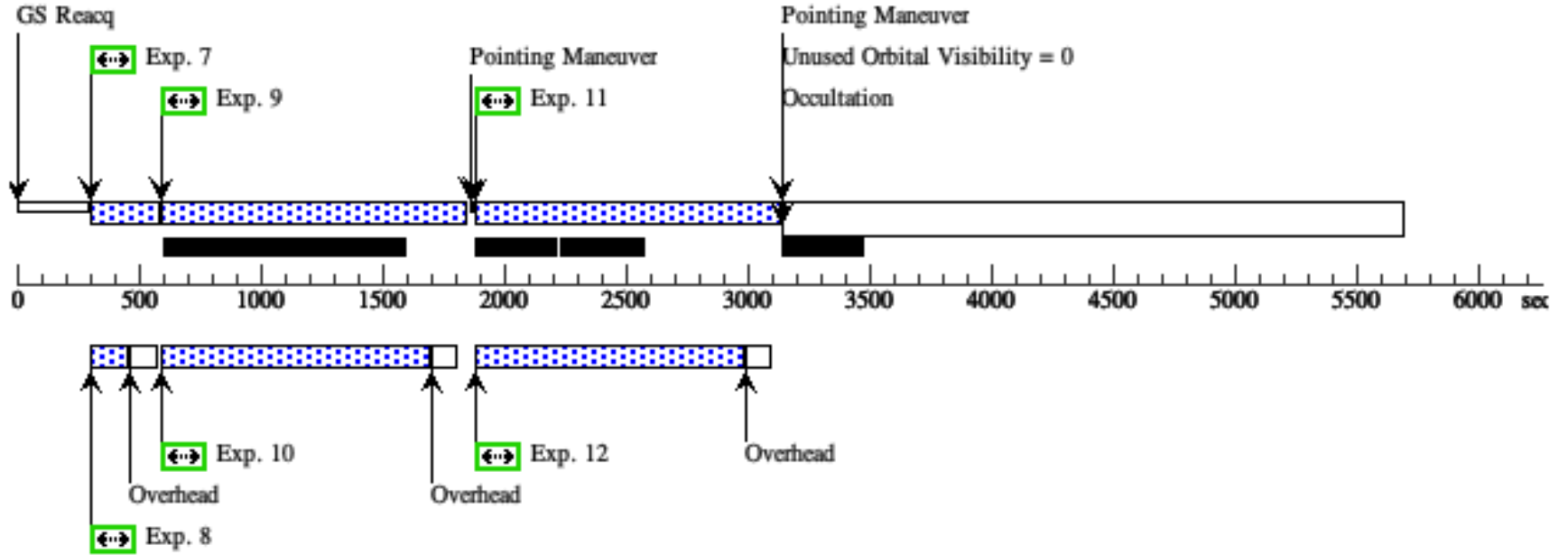
Proposal 15507 - CRATER1-F606W-EP2 (01) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

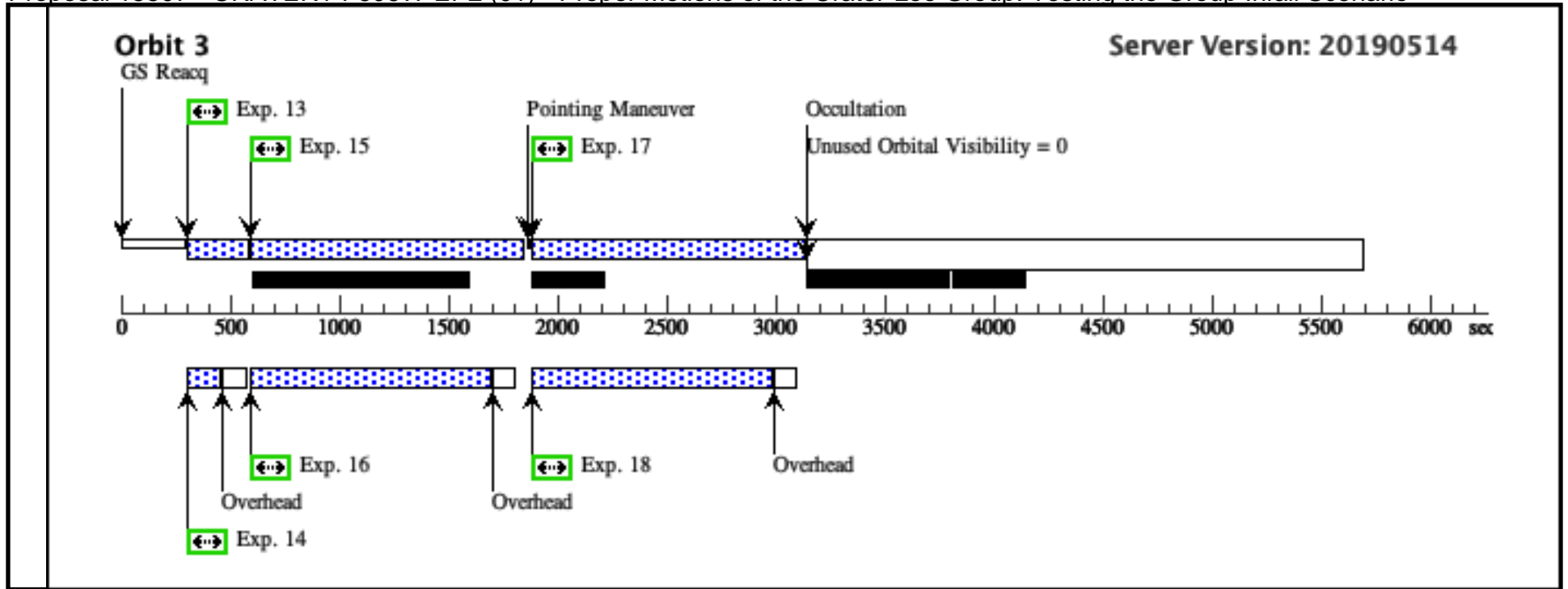
15	(1) CRATER-1	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.2393,0 .1418	Sequence 13-18 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 15-16 in Sequence 13-18 Non-Int in CRATER1-F606W-EP2 (01)	1130 Secs (1130 Secs) [==>]	[3]
16	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 13-18 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 15-16 in Sequence 13-18 Non-Int in CRATER1-F606W-EP2 (01)	1100 Secs (1100 Secs) [==>]	[3]
17	(1) CRATER-1	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.4039,0 .1541	Sequence 13-18 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 17-18 in Sequence 13-18 Non-Int in CRATER1-F606W-EP2 (01)	1130 Secs (1130 Secs) [==>]	[3]
18	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 13-18 Non-Int in CRATER1-F606W-EP2 (01) Prime + Parallel Group 17-18 in Sequence 13-18 Non-Int in CRATER1-F606W-EP2 (01)	1100 Secs (1100 Secs) [==>]	[3]



Orbit 2

Server Version: 20190514





Proposal 15507 - CRATER2-F606W-EP2 (02) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

Visit	<p>Proposal 15507, CRATER2-F606W-EP2 (02), scheduled Mon Dec 16 19:00:26 GMT 2019</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/UVIS, ACS/WFC</p> <p>Special Requirements: ORIENT 285.81D TO 286.81 D; AFTER 01-SEP-2019:00:00:00</p> <p><i>Comments: This is the second-epoch visit for the dwarf galaxy Crater 2. In this visit, we will image Crater 2 using the F606W filter for both primary ACS/WFC and parallel WFC3/UVIS observations. Three orbits are required to complete this visit. Each orbit will consist of one short and two long exposures. To maximize the time baseline between the first-epoch (Dec 2016) and these second-epoch observations, we added Timing Requirements of "After 01-SEP-2019" for this visit. This will ensure that our second-epoch observations are carried as late as possible. We have also added Orient Ranges requirements to align our second-epoch images with the first-epoch ones. We implemented a custom-designed dither pattern via the POS-TARG requirement.</i></p>					
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
(2)		CRATER-2	RA: 11 49 14.4000 (177.3100000d) Dec: -18 24 46.80 (-18.41300d) Equinox: J2000		V=12.15+/-0.1	Reference Frame: ICRS
<p><i>Comments:</i> Category=GALAXY Description=[DWARF ELLIPTICAL, HALO]</p>						

Proposal 15507 - CRATER2-F606W-EP2 (02) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

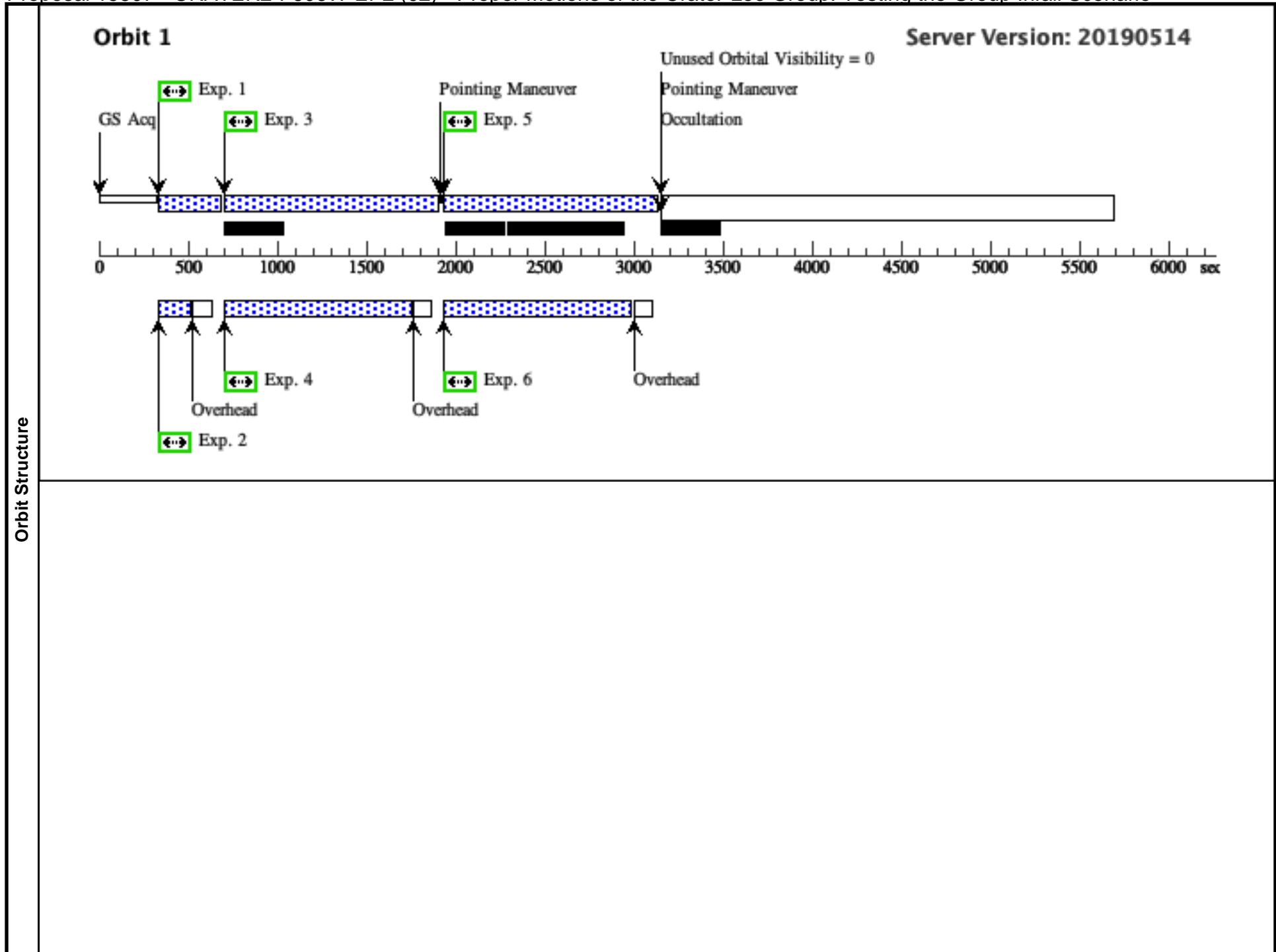
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
Exposures	1	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.0000,0.0000	Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 1-2 in Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (02)	143 Secs (143 Secs) [==>]	[1]
	2	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0		Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 1-2 in Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (02)	150 Secs (150 Secs) [==>]	[1]
	3	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.0000,0.0000	Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 3-4 in Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (02)	1080 Secs (1080 Secs) [==>]	[1]
	4	ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 3-4 in Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (02)	1050 Secs (1050 Secs) [==>]	[1]
	5	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.1647,0.0124	Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 5-6 in Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (02)	1080 Secs (1080 Secs) [==>]	[1]
	6	ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 5-6 in Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (02)	1050 Secs (1050 Secs) [==>]	[1]
	7	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.3293,0.0248	Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 7-8 in Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (02)	150 Secs (150 Secs) [==>]	[2]

Proposal 15507 - CRATER2-F606W-EP2 (02) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

8	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0	Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 7-8 in Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (02)	150 Secs (150 Secs) [==>]	[2]
9	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.3293,0.0248	Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 9-10 in Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (02)	1133 Secs (1133 Secs) [==>]	[2]
10	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 9-10 in Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (02)	1100 Secs (1100 Secs) [==>]	[2]
11	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.0747,0.1294	Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 11-12 in Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (02)	1133 Secs (1133 Secs) [==>]	[2]
12	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 11-12 in Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (02)	1100 Secs (1100 Secs) [==>]	[2]
13	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.2393,0.1418	Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 13-14 in Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (02)	150 Secs (150 Secs) [==>]	[3]
14	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0	Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 13-14 in Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (02)	150 Secs (150 Secs) [==>]	[3]

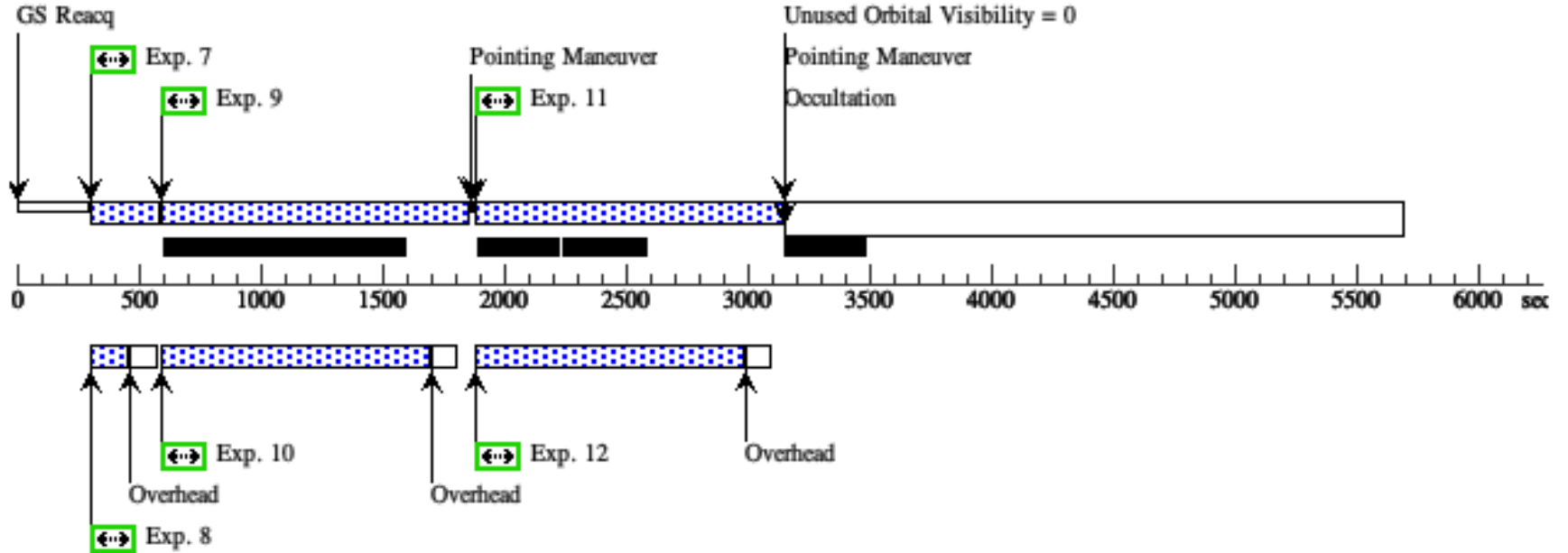
Proposal 15507 - CRATER2-F606W-EP2 (02) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

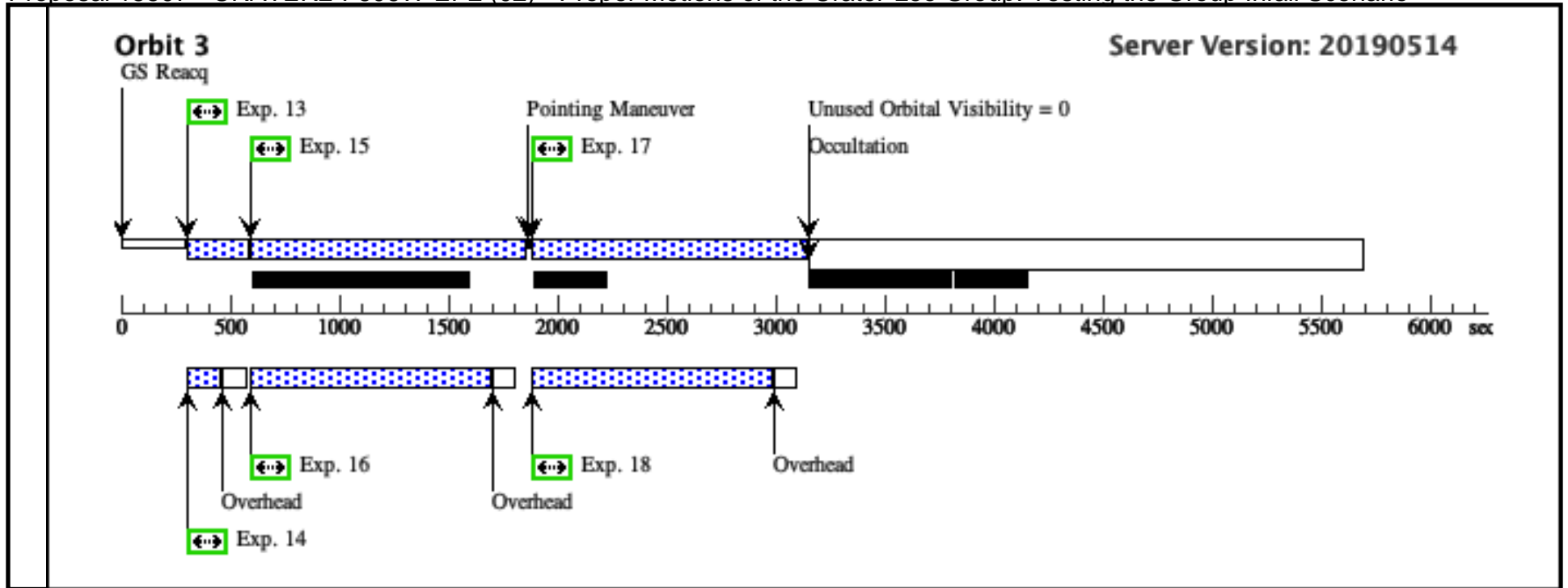
15	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.2393,0 .1418	Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 15-16 in Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (02)	1133 Secs (1133 Secs) [==>]	[3]
16	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 15-16 in Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (02)	1100 Secs (1100 Secs) [==>]	[3]
17	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.4039,0 .1541	Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 17-18 in Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (02)	1133 Secs (1133 Secs) [==>]	[3]
18	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (02) Prime + Parallel Group 17-18 in Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (02)	1100 Secs (1100 Secs) [==>]	[3]



Orbit 2

Server Version: 20190514





Proposal 15507 - CRATER2-F606W-EP2 (52) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

Mon Dec 16 19:00:27 GMT 2019

Visit	<p>Proposal 15507, CRATER2-F606W-EP2 (52)</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/UVIS, ACS/WFC</p> <p>Special Requirements: ORIENT 285.81D TO 286.81 D; AFTER 01-SEP-2019:00:00:00</p> <p><i>Comments: This is the second-epoch visit for the dwarf galaxy Crater 2. In this visit, we will image Crater 2 using the F606W filter for both primary ACS/WFC and parallel WFC3/UVIS observations. Three orbits are required to complete this visit. Each orbit will consist of one short and two long exposures. To maximize the time baseline between the first-epoch (Dec 2016) and these second-epoch observations, we added Timing Requirements of "After 01-SEP-2019" for this visit. This will ensure that our second-epoch observations are carried as late as possible. We have also added Orient Ranges requirements to align our second-epoch images with the first-epoch ones. We implemented a custom-designed dither pattern via the POS-TARG requirement.</i></p>					
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
(2)		CRATER-2	RA: 11 49 14.4000 (177.3100000d) Dec: -18 24 46.80 (-18.41300d) Equinox: J2000		V=12.15+/-0.1	Reference Frame: ICRS
<p><i>Comments:</i> Category=GALAXY Description=[DWARF ELLIPTICAL, HALO]</p>						

Proposal 15507 - CRATER2-F606W-EP2 (52) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

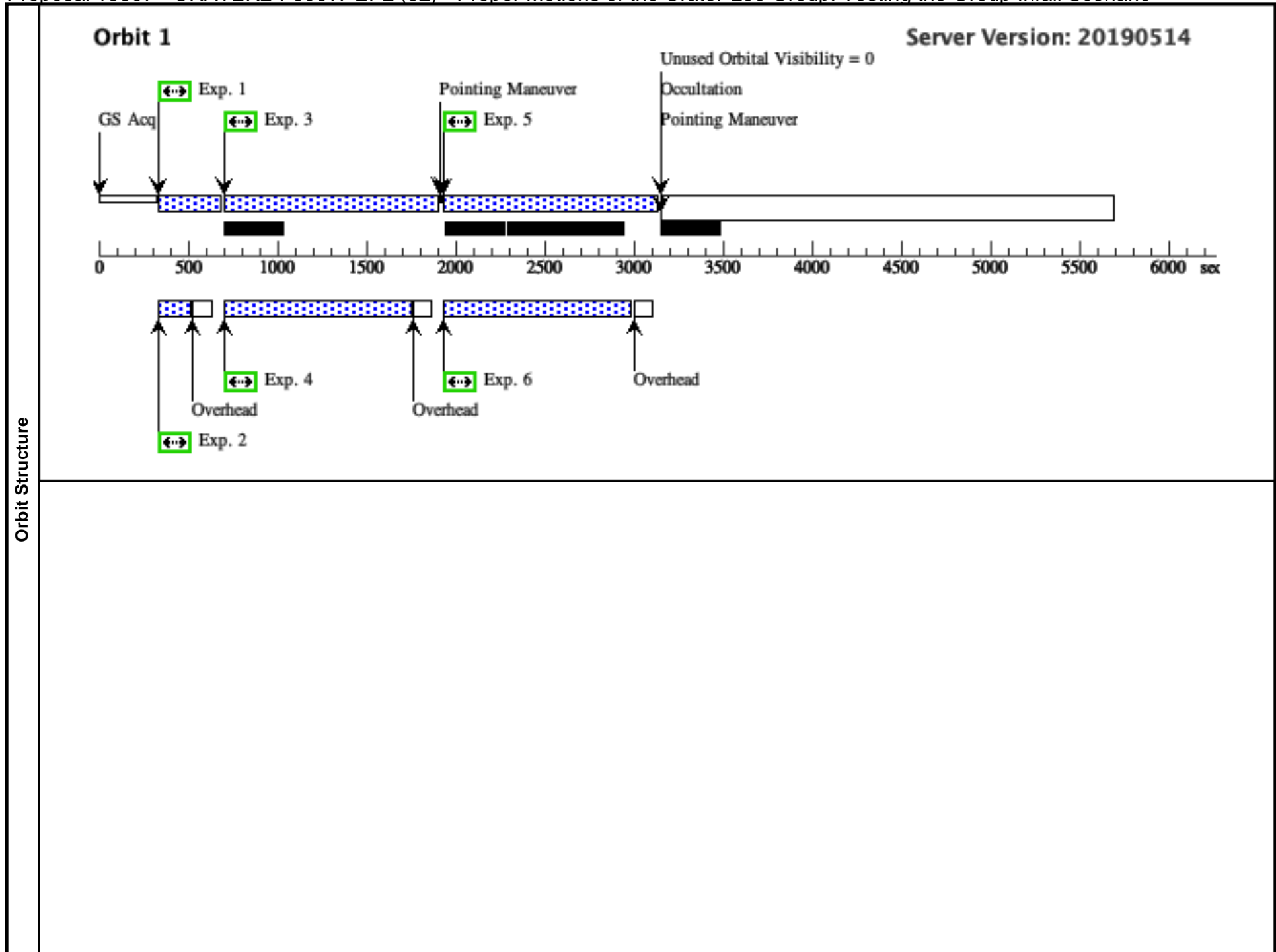
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
Exposures	1	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.0000,0.0000	Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 1-2 in Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (52)	143 Secs (143 Secs) [==>]	[1]
	2	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0		Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 1-2 in Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (52)	150 Secs (150 Secs) [==>]	[1]
	3	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.0000,0.0000	Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 3-4 in Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (52)	1080 Secs (1080 Secs) [==>]	[1]
	4	ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 3-4 in Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (52)	1050 Secs (1050 Secs) [==>]	[1]
	5	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.1647,0.0124	Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 5-6 in Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (52)	1080 Secs (1080 Secs) [==>]	[1]
	6	ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 5-6 in Sequence 1-6 Non-Int in CRATER2-F606W-EP2 (52)	1050 Secs (1050 Secs) [==>]	[1]
	7	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.3293,0.0248	Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 7-8 in Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (52)	150 Secs (150 Secs) [==>]	[2]

Proposal 15507 - CRATER2-F606W-EP2 (52) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

8	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0	Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 7-8 in Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (52)	150 Secs (150 Secs) [==>]	[2]
9	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.3293,0.0248	Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 9-10 in Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (52)	1133 Secs (1133 Secs) [==>]	[2]
10	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 9-10 in Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (52)	1100 Secs (1100 Secs) [==>]	[2]
11	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.0747,0.1294	Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 11-12 in Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (52)	1133 Secs (1133 Secs) [==>]	[2]
12	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 11-12 in Sequence 7-12 Non-Int in CRATER2-F606W-EP2 (52)	1100 Secs (1100 Secs) [==>]	[2]
13	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.2393,0.1418	Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 13-14 in Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (52)	150 Secs (150 Secs) [==>]	[3]
14	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0	Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 13-14 in Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (52)	150 Secs (150 Secs) [==>]	[3]

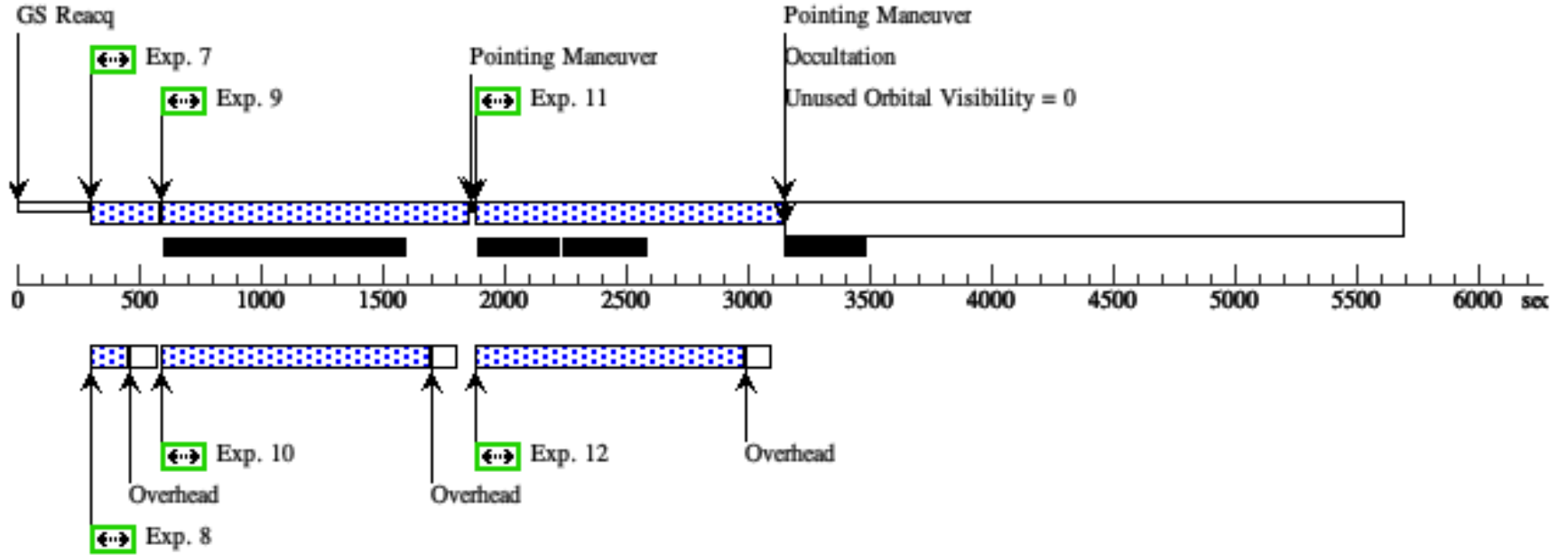
Proposal 15507 - CRATER2-F606W-EP2 (52) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

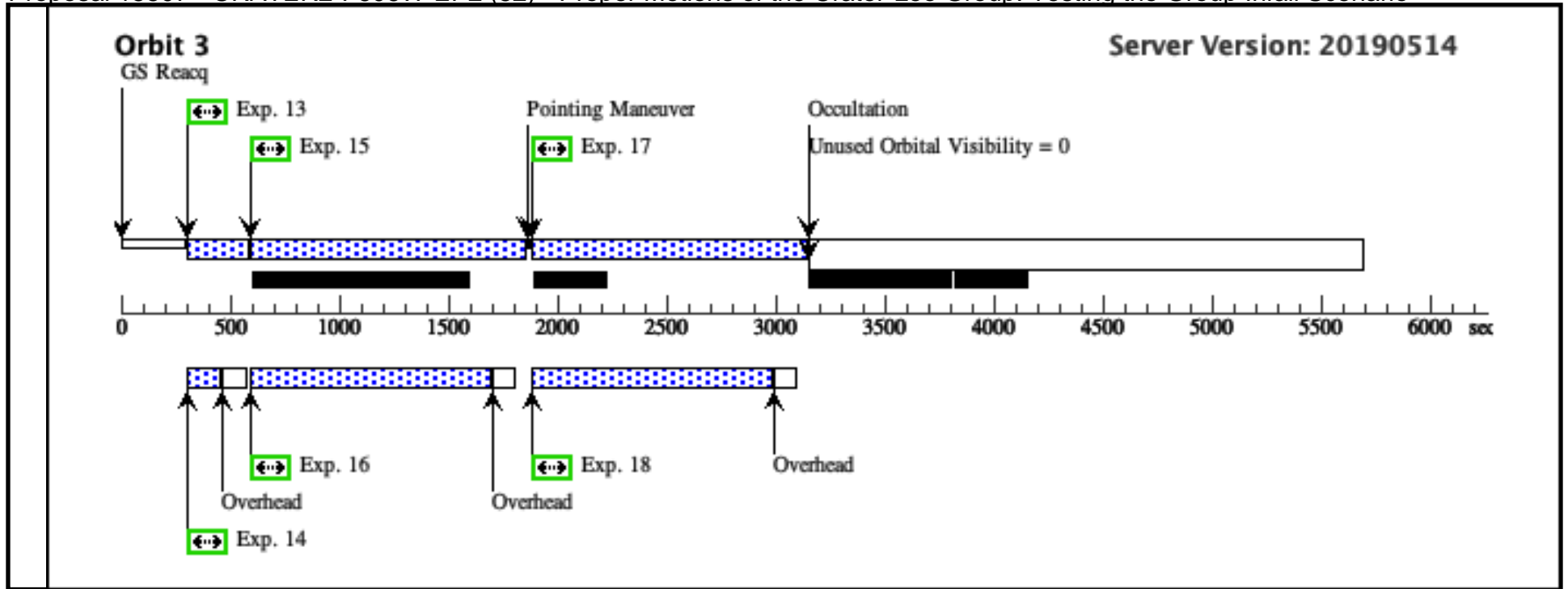
15	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.2393,0 .1418	Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 15-16 in Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (52)	1133 Secs (1133 Secs) [==>]	[3]
16	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 15-16 in Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (52)	1100 Secs (1100 Secs) [==>]	[3]
17	(2) CRATER-2	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.4039,0 .1541	Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 17-18 in Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (52)	1133 Secs (1133 Secs) [==>]	[3]
18	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (52) Prime + Parallel Group 17-18 in Sequence 13-18 Non-Int in CRATER2-F606W-EP2 (52)	1100 Secs (1100 Secs) [==>]	[3]



Server Version: 20190514

Orbit 2





Proposal 15507 - LEOV-F606W-EP2 (03) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

Mon Dec 16 19:00:27 GMT 2019

Visit	<p>Proposal 15507, LEOV-F606W-EP2 (03), scheduling</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/UVIS, ACS/WFC</p> <p>Special Requirements: SCHED 80%; ORIENT 83.5D TO 84.5 D; AFTER 01-SEP-2019:00:00:00</p> <p><i>Comments: This is the second-epoch visit for galaxy LeoV. In this visit, we will image Leo V using the F606W filter for both primary ACS/WFC and parallel WFC3/UVIS observations. Five orbits are required to complete this visit. Each orbit will consist of one short and two long exposures. To maximize the time baseline between the first-epoch (Mar 2017) and these second-epoch observations, we added Timing Requirements of "After 01-SEP-2019" for this visit. This will ensure that our second-epoch observations are carried as late as possible. The Schedulability was reduced to 80 to increase the schedulable windows under the specified Orient ranges. We implemented a custom-designed dither pattern via the POS-TARG requirement.</i></p>					
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
(3)		LEO-V	RA: 11 31 9.6000 (172.7900000d) Dec: +02 13 12.00 (2.22000d) Equinox: J2000		V=16.0+/-0.4	Reference Frame: ICRS
	<p><i>Comments:</i> Category=GALAXY Description=[DWARF SPHEROIDAL, HALO]</p>					

Proposal 15507 - LEOV-F606W-EP2 (03) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
Exposures	1	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.0000,0.0000	Sequence 1-6 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 1-2 in Sequence 1-6 Non-Int in LEOV-F606W-EP2 (03)	150 Secs (150 Secs) [==>]	[1]
	2	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0		Sequence 1-6 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 1-2 in Sequence 1-6 Non-Int in LEOV-F606W-EP2 (03)	150 Secs (150 Secs) [==>]	[1]
	3	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.0000,0.0000	Sequence 1-6 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 3-4 in Sequence 1-6 Non-Int in LEOV-F606W-EP2 (03)	985 Secs (985 Secs) [==>]	[1]
	4	ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Sequence 1-6 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 3-4 in Sequence 1-6 Non-Int in LEOV-F606W-EP2 (03)	1000 Secs (1000 Secs) [==>]	[1]
	5	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.0654,0.2574	Sequence 1-6 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 5-6 in Sequence 1-6 Non-Int in LEOV-F606W-EP2 (03)	985 Secs (985 Secs) [==>]	[1]
	6	ANY	WFC3/UVIS, ACCUM, UVIS	F606W			Sequence 1-6 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 5-6 in Sequence 1-6 Non-Int in LEOV-F606W-EP2 (03)	1000 Secs (1000 Secs) [==>]	[1]
	7	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W		POS TARG 0.1391,0.1689	Sequence 7-12 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 7-8 in Sequence 7-12 Non-Int in LEOV-F606W-EP2 (03)	150 Secs (150 Secs) [==>]	[2]
	8	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0		Sequence 7-12 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 7-8 in Sequence 7-12 Non-Int in LEOV-F606W-EP2 (03)	150 Secs (150 Secs) [==>]	[2]

Proposal 15507 - LEOV-F606W-EP2 (03) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

9	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.1391,0 .1689	Sequence 7-12 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 9-10 in Sequence 7-12 Non-Int in LEOV-F606W-EP2 (03)	1040 Secs (1040 Secs) [==>]	[2]
10	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 7-12 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 9-10 in Sequence 7-12 Non-Int in LEOV-F606W-EP2 (03)	1050 Secs (1050 Secs) [==>]	[2]
11	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.1550,0 .4225	Sequence 7-12 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 11-12 in Sequence 7-12 Non-Int in LEOV-F606W-EP2 (03)	1040 Secs (1040 Secs) [==>]	[2]
12	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 7-12 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 11-12 in Sequence 7-12 Non-Int in LEOV-F606W-EP2 (03)	1050 Secs (1050 Secs) [==>]	[2]
13	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.2177,0 .0857	Sequence 13-18 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 13-14 in Sequence 13-18 Non-Int in LEOV-F606W-EP2 (03)	150 Secs (150 Secs) [==>]	[3]
14	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0	Sequence 13-18 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 13-14 in Sequence 13-18 Non-Int in LEOV-F606W-EP2 (03)	150 Secs (150 Secs) [==>]	[3]
15	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.2177,0 .0857	Sequence 13-18 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 15-16 in Sequence 13-18 Non-Int in LEOV-F606W-EP2 (03)	1040 Secs (1040 Secs) [==>]	[3]

Proposal 15507 - LEOV-F606W-EP2 (03) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

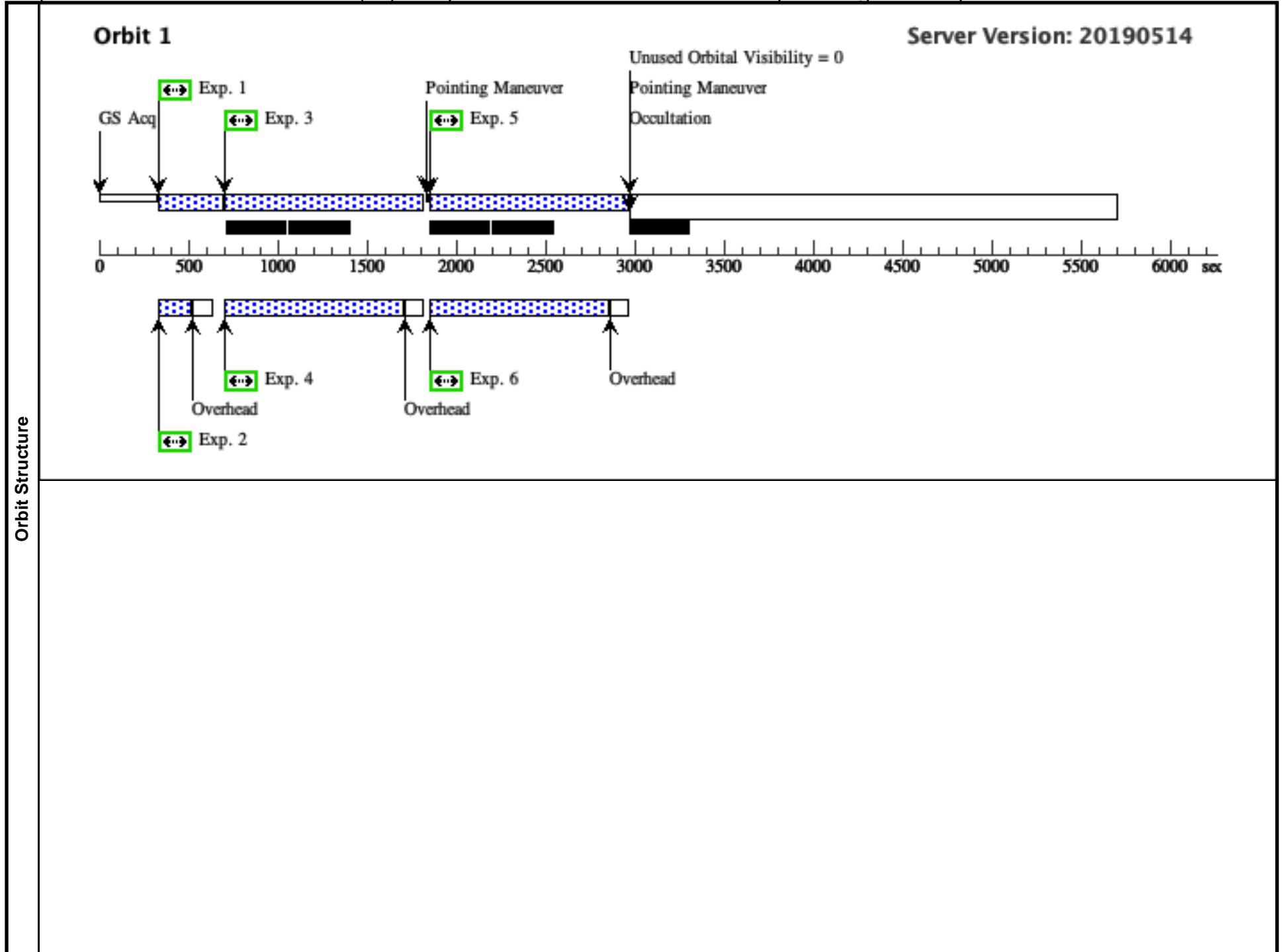
16	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 13-18 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 15-16 in Sequence 13-18 Non-Int in LEOV-F606W-EP2 (03)	1050 Secs (1050 Secs) [==>]	[3]
17	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.2781,0.3427	Sequence 13-18 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 17-18 in Sequence 13-18 Non-Int in LEOV-F606W-EP2 (03)	1040 Secs (1040 Secs) [==>]	[3]
18	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 13-18 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 17-18 in Sequence 13-18 Non-Int in LEOV-F606W-EP2 (03)	1050 Secs (1050 Secs) [==>]	[3]
19	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.3414,0.1544	Sequence 19-24 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 19-20 in Sequence 19-24 Non-Int in LEOV-F606W-EP2 (03)	150 Secs (150 Secs) [==>]	[4]
20	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0	Sequence 19-24 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 19-20 in Sequence 19-24 Non-Int in LEOV-F606W-EP2 (03)	150 Secs (150 Secs) [==>]	[4]
21	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.3414,0.1544	Sequence 19-24 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 21-22 in Sequence 19-24 Non-Int in LEOV-F606W-EP2 (03)	1040 Secs (1040 Secs) [==>]	[4]
22	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 19-24 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 21-22 in Sequence 19-24 Non-Int in LEOV-F606W-EP2 (03)	1050 Secs (1050 Secs) [==>]	[4]

Proposal 15507 - LEOV-F606W-EP2 (03) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

23	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.3567,0 .2595	Sequence 19-24 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 23-24 in Sequence 19-24 Non-Int in LEOV-F606W-EP2 (03)	1040 Secs (1040 Secs) [==>]	[4]
24	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 19-24 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 23-24 in Sequence 19-24 Non-Int in LEOV-F606W-EP2 (03)	1050 Secs (1050 Secs) [==>]	[4]
25	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.4216,0 .4178	Sequence 25-30 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 25-26 in Sequence 25-30 Non-Int in LEOV-F606W-EP2 (03)	150 Secs (150 Secs) [==>]	[5]
26	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	FLASH=6.0	Sequence 25-30 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 25-26 in Sequence 25-30 Non-Int in LEOV-F606W-EP2 (03)	150 Secs (150 Secs) [==>]	[5]
27	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.4216,0 .4178	Sequence 25-30 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 27-28 in Sequence 25-30 Non-Int in LEOV-F606W-EP2 (03)	1040 Secs (1040 Secs) [==>]	[5]
28	ANY	WFC3/UVIS, ACCUM, UVIS	F606W		Sequence 25-30 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 27-28 in Sequence 25-30 Non-Int in LEOV-F606W-EP2 (03)	1050 Secs (1050 Secs) [==>]	[5]
29	(3) LEO-V	ACS/WFC, ACCUM, WFC	F606W	POS TARG 0.4802,0 .2787	Sequence 25-30 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 29-30 in Sequence 25-30 Non-Int in LEOV-F606W-EP2 (03)	1040 Secs (1040 Secs) [==>]	[5]

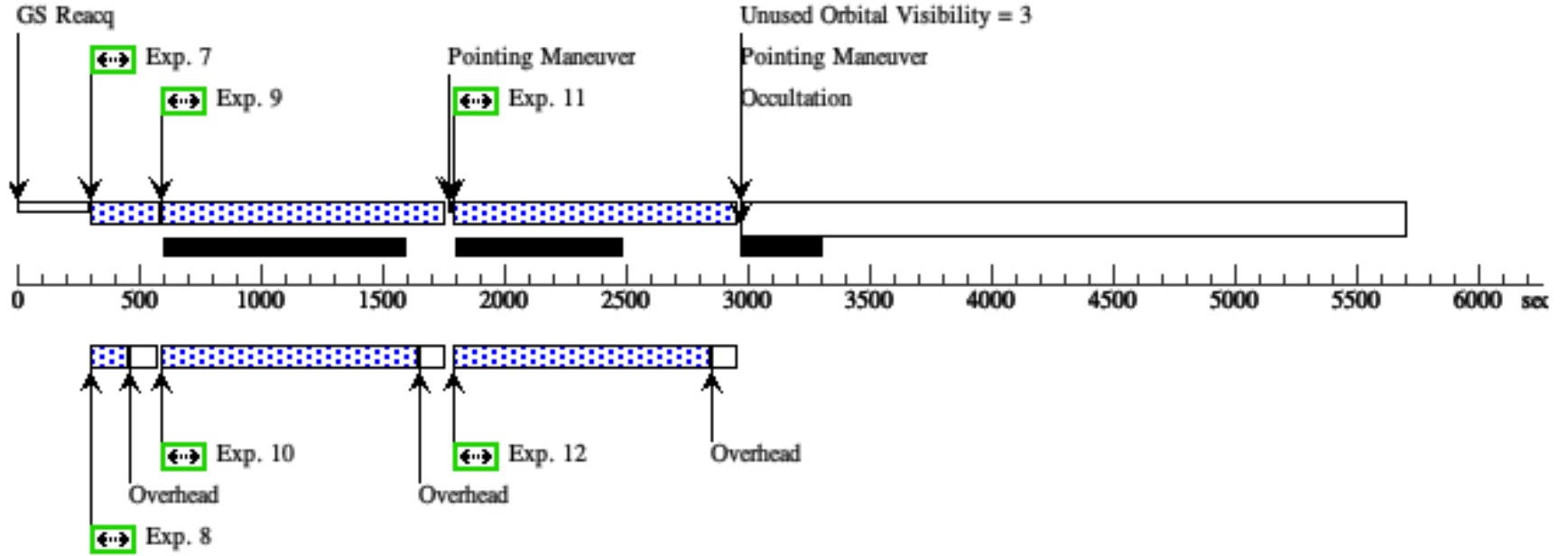
Proposal 15507 - LEOV-F606W-EP2 (03) - Proper Motions of the Crater-Leo Group: Testing the Group Infall Scenario

	30	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	Sequence 25-30 Non-Int in LEOV-F606W-EP2 (03) Prime + Parallel Group 29-30 in Sequence 25-30 Non-Int in LEOV-F606W-EP2 (03)	1050 Secs (1050 Secs) [==>]	[5]
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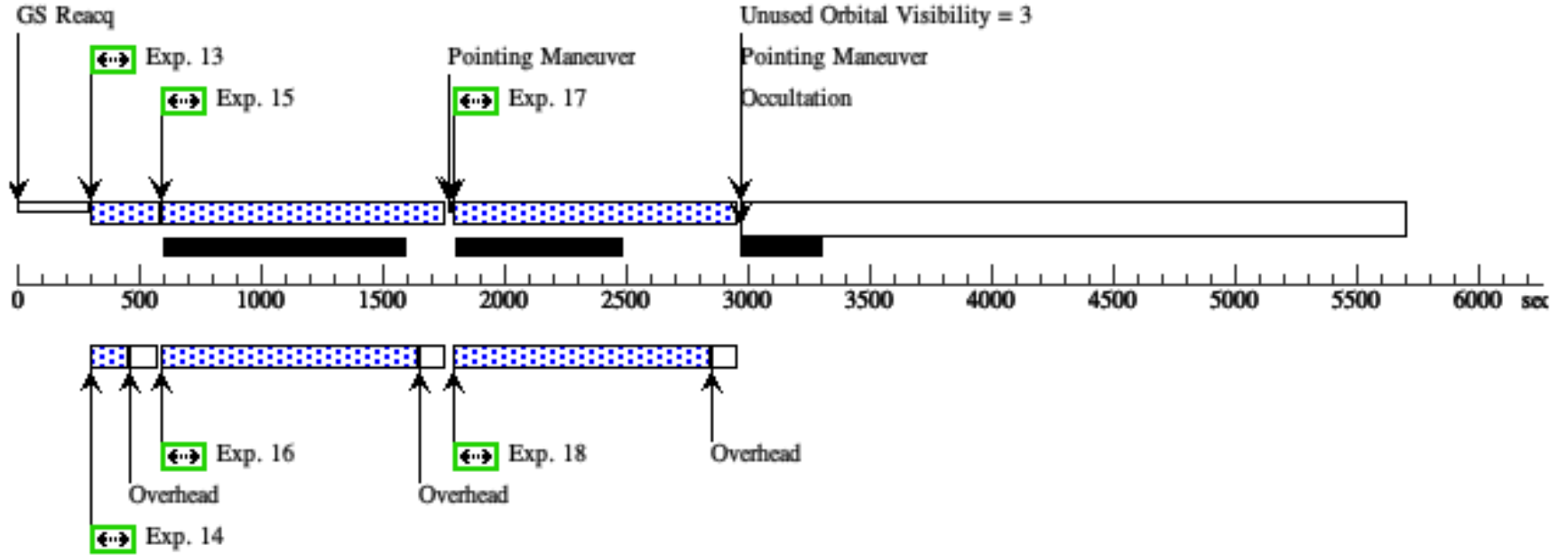


Orbit 2

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Orbit 3



Orbit 4

