12273 - Mass of the Local Group from Proper Motions of Distant Dwarf Galaxies

Cycle: 18, 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) CETUS-DWARF	ACS/WFC WFC3/UVIS	2	18-Aug-2010 15:41:34.0	yes
02	(1) CETUS-DWARF	ACS/WFC WFC3/UVIS	2	18-Aug-2010 15:41:36.0	yes
03	(2) LEO-A-DWARF	ACS/WFC WFC3/UVIS	2	18-Aug-2010 15:41:38.0	yes
04	(2) LEO-A-DWARF	ACS/WFC WFC3/UVIS	2	18-Aug-2010 15:41:40.0	yes
05	(3) TUCANA-DWARF	ACS/WFC WFC3/UVIS	2	18-Aug-2010 15:41:41.0	yes
06	(3) TUCANA-DWARF	ACS/WFC WFC3/UVIS	2	18-Aug-2010 15:41:43.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
07	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC WFC3/UVIS	2	18-Aug-2010 15:41:44.0	yes
08	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC WFC3/UVIS	2	18-Aug-2010 15:41:46.0	yes
09	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC WFC3/UVIS	2	18-Aug-2010 15:41:47.0	yes

18 Total Orbits Used

ABSTRACT

The Local Group and its two dominant spirals, the Milky Way and M31, have become the benchmark for testing many aspects of cosmological and galaxy formation theories, due to many exciting new discoveries in the past decade. However, it is difficult to put results in a proper cosmological context, because our knowledge of the mass M of the Local Group remains uncertain by a factor 4. In units of 10^{12} solar masses, a spherical infall model for the zero-velocity surface gives M~1.3; the sum of estimates for the Milky Way and M31 masses gives M~2.6; and the Local Group Timing argument for the M31 orbit gives M~5.6. It is possible to discriminate between the proposed masses by calculating the orbits of galaxies at the edge of the Local Group, which requires knowledge of transverse velocity components. We therefore propose to use ACS/WFC to determine the proper motions of the 4 dwarf galaxies near the edge of the Local Group (Cetus, Leo A, Tucana, Sag DIG) for which deep first epoch data (with 5-7 year time baselines) already exist in the HST Archive. Our team has extensive expertise with HST astrometric science, and our past/ongoing work for, e.g., Omega Cen, LMC/SMC and M31 show that the necessary astrometric accuracy is within the reach of HST's demonstrated capabilities. We have developed, tested, and published a new technique that uses compact background galaxies as astrometric reference sources, and we have already reduced the first epoch data. The final predicted transverse velocity accuracy, 36 km/s when averaged over the sample, will be sufficient to discriminate between each of the proposed Local Group masses at 2-sigma significance (4-sigma between the most extreme values). Our project will yield the most accurate Local Group mass determination to date, and only HST can achieve the required accuracy.

OBSERVING DESCRIPTION

To measure absolute proper motions of the four target galaxies Cetus, Leo A, Tucana, and Sag DIG dwarf galaxies, we will use compact background galaxies in the field view as stationary reference sources. We will measure the average motion of stars in each Local Group galaxy between epochs 1 and 2 with respect to these reference sources. Our analysis techniques and expected accuracies are described in the Phase I proposal. First epoch ACS

data are available in the archive from previous observing programs. The present project will obtain the second epoch data.

The first epoch ACS data were obtained in at least two filters to make deep color magnitude diagrams for the target galaxies. The available broad-band colors and depth are sufficient for separating stars, foreground stars, and background galaxies to first order. For the second epoch it is therefore sufficient to take data in only one of the filters. For Cetus, Leo A, and Tucana dwarfs, we will use the first epoch data to build templates for background galaxies. For SAGDIG, however, our analysis shows that the first epoch data are neither deep nor well-dithered enough to build high signal-to-noise and high resolution templates for the background galaxies. We will therefore use our deeper second epoch F814W data for building the templates for SAGDIG.

We will observe each target galaxy with the F814W filter using the same pointing and orientation used for the first epoch data. Individual exposures will be sub-pixel dithered and will last half an orbit. We will use customized dither patterns designed by Jay Anderson (STScI) to maximize the pixel phase coverage. We require that all of our images be obtained in 30-60 day windows so that they can be treated as single epoch data for astrometric analyses.

During our second epoch observations, the WFC3/UVIS camera will be pointed ~6 arcmin away in the outer halo of each dwarf galaxy. We will observe those fields with F475W and F814W filters to construct color-magnitude diagrams of the outer halos. These will be used to determine stellar population gradients and the stellar halo density profile to constrain formation and evolutionary scenarios.

REAL TIME JUSTIFICATION

N/A

CALIBRATION JUSTIFICATION

N/A

ADDITIONAL COMMENTS

N/A

Visit

Proposal 12273, Visit 01, implementation Wed Aug 18 19:41:48 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC, WFC3/UVIS

Special Requirements: ORIENT 266.014664D TO 266.014664 D; GROUP 01,02 WITHIN 30D

Comments: This is the first visit for imaging the Cetus Dwarf Galaxy. Two orbits are required to complete this visit. Since our goal is to measure proper motions of stars in the target galaxy, our orientation is set to exactly match the previous observations of PID 10505. We adopt a customized dither pattern designed to optimally cover the pixel phase using the POST-ARG special requirements. For each visit we will do a set of 4-point dithering. We require that Visits 01 and 02 be observed in a 30 day window so that they can be treated as single epoch data for astrometric analysis.

Fixed Targets

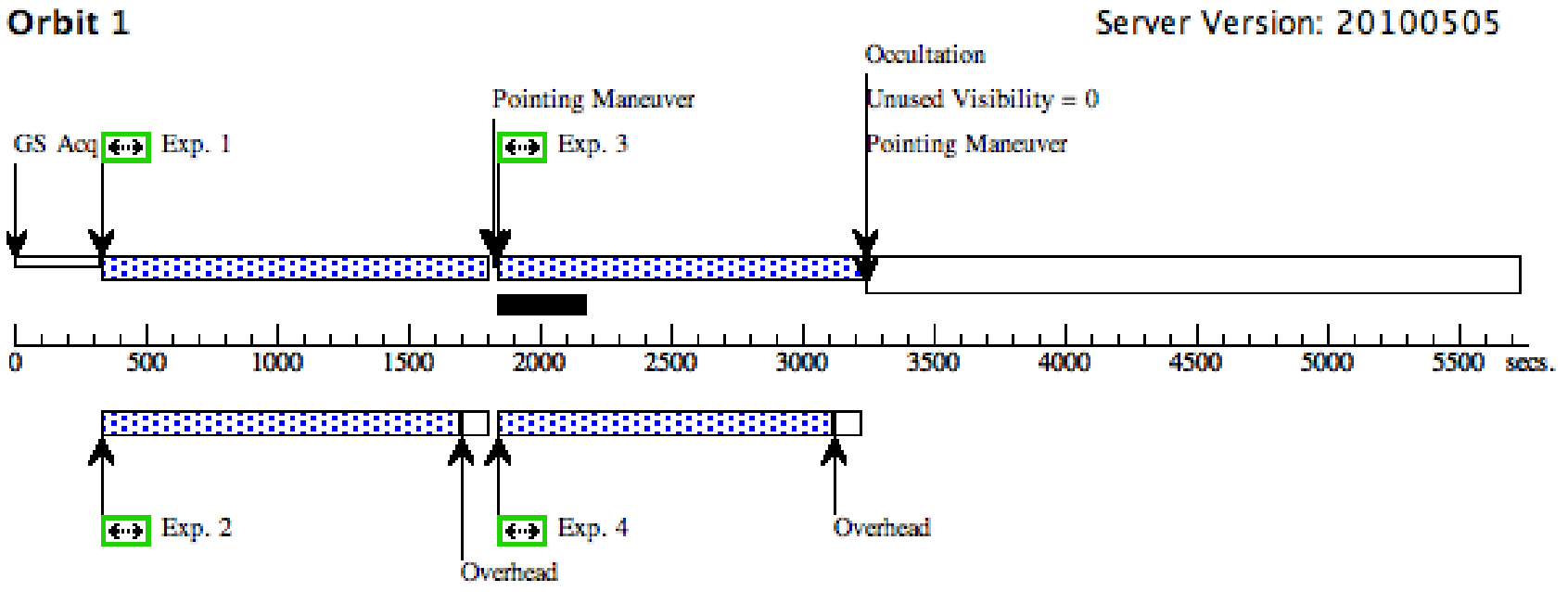
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CETUS-DWARF	RA: 00 26 9.7000 (6.5404167d) Dec: -11 04 35.00 (-11.07639d) Equinox: J2000		V=14.4+/-0.2	Reference Frame: ICRS

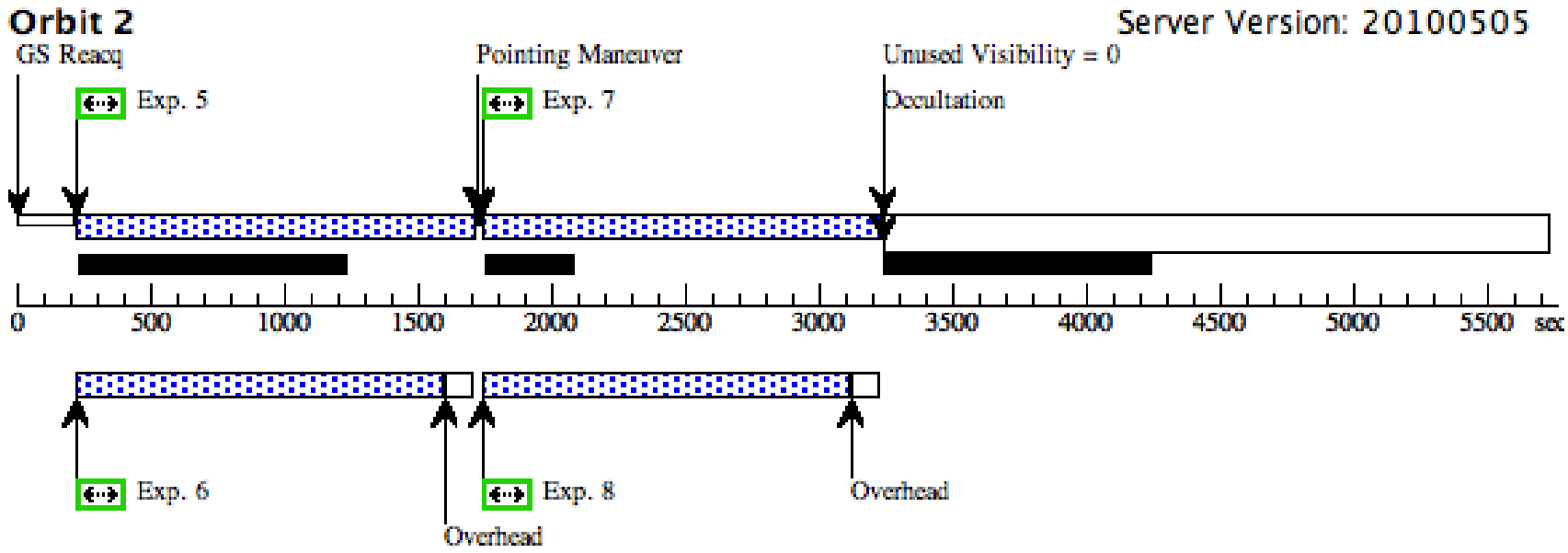
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	cetus-acs-dither1	(1) CETUS-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.0000,0.0000	Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1267 Secs *[==>]*	***[1]***
2	cetus-wcs3-dither1	(1) CETUS-DWARF	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1327 Secs *[==>]*	***[1]***
3	cetus-acs-dither2	(1) CETUS-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.1740,0.2350	Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1267 Secs *[==>]*	***[1]***
4	cetus-wfc3-dither2	(1) CETUS-DWARF	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1251 Secs *[==>]*	***[1]***
5	cetus-acs-dither3	(1) CETUS-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.3232,0.1235	Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1363 Secs *[==>]*	***[2]***
6	cetus-wfc3-dither3	(1) CETUS-DWARF	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1347 Secs *[==>]*	***[2]***
7	cetus-acs-dither4	(1) CETUS-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.1005,0.3305	Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1364 Secs *[==>]*	***[2]***
8	cetus-wfc3-dither4	(1) CETUS-DWARF	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1354 Secs *[==>]*	***[2]***

Orbit Structure





Visit

Proposal 12273, Visit 02, implementation Wed Aug 18 19:41:48 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC, WFC3/UVIS

Special Requirements: SAME ORIENT AS 01; GROUP 02,01 WITHIN 30D

Comments: This is the second visit for imaging the Cetus Dwarf Galaxy. Two orbits are required to complete this visit. We request that the orientation be exactly the same as that of Visit 01. We adopt a customized dither pattern designed to optimally cover the pixel phase using the POS-TARG special requirements. For each visit we will do a set of 4-point dithering. We request that Visits 01 and 02 be observed in a 30 day window so that they can be treated as single epoch data for astrometric analysis.

Fixed Targets

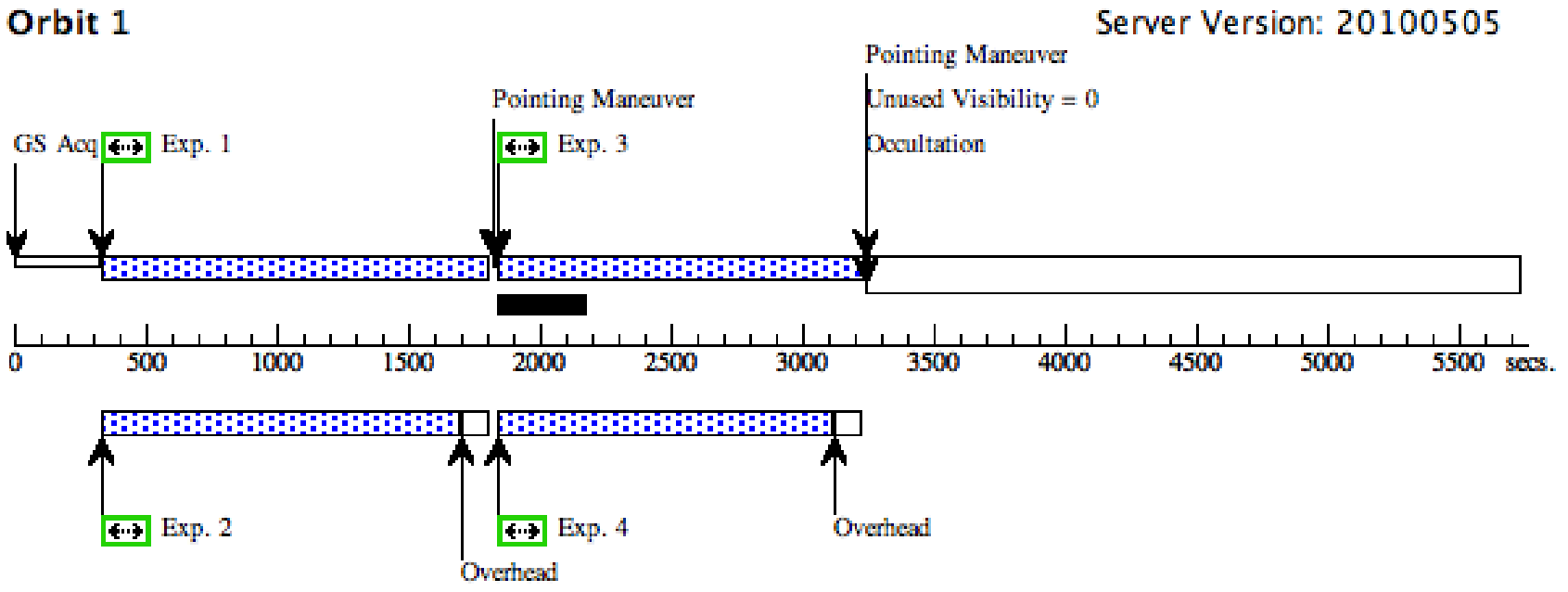
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CETUS-DWARF	RA: 00 26 9.7000 (6.5404167d) Dec: -11 04 35.00 (-11.07639d) Equinox: J2000		V=14.4+/-0.2	Reference Frame: ICRS

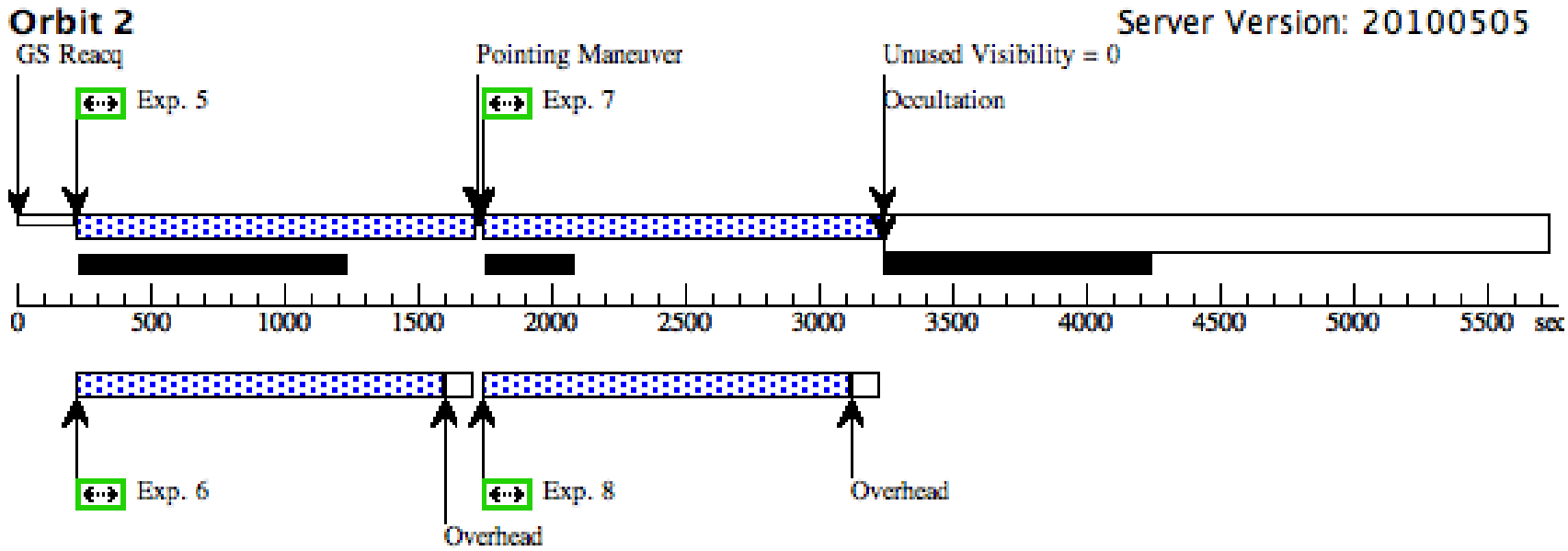
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	cetus-acs-dither5	(1) CETUS-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.5075,0.0505	Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1267 Secs *[==>]*	***[1]***
2	cetus-wfc3-dither5	(1) CETUS-DWARF	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1327 Secs *[==>]*	***[1]***
3	cetus-acs-dither6	(1) CETUS-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.6815,0.2855	Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1267 Secs *[==>]*	***[1]***
4	cetus-wfc3-dither6	(1) CETUS-DWARF	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1251 Secs *[==>]*	***[1]***
5	cetus-acs-dither7	(1) CETUS-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.8300,0.1735	Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1363 Secs *[==>]*	***[2]***
6	cetus-wfc3-dither7	(1) CETUS-DWARF	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1347 Secs *[==>]*	***[2]***
7	cetus-acs-dither8	(1) CETUS-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.6080,0.3810	Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1364 Secs *[==>]*	***[2]***
8	cetus-wfc3-dither8	(1) CETUS-DWARF	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1354 Secs *[==>]*	***[2]***

Orbit Structure





Visit

Proposal 12273, Visit 03, implementation Wed Aug 18 19:41:49 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC, WFC3/UVIS

Special Requirements: ORIENT 282.484802D TO 287.5 D; GROUP 03,04 WITHIN 30D

Comments: This is the first visit for imaging the Leo A Dwarf Galaxy. Two orbits are required to complete this visit. Since our goal is to measure proper motions of stars in the target galaxy, our orientation is set to exactly match the previous observations of PID 10590. We adopt a customized dither pattern designed to optimally cover the pixel phase using the POS-TARG special requirements. For each visit we will do a set of 4-point dithering. We request that Visits 03 and 04 be observed in a 30 day window so that they can be treated as single epoch data for astrometric analysis.

Fixed Targets

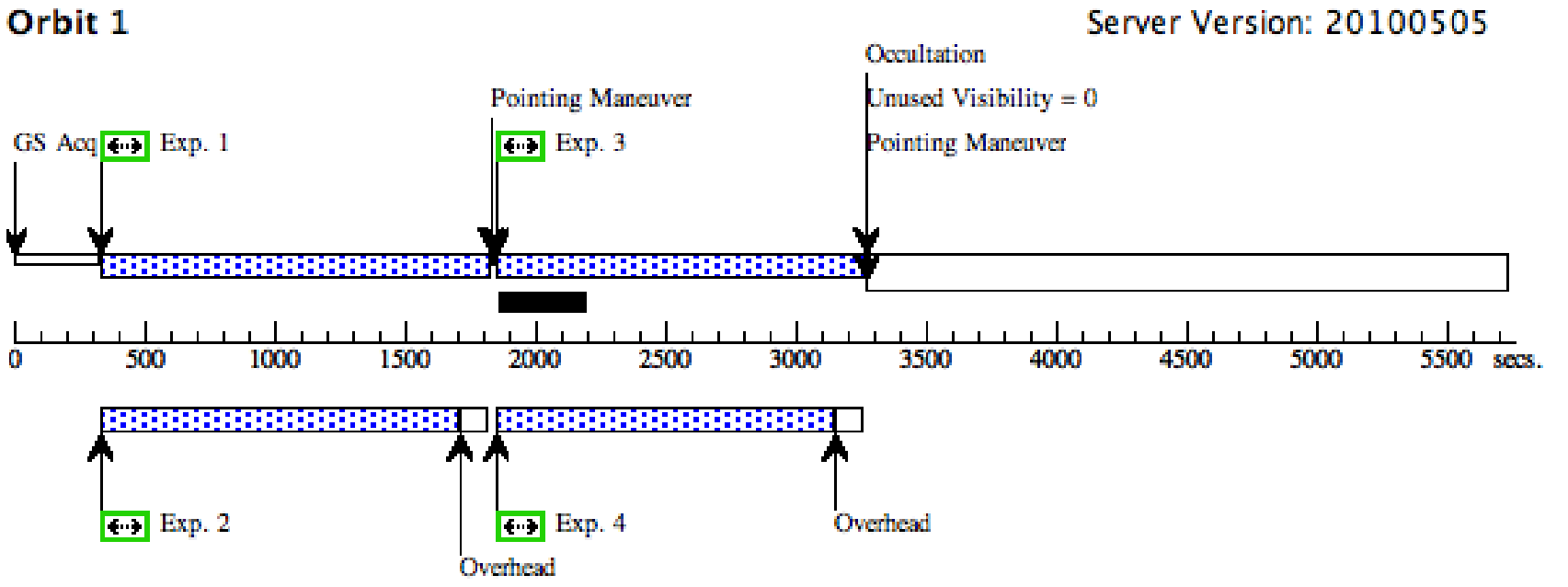
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	LEO-A-DWARF	RA: 09 59 23.8000 (149.8491667d) Dec: +30 45 23.80 (30.75661d) Equinox: J2000		V=12.5+/-0.2	Reference Frame: ICRS

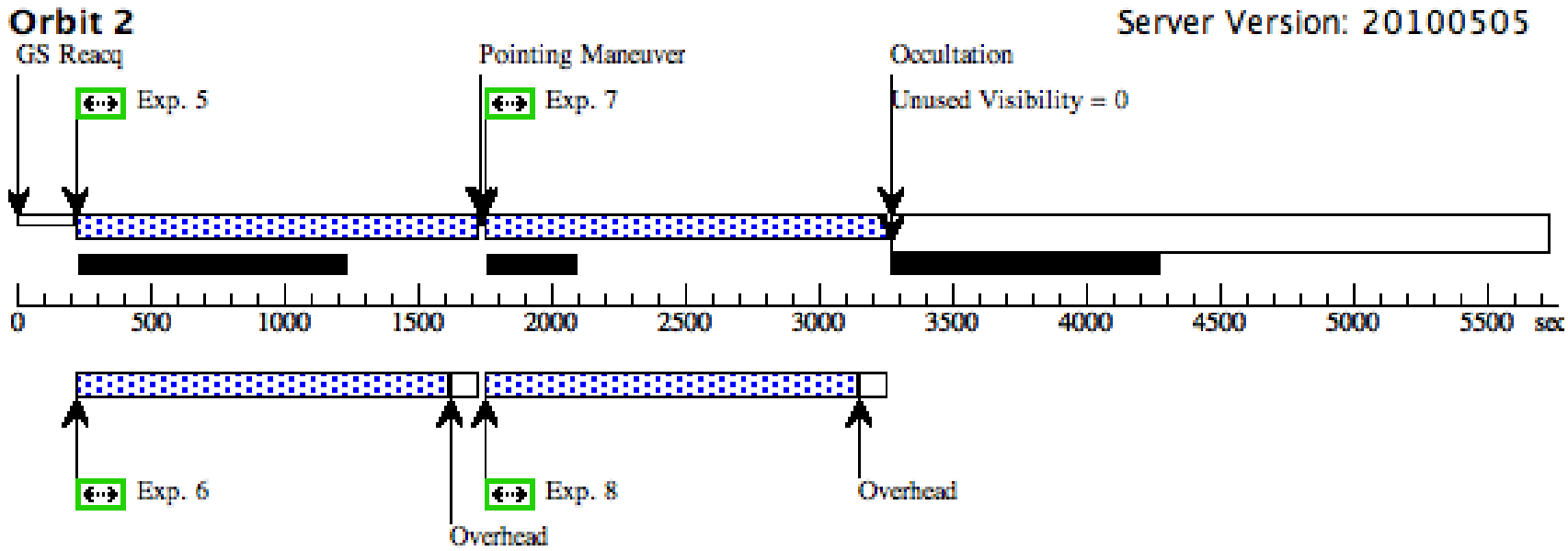
Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	leoa-acs-dither1	(2) LEO-A-DWARF	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.0000,0.0000	Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1282 Secs *[==>]*	***[1]***
2	leoa-wfc3-dither1	(2) LEO-A-DWARF	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1342 Secs *[==>]*	***[1]***
3	leoa-acs-dither2	(2) LEO-A-DWARF	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.1740,0.2350	Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1282 Secs *[==>]*	***[1]***
4	leoa-wfc3-dither2	(2) LEO-A-DWARF	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1272 Secs *[==>]*	***[1]***
5	leoa-acs-dither3	(2) LEO-A-DWARF	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.3232,0.1235	Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1378 Secs *[==>]*	***[2]***
6	leoa-wfc3-dither3	(2) LEO-A-DWARF	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1362 Secs *[==>]*	***[2]***
7	leoa-acs-dither4	(2) LEO-A-DWARF	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.1005,0.3305	Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1379 Secs *[==>]*	***[2]***
8	leoa-wfc3-dither4	(2) LEO-A-DWARF	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1369 Secs *[==>]*	***[2]***

Orbit Structure





Visit

Proposal 12273, Visit 04, implementation Wed Aug 18 19:41:49 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC, WFC3/UVIS

Special Requirements: SAME ORIENT AS 03; GROUP 04,03 WITHIN 30D

Comments: This is the second visit for imaging the Leo A Dwarf Galaxy. Two orbits are required to complete this visit. We request that the orientation be exactly the same as that of Visit 03. We adopt a customized dither pattern designed to optimally cover the pixel phase using the POS-TARG special requirements. For each visit we will do a set of 4-point dithering. We request that Visits 03 and 04 be observed in a 30 day window so that they can be treated as single epoch data for astrometric analysis.

Fixed Targets

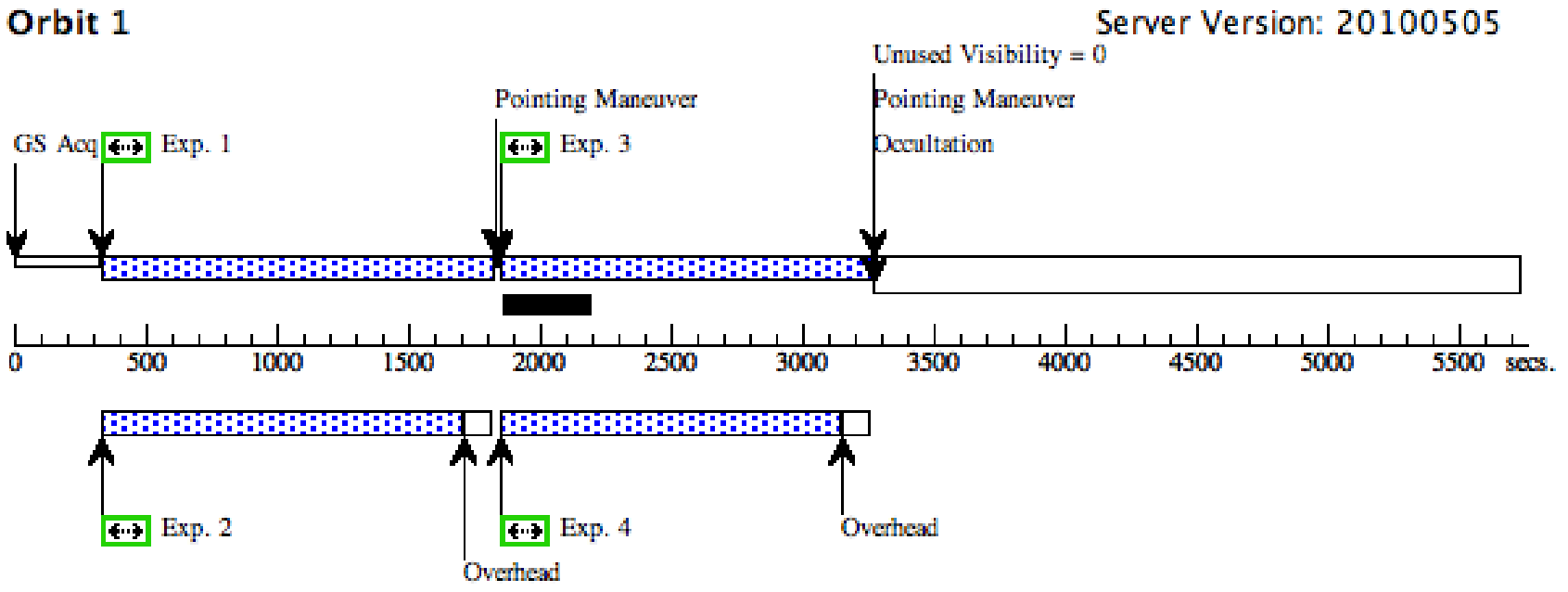
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	LEO-A-DWARF	RA: 09 59 23.8000 (149.8491667d) Dec: +30 45 23.80 (30.75661d) Equinox: J2000		V=12.5+/-0.2	Reference Frame: ICRS

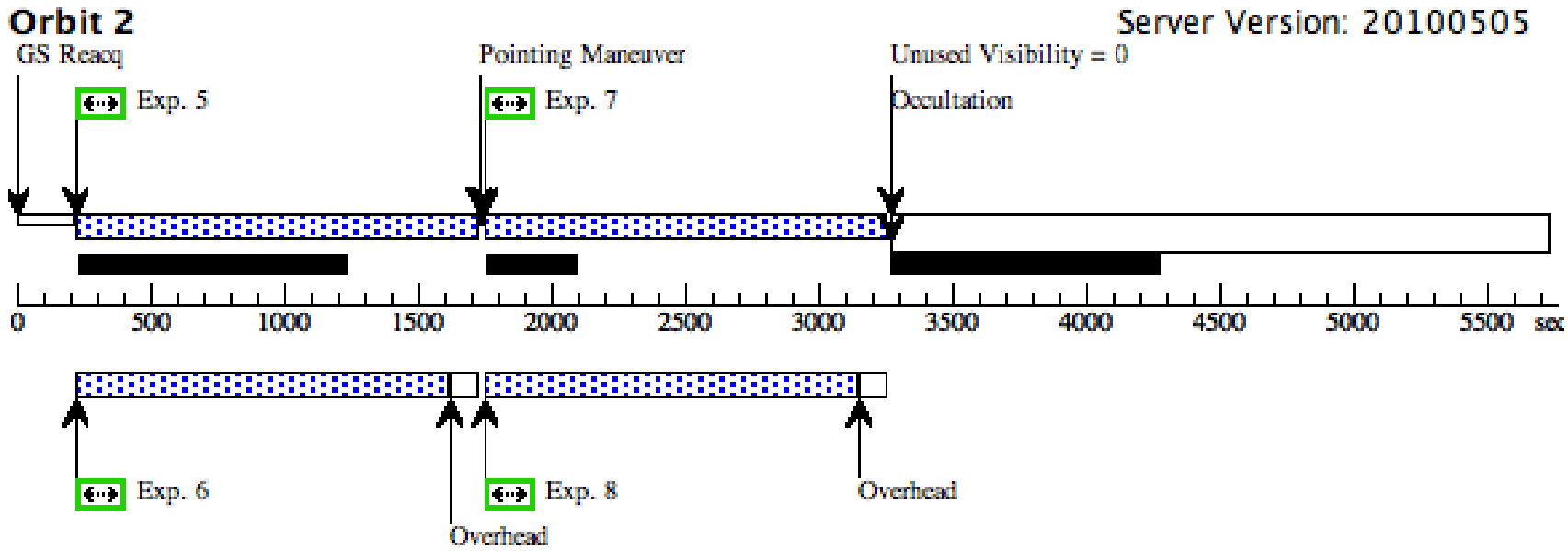
Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	leoa-acs-dither5	(2) LEO-A-DWARF	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.5075,0.0505	Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1282 Secs *[==>]*	***[1]***
2	leoa-wfc3-dither5	(2) LEO-A-DWARF	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1342 Secs *[==>]*	***[1]***
3	leoa-acs-dither6	(2) LEO-A-DWARF	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.6815,0.2855	Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1282 Secs *[==>]*	***[1]***
4	leoa-wfc3-dither6	(2) LEO-A-DWARF	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1272 Secs *[==>]*	***[1]***
5	leoa-acs-dither7	(2) LEO-A-DWARF	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.8300,0.1735	Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1378 Secs *[==>]*	***[2]***
6	leoa-wfc3-dither7	(2) LEO-A-DWARF	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1362 Secs *[==>]*	***[2]***
7	leoa-acs-dither8	(2) LEO-A-DWARF	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.6080,0.3810	Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1379 Secs *[==>]*	***[2]***
8	leoa-wfc3-dither8	(2) LEO-A-DWARF	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1369 Secs *[==>]*	***[2]***

Orbit Structure





Visit

Proposal 12273, Visit 05, implementation Wed Aug 18 19:41:49 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC, WFC3/UVIS

Special Requirements: ORIENT 231.55373D TO 231.55373 D; GROUP 05,06 WITHIN 30D

Comments: This is the first visit for imaging the Tucana Dwarf Galaxy. Two orbits are required to complete this visit. Since our goal is to measure proper motions of stars in the target galaxy, our orientation is set to exactly match the previous observations of PID 10505. We adopt a customized dither pattern designed to optimally cover the pixel phase using the POS-TARG special requirements. For each visit we will do a set of 4-point dithering. We request that Visits 05 and 06 be observed in a 30 day window so that they can be treated as single epoch data for astrometric analysis.

Fixed Targets

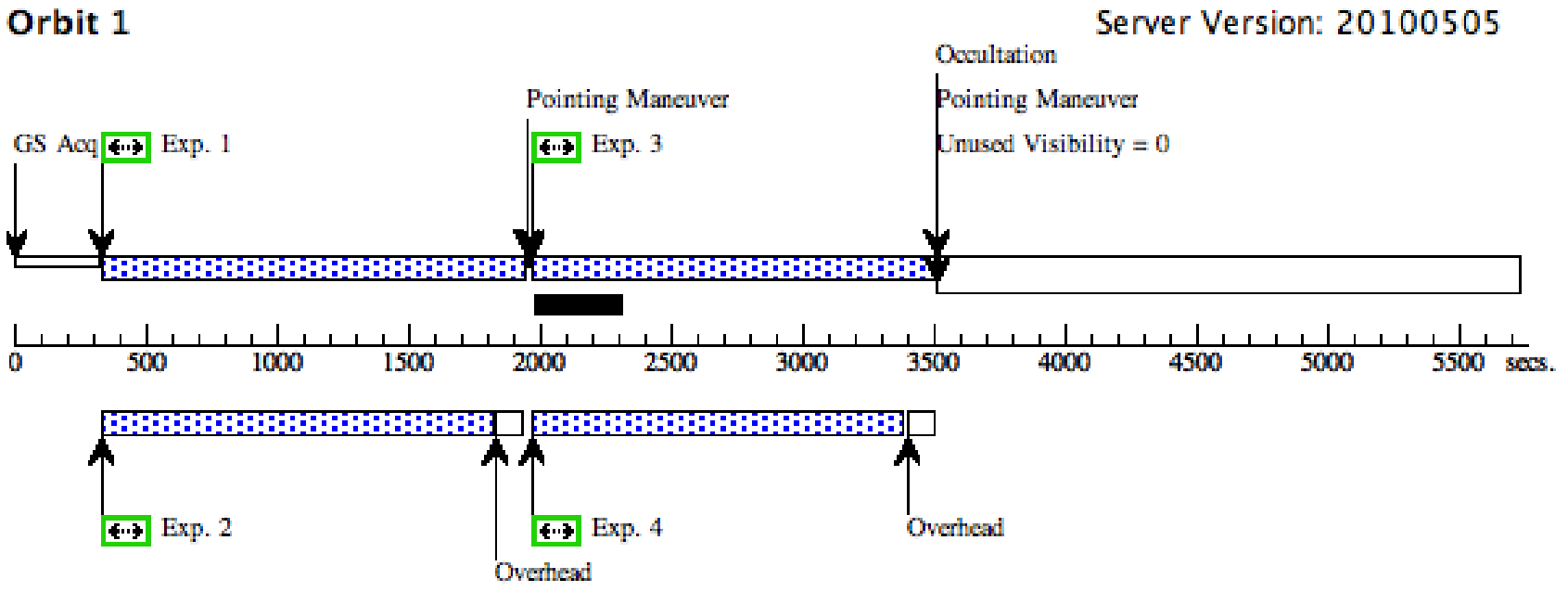
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	TUCANA-DWARF	RA: 22 41 48.4200 (340.4517500d) Dec: -64 25 16.05 (-64.42113d) Equinox: J2000		V=15.2+/-0.2	Reference Frame: ICRS

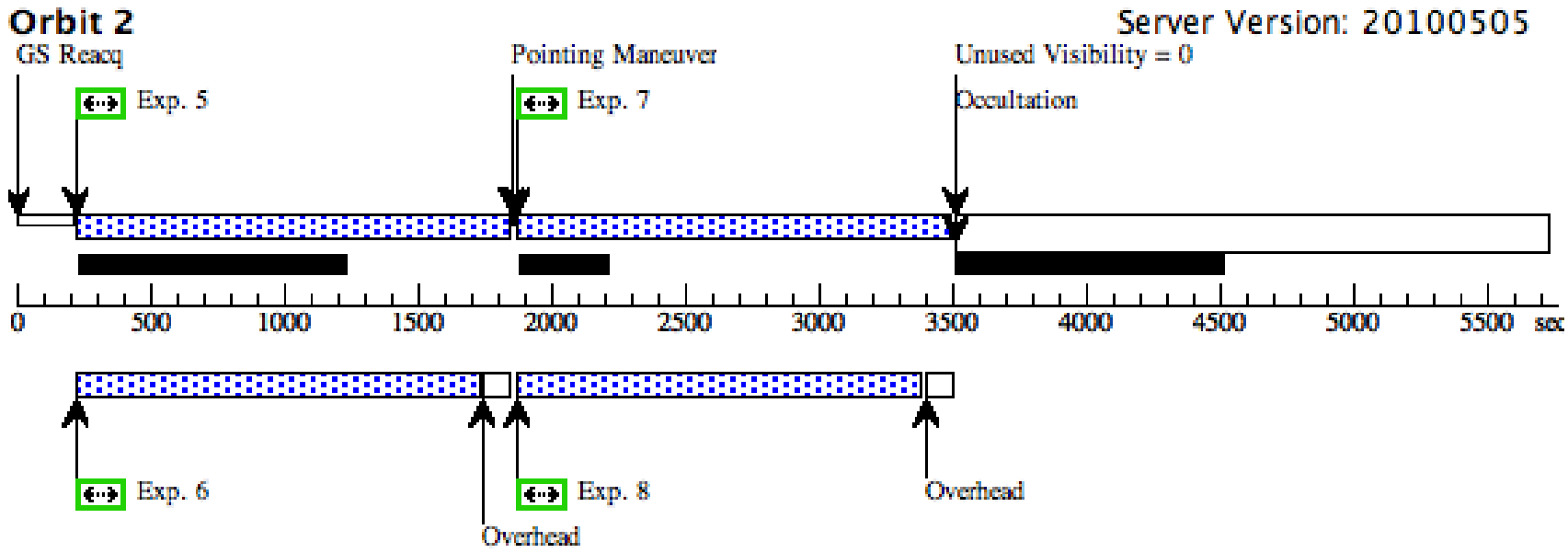
Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	tucana-acs-dither1	(3) TUCANA-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.0000,0.0000	Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1402 Secs *[==>]*	***[1]***
2	tucana-wfc3-dither1	(3) TUCANA-DWARF	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1462 Secs *[==>]*	***[1]***
3	tucana-acs-dither2	(3) TUCANA-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.1740,0.2350	Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1403 Secs *[==>]*	***[1]***
4	tucana-wfc3-dither2	(3) TUCANA-DWARF	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1393 Secs *[==>]*	***[1]***
5	tucana-acs-dither3	(3) TUCANA-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.3232,0.1235	Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1499 Secs *[==>]*	***[2]***
6	tucana-wfc3-dither3	(3) TUCANA-DWARF	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1483 Secs *[==>]*	***[2]***
7	tucana-acs-dither4	(3) TUCANA-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.1005,0.3305	Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1499 Secs *[==>]*	***[2]***
8	tucana-wfc3-dither4	(3) TUCANA-DWARF	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1489 Secs *[==>]*	***[2]***

Orbit Structure





Visit

Proposal 12273, Visit 06, implementation Wed Aug 18 19:41:49 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC, WFC3/UVIS

Special Requirements: SAME ORIENT AS 05; GROUP 06,05 WITHIN 30D

Comments: This is the second visit for imaging the Tucana Dwarf Galaxy. Two orbits are required to complete this visit. We request that the orientation be exactly the same as Visit 05. We adopt a customized dither pattern designed to optimally cover the pixel phase using the POS-TARG special requirements. For each visit we will do a set of 4-point dithering. We request that Visits 05 and 06 be observed in a 30 day window so that they can be treated as single epoch data for astrometric analysis.

Fixed Targets

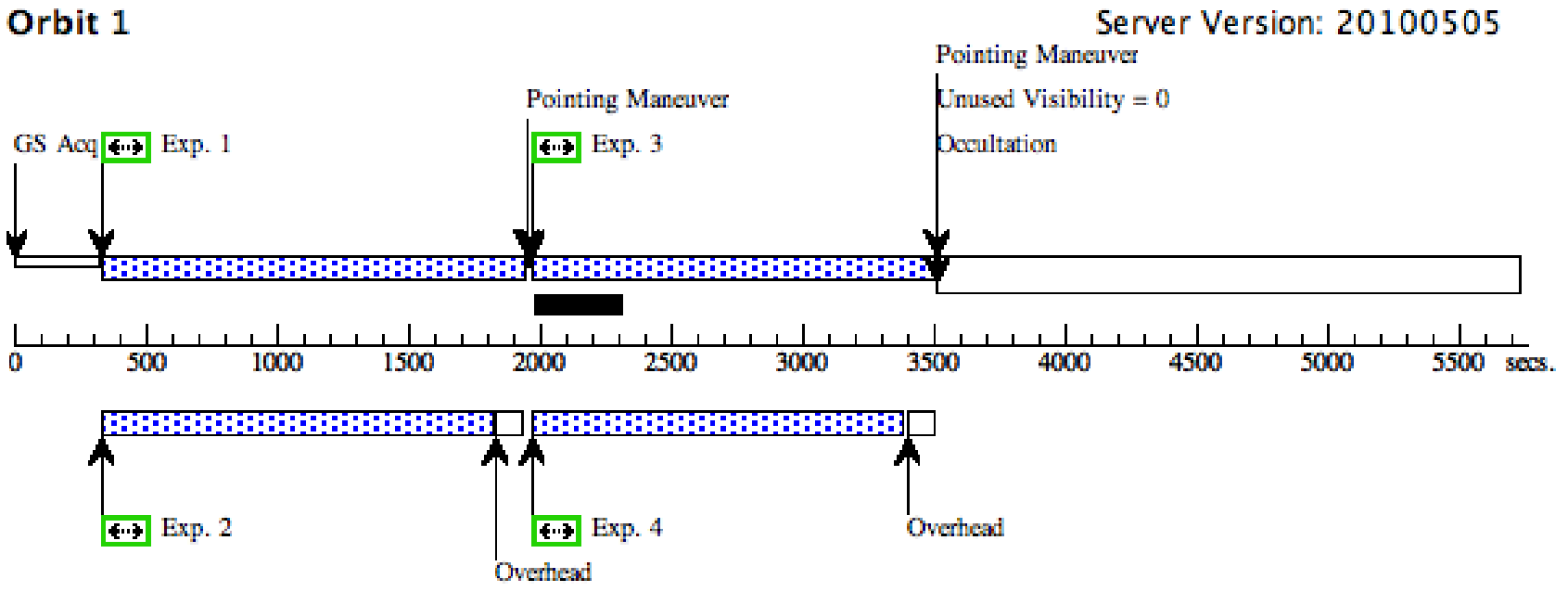
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	TUCANA-DWARF	RA: 22 41 48.4200 (340.4517500d) Dec: -64 25 16.05 (-64.42113d) Equinox: J2000		V=15.2+/-0.2	Reference Frame: ICRS

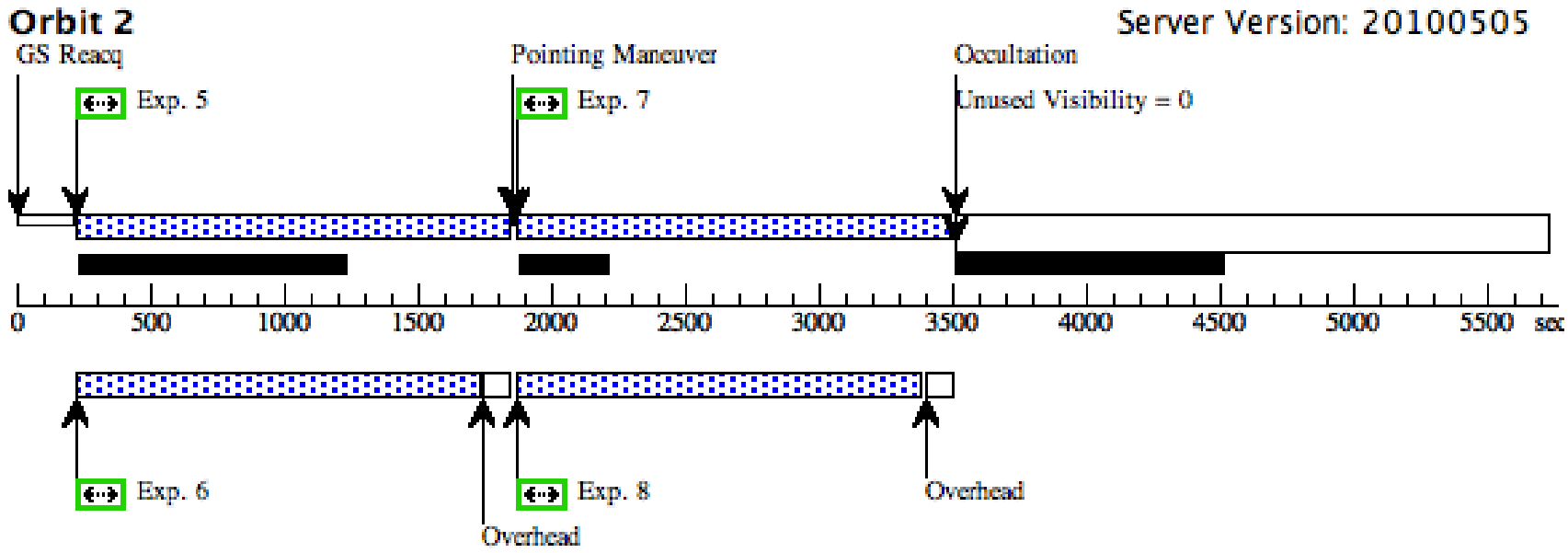
Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	tucana-acs-dither5	(3) TUCANA-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.5075,0.0505	Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1402 Secs *[==>]*	***[1]***
2	tucana-wfc3-dither5	(3) TUCANA-DWARF	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1462 Secs *[==>]*	***[1]***
3	tucana-acs-dither6	(3) TUCANA-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.6815,0.2855	Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1403 Secs *[==>]*	***[1]***
4	tucana-wfc3-dither6	(3) TUCANA-DWARF	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1393 Secs *[==>]*	***[1]***
5	tucana-acs-dither7	(3) TUCANA-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.8300,0.1735	Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1499 Secs *[==>]*	***[2]***
6	tucana-wfc3-dither7	(3) TUCANA-DWARF	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1483 Secs *[==>]*	***[2]***
7	tucana-acs-dither8	(3) TUCANA-DWARF	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO	POS TARG 0.6080,0.3810	Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1499 Secs *[==>]*	***[2]***
8	tucana-wfc3-dither8	(3) TUCANA-DWARF	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1489 Secs *[==>]*	***[2]***

Orbit Structure





Visit

Proposal 12273, Visit 07, implementation Wed Aug 18 19:41:49 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC, WFC3/UVIS

Special Requirements: ORIENT 87.260712D TO 87.260712 D; GROUP 07,08,09 WITHIN 60D

Comments: This is the first visit for imaging the Sagittarius Dwarf Irregular Galaxy (SAGDIG). Two orbits are required to complete this visit. Since our goal is to measure proper motions of stars in the target galaxy, our orientation is set to exactly match the previous observations of PID 9820. We adopt a customized dither pattern designed to optimally cover the pixel phase using the POS-TARG special requirements. For each visit we will do a set of 4-point dithering. We request that Visits 07, 08, and 09 be observed in a 60 day window so that they can be treated as single epoch data for astrometric analysis.

Fixed Targets

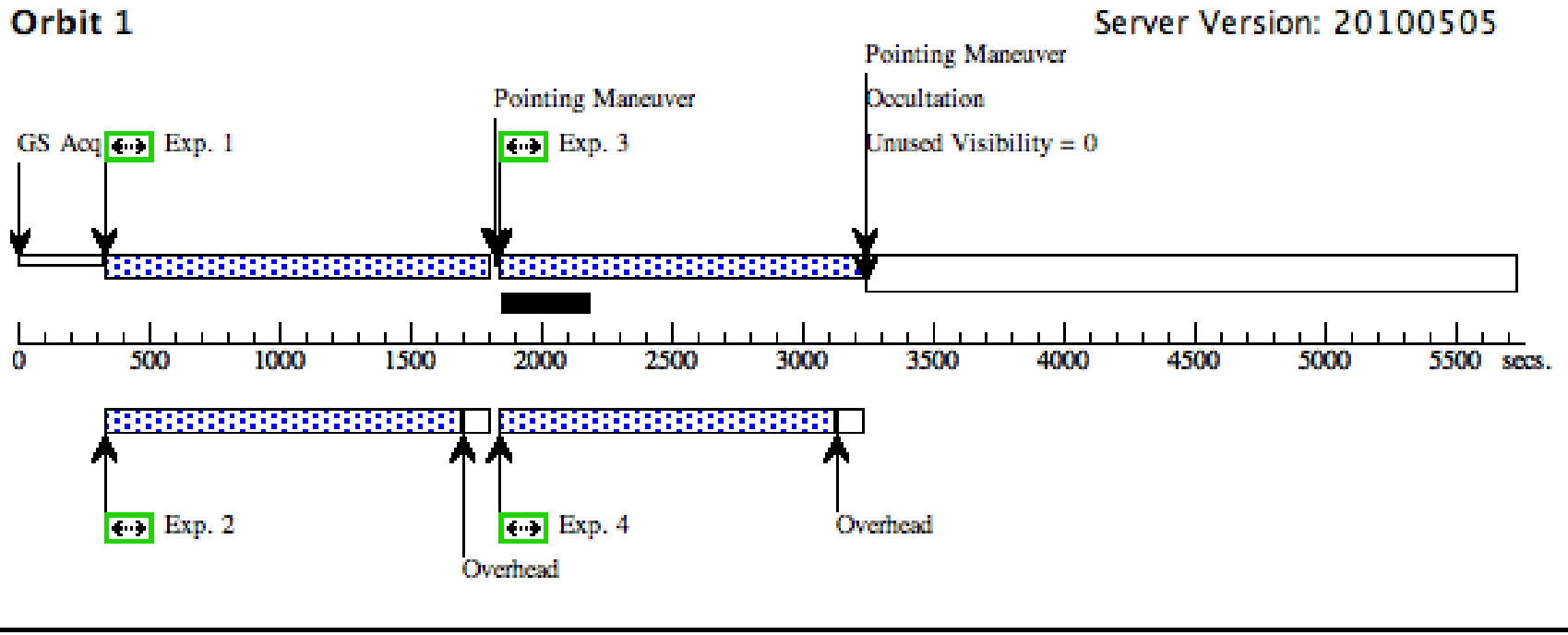
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	SAGITTARIUS-DWARF-IRREGULAR	RA: 19 30 0.0700 (292.5002917d) Dec: -17 40 46.42 (-17.67956d) Equinox: J2000		V=14.3+/-0.2	Reference Frame: ICRS

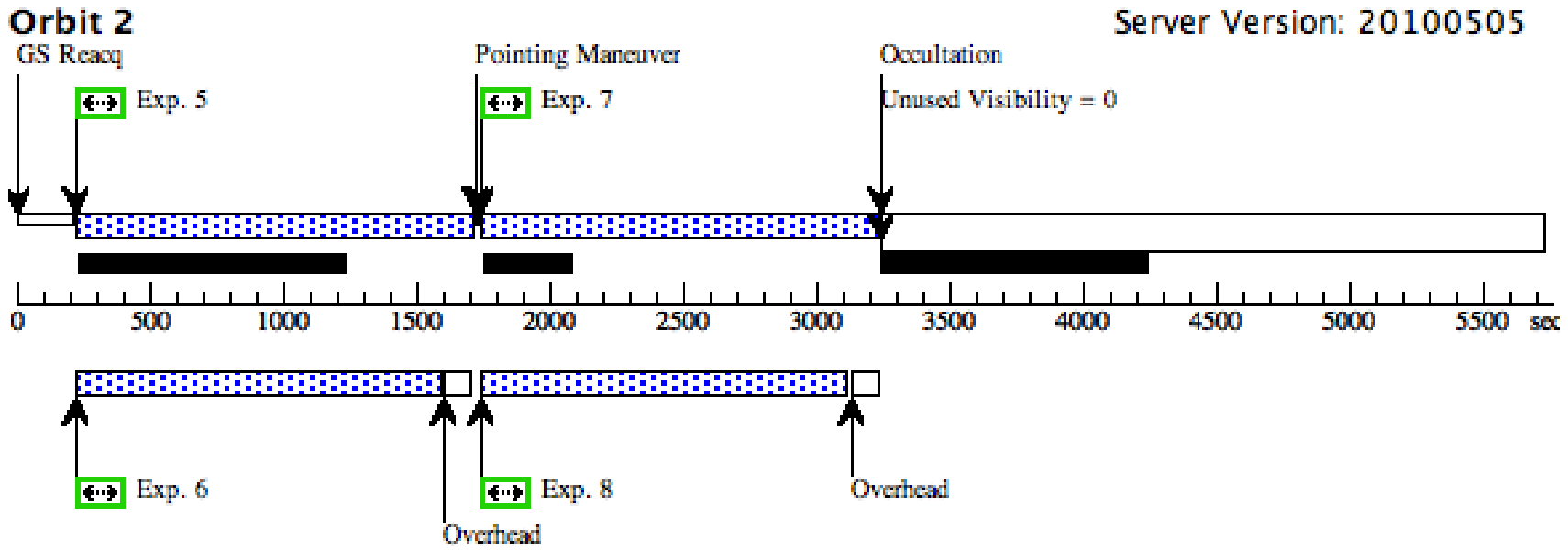
Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	sagdig-acs-dither1	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.0000,0.0000	Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1269 Secs *[==>]*	***[1]***
2	sagdig-wfc3-dither1	(4) SAGITTARIUS-DWARF-IRREGULAR	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1329 Secs *[==>]*	***[1]***
3	sagdig-acs-dither2	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.1740,0.1850	Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1269 Secs *[==>]*	***[1]***
4	sagdig-wfc3-dither2	(4) SAGITTARIUS-DWARF-IRREGULAR	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1259 Secs *[==>]*	***[1]***
5	sagdig-acs-dither3	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.3232,0.1235	Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1365 Secs *[==>]*	***[2]***
6	sagdig-wfc3-dither3	(4) SAGITTARIUS-DWARF-IRREGULAR	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1349 Secs *[==>]*	***[2]***
7	sagdig-acs-dither4	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.1005,0.3305	Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1366 Secs *[==>]*	***[2]***
8	sagdig-wfc3-dither4	(4) SAGITTARIUS-DWARF-IRREGULAR	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1356 Secs *[==>]*	***[2]***

Orbit Structure





Visit

Proposal 12273, Visit 08, implementation Wed Aug 18 19:41:49 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC, WFC3/UVIS

Special Requirements: SAME ORIENT AS 07; GROUP 08,07,09 WITHIN 60D

Comments: This is the second visit for imaging the Sagittarius Dwarf Irregular Galaxy (SAGDIG). Two orbits are required to complete this visit. We request that the orientation be exactly the same as that of Visit 07. We adopt a customized dither pattern designed to optimally cover the pixel phase using the POS-TARG special requirements. For each visit we will do a set of 4-point dithering. We request that Visits 07, 08, and 09 be observed in a 60 day window so that they can be treated as single epoch data for astrometric analysis.

Fixed Targets

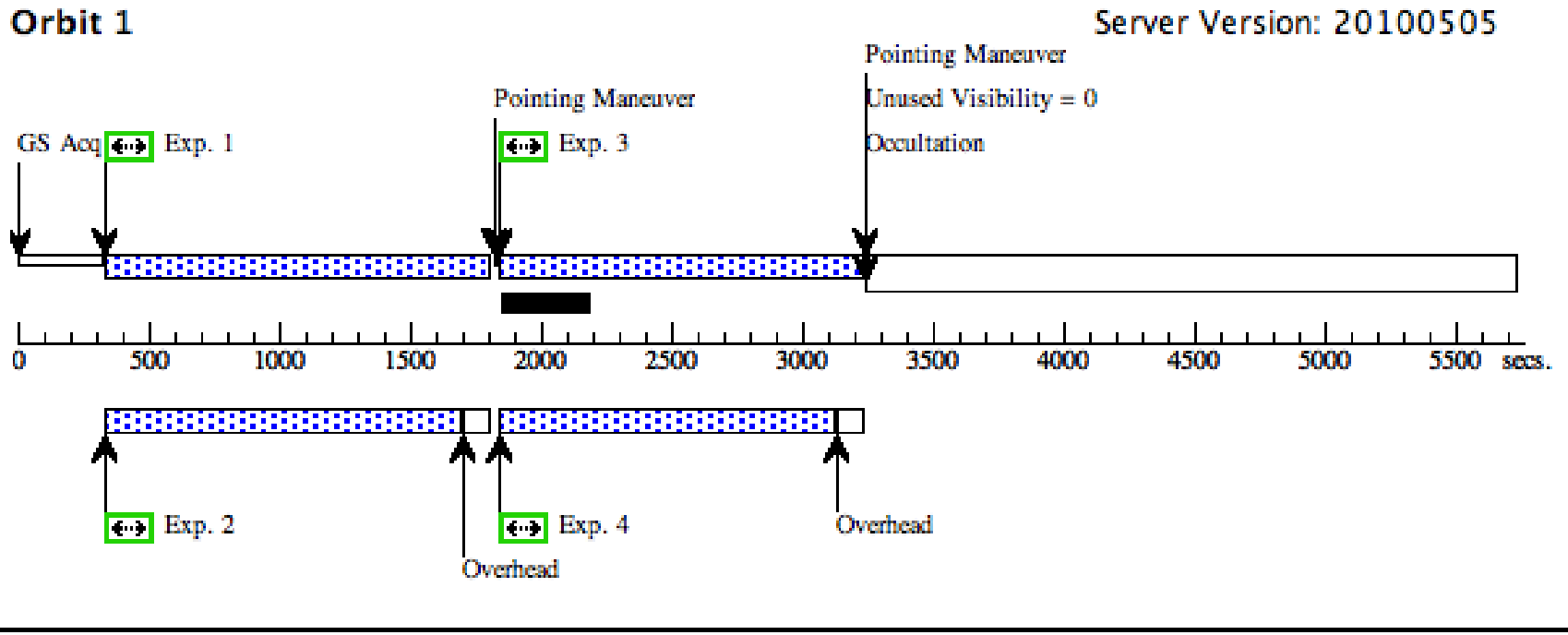
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	SAGITTARIUS-DWARF-IRREGULAR	RA: 19 30 0.0700 (292.5002917d) Dec: -17 40 46.42 (-17.67956d) Equinox: J2000		V=14.3+/-0.2	Reference Frame: ICRS

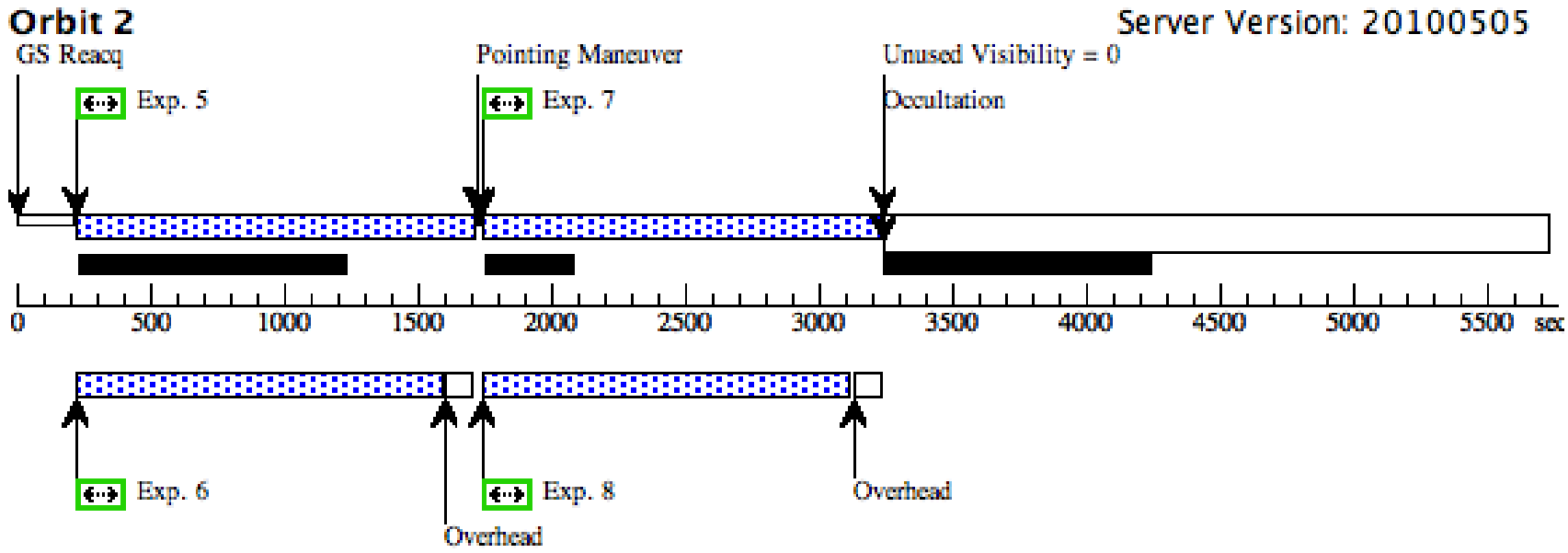
Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	sagdig-acs-dither5	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.5030,0.0460	Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1269 Secs *[==>]*	***[1]***
2	sagdig-wfc3-dither5	(4) SAGITTARIUS-DWARF-IRREGULAR	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1329 Secs *[==>]*	***[1]***
3	sagdig-acs-dither6	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.6770,0.2310	Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1269 Secs *[==>]*	***[1]***
4	sagdig-wfc3-dither6	(4) SAGITTARIUS-DWARF-IRREGULAR	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1259 Secs *[==>]*	***[1]***
5	sagdig-acs-dither7	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.8262,0.1695	Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1365 Secs *[==>]*	***[2]***
6	sagdig-wfc3-dither7	(4) SAGITTARIUS-DWARF-IRREGULAR	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1349 Secs *[==>]*	***[2]***
7	sagdig-acs-dither8	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.6035,0.3765	Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1366 Secs *[==>]*	***[2]***
8	sagdig-wfc3-dither8	(4) SAGITTARIUS-DWARF-IRREGULAR	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1356 Secs *[==>]*	***[2]***

Orbit Structure





Visit

Proposal 12273, Visit 09, implementation Wed Aug 18 19:41:49 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC, WFC3/UVIS

Special Requirements: SAME ORIENT AS 07; GROUP 09,07,08 WITHIN 60D

Comments: This is the third visit for imaging the Sagittarius Dwarf Irregular Galaxy (SAGDIG). Two orbits are required to complete this visit. We request that the orientation be exactly the same as that of Visit 07. We adopt a customized dither pattern designed to optimally cover the pixel phase using the POS-TARG special requirements. For each visit we will do a set of 4-point dithering. We request that Visits 07, 08, and 09 be observed in a 60 day window so that they can be treated as single epoch data for astrometric analysis.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	SAGITTARIUS-DWARF-IRREGULAR	RA: 19 30 0.0700 (292.5002917d) Dec: -17 40 46.42 (-17.67956d) Equinox: J2000		V=14.3+/-0.2	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	sagdig-acs-dither9	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.1180,0.5180	Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1269 Secs *[==>]*	***[1]***
2	sagdig-wfc3-dither9	(4) SAGITTARIUS-DWARF-IRREGULAR	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 1-2	1329 Secs *[==>]*	***[1]***
3	sagdig-acs-dither10	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.2920,0.7030	Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1269 Secs *[==>]*	***[1]***
4	sagdig-wfc3-dither10	(4) SAGITTARIUS-DWARF-IRREGULAR	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 1-4 Non-Int Prime + Parallel Group 3-4	1259 Secs *[==>]*	***[1]***
5	sagdig-acs-dither11	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.4412,0.6415	Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1365 Secs *[==>]*	***[2]***
6	sagdig-wfc3-dither11	(4) SAGITTARIUS-DWARF-IRREGULAR	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 5-6	1349 Secs *[==>]*	***[2]***
7	sagdig-acs-dither12	(4) SAGITTARIUS-DWARF-IRREGULAR	ACS/WFC, ACCUM, WFC-FIX	F814W	CR-SPLIT=NO	POS TARG 0.2185,0.8485	Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1366 Secs *[==>]*	***[2]***
8	sagdig-wfc3-dither12	(4) SAGITTARIUS-DWARF-IRREGULAR	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Sequence 5-8 Non-Int Prime + Parallel Group 7-8	1356 Secs *[==>]*	***[2]***

Orbit Structure