



## 12317 - Dynamical Masses of the Coolest Brown Dwarfs

Cycle: 17, Proposal Category: GO

(Availability Mode: SUPPORTED)

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
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### 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) SDSSJ042348.57-041403.5	ACS/WFC	1	22-Jun-2010 21:01:04.0	yes
02	(1) SDSSJ042348.57-041403.5	ACS/WFC	1	22-Jun-2010 21:01:09.0	yes
03	(2) 2MASSJ05185995-2828372	ACS/WFC	1	22-Jun-2010 21:01:12.0	yes
04	(2) 2MASSJ05185995-2828372	ACS/WFC	1	22-Jun-2010 21:01:14.0	yes
05	(3) SDSSJ092615.38+584720.9	ACS/WFC	1	22-Jun-2010 21:01:15.0	yes
06	(3) SDSSJ092615.38+584720.9	ACS/WFC	1	22-Jun-2010 21:01:18.0	yes

6 Total Orbits Used

### ABSTRACT

T dwarfs are excellent laboratories to study the evolution and the atmospheric physics of both brown dwarfs and extrasolar planets. To date, only a single T dwarf binary has a dynamical mass determination, and more are sorely needed. The prospects of measuring more dynamical masses over the next decade are limited to 6 known short-period T dwarf binaries. We propose here to obtain Long-Term HST/ACS monitoring for the 3 of the 6 binaries which cannot be resolved with AO from the ground. Upon completion, our program will substantially increase the number of T dwarf

dynamical mass measurements and thereby provide key benchmarks for testing theoretical models of ultracool objects.

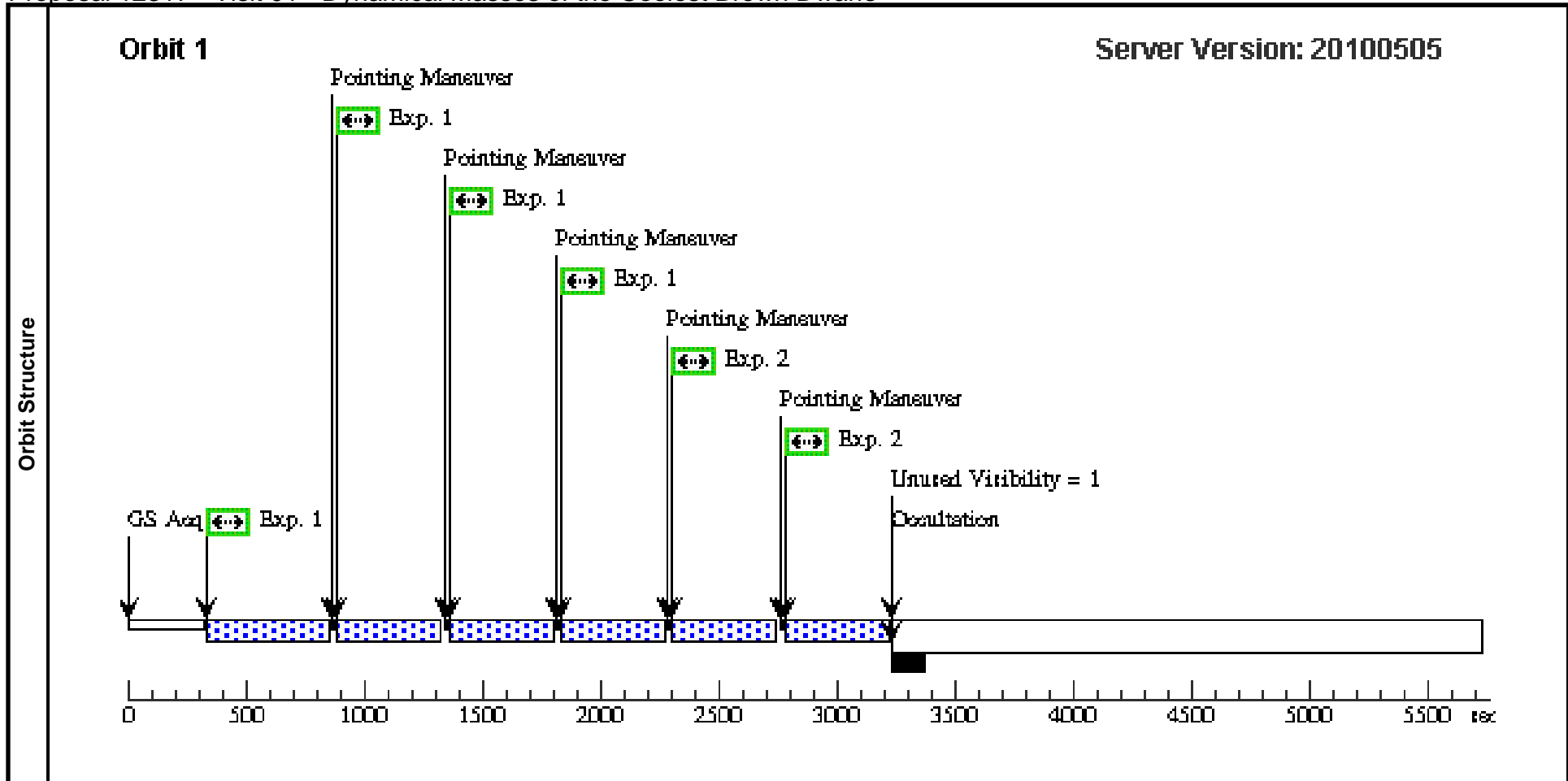
### **OBSERVING DESCRIPTION**

Orbital monitoring of 3 methane brown dwarf (T dwarf) binaries. This is a long-term program with 6 epochs of imaging per target over 3 years. One PSF star (eps IndiBab) will be observed in the first year (Cycle 17). Images should be taken at an interval of at least a few months, which drives the requested time constraints. If images are taken too close together in time they become much less useful in determining the orbits of our targets.

Proposal 12317 (STScI Edit Number: 1, Created: Tuesday, June 22, 2010 8:01:20 PM EST) - Overview

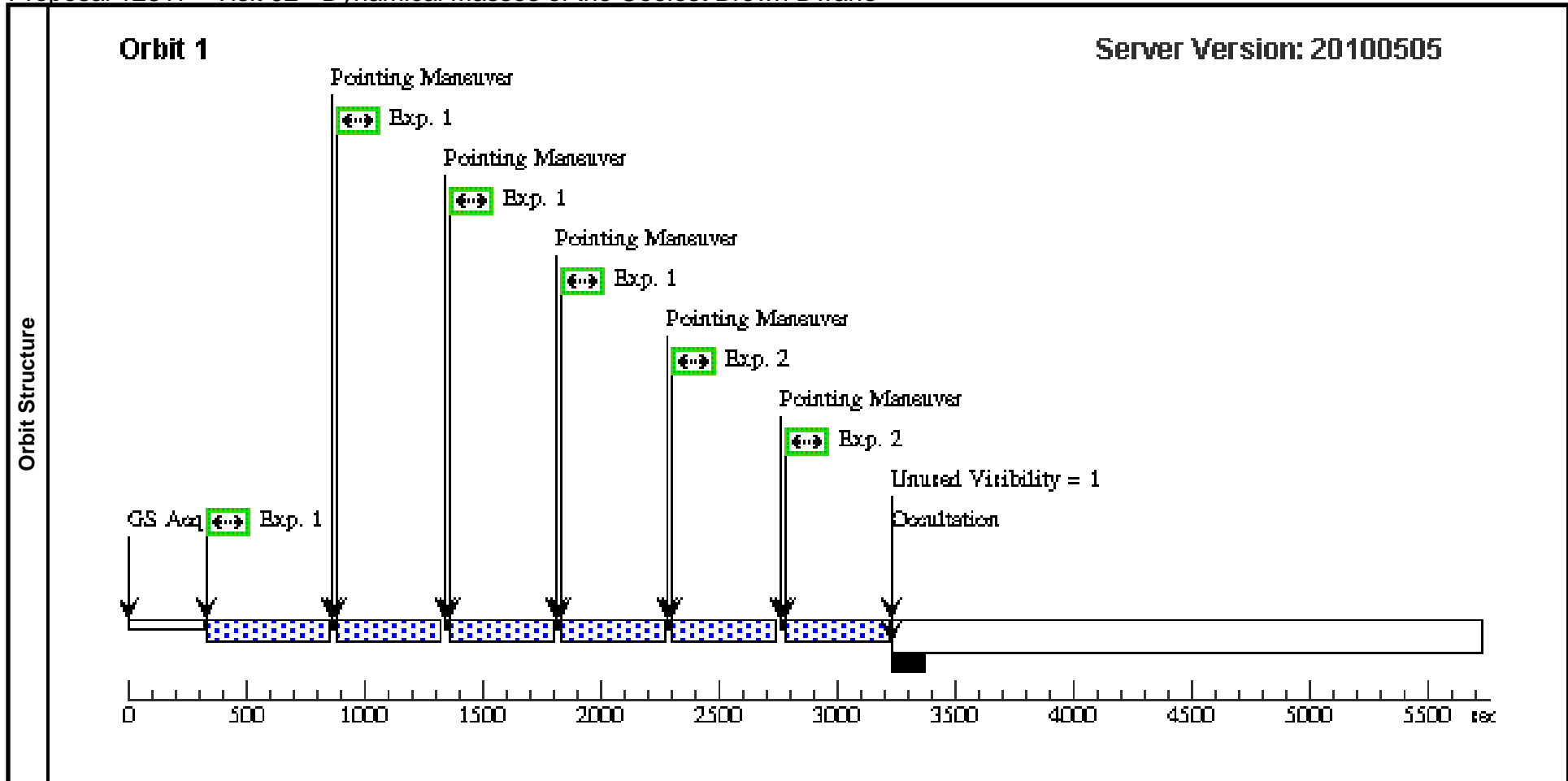
Wed Jun 23 01:01:21 GMT 2010

Visit	<b>Proposal 12317, Visit 01, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: BETWEEN 01-DEC-2010:00:00:00 AND 01-APR-2011:00:00:00									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(7)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187	Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false	(1)						
	(8)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.364 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.23 Angle Between Sides= Center Pattern=true	(2)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	SDSSJ042348.57-041403.5	RA: 04 23 48.5900 (65.9524583d) Dec: -04 14 3.50 (-4.23431d) Equinox: J2000		V=25 J=14.5, H=13.5, K=12.9	Reference Frame: ICRS				
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	SD0423-04 Visit 1	(1) SDSSJ042348.57-041403.5	ACS/WFC, ACCUM, WFC1-1K	F814W				Pattern 7, Exps 1-1 (7)	340 Secs [==>347.0 Secs (Pattern 1)] [==>347.0 Secs (Pattern 2)] [==>347.0 Secs (Pattern 3)] [==>347.0 Secs (Pattern 4)]
2	SD0423-04 Visit 1	(1) SDSSJ042348.57-041403.5	ACS/WFC, ACCUM, WFC1-1K	F814W				Pattern 8, Exps 2-2 (8)	340 Secs [==>347.0 Secs (Pattern 1)] [==>347.0 Secs (Pattern 2)]	[1]



Proposal 12317 - Visit 01 - Dynamical Masses of the Coolest Brown Dwarfs

Visit	<b>Proposal 12317, Visit 02, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: BETWEEN 01-JUL-2011:00:00:00 AND 31-DEC-2011:00:00:00					Wed Jun 23 01:01:22 GMT 2010				
Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
	(7)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187 Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false		(1)						
(8)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.364 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=47.23 Angle Between Sides= Center Pattern=true		(2)							
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	SDSSJ042348.57-041403.5	RA: 04 23 48.5900 (65.9524583d) Dec: -04 14 3.50 (-4.23431d) Equinox: J2000		V=25 J=14.5, H=13.5, K=12.9	Reference Frame: ICRS				
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	SD0423-04 Visit 2	(1) SDSSJ042348.57 -041403.5	ACS/WFC, ACCUM, WFC1-1K	F814W			Pattern 7, Exps 1-1 (7)	340 Secs [==>347.0 Secs (Pattern 1)] [==>347.0 Secs (Pattern 2)] [==>347.0 Secs (Pattern 3)] [==>347.0 Secs (Pattern 4)]	[1]
2	SD0423-04 Visit 2	(1) SDSSJ042348.57 -041403.5	ACS/WFC, ACCUM, WFC1-1K	F814W			Pattern 8, Exps 2-2 (8)	340 Secs [==>347.0 Secs (Pattern 1)] [==>347.0 Secs (Pattern 2)]	[1]	



Proposal 12317 - Visit 03 - Dynamical Masses of the Coolest Brown Dwarfs

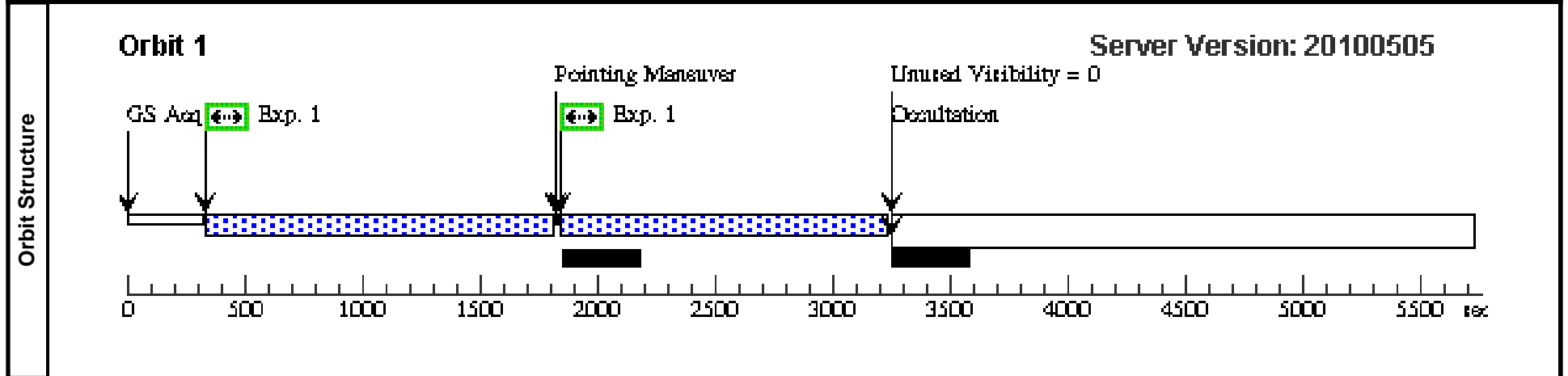
Wed Jun 23 01:01:23 GMT 2010

<b>Visit</b>	<b>Proposal 12317, Visit 03, implementation</b>		
	<b>Diagnostic Status: No Diagnostics</b>		
	Scientific Instruments: ACS/WFC		
	Special Requirements: BETWEEN 05-NOV-2010:00:00:00 AND 11-JAN-2011:00:00:00		

<b>Patterns</b>	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false	(1)

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	2MASSJ05185995-2828372	RA: 05 18 59.9500 (79.7497917d) Dec: -28 28 37.20 (-28.47700d) Equinox: J2000		V=25 J=16.0, H=14.8, K=14.2	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	2M0518-28 Visit 1	(2) 2MASSJ05185995-2828372	ACS/WFC, ACCUM, WFC	F814W			Pattern 1, Exps 1-1 (1)	1276 Secs [=>1271.0 Secs (Pattern 1)] [=>1271.0 Secs (Pattern 2)]	[1]



Proposal 12317 - Visit 04 - Dynamical Masses of the Coolest Brown Dwarfs

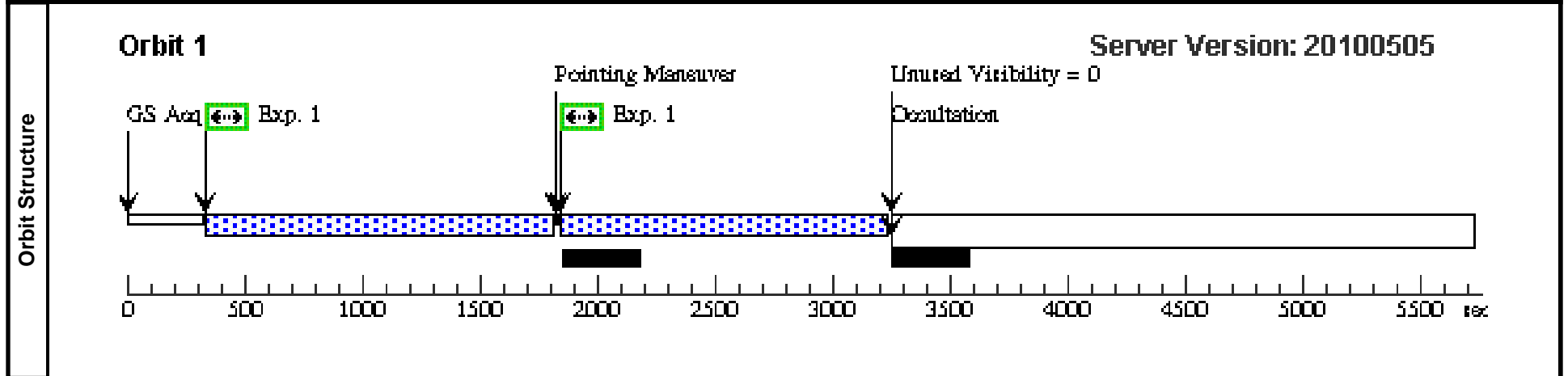
Wed Jun 23 01:01:23 GMT 2010

<b>Visit</b>	<b>Proposal 12317, Visit 04, implementation</b>		
	<b>Diagnostic Status: No Diagnostics</b>		
	Scientific Instruments: ACS/WFC		
	Special Requirements: BETWEEN 11-APR-2011:00:00:00 AND 31-DEC-2011:00:00:00		

<b>Patterns</b>	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false	(1)

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	2MASSJ05185995-2828372	RA: 05 18 59.9500 (79.7497917d) Dec: -28 28 37.20 (-28.47700d) Equinox: J2000		V=25 J=16.0, H=14.8, K=14.2	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	2M0518-28 Visit 2	(2) 2MASSJ05185995-2828372	ACS/WFC, ACCUM, WFC	F814W			Pattern 1, Exps 1-1 (1)	1276 Secs [=>1271.0 Secs (Pattern 1)] [=>1271.0 Secs (Pattern 2)]	[1]



Proposal 12317 - Visit 05 - Dynamical Masses of the Coolest Brown Dwarfs

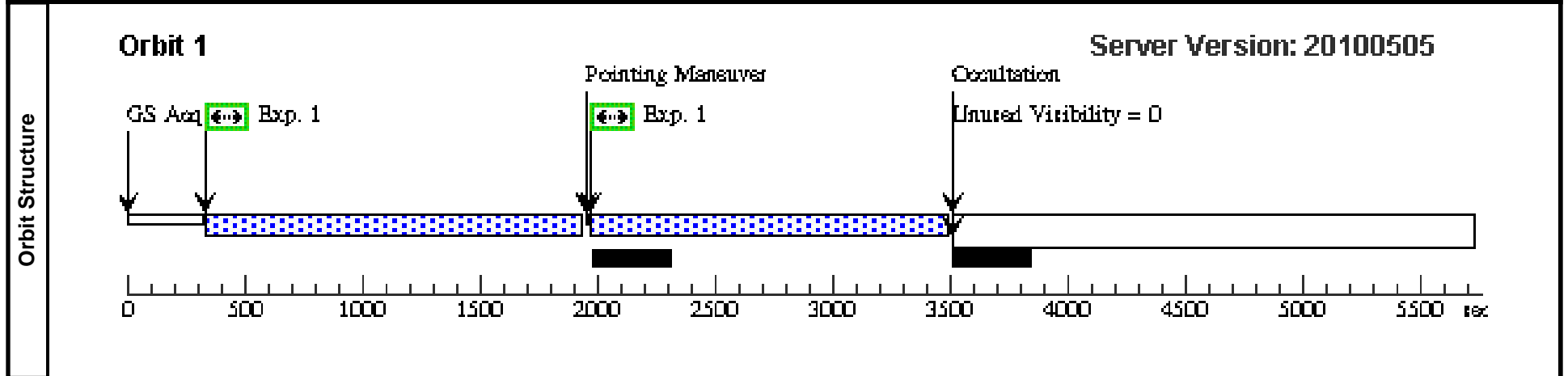
Wed Jun 23 01:01:23 GMT 2010

<b>Visit</b>	<b>Proposal 12317, Visit 05</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: BETWEEN 17-SEP-2010:00:00:00 AND 01-JAN-2011:00:00:00		
	<b>#</b>	<b>Primary Pattern</b>	<b>Secondary Pattern</b>
	(1)	Pattern Type=ACS-WFC-DITHER- LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false
			<b>Exposures</b>

<b>Patterns</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(3)	SDSSJ092615.38+58472 0.9	RA: 09 26 15.3800 (141.5640833d) Dec: +58 47 20.90 (58.78914d) Equinox: J2000		V=25 J=15.9, H=15.3, K=15.5	Reference Frame: ICRS

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

<b>Fixed Targets</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	2M0926+58 Visit 1	(3) SDSSJ092615.38 +584720.9	ACS/WFC, ACCUM, WFC	F814W			Pattern 1, Exps 1-1 (1)	1401 Secs [=>1398.0 Secs (Pattern 1)] [=>1398.0 Secs (Pattern 2)]	[1]



Proposal 12317 - Visit 06 - Dynamical Masses of the Coolest Brown Dwarfs

Wed Jun 23 01:01:23 GMT 2010

<b>Visit</b>	<b>Proposal 12317, Visit 06</b>		
	<b>Diagnostic Status: No Diagnostics</b>		
	Scientific Instruments: ACS/WFC		
	Special Requirements: BETWEEN 10-MAR-2011:00:00:00 AND 31-DEC-2011:00:00:00		

<b>Patterns</b>	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false	(1)

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	SDSSJ092615.38+584720.9	RA: 09 26 15.3800 (141.5640833d) Dec: +58 47 20.90 (58.78914d) Equinox: J2000		V=25 J=15.9, H=15.3, K=15.5	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	2M0926+58 Visit 2	(3) SDSSJ092615.38 +584720.9	ACS/WFC, ACCUM, WFC	F814W			Pattern 1, Exps 1-1 (1)	1401 Secs [=>1398.0 Secs (Pattern 1)] [=>1398.0 Secs (Pattern 2)]	[1]

