



## 12661 - Dynamical Masses of the Coolest Brown Dwarfs

Cycle: 19, 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	25-Sep-2012 21:04:38.0	yes
02	(1) SDSSJ042348.57-041403.5	ACS/WFC	1	25-Sep-2012 21:04:47.0	yes
03	(2) 2MASSJ05185995-2828372	ACS/WFC	1	25-Sep-2012 21:04:51.0	yes
04	(2) 2MASSJ05185995-2828372	ACS/WFC	1	25-Sep-2012 21:04:54.0	yes
54	(2) 2MASSJ05185995-2828372	ACS/WFC	1	25-Sep-2012 21:04:58.0	yes
05	(3) SDSSJ092615.38+584720.9	ACS/WFC	1	25-Sep-2012 21:05:02.0	yes
06	(3) SDSSJ092615.38+584720.9	ACS/WFC	1	25-Sep-2012 21:05:06.0	yes

7 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.

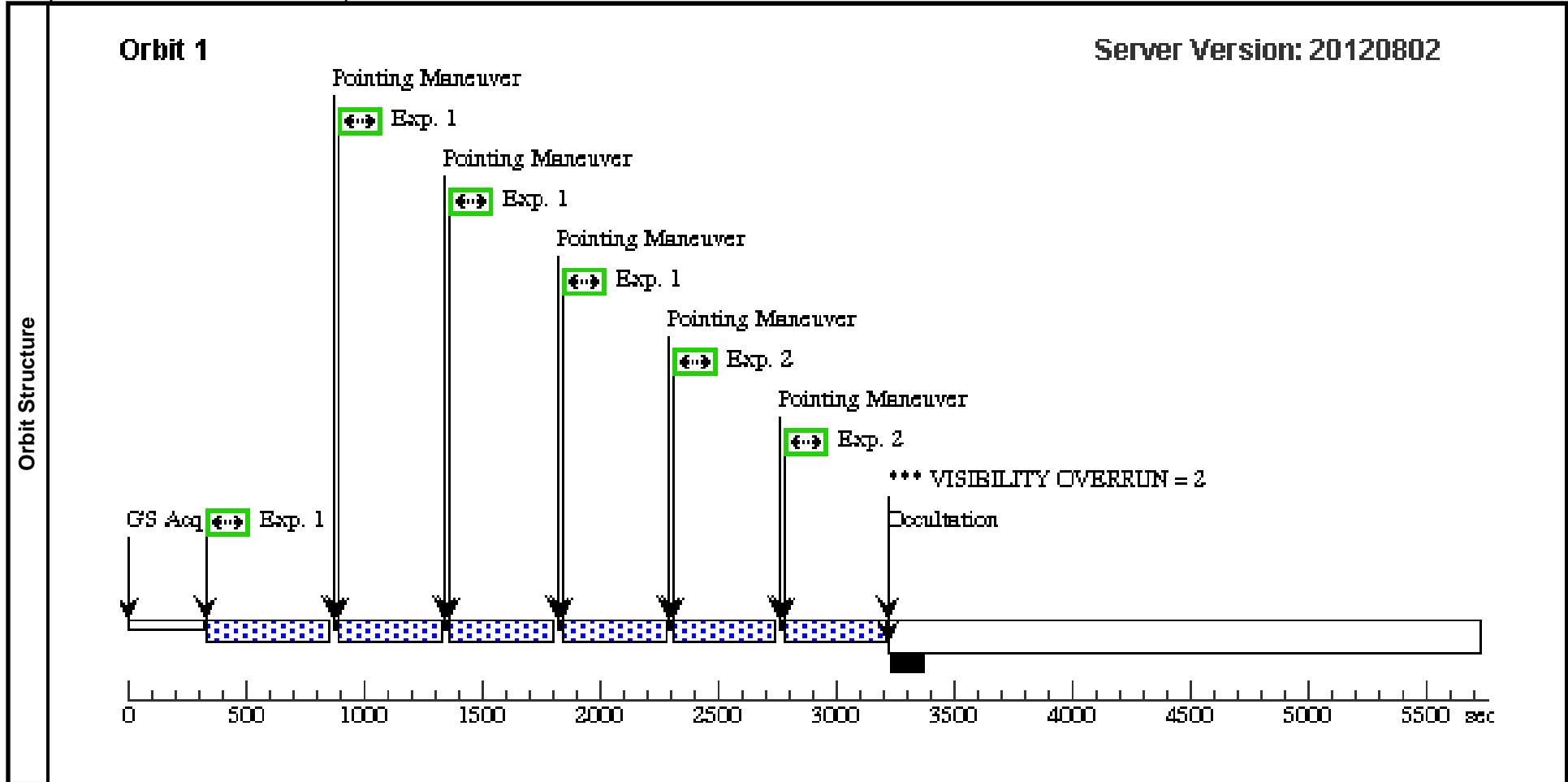
### **OBSERVING DESCRIPTION**

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. Cycle 19 is the final year of this program, and the BETWEEN requirements are set by the need to have each binary's observation epochs be separated by at least ~4 months as justified in the original Phase 1 proposal. According to the latest scheduling information available for our Cycle 18 visits as of this Phase 2 submission, all 3 of our targets will be observed between August and October of 2011. Thus, we will obtain new data in the spring and fall of 2012.

Proposal 12661 - Visit 01 - Dynamical Masses of the Coolest Brown Dwarfs

Wed Sep 26 01:05:12 GMT 2012

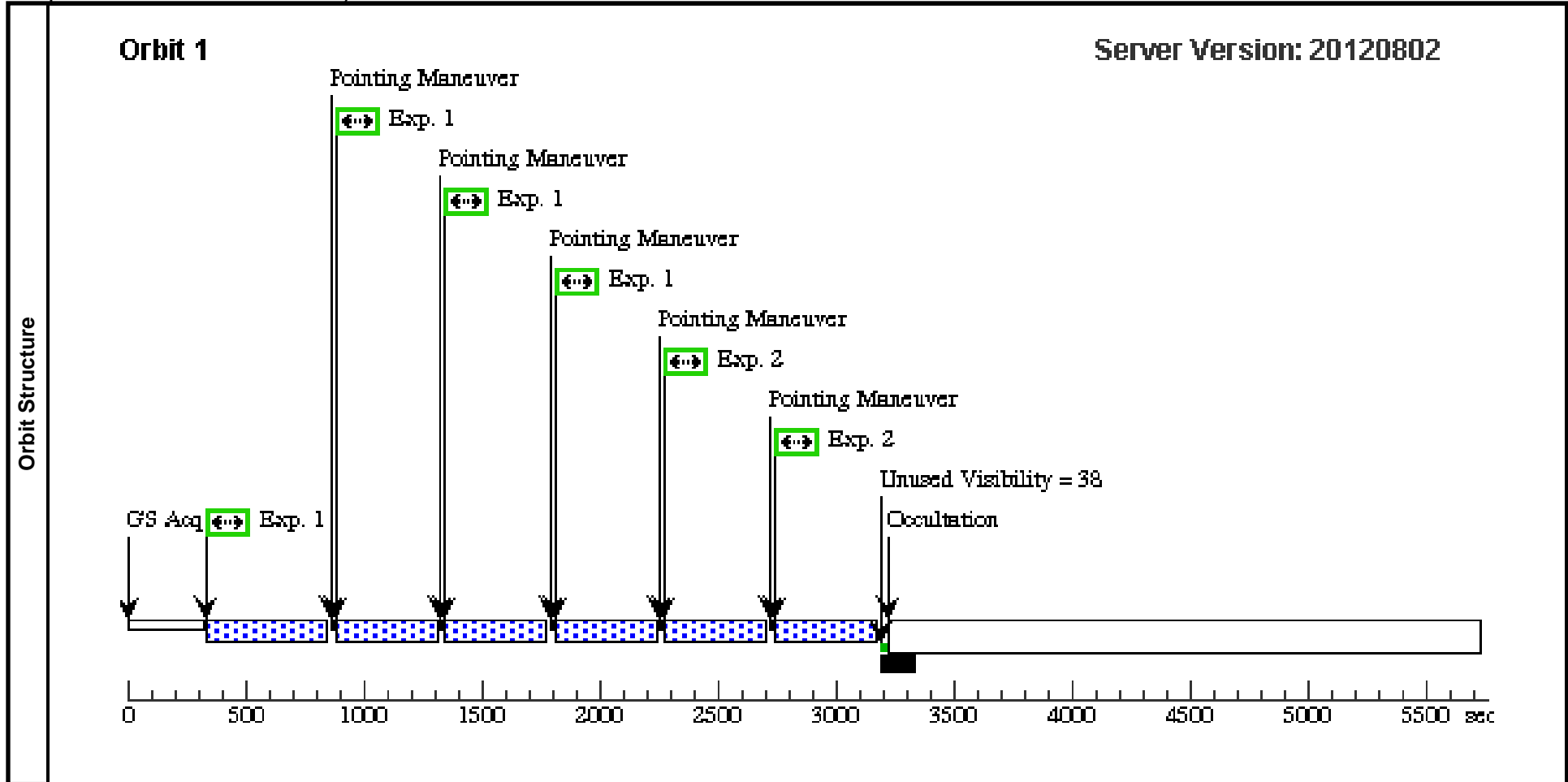
<b>Visit</b>	<b>Proposal 12661, Visit 01, completed</b> <b>Diagnostic Status: Warning</b> Scientific Instruments: ACS/WFC Special Requirements: PCS MODE FINE; BETWEEN 07-FEB-2012 AND 07-APR-2012									
	(Visit 01) Warning (Orbit Planner): VISIBILITY OVERRUN									
<b>Diagnosics</b>										
<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>	<b>Secondary Pattern</b>	<b>Exposures</b>						
	(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)					
<b>Patterns</b>	(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)					
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>				
	(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>										
<b>Exposures</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	SD0423-04 Visit 1	(1) SDSSJ042348.57 -041403.5	ACS/WFC, ACCUM, WFC1-1K	F814W			Pattern 7, Exps 1-1 in Visit 01 (7)	350 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
<b>Exposures</b>	2	SD0423-04 Visit 1	(1) SDSSJ042348.57 -041403.5	ACS/WFC, ACCUM, WFC1-1K	F814W			Pattern 8, Exps 2-2 in Visit 01 (8)	340 Secs [==>(Pattern 1)] [==>(Pattern 2)]	[1]



Proposal 12661 - Visit 02 - Dynamical Masses of the Coolest Brown Dwarfs

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Visit	<b>Proposal 12661, Visit 02, completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: PCS MODE FINE; BETWEEN 07-AUG-2012 AND 30-NOV-2012									
	#	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 2	(1) SDSSJ042348.57-041403.5	ACS/WFC, ACCUM, WFC1-1K	F814W				Pattern 7, Exps 1-1 in Visit 02 (7)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]
2	SD0423-04 Visit 2	(1) SDSSJ042348.57-041403.5	ACS/WFC, ACCUM, WFC1-1K	F814W				Pattern 8, Exps 2-2 in Visit 02 (8)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 12661 - Visit 03 - Dynamical Masses of the Coolest Brown Dwarfs

Wed Sep 26 01:05:15 GMT 2012

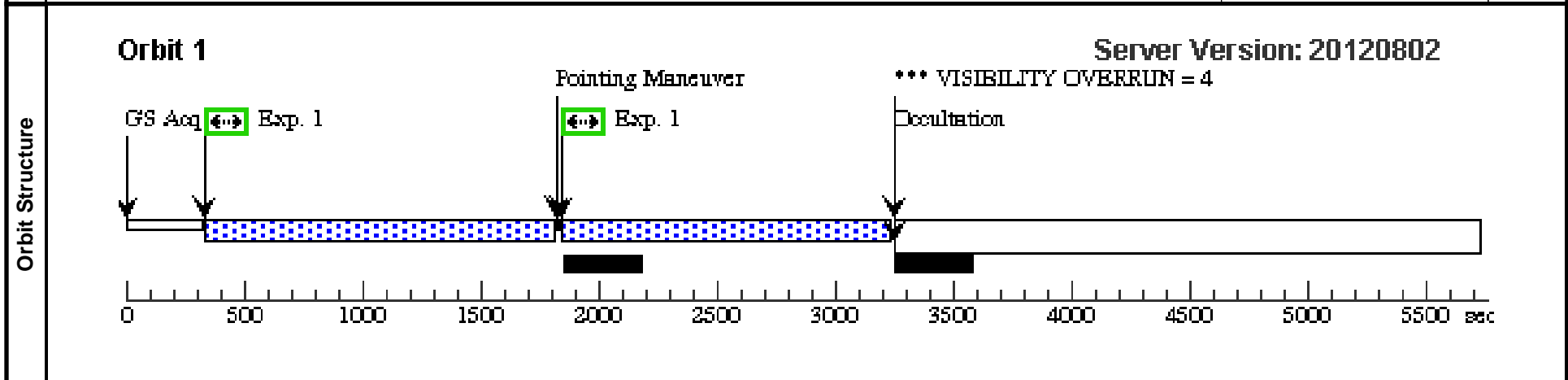
<b>Visit</b>	Proposal 12661, Visit 03, completed
	<b>Diagnostic Status: Warning</b> Scientific Instruments: ACS/WFC Special Requirements: PCS MODE FINE; BETWEEN 03-FEB-2012 AND 15-APR-2012

<b>Diagnostics</b>	(Visit 03) Warning (Orbit Planner): VISIBILITY OVERRUN
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<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 in Visit 03 (1)	1271 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 12661 - Visit 04 - Dynamical Masses of the Coolest Brown Dwarfs

Wed Sep 26 01:05:18 GMT 2012

<b>Visit</b>	Proposal 12661, Visit 04, completed <b>Diagnostic Status: Warning</b> Scientific Instruments: ACS/WFC Special Requirements: PCS MODE FINE; BETWEEN 15-AUG-2012 AND 30-NOV-2012									
<b>Diagnostics</b>	(Visit 04) Warning (Orbit Planner): VISIBILITY OVERRUN									
<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) 2MASSJ0518599 5-2828372	ACS/WFC, ACCUM, WFC	F814W			Pattern 1, Exps 1-1 in Visit 04 (1)	1271 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
<b>Orbit Structure</b>	<div style="display: flex; justify-content: space-between;"> <span><b>Orbit 1</b></span> <span><b>Server Version: 20120802</b></span> </div> <p>GS Acq [ ] Exp. 1</p> <p>Pointing Maneuver [ ] Exp. 1</p> <p>Occultation *** VISIBILITY OVERRUN = 4</p> <p>0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 sec</p>									

<b>Visit</b>	Proposal 12661, Visit 54 <b>Diagnostic Status: Warning</b> Scientific Instruments: ACS/WFC Special Requirements: PCS MODE FINE; BETWEEN 15-AUG-2012 AND 30-NOV-2012									
	(Visit 54) Warning (Orbit Planner): VISIBILITY OVERRUN									
<b>Diagnostics</b>										
<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 in Visit 54 (1) 1271 Secs [==>(Pattern 1)] [==>(Pattern 2)]	[1]
<b>Orbit Structure</b>	Server Version: 20120802									
	<p>Orbit 1</p> <p>GS Acq [ ] Exp. 1</p> <p>Pointing Maneuver [ ] Exp. 1</p> <p>Occultation *** VISIBILITY OVERRUN = 4</p> <p>0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 sec</p>									

Proposal 12661 - Visit 05 - Dynamical Masses of the Coolest Brown Dwarfs

Wed Sep 26 01:05:19 GMT 2012

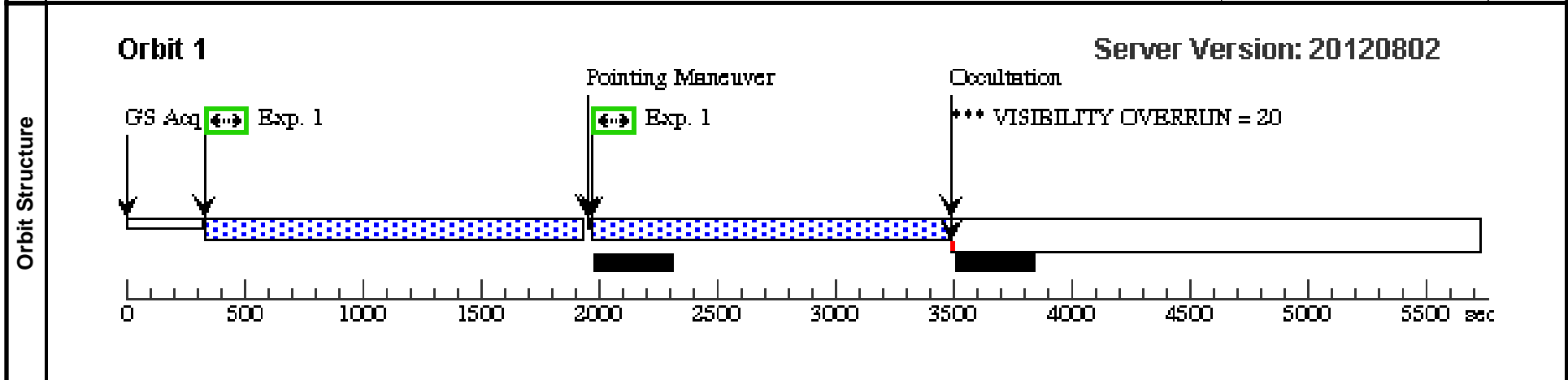
<b>Visit</b>	Proposal 12661, Visit 05, completed <b>Diagnostic Status: Warning</b> Scientific Instruments: ACS/WFC Special Requirements: PCS MODE FINE; BETWEEN 03-FEB-2012 AND 15-APR-2012
	(Visit 05) Warning (Orbit Planner): VISIBILITY OVERRUN

<b>Diagnostics</b>	(Visit 05) Warning (Orbit Planner): VISIBILITY OVERRUN

<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 1	(3) SDSSJ092615.38+584720.9	ACS/WFC, ACCUM, WFC	F814W				Pattern 1, Exps 1-1 in Visit 05 (1)	1398 Secs [=>(Pattern 1)] [=>(Pattern 2)]



<b>Visit</b>	Proposal 12661, Visit 06, scheduling <b>Diagnostic Status: Warning</b> Scientific Instruments: ACS/WFC Special Requirements: PCS MODE FINE; BETWEEN 15-AUG-2012 AND 30-NOV-2012
	(Visit 06) Warning (Orbit Planner): VISIBILITY OVERRUN

<b>Diagnostics</b>	(Visit 06) Warning (Orbit Planner): VISIBILITY OVERRUN

<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	

<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 in Visit 06 (1)	1398 Secs [=>(Pattern 1)] [=>(Pattern 2)]

