



10801 - Direct Determination of Kuiper Belt Object Diameters with HST

Cycle: 15, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
Dr. Keith S. Noll (PI)	Space Telescope Science Institute	noll@stsci.edu
Dr. Edmund Nelan (CoI)	Space Telescope Science Institute	nelan@stsci.edu
Dr. Anton Koekemoer (CoI)	Space Telescope Science Institute	koekemoe@stsci.edu
Dr. William M. Grundy (CoI)	Lowell Observatory	W.Grundy@lowell.edu
Ms. Elizabeth Barker (CoI)	Space Telescope Science Institute	ebarker@stsci.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) KBO2005FY9	ACS/HRC	1	02-Mar-2007 21:04:12.0	yes
02	(2) KBO90428ORCUS	ACS/HRC	1	02-Mar-2007 21:04:21.0	yes
03	(3) KBO55636	ACS/HRC	1	02-Mar-2007 21:04:28.0	yes
04	(5) KBO2005FY9-FGS-FIXED	FGS	1	02-Mar-2007 21:04:32.0	yes
05	(4) KBO2005FY9-FGS	FGS	1	02-Mar-2007 21:04:34.0	yes

5 Total Orbits Used

ABSTRACT

When it comes to fundamental properties of an astronomical object, it is difficult to think of a more fundamental physical property than its size. Because of their distance, objects in the Kuiper Belt are generally too small for their disks to be resolved. The heterogeneous albedo and color of the Kuiper Belt population makes size estimates from observed absolute magnitude highly uncertain. And the long-awaited data from the Spitzer Space Telescope suffers from our ignorance of crucial macro- and micro-physical properties such as spin period, pole orientation, surface roughness, and thermal inertia.

We propose to add a new dimension to the measurement of KBO diameters by employing two techniques that will directly measure the diameters of three large KBOs. We expect to obtain diameter measurements with uncertainties of 10% or better and utilize these to validate and cross calibrate the growing web of diameter measurements for KBOs.

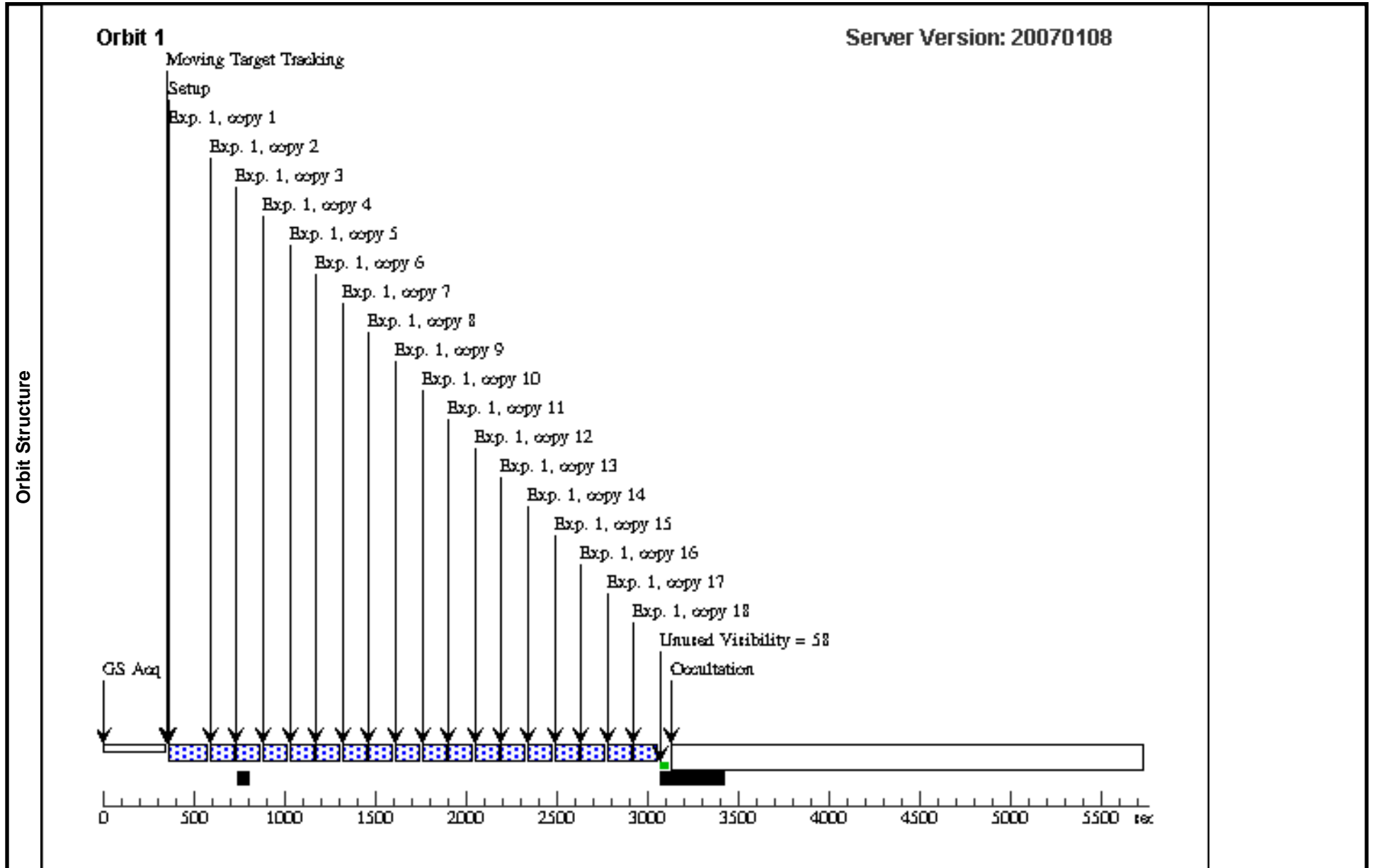
OBSERVING DESCRIPTION

KBO diameter measurements

Proposal 10801 - Visit 01 - Direct Determination of Kuiper Belt Object Diameters with HST

Sat Mar 03 02:04:36 GMT 2007

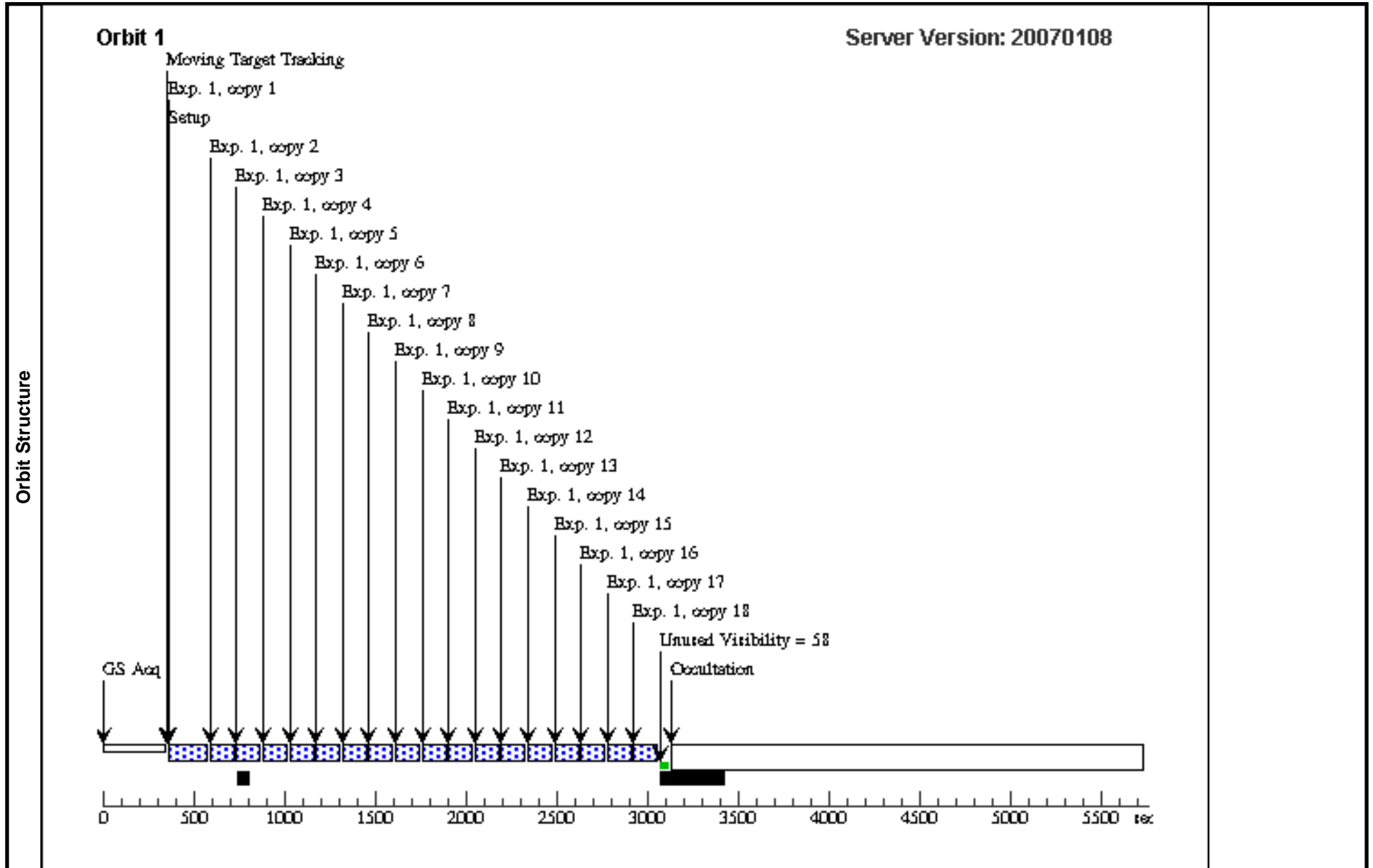
Visit	Proposal 10801, Visit 01, completed Diagnostic Status: No Diagnostics Scientific Instruments: ACS/HRC Special Requirements: (none)									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window			
	(1)	KBO2005FY9	TYPE=ASTEROID,A=45.569999523,E=0.15767069,I=28.9977173,O=79.6076492,W=295.547773,M=149.6158021,EQUINOX=J2000,EPOCH=19-JUL-2007:00:00:00				A_VEL KBO2005FY9 FROM EARTH GT 0.00005			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) KBO2005FY9	ACS/HRC, ACCUM, HRC	F555W	CR-SPLIT=NO			95.0 Secs X 18 [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)] [==>(Copy 9)] [==>(Copy 10)] [==>(Copy 11)] [==>(Copy 12)] [==>(Copy 13)] [==>(Copy 14)] [==>(Copy 15)] [==>(Copy 16)] [==>(Copy 17)] [==>(Copy 18)]	[1]



Proposal 10801 - Visit 02 - Direct Determination of Kuiper Belt Object Diameters with HST

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Visit	Proposal 10801, Visit 02, completed Diagnostic Status: No Diagnostics Scientific Instruments: ACS/HRC Special Requirements: (none)									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window			
	(2)	KBO90428ORCUS	TYPE=ASTEROID,A=39.275462007,E=0.22324539,I=20.5961319,O=268.7354534,W=72.3682649,M=162.9071722,EQUINO X=J2000,EPOCH=19-JUL-2007:00:00:00							
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(2) KBO90428ORCUS	ACS/HRC, ACCUM, HRC	F555W	CR-SPLIT=NO			95.0 Secs X 18 [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)] [==>(Copy 9)] [==>(Copy 10)] [==>(Copy 11)] [==>(Copy 12)] [==>(Copy 13)] [==>(Copy 14)] [==>(Copy 15)] [==>(Copy 16)] [==>(Copy 17)] [==>(Copy 18)]	[1]

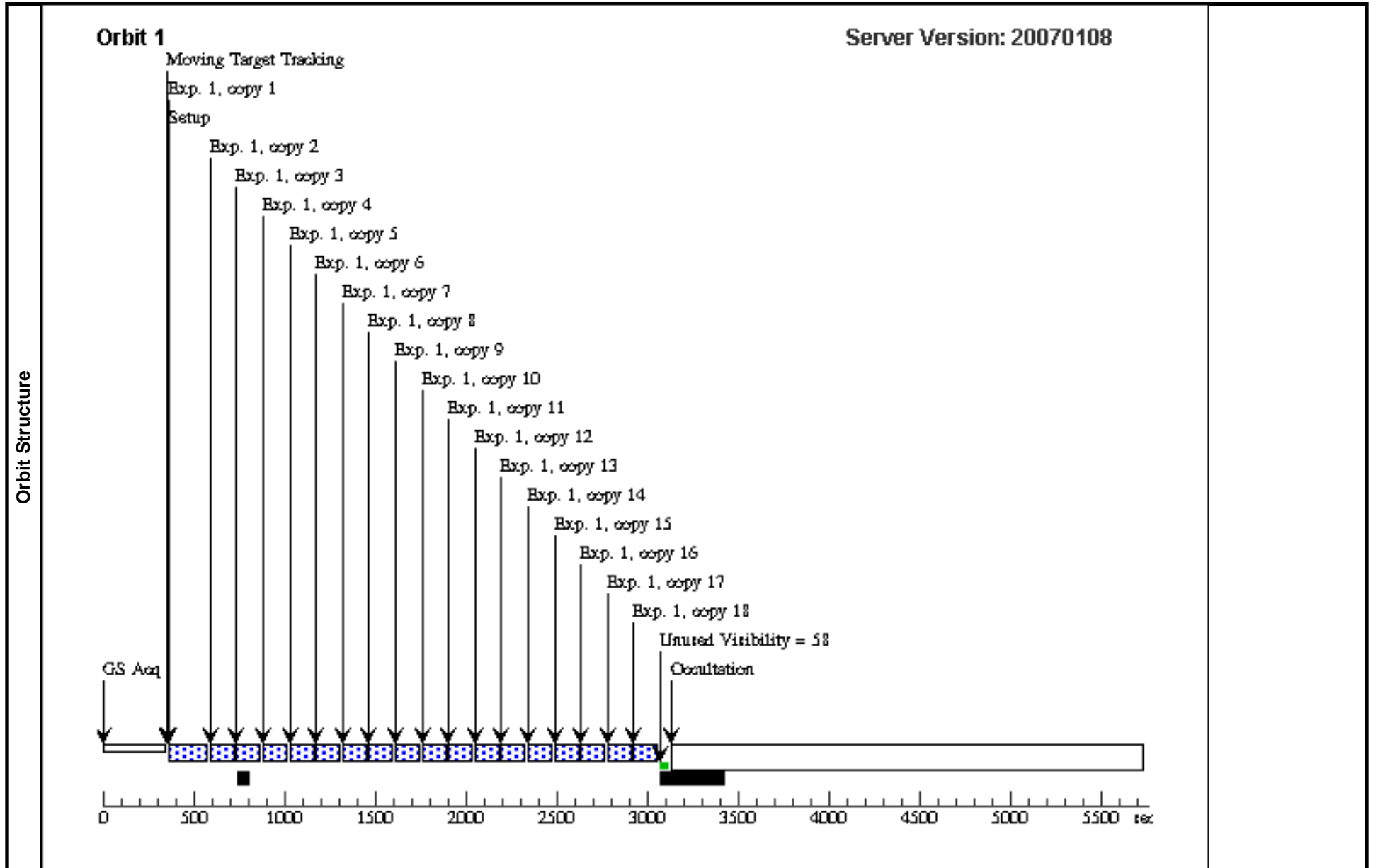


Proposal 10801 - Visit 03 - Direct Determination of Kuiper Belt Object Diameters with HST

Sat Mar 03 02:04:38 GMT 2007

Visit	Proposal 10801, Visit 03, completed Diagnostic Status: No Diagnostics Scientific Instruments: ACS/HRC Special Requirements: (none)										
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window				
	(3)	KBO55636	TYPE=ASTEROID,A=43.186994889,E=0.12455967,I=25.8451701,O=324.540242,W=339.2972565,M=62.4617255,EQUINOX=J2000,EPOCH=19-JUL-2007:00:00:00								
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	
	1		(3) KBO55636	ACS/HRC, ACCUM, HRC	F555W	CR-SPLIT=NO			95.0 Secs X 18		
									[==>(Copy 1)]		
									[==>(Copy 2)]		
									[==>(Copy 3)]		
									[==>(Copy 4)]		
									[==>(Copy 5)]		
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[1]



Proposal 10801 - Visit 04 - Direct Determination of Kuiper Belt Object Diameters with HST

Sat Mar 03 02:04:39 GMT 2007

Visit	Proposal 10801, Visit 04, scheduling Diagnostic Status: No Diagnostics Scientific Instruments: FGS Special Requirements: PCS MODE FINE; SCHED 70%; BETWEEN 14-MAR-2007:14:10:00 AND 14-MAR-2007:15:00:00									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(5)	KBO2005FY9-FGS-FIXED	RA: 12 24 37.1400 (186.1547500d) Dec: +29 45 48.72 (29.76353d) Equinox: J2000		V=16.8+/-0.2	Reference Frame: ICRS				
Comments: Target RA and Dec are computed position of asteroid on 2007.073:15:00:00 UT.										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(5) KBO2005FY9-F GS-FIXED	(5) KBO2005FY9-F GS-FIXED	FGS, TRANS, 1	F583W	SCANS=10; STEP-SIZE=0.5		Sequence 1-3 Non-Int	560.0 Secs [=>]	[1]
	2	(5) KBO2005FY9-F GS-FIXED	(5) KBO2005FY9-F GS-FIXED	FGS, TRANS, 1	F583W	SCANS=10; STEP-SIZE=0.5	SAME POS AS 1	Sequence 1-3 Non-Int	560.0 Secs [=>]	[1]
	3	(5) KBO2005FY9-F GS-FIXED	(5) KBO2005FY9-F GS-FIXED	FGS, TRANS, 1	F583W	SCANS=10; STEP-SIZE=0.5	SAME POS AS 1	Sequence 1-3 Non-Int	560.0 Secs [=>]	[1]
Orbit Structure	<p>Orbit 1 Server Version: 20070108</p> <p>Timeline labels: GS Acq, Setup, Exp. 1, Exp. 2, Exp. 3, Home, Occultation, Unused Visibility = 93</p> <p>X-axis: 0, 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 5500 sec</p>									

Proposal 10801 - Visit 05 - Direct Determination of Kuiper Belt Object Diameters with HST

Sat Mar 03 02:04:40 GMT 2007

Visit	Proposal 10801, Visit 05, implementation Diagnostic Status: No Diagnostics Scientific Instruments: FGS Special Requirements: PCS MODE FINE; SCHED 70% <i>Comments: Visit added by PC to see when visit 4 could schedule, and find the coord of the asteroid on the day that visit is executed. This visit will be withdrawn after visit 4 executes.</i>				

Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window
	(4)	KBO2005FY9-FGS	TYPE=ASTEROID,A=45.569999523,E=0.15767069,I=28.9977173,O=79.6076492,W=295.547773,M=149.6158021,EQUINOX=J2000,EPOCH=19-JUL-2007:00:00:00			

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(4) KBO2005FY9-FGS	FGS, POS, 1		F583W				1800.0 Secs [==>]

