11152 - Probing the compact dust disk of a nearby Classical T Tauri Star

Cycle: 16, 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) V-BP-PSC	WFPC2	2	18-Jun-2007 21:06:44.0	yes
02	(3) BPPSC-NORTH-JET	WFPC2	1	18-Jun-2007 21:06:50.0	yes
03	(1) V-BP-PSC	NIC1 NIC2	1	18-Jun-2007 21:07:02.0	yes
04	(1) V-BP-PSC	NIC1 NIC2	1	18-Jun-2007 21:07:12.0	yes
05	(2) TYC-5245-266-1	NIC1 NIC2	1	18-Jun-2007 21:07:25.0	yes

6 Total Orbits Used

ABSTRACT

BP Psc is a high Galactic latitude (b = -57), bright, IRAS source that generally has been classified as a T Tauri star but little studied to date. We have carried out a multiwavelength ground-based study of this object and find that it is most likely a ~10 Myr classical T Tauri star surrounded by a gas and dust disk, and less than 100 pc from Earth, making it one of the oldest and closest such stars known. Near-IR AO images and IR photometry show it is surrounded by an compact (0.2"), almost-edge-on, optically thick disk of dust with a wide range of temperatures. We propose a multiwavelength polarimetric study of the compact disk to support quantitative modeling to recover disk and dust parameters. We also propose coronagraphic imaging to search for larger-scale dust structures invisible in ground-based images, and narrowband imaging of an outflow jet and associated Herbig-Haro objects to study their structure and determine a kinematic distance of the system. A massive compact disk surrounding an isolated 10 Myr star is a unique environment for planet formation, and its proximity to Earth allows HST to study it in detail.

OBSERVING DESCRIPTION

We will carry out the following observation sequences, designed to probe the circumstellar dust on a variety of scales.

Visit 1 (2 orbits): WFPC2 direct and polarimetric imaging of the inner disk
1a. F555W, four dither positions, two 0.7 and 2 seconds exposures per position, 8 images total
1b. F555W, four dither positions, 10 second exposure per position, 4 images total
1c. WFPC polarimetry in F815W band. 30 second exposures, 2 dither positions each, 6 images total.

1a . Unsaturated images intended to probe the inner disk. These require very short exposure times to avoid saturation. We have estimated these assuming the V=12.2 BP Psc is a point source. Since the source will be extended (~0.1?), the risk of saturation is reduced, but the precise extent at visible wavelengths is unknown and there is also historical evidence for as much as ~1 mag of variability. At large (>0.3?) separations, these short exposures will be read-noise-limited to ~15 mag/square arcsec (2-sigma per 1 pixel box.)
1b. Medium-exposure images. If BP Psc is surrounded by an extended disk similar to that of TW Hya, it would have a brightness of ~16 magnitudes/square arcsec at 60 AU (0.6?), the outer edge of the CO disk. To detect this, we will carry out a similar set of PC exposures but with 10-

second integrations. This image set will moderately saturate the central source, but the ORIENT constraints have been set up so the bleeding won't interfere with the disk (which is at a PA of about 60) or the jet (PA=-30). This allows four possible
orientation ranges.
1c. Polarimetry is a powerful technique to detect extended dust envelopes near bright sources. The baseline is to use the polarization quad twice in the PC channel (angles 135 and 15 degrees) and once in WF2 (102 degrees) due to constraints on the WFPC polarization quad. The expected polarization signature is quite strong, so some detection should be possible, though we expect the NICMOS data below to be more precisely calibrated. These images will also be moderately saturated. In addition, a
small amount of unused time at the end is filled in with H-alpha observations.
This uses two orbits - in the original proposal we had estimated one, so we have
decreased the H-alpha observations in Visit 2 from 2 to 1 orbit.

Visit 3 and 4: NICMOS polarimetry of the extended envelope
3a&4a. NICMOS NIC1 polarimetry (using the POL0S, POL60S, POL120S filters) in MULTIACCUM mode to probe the polarization at separations that will be near the edge of the coronagraph occultor.
3b&4b. NICMOS NIC2 deep coronagraphic polarimetry through the POL0L, POL60L, and POL120L filters.

The NICMOS PSF has a broader core than our ground-based AO PSF, but significantly lower ?wings? and much better stability for PSF subtraction. NICMOS polarimetry will provide a quantitative probe of circumstellar dust on larger scales, determining the the star is surrounded by a diffuse disk similar to that of TW Hydrae. In the NIC1 exposures, a TW Hya-like disk would have an SNR of ~8 per pixel at small separations. The deeper coronagraphic set will have SNR=6 per pixel per polarization for a similar disk out to 1.5? (~120 AU). Orbit 3 repeats the same sequence with a change in orientation.

Visit 5: NICMOS PSF star TYC 5243-157-1
5. Same sequence as above.

TYC 5244-226-1is a PSF star, K=8.8, matching BP PSC?s colors that has been determined to be single using Keck AO observations.

Visit 2: deep H-alpha observations
2. F658N, WF and PC cameras. Four dither positions of 400 sec per position.
(original proposal called for two orbits of this mode.)

Total of 1600seconds of integration, sufficient to give SNR=0.5 per pixel on the dimmest visible portion of the jet. This will be offset from BP Psc to center on the brightest portion of the jet. Orientation selected so the jet runs along the diagonal from PC into the rest
of the WFC. Resolution will be vastly better than any available visible-light wide-field imagery from the ground, allowing the kinematic distance measurements to be completed in 1-2 years.

Visit

Proposal 11152, Visit 01, implementation Tue Jun 19 01:07:28 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: WFPC2

Special Requirements: ORIENT 10.0D TO 45.0 D; ORIENT 190.0D TO 225.0 D; ORIENT 105.0D TO 140.0 D; ORIENT 285.0D TO 320.0 D

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFPC2-BOX	Coordinate Frame=POS-TARG		(1-3)
	Purpose=DITHER	Pattern Orientation=26.57		
	Number Of Points=4	Angle Between Sides=143.13		
	Point Spacing=0.559	Center Pattern=false		
	Line Spacing=0.559			
(2)	Pattern Type=WFPC2-LINE	Coordinate Frame=POS-TARG		(4), (5), (6)
	Purpose=DITHER	Pattern Orientation=45		
	Number Of Points=2	Angle Between Sides=		
	Point Spacing=0.354	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-BP-PSC	RA: 23 22 24.6900 (350.6028750d)	Proper Motion RA: 0.0029s/yr	V=12.2	Reference Frame: ICRS
	Alt Name1: TYC5244-148-1	Dec: -02 13 41.40 (-2.22817d)	Proper Motion Dec: -0.026"/yr		
		Equinox: J2000	Epoch of Position: 2000.0		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
RA and DEC PM come from Tycho 2; object also known as TYC5244-148-1

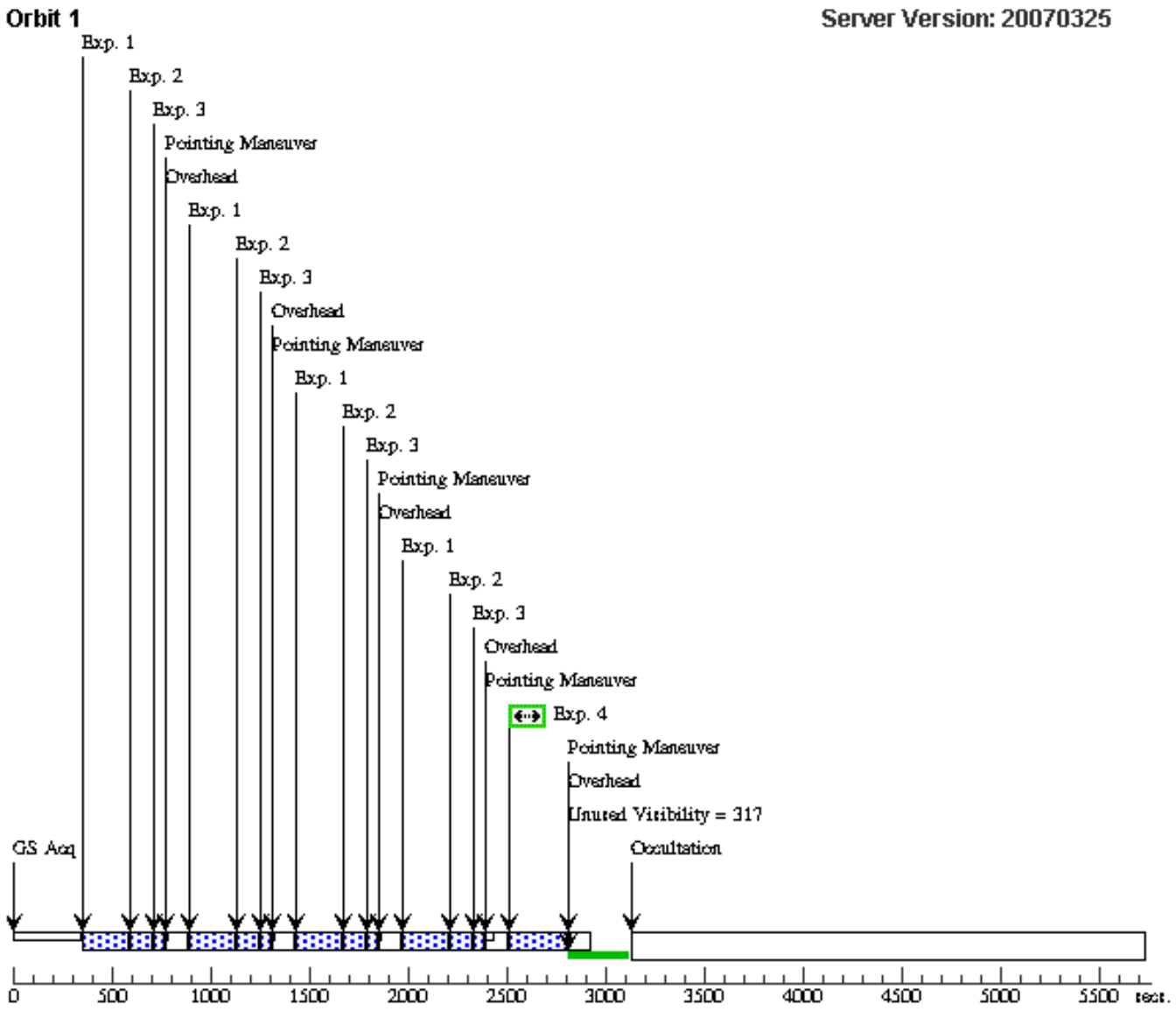
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Unsaturated	(1) V-BP-PSC	WFPC2, IMAGE, PC1	F555W			Pattern 1-3 (1)	0.7 Secs	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
2	Slightly saturated	(1) V-BP-PSC	WFPC2, IMAGE, PC1	F555W			Pattern 1-3 (1)	2.0 Secs	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	
3	Medium exposures	(1) V-BP-PSC	WFPC2, IMAGE, PC1	F555W			Pattern 1-3 (1)	10.0 Secs	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	

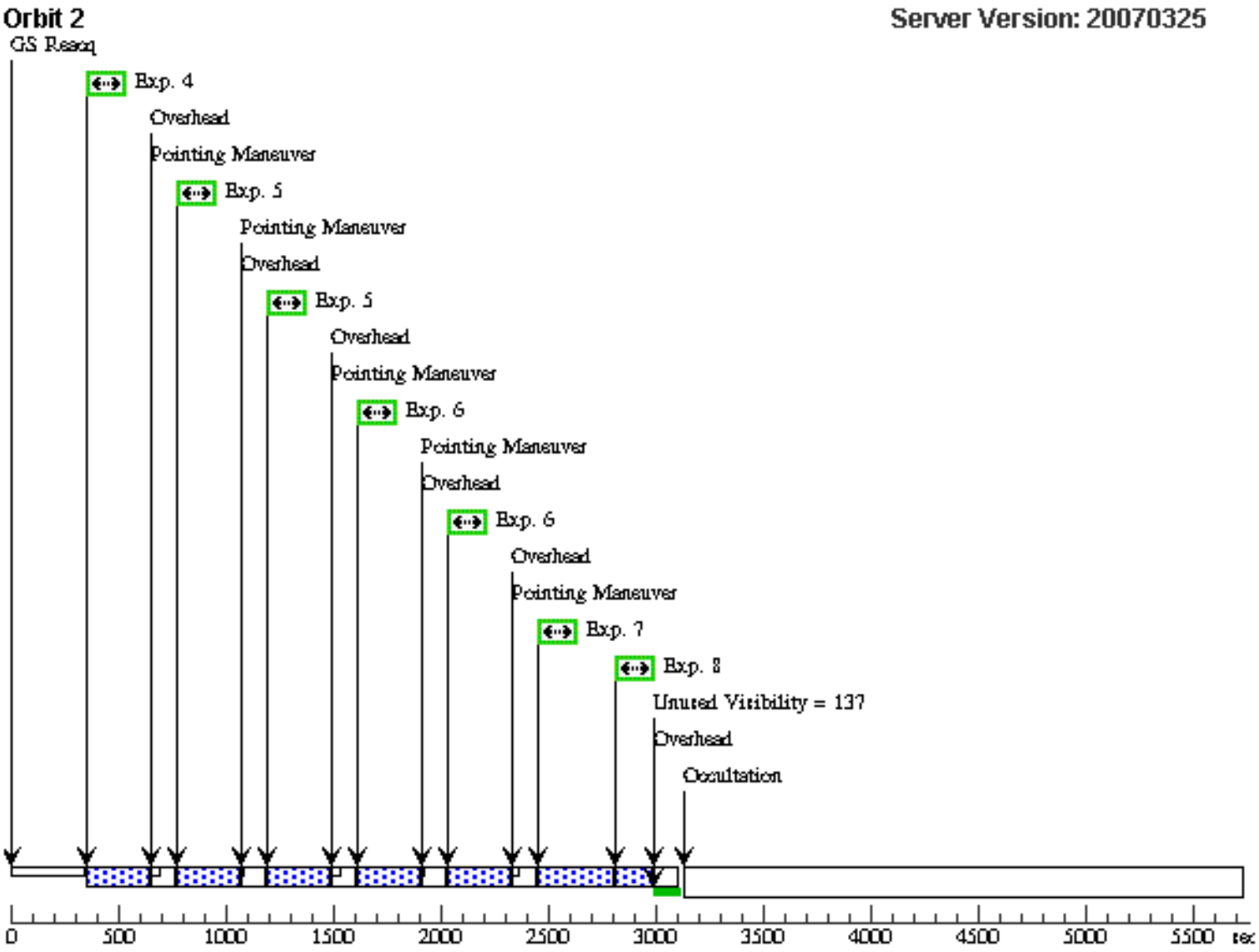
Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
4	Polarimetry 1	(1) V-BP-PSC	WFPC2, IMAGE, WF2	F555W POLQ			Pattern 4-4 (2)	60.0 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]*** ***[2]***
Comments: Polarization at 15 degrees									
5	Polarimetry 2	(1) V-BP-PSC	WFPC2, IMAGE, WF3	F555W POLQ			Pattern 5-5 (2)	60.0 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
6	Polarimetry 3 (WC)	(1) V-BP-PSC	WFPC2, IMAGE, WF4	F555W POLQ			Pattern 6-6 (2)	60.0 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
7	H-alpha on-axis	(1) V-BP-PSC	WFPC2, IMAGE, WFALL	F656N				120.0 Secs *[==>]*	 ***[2]***
8	H-alpha on-axis	(1) V-BP-PSC	WFPC2, IMAGE, WFALL	F656N				120.0 Secs *[==>]*	 ***[2]***

Orbit Structure



Orbit Structure (continued)



Visit

Proposal 11152, Visit 02, implementation Tue Jun 19 01:07:30 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: WFPC2

Special Requirements: ORIENT 184.0D TO 224.0 D

Comments: Deep H-alpha exposures

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFPC2-BOX	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=26.57		
	Number Of Points=4	Angle Between Sides=143.13		
	Point Spacing=0.559	Center Pattern=false		
	Line Spacing=0.559			

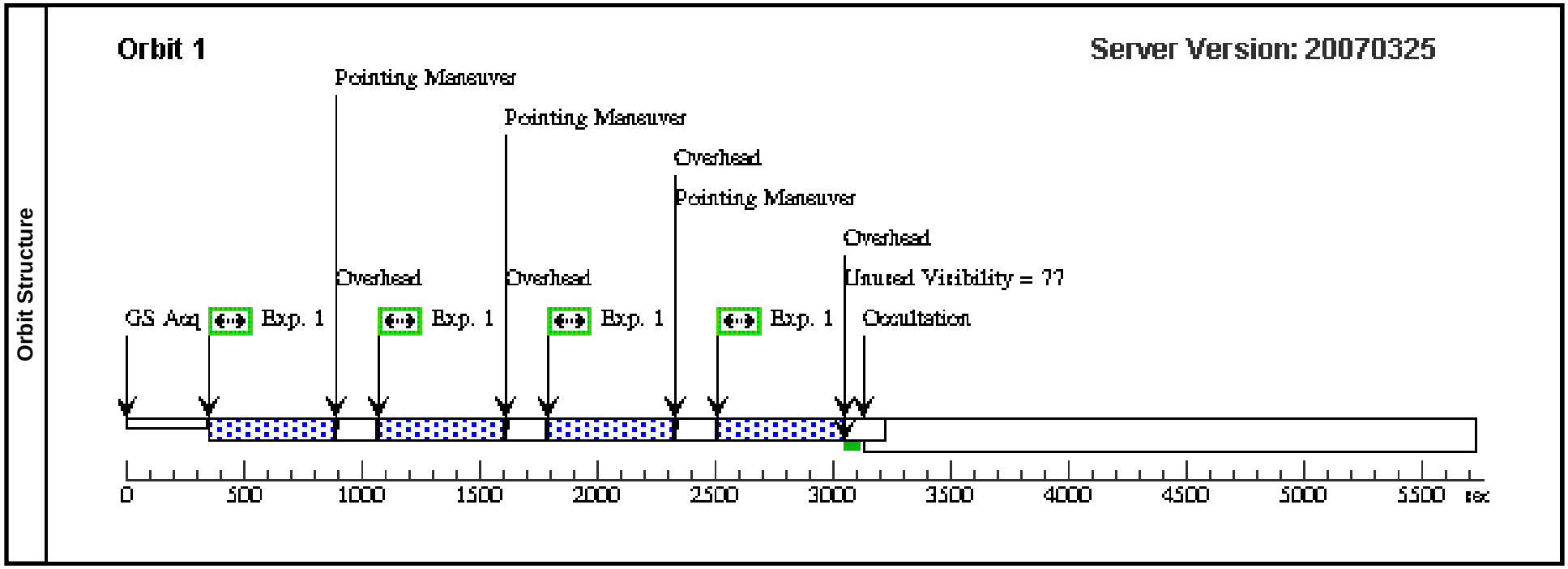
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-BP-PSC	RA: 23 22 24.6900 (350.6028750d)	Proper Motion RA: 0.0029s/yr	V=12.2	Reference Frame: ICRS
	Alt Name1: TYC5244-148-1	Dec: -02 13 41.40 (-2.22817d)	Proper Motion Dec: -0.026"/yr		
		Equinox: J2000	Epoch of Position: 2000.0		
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. RA and DEC PM come from Tycho 2; object also known as TYC5244-148-1					
(3)	BPPSC-NORTH-JET	Offset from V-BP-PSC by		V=18.0	Offset Position (BPPSC-NORTH-JET)
		RA Offset: 3.29 Secs			Reference Frame: ICRS
		Dec Offset: 109.38 Arcsec			

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Deep H-alpha	(3) BPPSC-NORTH-JET	WFPC2, IMAGE, PC1	F656N			Pattern 1-1 (1)	400.0 Secs	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	

Comments: Deep h-alpha 4-position box


Orbit Structure
Orbit 1
Server Version: 20070325
Pointing Maneuver
Pointing Maneuver
Overhead
Pointing Maneuver
Overhead
Overhead
Overhead
Unused Visibility = 77
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11152, Visit 03, implementation Tue Jun 19 01:07:30 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: NIC2, NIC1

Special Requirements: GROUP 03,04,05 WITHIN 7.0D

Comments: NICMOS polarimetry + coronagraphy

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-BP-PSC	RA: 23 22 24.6900 (350.6028750d)	Proper Motion RA: 0.0029s/yr	V=12.2	Reference Frame: ICRS
	Alt Name1: TYC5244-148-1	Dec: -02 13 41.40 (-2.22817d)	Proper Motion Dec: -0.026"/yr		
		Equinox: J2000	Epoch of Position: 2000.0		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
RA and DEC PM come from Tycho 2; object also known as TYC5244-148-1

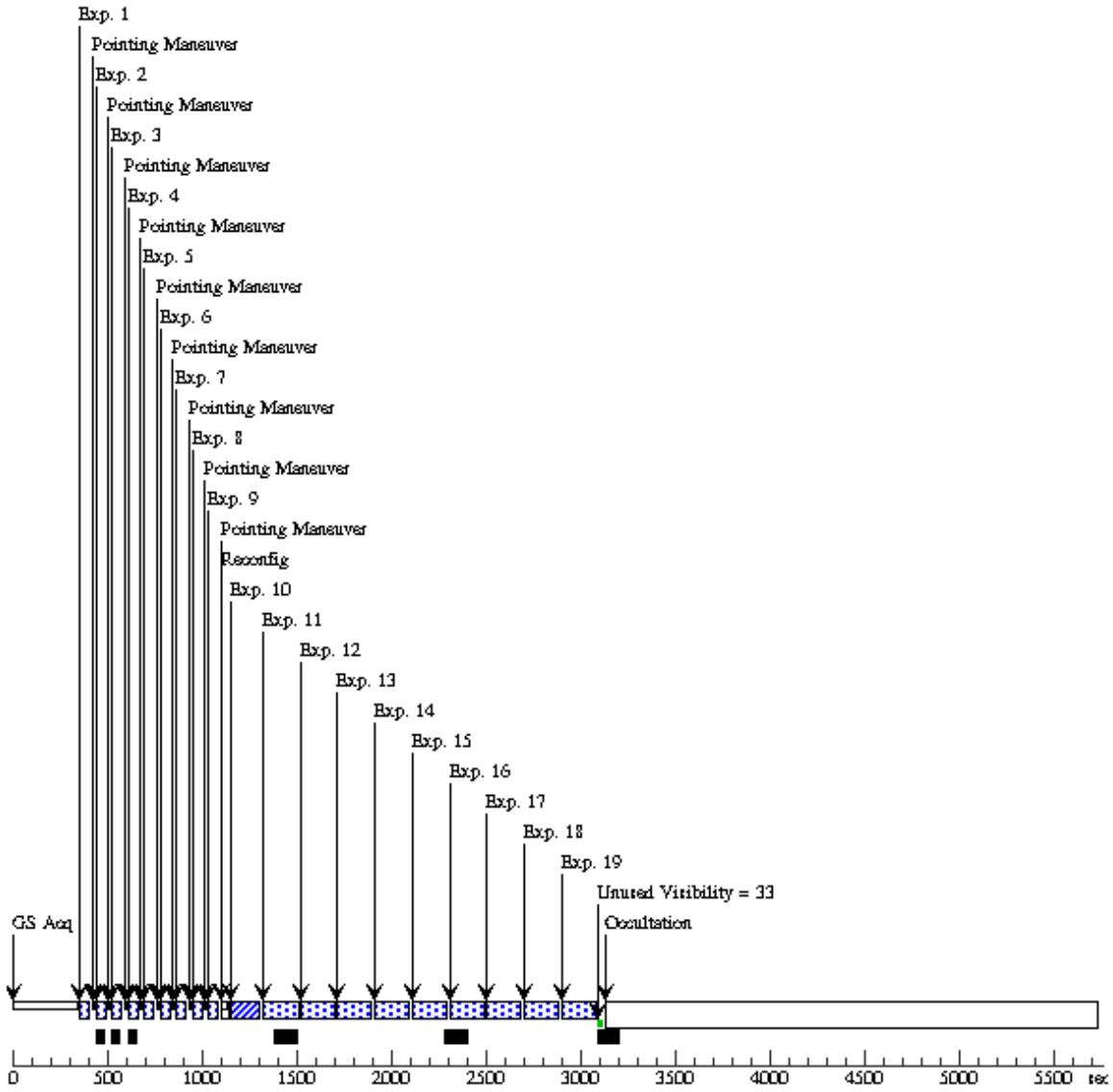
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Unsat Pol 1a	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL0S	SAMP-SEQ=STEP8; NSAMP=10			*[==>]*	***[1]***
2	Unsat Pol 1b	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL0S	SAMP-SEQ=STEP8; NSAMP=10	POS TARG 0.92,0.38		*[==>]*	***[1]***
3	Unsat Pol 1c	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL0S	SAMP-SEQ=STEP8; NSAMP=10	POS TARG 0.54,1.31		*[==>]*	***[1]***
4	Unsat Pol 2a	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL120S	SAMP-SEQ=STEP8; NSAMP=10			*[==>]*	***[1]***
5	Unsat Pol 2b	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL120S	SAMP-SEQ=STEP8; NSAMP=10	POS TARG 0.92,0.38		*[==>]*	***[1]***
6	Unsat Pol 2c	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL120S	SAMP-SEQ=STEP8; NSAMP=10	POS TARG 0.54,1.31		*[==>]*	***[1]***
7	Unsat Pol 3a	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL240S	SAMP-SEQ=STEP8; NSAMP=10			*[==>]*	***[1]***
8	Unsat Pol 3b	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL240S	SAMP-SEQ=STEP8; NSAMP=10	POS TARG 0.92,0.38		*[==>]*	***[1]***
9	Unsat Pol 3c	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL240S	SAMP-SEQ=STEP8; NSAMP=10	POS TARG 0.54,1.31		*[==>]*	***[1]***
10	Coronagraph acquisition	(1) V-BP-PSC	NIC2, ACQ, NIC2-ACQ	F160W				0.265 Secs *[==>]*	 ***[1]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
11	Coronagraphic Pol0	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL0L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
12	Coronagraphic Pol120	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL120L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
13	Coronagraphic Pol240	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL240L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
14	Coronagraphic Pol0	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL0L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
15	Coronagraphic Pol120	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL120L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
16	Coronagraphic Pol240	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL240L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
17	Coronagraphic Pol0	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL0L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
18	Coronagraphic Pol120	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL120L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
19	Coronagraphic Pol240	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL240L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***

Orbit Structure



Visit

Proposal 11152, Visit 04, implementation Tue Jun 19 01:07:31 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: NIC2, NIC1

Special Requirements: ORIENT 30.0D TO 150.0D FROM 02

Comments: NICMOS polarimetry + coronagraphy

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-BP-PSC	RA: 23 22 24.6900 (350.6028750d)	Proper Motion RA: 0.0029s/yr	V=12.2	Reference Frame: ICRS
	Alt Name1: TYC5244-148-1	Dec: -02 13 41.40 (-2.22817d)	Proper Motion Dec: -0.026"/yr		
		Equinox: J2000	Epoch of Position: 2000.0		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
RA and DEC PM come from Tycho 2; object also known as TYC5244-148-1

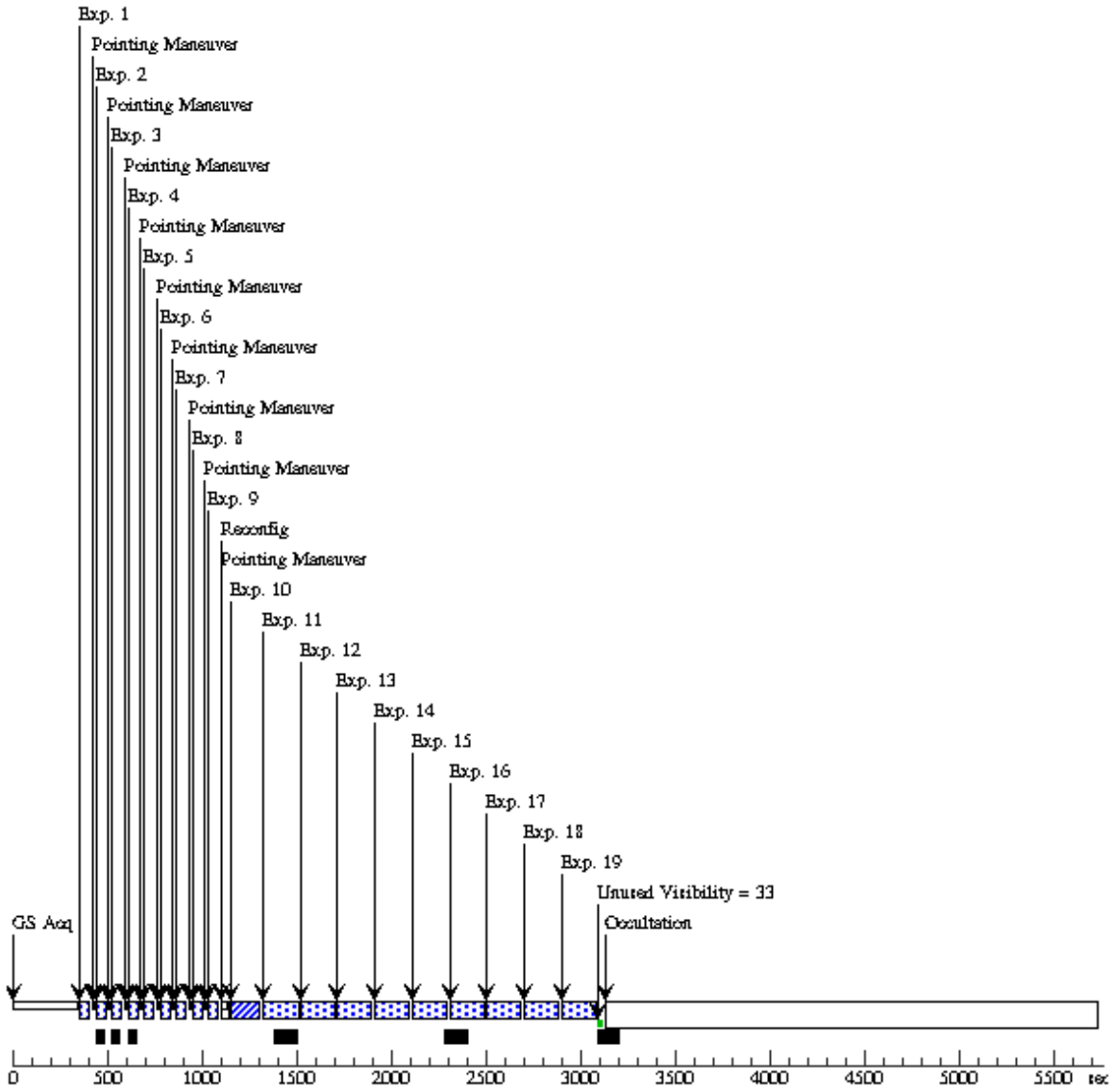
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Unsat Pol 1a	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL0S	SAMP-SEQ=STEP8; NSAMP=10			*[==>]*	***[1]***
2	Unsat Pol 1b	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL0S	SAMP-SEQ=STEP8; NSAMP=10	POS TARG 0.92,0.38		*[==>]*	***[1]***
3	Unsat Pol 1c	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL0S	SAMP-SEQ=STEP8; NSAMP=10	POS TARG 0.54,1.31		*[==>]*	***[1]***
4	Unsat Pol 2a	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL120S	SAMP-SEQ=STEP8; NSAMP=10			*[==>]*	***[1]***
5	Unsat Pol 2b	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL120S	SAMP-SEQ=STEP8; NSAMP=10	POS TARG 0.92,0.38		*[==>]*	***[1]***
6	Unsat Pol 2c	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL120S	SAMP-SEQ=STEP8; NSAMP=10	POS TARG 0.54,1.31		*[==>]*	***[1]***
7	Unsat Pol 3a	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL240S	SAMP-SEQ=STEP8; NSAMP=10			*[==>]*	***[1]***
8	Unsat Pol 3b	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL240S	SAMP-SEQ=STEP8; NSAMP=10	POS TARG 0.92,0.38		*[==>]*	***[1]***
9	Unsat Pol 3c	(1) V-BP-PSC	NIC1, MULTIACCUM, NIC1	POL240S	SAMP-SEQ=STEP8; NSAMP=10	POS TARG 0.54,1.31		*[==>]*	***[1]***
10	Coronagraph acquisition	(1) V-BP-PSC	NIC2, ACQ, NIC2-ACQ	F160W				0.265 Secs *[==>]*	 ***[1]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
11	Coronagraphic Pol0	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL0L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
12	Coronagraphic Pol120	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL120L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
13	Coronagraphic Pol240	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL240L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
14	Coronagraphic Pol0	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL0L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
15	Coronagraphic Pol120	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL120L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
16	Coronagraphic Pol240	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL240L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
17	Coronagraphic Pol0	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL0L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
18	Coronagraphic Pol120	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL120L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
19	Coronagraphic Pol240	(1) V-BP-PSC	NIC2, MULTIACCUM, NIC2-CORON	POL240L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***

Orbit Structure



Visit

Proposal 11152, Visit 05, implementation Tue Jun 19 01:07:33 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: NIC2, NIC1

Special Requirements: (none)

Comments: NICMOS polarimetry + coronagraphy

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	TYC-5245-266-1	RA: 23 20 38.7000 (350.1612500d) Dec: -02 26 42.60 (-2.44517d) Equinox: J2000		V=11.26	Reference Frame: ICRS

Comments: PSF reference star. PM 10 mas/year

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Unsat Pol 1a	(2) TYC-5245-266-1	NIC1, MULTIACCUM, NIC1	POL0S	SAMP-SEQ=STEP8 ; NSAMP=10			*[==>]*	***[1]***
2	Unsat Pol 1b	(2) TYC-5245-266-1	NIC1, MULTIACCUM, NIC1	POL0S	SAMP-SEQ=STEP8 ; NSAMP=10	POS TARG 0.92,0.38		*[==>]*	***[1]***
3	Unsat Pol 1c	(2) TYC-5245-266-1	NIC1, MULTIACCUM, NIC1	POL0S	SAMP-SEQ=STEP8 ; NSAMP=10	POS TARG 0.54,1.31		*[==>]*	***[1]***
4	Unsat Pol 2a	(2) TYC-5245-266-1	NIC1, MULTIACCUM, NIC1	POL120S	SAMP-SEQ=STEP8 ; NSAMP=10			*[==>]*	***[1]***
5	Unsat Pol 2b	(2) TYC-5245-266-1	NIC1, MULTIACCUM, NIC1	POL120S	SAMP-SEQ=STEP8 ; NSAMP=10	POS TARG 0.92,0.38		*[==>]*	***[1]***
6	Unsat Pol 2c	(2) TYC-5245-266-1	NIC1, MULTIACCUM, NIC1	POL120S	SAMP-SEQ=STEP8 ; NSAMP=10	POS TARG 0.54,1.31		*[==>]*	***[1]***
7	Unsat Pol 3a	(2) TYC-5245-266-1	NIC1, MULTIACCUM, NIC1	POL240S	SAMP-SEQ=STEP8 ; NSAMP=10			*[==>]*	***[1]***
8	Unsat Pol 3b	(2) TYC-5245-266-1	NIC1, MULTIACCUM, NIC1	POL240S	SAMP-SEQ=STEP8 ; NSAMP=10	POS TARG 0.92,0.38		*[==>]*	***[1]***
9	Unsat Pol 3c	(2) TYC-5245-266-1	NIC1, MULTIACCUM, NIC1	POL240S	SAMP-SEQ=STEP8 ; NSAMP=10	POS TARG 0.54,1.31		*[==>]*	***[1]***
10	Coronagraph acquisition	(2) TYC-5245-266-1	NIC2, ACQ, NIC2-ACQ	F160W				0.265 Secs *[==>]*	 ***[1]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
11	Coronagraphic Pol0	(2) TYC-5245-266-1	NIC2, MULTIACCUM, NIC2-CORON	POL0L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
12	Coronagraphic Pol120	(2) TYC-5245-266-1	NIC2, MULTIACCUM, NIC2-CORON	POL120L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
13	Coronagraphic Pol240	(2) TYC-5245-266-1	NIC2, MULTIACCUM, NIC2-CORON	POL240L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
14	Coronagraphic Pol0	(2) TYC-5245-266-1	NIC2, MULTIACCUM, NIC2-CORON	POL0L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
15	Coronagraphic Pol120	(2) TYC-5245-266-1	NIC2, MULTIACCUM, NIC2-CORON	POL120L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
16	Coronagraphic Pol240	(2) TYC-5245-266-1	NIC2, MULTIACCUM, NIC2-CORON	POL240L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
17	Coronagraphic Pol0	(2) TYC-5245-266-1	NIC2, MULTIACCUM, NIC2-CORON	POL0L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
18	Coronagraphic Pol120	(2) TYC-5245-266-1	NIC2, MULTIACCUM, NIC2-CORON	POL120L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***
19	Coronagraphic Pol240	(2) TYC-5245-266-1	NIC2, MULTIACCUM, NIC2-CORON	POL240L	SAMP-SEQ=STEP16; NSAMP=17			*[==>]*	***[1]***

Orbit Structure