10147 - Detecting the elusive low mass companion around epsilon Indi

Cycle: 13, Proposal Category: GO

(Availability Mode: AVAILABLE)

INVESTIGATORS

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VISITS

Visit	*Targets*	*Configurations*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) HD209100	NIC2	1	30-Jun-2005 21:00:59.0	yes
02	(1) HD209100	NIC2	1	30-Jun-2005 21:01:08.0	yes
03	(1) HD209100	NIC2	1	30-Jun-2005 21:01:23.0	yes
04	(1) HD209100	NIC2	1	30-Jun-2005 21:01:35.0	yes
51	(2) HD209100-POS2	NIC2	1	30-Jun-2005 21:01:44.0	yes
52	(2) HD209100-POS2	NIC2	1	30-Jun-2005 21:01:54.0	yes
53	(2) HD209100-POS2	NIC2	1	30-Jun-2005 21:02:05.0	yes
54	(2) HD209100-POS2	NIC2	1	30-Jun-2005 21:02:17.0	yes
05	(1) HD209100	NIC2	1	30-Jun-2005 21:02:28.0	yes

Visit	*Targets*	*Configurations*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
06	(1) HD209100	NIC2	1	30-Jun-2005 21:02:35.0	yes
07	(1) HD209100	NIC2	1	30-Jun-2005 21:02:46.0	yes
08	(1) HD209100	NIC2	1	30-Jun-2005 21:03:01.0	yes

12 Total Orbits Used

ABSTRACT

We propose coronagraphic NICMOS observations of the nearby (d = 3.6 pc) K5V star epsilon Indi (HD 209100) to search for the unknown companion which causes a low amplitude radial velocity (RV) trend in our 11 years of precise Doppler measurements. This RV data set places a lower limit of 4.5 AU for the orbital semimajor axis of this companion. Moreover, the fact that the RV trend is lacking any sign of curvature over this long time period clearly points towards a much larger orbital separation. Epsilon Indi also has a T dwarf (binary) companion at a separation of 1400 AU. However, these brown dwarf companions are too distant from the primary to induce the observed RV variation. It is also unlikely that this nearby star has an unknown stellar (M dwarf) companion. The RV signal is thus most probably caused by a yet unknown giant planetary or brown dwarf companion at a separation of more than 5 AU. Because epsilon Indi is so near to the Sun, it constitutes an ideal target for high contrast imaging with NICMOS in its coronagraphic mode. Indeed, NICMOS coronagraphy is capable of detecting objects down to 15 Jupiter masses at separations greater than 2.3 arcseconds (S/N=25) - precisely the separation and mass range indicated by our Doppler spectroscopy. Only 2 orbits of HST/NICMOS observations could directly image the coolest and lowest mass companion ever found around a solar-type star.

OBSERVING DESCRIPTION

We seek two epochs of NICMOS coronagraphic observations of the bright star Eps Indi. Our goal is to directly image the massive planet or brown dwarf around Eps Indi implied by the radial velocity data. Eps Indi is too bright (H=2.3) for on-board (mode 2) acquisition and so a BRIGHTOBJ acquisition is required. For optimal psf subtraction we will use a roll of 30 degrees between exposure sequences. Both sets of exposures, i.e. before and

after the roll, will be obtained in the same orbit through the H (F160W) filter. These observations will be repeated >= 6 months later to cofirm the common proper motion of any possible companion.

REAL TIME JUSTIFICATION

Because Eps Indi is a promising candidate for directly imaging the coolest and lowest mass companion ever found around a solar type star, yet is too bright (H=2.3) for on-board acquisition (limiting H=4), we require BRIGHTOBJ acquisition for both rolls of each epoch. The BRIGHTOBJ acquisition mode is only available in real-time.

CALIBRATION JUSTIFICATION

We require only the standard set of flats and ancillary frames obtained during the coronagraphic acquisition.

ADDITIONAL COMMENTS

Our need for REALTIME has increased our program from two to four orbits. We have discussed the issue with our contact scientist, Dr. Alfred Schultz, which led to a program change request currently pending with the TTRB. Our request is for realtime BRIGHTOBJ acquisition for the first epoch, and two additional orbits for the second epoch, as a ToO observation (to be activated only in the case of identifying a candidate companion in the first epoch observations).

Visit

Proposal 10147, Visit 01 Fri Jul 01 01:03:05 GMT 2005

Diagnostic Status: Error

Scientific Instruments: NIC2

Special Requirements: PCS MODE FINE; VISIBILITY INTERVAL CORON

Comments: First orbit consists of visit 01 and visit 02. Visit 01 will be a BRIGHTOBJ acquisition, followed by a roll, then visit 02 will be another BRIGHTOBJ acquistion.

BRIGHTOBJ coronagraphic acquisition with REALTIME downlink and analysis for the first spacecraft orientation.

Diagnostics

(Visit 01) Error: Visibility Interval CORON is not allowed when Number of Gyros is 2.

(Visit 01) Warning: GS ACQ SCENARIO REQUESTED INCONSISTENT WITH VISIT GYRO MODE

(Visit 01) Warning: POS TARG OUTSIDE OF APERTURE

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(6), (7)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=1.538	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD209100	RA: 22 03 21.6600 (330.8402500d)	Proper Motion RA: 0.48213s/yr	V=4.69+/-0.01	Coordinate Source: HIPPARCOS/TYCHO_CATALOGUE
	Alt Name1: epsilon Indi	Dec: -56 47 9.51 (-56.78598d)	Proper Motion Dec: -2.53833"/yr	H=2.349	
		Equinox: J2000	Parallax: 0.27579"		
		Plate Id: (?)	Epoch of Position: 1991.25		

Comments: This is a high proper motion star (3.96141 arcseconds /year and -2.53833 arcseconds per year in RA and Dec).

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	orient1background	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1	POS TARG 0,25; RT ANALYSIS; GSPAIR 088170050 9F20881700497F3; GS ACQ SCENARIO BASE13GO	Sequence 1-7 Non-Int	*[==>]*	***[1]***

Comments: background for coronagraphy with calibration Lamp OFF. This frame should be obtained offset from target Eps Indi at the same location (POS TARG) as the orient1flat frame.

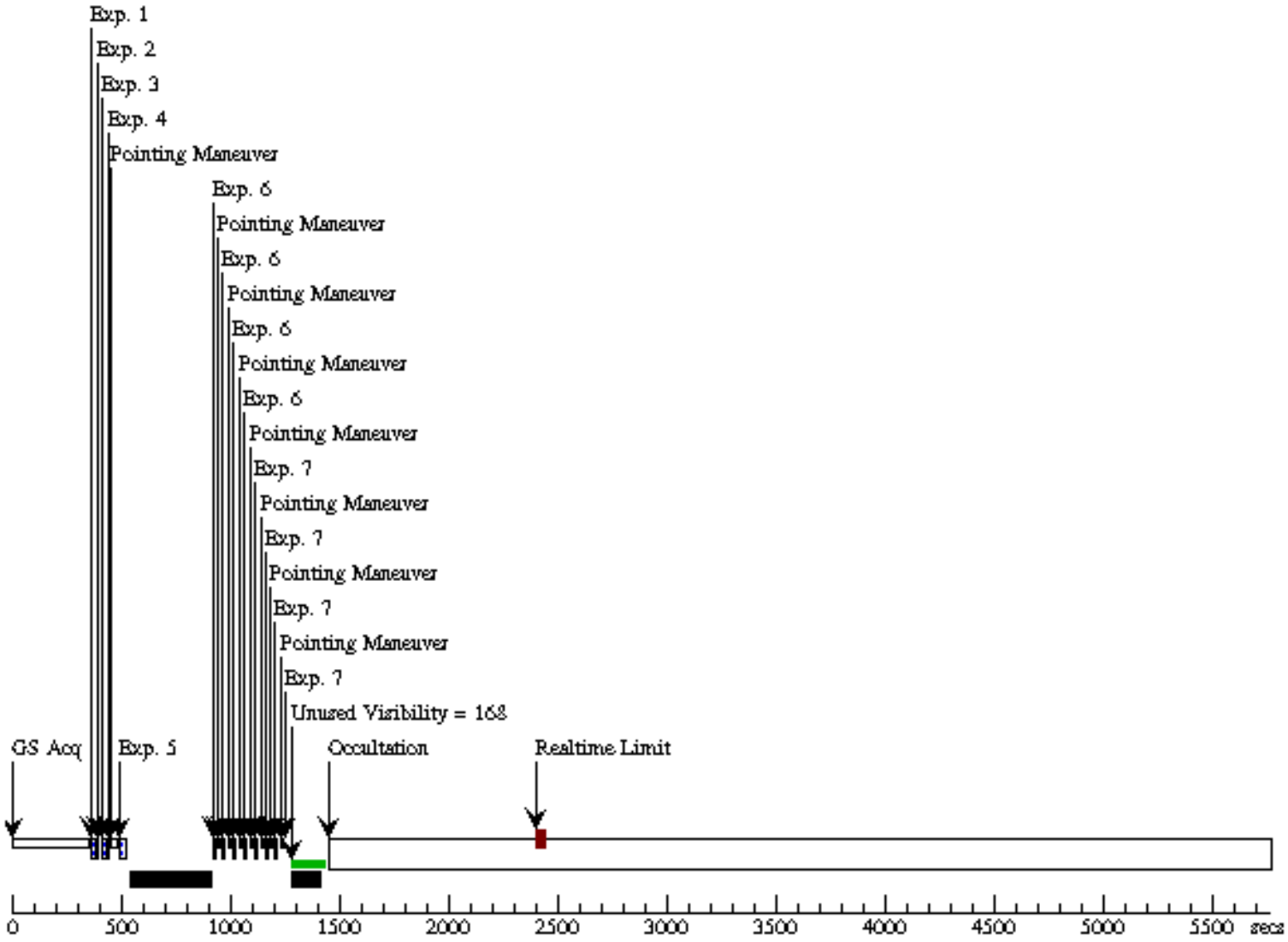
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
2	orient1background	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1	SAME POS AS 1; RT ANALYSIS	Sequence 1-7 Non-Int	*[==>]*	***[1]***

Comments: background for coronagraphy with calibration Lamp OFF. This frame should be obtained offset from target Eps Indi at the same location (POS TARG) as the orient1flat frame.

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
3	orient1flat	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1; LAMP=FLAT1	SAME POS AS 1; RT ANALYSIS	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: lamp flat for coronagraphy with calibration Lamp 1. This flat should be obtained offset (POS TARG 0.,25.) from target Eps Indi.									
4	orient1flat	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1; LAMP=FLAT1	SAME POS AS 1; RT ANALYSIS	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: lamp flat for coronagraphy with calibration Lamp 1. This flat should be obtained offset (POS TARG 0.,25.) from target Eps Indi.									
5	INDI_ACQ 1	(1) HD209100	NIC2, BRIGHTOBJ, NIC2-CORON	F160W		POS TARG 6.3568,-6.4564; RT ANALYSIS	Sequence 1-7 Non-Int	0.001024 Secs *[==>]*	***[1]***
Comments: For visit 01, after the two background (RT ANALYSIS) and two flat field (RT ANALYSIS) observations with coronagraphy slew telescope to target eps Indi and perform BRIGHTOBJ acquisition, SAVE OF FSET INDI1, within the same visibility period / orbit.									
6		(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F187N	SAMP-SEQ=SCAM RR; NSAMP=10	POS TARG 6.3568,-6.4564	Sequence 1-7 Non-Int Pattern 6-6 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
Comments: Exptime=2.030 sec									
7		(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F190N	SAMP-SEQ=SCAM RR; NSAMP=10	POS TARG 6.3568,-6.4564	Sequence 1-7 Non-Int Pattern 7-7 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
Comments: Exptime=2.030 sec									

Orbit Structure



Visit

Proposal 10147, Visit 02 Fri Jul 01 01:03:06 GMT 2005

Diagnostic Status: Error

Scientific Instruments: NIC2

Special Requirements: PCS MODE FINE; ORIENT 29.9D TO 29.9D FROM 01; AFTER 01 BY 25 M TO 40 M; VISIBILITY INTERVAL CORON

Comments: First orbit consists of visit 01 and visit 02. Visit 01 will be a BRIGHTOBJ acquisition, followed by a roll, then visit 02 will be another BRIGHTOBJ acquistion.

BRIGHTOBJ coronagraphic acquisition with REALTIME downlink and analysis for the second spacecraft orientation (roll by approximately 30 degrees), during the same visibility / orbit as visit 01.

QUICKLOOK data handling is required for Visit 2 and 6.

Diagnostics

(Visit 02) Error: Visibility Interval CORON is not allowed when Number of Gyros is 2.

(Visit 02) Warning: GS ACQ SCENARIO REQUESTED INCONSISTENT WITH VISIT GYRO MODE

(Visit 02) Warning: POS TARG OUTSIDE OF APERTURE

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(6), (7)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=1.538	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD209100	RA: 22 03 21.6600 (330.8402500d)	Proper Motion RA: 0.48213s/yr	V=4.69+/-0.01	Coordinate Source: HIPPARCOS/TYCHO_CATALOGUE
	Alt Name1: epsilon Indi	Dec: -56 47 9.51 (-56.78598d)	Proper Motion Dec: -2.53833"/yr	H=2.349	
		Equinox: J2000	Parallax: 0.27579"		
		Plate Id: (?)	Epoch of Position: 1991.25		

Comments: This is a high proper motion star (3.96141 arcseconds /year and -2.53833 arcseconds per year in RA and Dec).

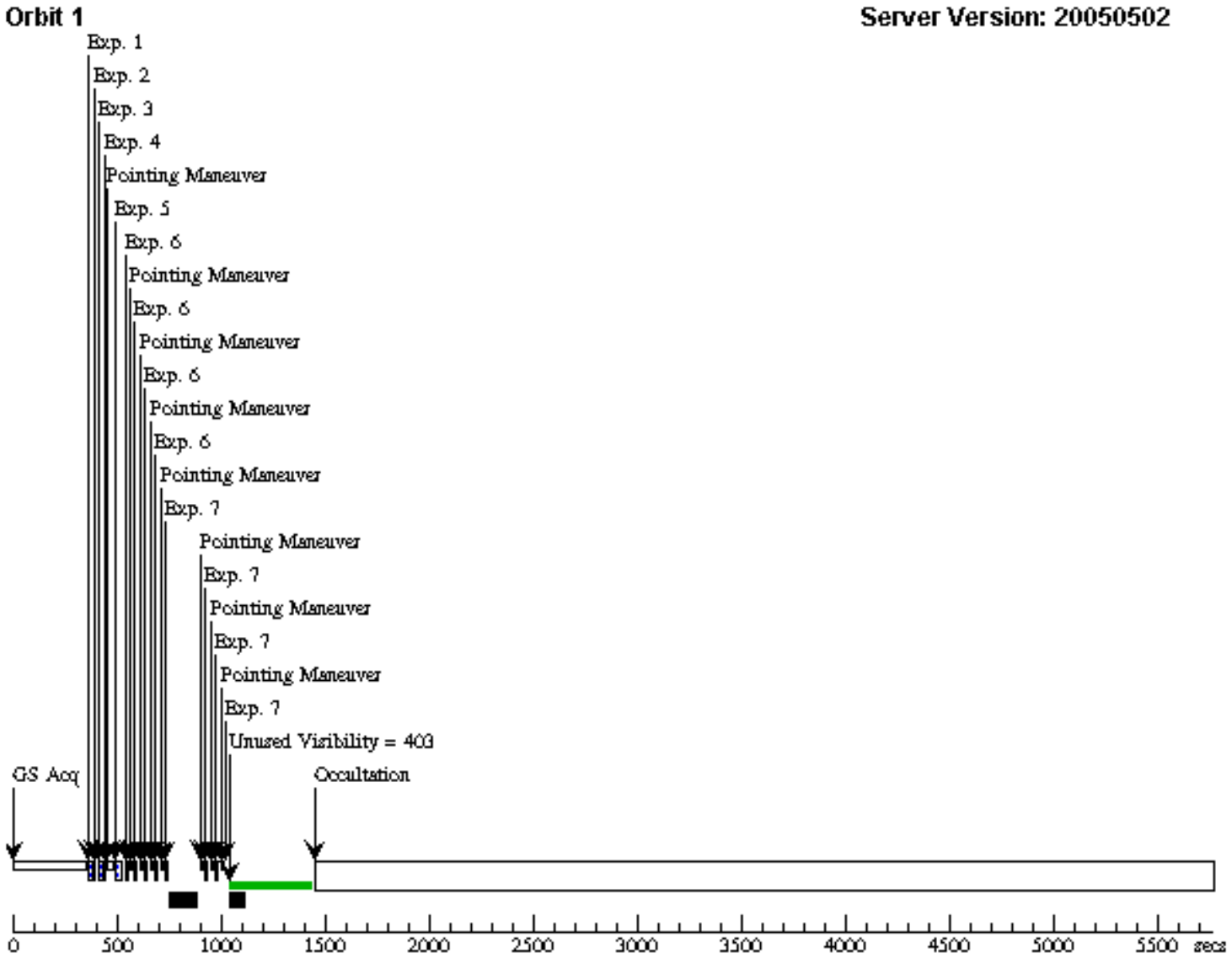
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	orient2background	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1	POS TARG 0,25; GSPAIR 0881700283F20881700405F3; GS ACQ SCENARIO BASE13GO	Sequence 1-7 Non-Int	*[==>]*	***[1]***
	Comments: background for coronagraphy with calibration Lamp OFF. This frame should be obtained offset from target Eps Indi at the same location as the orient2flat frame.								
2	orient2background	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1	SAME POS AS 1	Sequence 1-7 Non-Int	*[==>]*	***[1]***
	Comments: background for coronagraphy with calibration Lamp OFF. This frame should be obtained offset from target Eps Indi at the same location as the orient2flat frame.								

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
3	orient2flat	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1; LAMP=FLAT1	SAME POS AS 1	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: lamp flat for coronagraphy at second spacecraft orientation with calibration Lamp 1. This flat should be obtained offset from target Eps Indi.									
4	orient2flat	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1; LAMP=FLAT1	SAME POS AS 1	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: lamp flat for coronagraphy at second spacecraft orientation with calibration Lamp 1. This flat should be obtained offset from target Eps Indi.									
5	INDI_ACQ2	(1) HD209100	NIC2, BRIGHTOBJ, NIC2-CORON	F160W		POS TARG 6.3568,-6.4564	Sequence 1-7 Non-Int	0.001024 Secs *[==>]*	***[1]***
Comments: BRIGHTOBJ acquistion of eps Indi for orientation 2, SAVE OFFSET INDI2, after the two background (RT ANALYSIS) and two flat field (RT ANALYSIS) observations with coronagraphy within the same visibility period / orbit.									
6		(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F187N	SAMP-SEQ=SCAMRR; NSAMP=10	POS TARG 6.3568,-6.4564	Sequence 1-7 Non-Int Pattern 6-6 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
Comments: Exptime=2.030 sec									
7		(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F190N	SAMP-SEQ=SCAMRR; NSAMP=10	POS TARG 6.3568,-6.4564	Sequence 1-7 Non-Int Pattern 7-7 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
Comments: Exptime=2.030 sec									

Orbit Structure



Visit

Proposal 10147, Visit 03 Fri Jul 01 01:03:07 GMT 2005

Diagnostic Status: Error

Scientific Instruments: NIC2

Special Requirements: PCS MODE FINE; SAME ORIENT AS 01; AFTER 01 BY 3.1 Orbits TO 6 Orbits; VISIBILITY INTERVAL CORON

Comments: Second orbit consisting of visit 03 and visit 04. This is the first set of science exposures. AFTER visit02 BY <=6 Orbits. Visit 03 same guide stars as visit 01 and same spacecraft roll as visit 01. USE OFFSET INDI1 in order to move the star onto the coronagraphic hole.

Because of APT limitations, the realtime uplink, and mid-orbit roll, this orbit is currently packed as 14 multiaccums, roll, then 30 multiaccums. We would prefer 22 multiaccums in this visit, then roll, then 22 multiaccums in visit04. The APT is currently giving errors in this visit because the final buffer dump is occuring outside the visibility period. We understand this is OK, just not incorporated into the current APT.

Diagnostics

(Visit 03) Error: Visibility Interval CORON is not allowed when Number of Gyros is 2.

(INDI_SCI1 (03.001) special requirements) Error: Use Offset Id specified, but no Save Offset specified with this Id.

(Visit 03) Warning: GS ACQ SCENARIO REQUESTED INCONSISTENT WITH VISIT GYRO MODE

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD209100	RA: 22 03 21.6600 (330.8402500d)	Proper Motion RA: 0.48213s/yr	V=4.69+/-0.01	Coordinate Source: HIPPARCOS/TYCHO_CATALOGUE
	Alt Name1: epsilon Indi	Dec: -56 47 9.51 (-56.78598d)	Proper Motion Dec: -2.53833"/yr	H=2.349	
		Equinox: J2000	Parallax: 0.27579"		
		Plate Id: (?)	Epoch of Position: 1991.25		

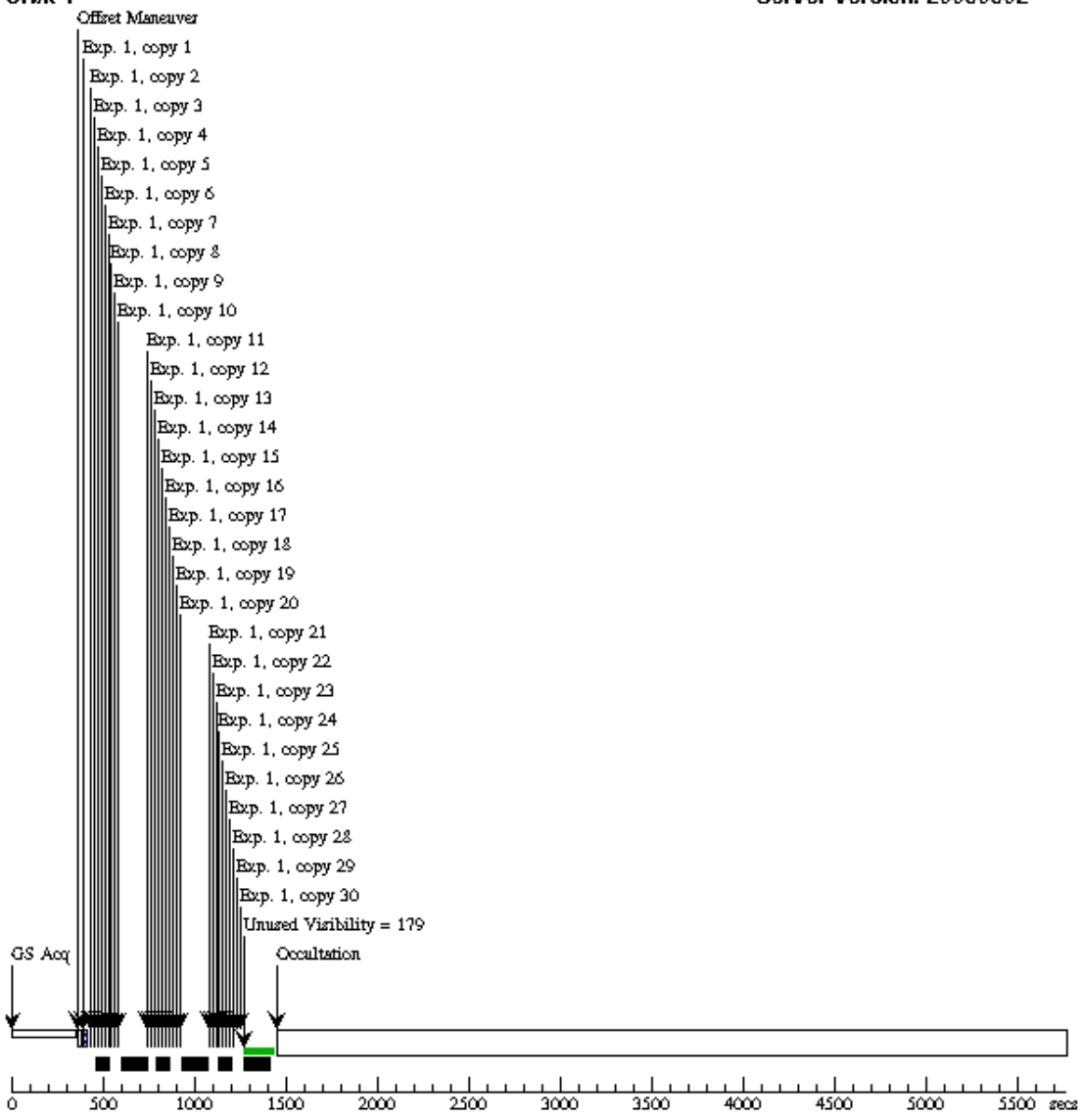
Comments: This is a high proper motion star (3.96141 arcseconds /year and -2.53833 arcseconds per year in RA and Dec).

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	INDI_SCI1	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=12; SAMP-SEQ=STEP1	POS TARG 6.3568,-6.4564; USE OFFSET INDI1; GSPAIR 088170050 9F20881700497F3; GS ACQ SCENARIO BASE13GO	Sequence 1-1 Non-Int	*[==>(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)]* *[==>(Copy 19)]* *[==>(Copy 20)]* *[==>(Copy 21)]* *[==>(Copy 22)]* *[==>(Copy 23)]* *[==>(Copy 24)]* *[==>(Copy 25)]* *[==>(Copy 26)]* *[==>(Copy 27)]* *[==>(Copy 28)]* *[==>(Copy 29)]* *[==>(Copy 30)]*	***[1]***

Comments: Because of APT limitations, the realtime uplink, and mid-orbit roll, this orbit is currently packed as 14 multiaccums, roll, then 30 multiaccums. We would prefer 22 multiaccums in this visit, then roll, then 22 multiaccum in visit04. The APT is currently giving errors in this visit because the final buffer dump is occuring outside the visibility period. We understand this is OK, just not incorporated into the current APT.

Orbit Structure



Visit

Proposal 10147, Visit 04 Fri Jul 01 01:03:08 GMT 2005

Diagnostic Status: Error

Scientific Instruments: NIC2

Special Requirements: PCS MODE FINE; SAME ORIENT AS 02; AFTER 03 BY 25 M TO 40 M; VISIBILITY INTERVAL CORON

Comments: Second orbit consisting of visit 03 and visit 04. This is the second set of science exposures. AFTER visit03, within the same visibility / orbit. Visit 04 same guide stars as visit 02 and same spacecraft roll as visit 02. USE OFFSET INDI2 in order to move the star onto the coronagraphic hole.

Because of APT limitations, the realtime uplink, and mid-orbit roll, this orbit is currently packed as 14 multiaccums, roll, then 30 multiaccums. We would prefer 22 multiaccums in this visit, then roll, then 22 multiaccums in visit04. The APT is currently giving errors in this visit because the final buffer dump is occuring outside the visibility period. We understand this is OK, just not incorporated into the current APT.

Diagnostics

(Visit 04) Error: Visibility Interval CORON is not allowed when Number of Gyros is 2.

(INDI_SCI2 (04.001) special requirements) Error: Use Offset Id specified, but no Save Offset specified with this Id.

(Visit 04) Warning: GS ACQ SCENARIO REQUESTED INCONSISTENT WITH VISIT GYRO MODE

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD209100	RA: 22 03 21.6600 (330.8402500d)	Proper Motion RA: 0.48213s/yr	V=4.69+/-0.01	Coordinate Source: HIPPARCOS/TYCHO_CATALOGUE
	Alt Name1: epsilon Indi	Dec: -56 47 9.51 (-56.78598d)	Proper Motion Dec: -2.53833"/yr	H=2.349	
		Equinox: J2000	Parallax: 0.27579"		
		Plate Id: (?)	Epoch of Position: 1991.25		

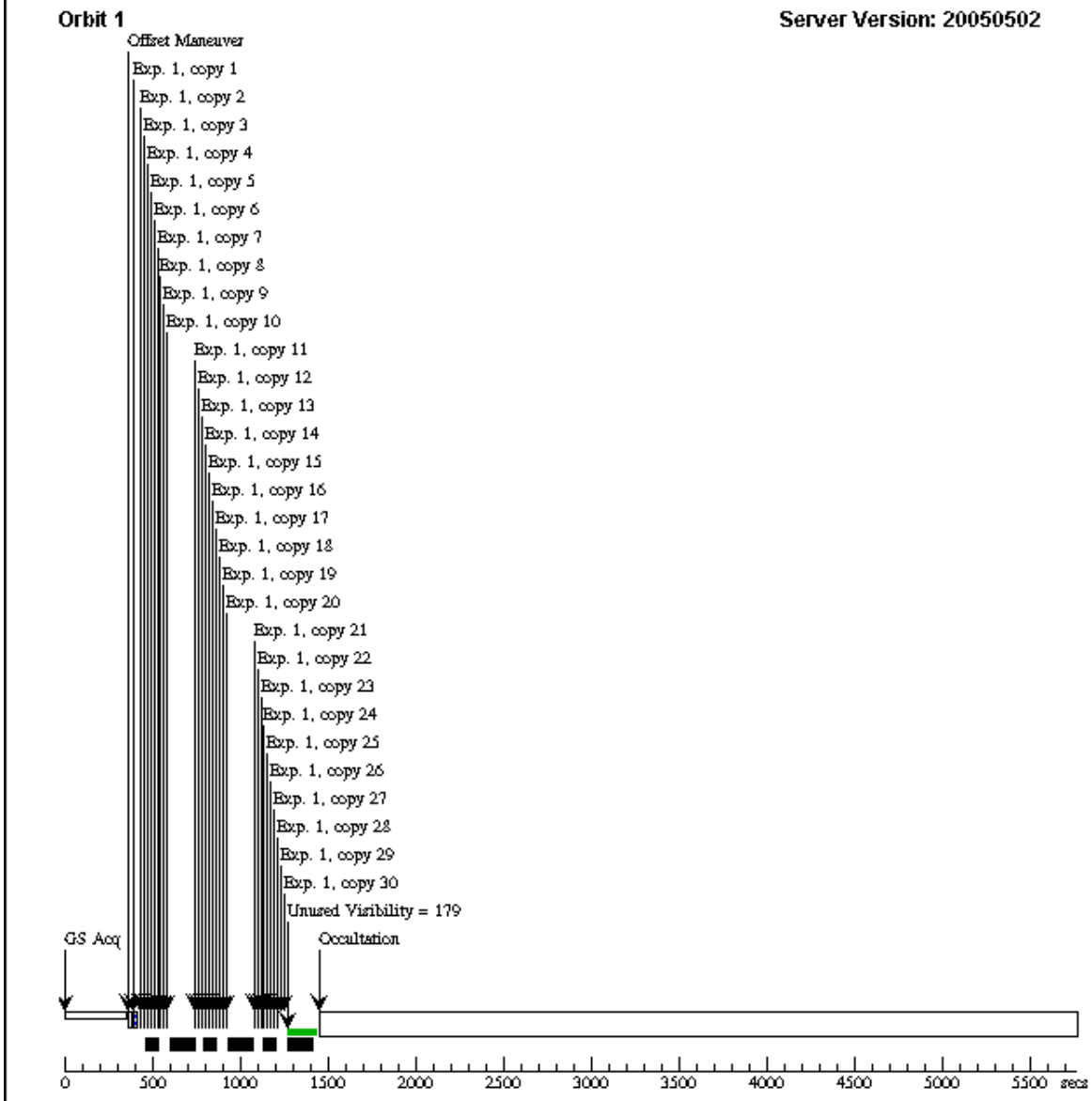
Comments: This is a high proper motion star (3.96141 arcseconds /year and -2.53833 arcseconds per year in RA and Dec).

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	INDI_SCI2	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=12; SAMP-SEQ=STEP1	POS TARG 6.3568,-6.4564; USE OFFSET INDI2; GSPAIR 088170028 3F20881700405F3; GS ACQ SCENARIO BASE13GO	Sequence 1-1 Non-Int	*[==>(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)]* *[==>(Copy 19)]* *[==>(Copy 20)]* *[==>(Copy 21)]* *[==>(Copy 22)]* *[==>(Copy 23)]* *[==>(Copy 24)]* *[==>(Copy 25)]* *[==>(Copy 26)]* *[==>(Copy 27)]* *[==>(Copy 28)]* *[==>(Copy 29)]* *[==>(Copy 30)]*	***[1]***

Comments: Because of APT limitations, the realtime uplink, and mid-orbit roll, this orbit is currently packed as 14 multiaccums, roll, then 30 multiaccums. We would prefer also to have 22 multiaccums in this post-roll visit, assuming the roll can be placed such that there are ~22 multiaccums in visit03. The APT is currently giving errors in this visit because the final buffer dump is occuring outside the visibility period. We understand this is OK, just not incorporated into the current APT.

Orbit Structure



Visit

Proposal 10147, Visit 51 Fri Jul 01 01:03:09 GMT 2005

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: NUMBER OF GYROS 3; BEFORE 15-AUG-2005:00:00:00; VISIBILITY INTERVAL CORON

Comments: First orbit consists of visit 51 and visit 52. Visit 51 will be a BRIGHTOBJ acquisition, followed by a roll, then visit 52 will be another BRIGHTOBJ acquistion.

BRIGHTOBJ coronagraphic acquisition with REALTIME downlink and analysis for the first spacecraft orientation.

Diagnostics

(Visit 51) Warning: POS TARG OUTSIDE OF APERTURE

(Visit 51) Warning: Number of Gyros overrides default value.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(6), (7)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=1.538	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HD209100-POS2	RA: 22 03 17.4400 (330.8226667d)	Proper Motion RA: 0.48195s/yr	V=4.69+/-0.01	Coordinate Source: HIPPARCOS/TYCHO_CATALOGUE
	Alt Name1: epsilon Indi	Dec: -56 46 47.30 (-56.77981d)	Proper Motion Dec: -2.53884"/yr	H=2.349	
		Equinox: J2000	Parallax: 0.27579"		
		Plate Id: (?)	Epoch of Position: 1991.25		

Comments: This is a high proper motion star with 3.95997arcseconds /year and -2.53884 arcseconds/year in RA and Dec, respectively.

It has equinox=2000 (ICRS), epoch=1991.25 coordinates from Hipparcos of RA=22 03 17.44, Dec=-56 46 47.3
and equinox=J2000, epoch=2000 (p.m. corrected to 2000) coordinates of RA=22 03 21.657, Dec= -56 47 09.51.
(We chose to use the former, epoch=1991.25, coordinates in the APT file as this appears more natural to the APT.)

The coordinates, proper-motion corrected for July, 2005 (using epoch = 2005.5), equinox=J2000 are 22:03:24.31, -56:47:23.47. The target coordinates HST derives should be very close to these values, depending on the date the observations are actually scheduled.

Exposures

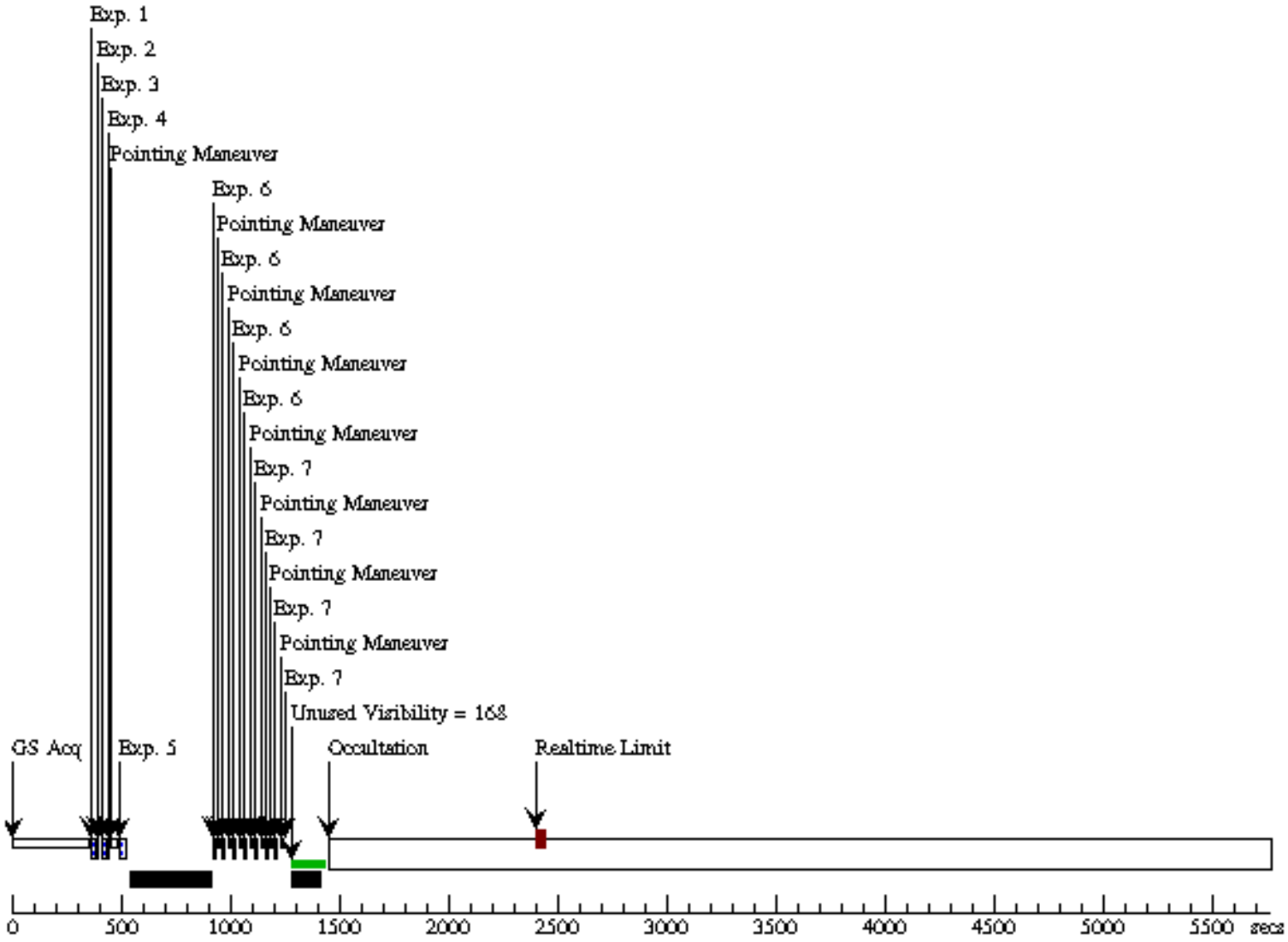
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	orient1background	(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1	POS TARG 0,25; RT ANALYSIS; GSPAIR 088170040 5F30881700509F1; GS ACQ SCENARIO BASE13GO	Sequence 1-7 Non-Int	*[==>]*	*[1]*

Comments: background for coronagraphy with calibration Lamp OFF. This frame should be obtained offset from target Eps Indi at the same location (POS TARG) as the orient1flat frame.

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
2	orient1background	(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1	SAME POS AS 1; RT ANALYSIS	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: background for coronagraphy with calibration Lamp OFF. This frame should be obtained offset from target Eps Indi at the same location (POS TARG) as the orient1flat frame.									
3	orient1flat	(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1; LAMP=FLAT1	SAME POS AS 1; RT ANALYSIS	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: lamp flat for coronagraphy with calibration Lamp 1. This flat should be obtained offset (POS TARG 0.,25.) from target Eps Indi.									
4	orient1flat	(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1; LAMP=FLAT1	SAME POS AS 1; RT ANALYSIS	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: lamp flat for coronagraphy with calibration Lamp 1. This flat should be obtained offset (POS TARG 0.,25.) from target Eps Indi.									
5	INDI_ACQ 51	(2) HD209100-POS2	NIC2, BRIGHTOBJ, NIC2-CORON	F160W		POS TARG 5.6568,-5.6568; RT ANALYSIS	Sequence 1-7 Non-Int	0.001024 Secs *[==>]*	***[1]***
Comments: For visit 51, after the two background (RT ANALYSIS) and two flat field (RT ANALYSIS) observations with coronagraphy slew telescope to target eps Indi and perform BRIGHTOBJ acquisition within the same visibility period / orbit.									
6		(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F187N	SAMP-SEQ=SCAMRR; NSAMP=10	POS TARG 5.6568,-5.6568	Sequence 1-7 Non-Int Pattern 6-6 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
Comments: Exptime=2.030 sec									
7		(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F190N	SAMP-SEQ=SCAMRR; NSAMP=10	POS TARG 5.6568,-5.6568	Sequence 1-7 Non-Int Pattern 7-7 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
Comments: Exptime=2.030 sec									

Orbit Structure



Visit

Proposal 10147, Visit 52 Fri Jul 01 01:03:09 GMT 2005

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: NUMBER OF GYROS 3; ORIENT 15.0D TO 29.9D FROM 51; AFTER 51 BY 25 M TO 40 M; VISIBILITY INTERVAL CORON

Comments: First orbit consists of visit 51 and visit 52. Visit 51 will be a BRIGHTOBJ acquisition, followed by a roll, then visit 52 will be another BRIGHTOBJ acquistion.

BRIGHTOBJ coronagraphic acquisition with REALTIME downlink and analysis for the second spacecraft orientation (roll by 15 to 30 degrees), during the same visibility / orbit as visit 51.

QUICKLOOK data handling is required for Visit 52 and 56.

Diagnostics

(Visit 52) Warning: Number of Gyros overrides default value.

(Visit 52) Warning: POS TARG OUTSIDE OF APERTURE

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(6), (7)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=1.538	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HD209100-POS2	RA: 22 03 17.4400 (330.8226667d)	Proper Motion RA: 0.48195s/yr	V=4.69+/-0.01	Coordinate Source: HIPPARCOS/TYCHO_CATALOGUE
	Alt Name1: epsilon Indi	Dec: -56 46 47.30 (-56.77981d)	Proper Motion Dec: -2.53884"/yr	H=2.349	
		Equinox: J2000	Parallax: 0.27579"		
		Plate Id: (?)	Epoch of Position: 1991.25		

Comments: This is a high proper motion star with 3.95997arcseconds /year and -2.53884 arcseconds/year in RA and Dec, respectively.

It has equinox=2000 (ICRS), epoch=1991.25 coordinates from Hipparcos of
RA=22 03 17.44, Dec=-56 46 47.3
and equinox=J2000, epoch=2000 (p.m. corrected to 2000) coordinates of
RA=22 03 21.657, Dec= -56 47 09.51.
(We chose to use the former, epoch=1991.25, coordinates in the APT file as this appears more natural to the APT.)

The coordinates, proper-motion corrected for July, 2005 (using epoch = 2005.5), equinox=J2000 are 22:03:24.31, -56:47:23.47. The target coordinates HST derives should be very close to these values, depending on the date the observations are actually scheduled.

Exposures

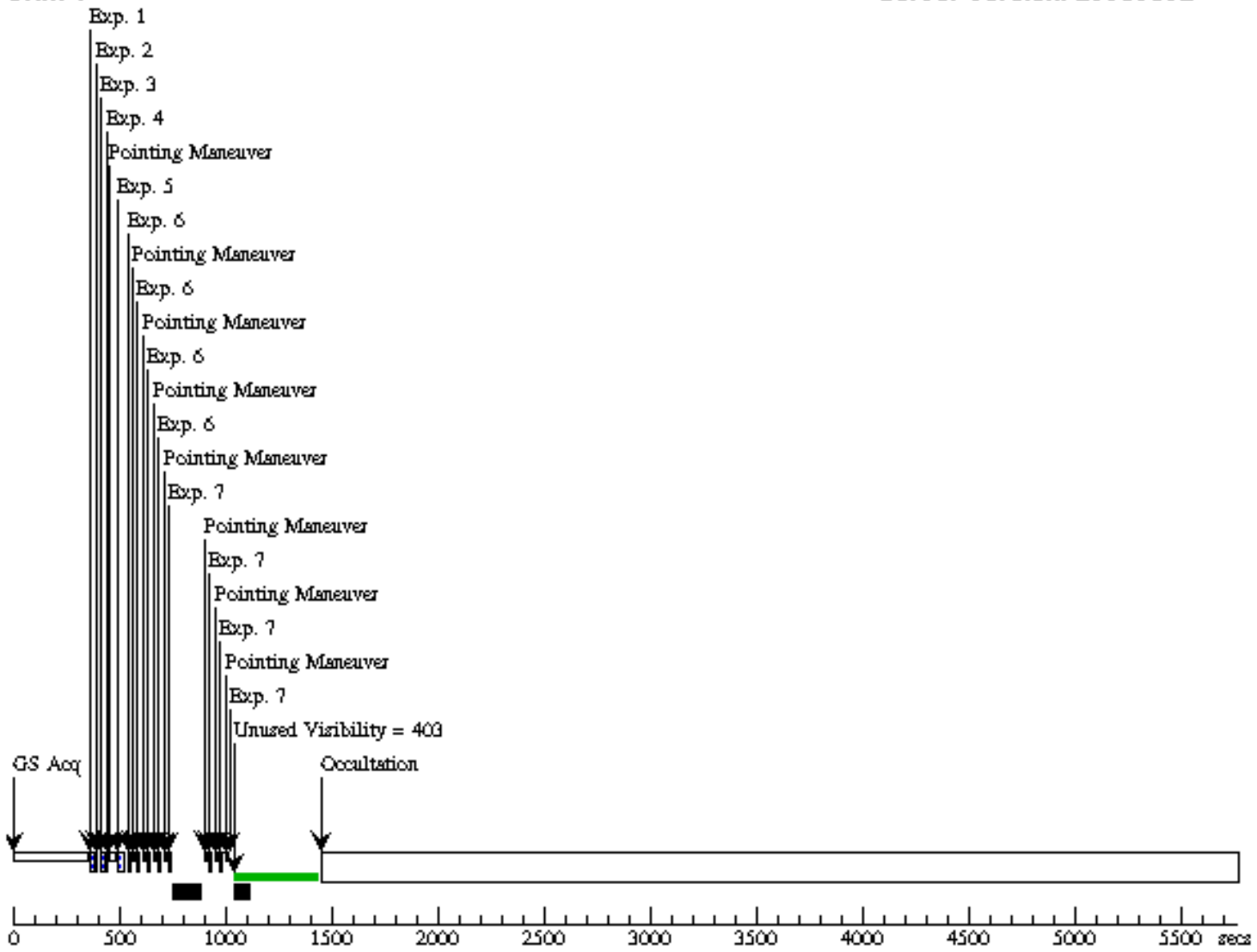
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	orient2background	(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1	POS TARG 0,25; GSPAIR 0881700147F10881700165F3; GS ACQ SCENARIO BASE13GO	Sequence 1-7 Non-Int	*[==>]*	***[1]***

Comments: background for coronagraphy with calibration Lamp OFF. This frame should be obtained offset from target Eps Indi at the same location as the orient2flat frame.

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
2	orient2background	(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1	SAME POS AS 1	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: background for coronagraphy with calibration Lamp OFF. This frame should be obtained offset from target Eps Indi at the same location as the orient2flat frame.									
3	orient2flat	(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1; LAMP=FLAT1	SAME POS AS 1	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: lamp flat for coronagraphy at second spacecraft orientation with calibration Lamp 1. This flat should be obtained offset from target Eps Indi.									
4	orient2flat	(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1; LAMP=FLAT1	SAME POS AS 1	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: lamp flat for coronagraphy at second spacecraft orientation with calibration Lamp 1. This flat should be obtained offset from target Eps Indi.									
5	INDI_ACQ 52	(2) HD209100-POS2	NIC2, BRIGHTOBJ, NIC2-CORON	F160W		POS TARG 5.6568,-5.6568	Sequence 1-7 Non-Int	0.001024 Secs *[==>]*	 ***[1]***
Comments: BRIGHTOBJ acquistion of eps Indi for orientation 2 after the two background and two flat field observations with coronagraphy within the same visibility period / orbit.									
6		(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F187N	SAMP-SEQ=SCAMRR; NSAMP=10	POS TARG 5.6568,-5.6568	Sequence 1-7 Non-Int Pattern 6-6 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
Comments: Exptime=2.030 sec									
7		(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F190N	SAMP-SEQ=SCAMRR; NSAMP=10	POS TARG 5.6568,-5.6568	Sequence 1-7 Non-Int Pattern 7-7 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
Comments: Exptime=2.030 sec									

Orbit Structure



Visit

Proposal 10147, Visit 53 Fri Jul 01 01:03:10 GMT 2005

Diagnostic Status: Error

Scientific Instruments: NIC2

Special Requirements: NUMBER OF GYROS 3; SAME ORIENT AS 51; AFTER 51 BY 3.1 Orbits TO 6 Orbits; VISIBILITY INTERVAL CORON

Comments: Second orbit consisting of visit 53 and visit 54. This is the first set of science exposures. AFTER visit 52 BY <=6 Orbits. Visit 53 same guide stars as visit 51 and same spacecraft roll as visit 51. USE OFFSET INDI51 in order to move the star onto the coronagraphic hole.

Diagnostics

(INDI_SCI51 (53.001) special requirements) Error: Use Offset Id specified, but no Save Offset specified with this Id.

(Visit 53) Warning: Number of Gyros overrides default value.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HD209100-POS2	RA: 22 03 17.4400 (330.8226667d)	Proper Motion RA: 0.48195s/yr	V=4.69+/-0.01	Coordinate Source: HIPPARCOS/TYCHO_CATALOGUE
	Alt Name1: epsilon Indi	Dec: -56 46 47.30 (-56.77981d)	Proper Motion Dec: -2.53884"/yr	H=2.349	
		Equinox: J2000	Parallax: 0.27579"		
		Plate Id: (?)	Epoch of Position: 1991.25		

Comments: This is a high proper motion star with 3.95997arcseconds /year and -2.53884 arcseconds/year in RA and Dec, respectively.

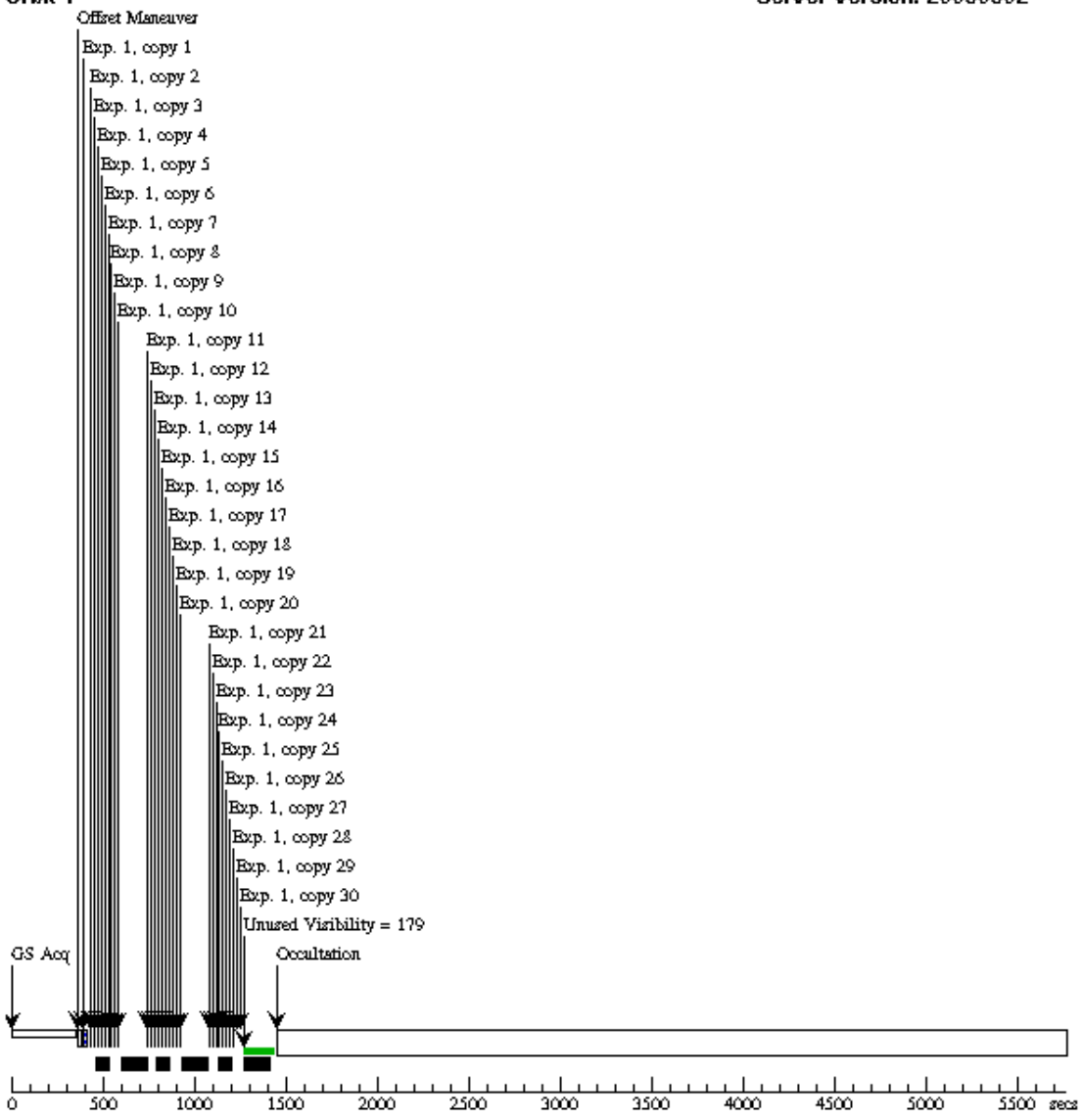
It has equinox=2000 (ICRS), epoch=1991.25 coordinates from Hipparcos of RA=22 03 17.44, Dec=-56 46 47.3
and equinox=J2000, epoch=2000 (p.m. corrected to 2000) coordinates of RA=22 03 21.657, Dec= -56 47 09.51.
(We chose to use the former, epoch=1991.25, coordinates in the APT file as this appears more natural to the APT.)

The coordinates, proper-motion corrected for July, 2005 (using epoch = 2005.5), equinox=J2000 are 22:03:24.31, -56:47:23.47. The target coordinates HST derives should be very close to these values, depending on the date the observations are actually scheduled.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	INDI_SCI51	(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=12; SAMP-SEQ=STEP1	POS TARG 5.6568,-5.6568; USE OFFSET INDI51; GSPAIR 088170040 5F30881700509F1; GS ACQ SCENARIO BASE13GO	Sequence 1-1 Non-Int	*[==>(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)]* *[==>(Copy 19)]* *[==>(Copy 20)]* *[==>(Copy 21)]* *[==>(Copy 22)]* *[==>(Copy 23)]* *[==>(Copy 24)]* *[==>(Copy 25)]* *[==>(Copy 26)]* *[==>(Copy 27)]* *[==>(Copy 28)]* *[==>(Copy 29)]* *[==>(Copy 30)]*	***[1]***

Orbit Structure



Visit

Proposal 10147, Visit 54 Fri Jul 01 01:03:10 GMT 2005

Diagnostic Status: Error

Scientific Instruments: NIC2

Special Requirements: NUMBER OF GYROS 3; SAME ORIENT AS 52; AFTER 53 BY 25 M TO 40 M; VISIBILITY INTERVAL CORON

Comments: Second orbit consisting of visit 53 and visit 54. This is the second set of science exposures. AFTER visit 53, within the same visibility / orbit. Visit 54 same guide stars as visit 52 and same spacecraft roll as visit 52. USE OFFSET INDI52 in order to move the star onto the coronagraphic hole.

Diagnostics

(INDI_SCI52 (54.001) special requirements) Error: Use Offset Id specified, but no Save Offset specified with this Id.

(Visit 54) Warning: Number of Gyros overrides default value.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HD209100-POS2	RA: 22 03 17.4400 (330.8226667d)	Proper Motion RA: 0.48195s/yr	V=4.69+/-0.01	Coordinate Source: HIPPARCOS/TYCHO_CATALOGUE
	Alt Name1: epsilon Indi	Dec: -56 46 47.30 (-56.77981d)	Proper Motion Dec: -2.53884"/yr	H=2.349	
		Equinox: J2000	Parallax: 0.27579"		
		Plate Id: (?)	Epoch of Position: 1991.25		

Comments: This is a high proper motion star with 3.95997arcseconds /year and -2.53884 arcseconds/year in RA and Dec, respectively.

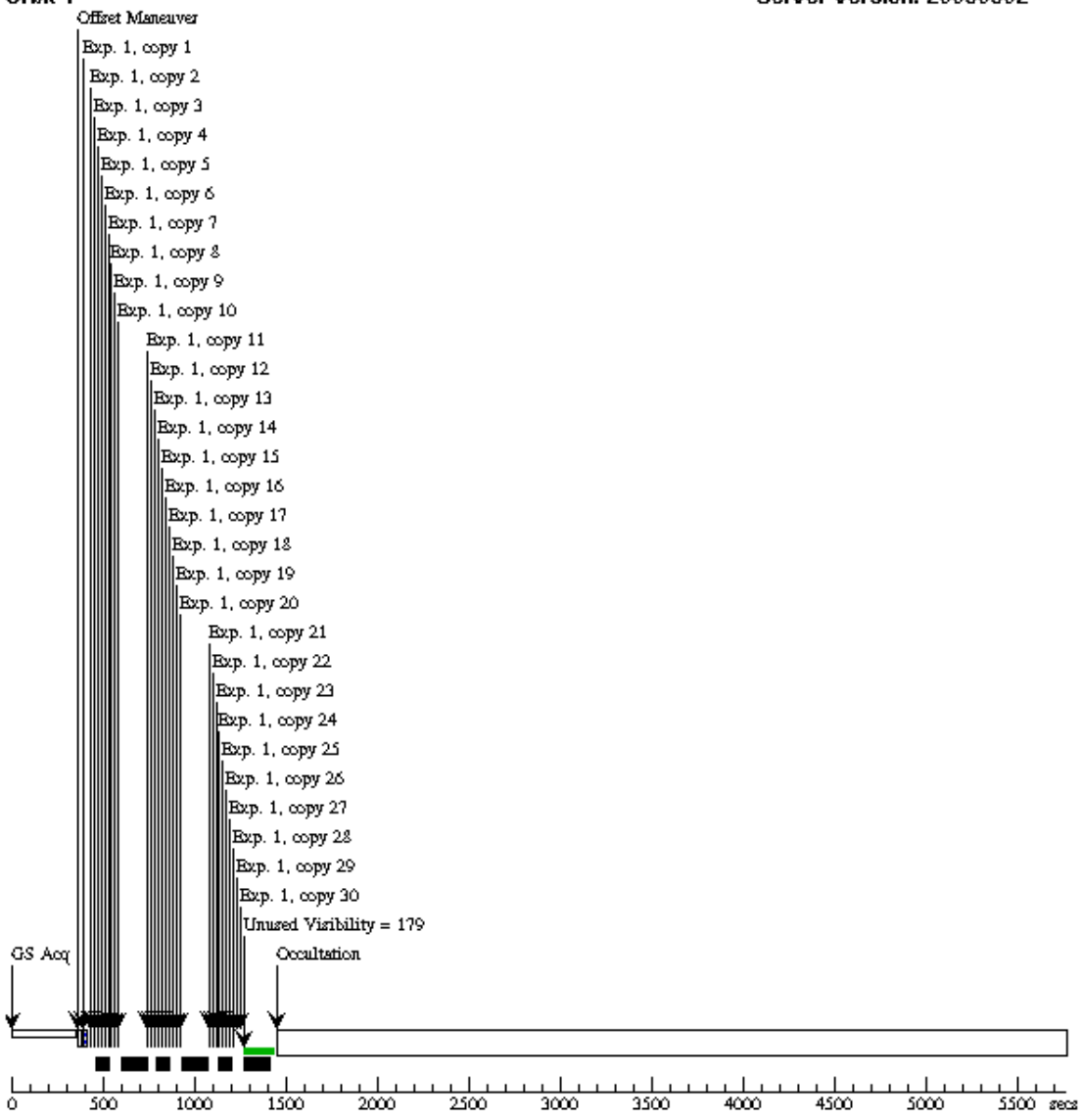
It has equinox=2000 (ICRS), epoch=1991.25 coordinates from Hipparcos of
RA=22 03 17.44, Dec=-56 46 47.3
and equinox=J2000, epoch=2000 (p.m. corrected to 2000) coordinates of
RA=22 03 21.657, Dec= -56 47 09.51.
(We chose to use the former, epoch=1991.25, coordinates in the APT file as this appears more natural to the APT.)

The coordinates, proper-motion corrected for July, 2005 (using epoch = 2005.5), equinox=J2000 are 22:03:24.31, -56:47:23.47. The target coordinates HST derives should be very close to these values, depending on the date the observations are actually scheduled.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	INDI_SCI52	(2) HD209100-POS2	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=12; SAMP-SEQ=STEP1	POS TARG 5.6568,-5.6568; USE OFFSET INDI52; GSPAIR 0881700147F10881700165F3; GS ACQ SCENARIO BASE13GO	Sequence 1-1 Non-Int	*[==>(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)]* *[==>(Copy 19)]* *[==>(Copy 20)]* *[==>(Copy 21)]* *[==>(Copy 22)]* *[==>(Copy 23)]* *[==>(Copy 24)]* *[==>(Copy 25)]* *[==>(Copy 26)]* *[==>(Copy 27)]* *[==>(Copy 28)]* *[==>(Copy 29)]* *[==>(Copy 30)]*	***[1]***

Orbit Structure



Visit

Proposal 10147, Visit 05 Fri Jul 01 01:03:11 GMT 2005

Diagnostic Status: Error

Scientific Instruments: NIC2

Special Requirements: PCS MODE FINE; ON HOLD ; VISIBILITY INTERVAL CORON

Comments: These are second epoch observations in order to confirm common proper motion for any candidate companion found in the first epoch observations (from visits 01-04). Visits 05 through 08 will be equivalent to visits 01 through 04, respectively.

Third orbit consists of visit 05 and visit 06. Visit 05 will be a BRIGHTOBJ acquisition, followed by a roll, then visit 06 will be another BRIGHTOBJ acquistion.

BRIGHTOBJ coronagraphic acquisition with REALTIME downlink and analysis for the first spacecraft orientation.

On Hold Comments: On hold until 6 months after visits 01 through 04 and activation by PI. PI will ensure a candidate companion to epsilon Indi before invoking this second epoch series of observations.

Diagnostics

(Visit 05) Error: Visibility Interval CORON is not allowed when Number of Gyros is 2.

(Visit 05) Warning: POS TARG OUTSIDE OF APERTURE

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(6), (7)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=1.538	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD209100	RA: 22 03 21.6600 (330.8402500d)	Proper Motion RA: 0.48213s/yr	V=4.69+/-0.01	Coordinate Source: HIPPARCOS/TYCHO_CATALOGUE
	Alt Name1: epsilon Indi	Dec: -56 47 9.51 (-56.78598d)	Proper Motion Dec: -2.53833"/yr	H=2.349	
		Equinox: J2000	Parallax: 0.27579"		
		Plate Id: (?)	Epoch of Position: 1991.25		

Comments: This is a high proper motion star (3.96141 arcseconds /year and -2.53833 arcseconds per year in RA and Dec).

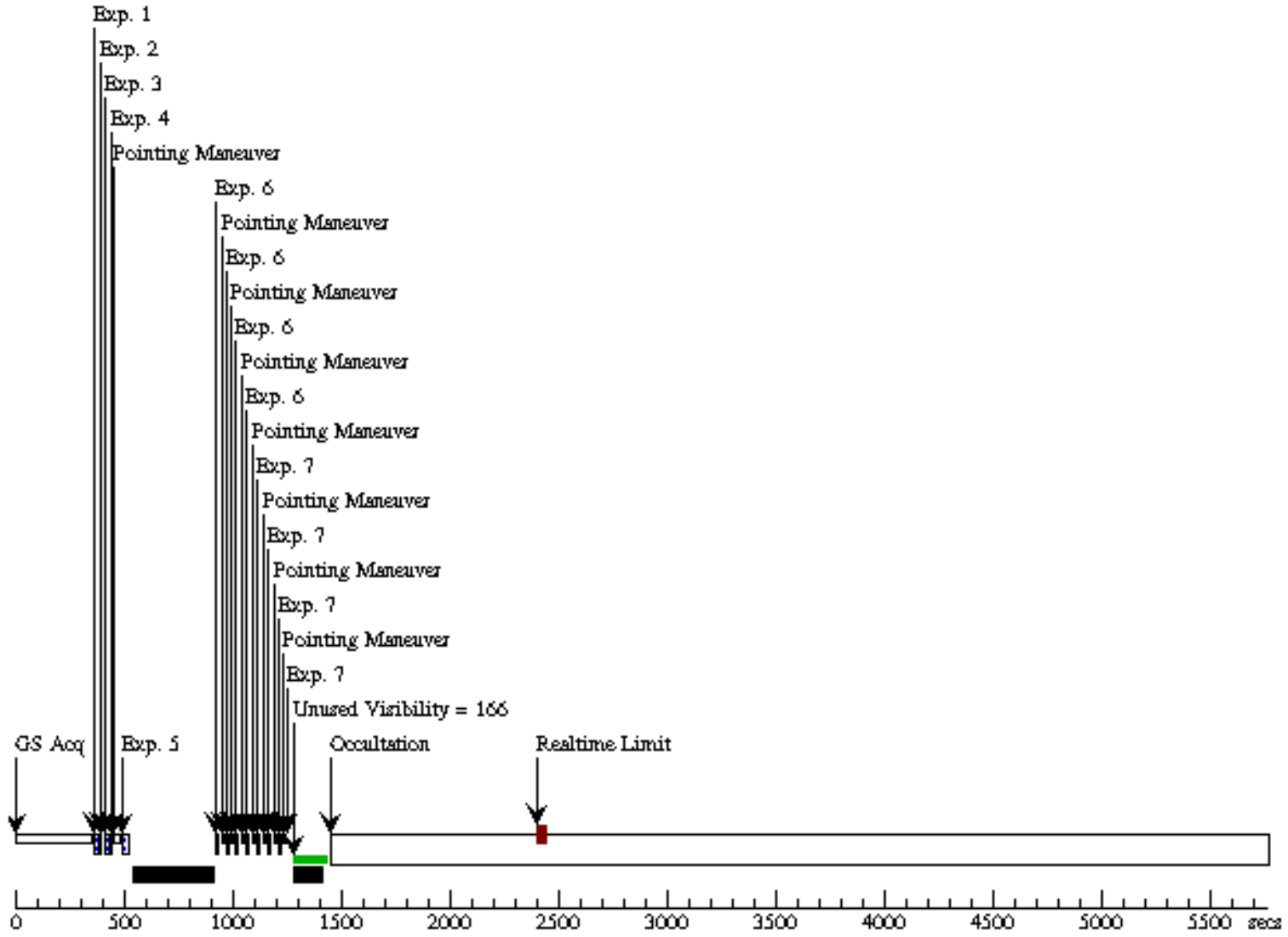
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	orient3background	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1	POS TARG 0,25; RT ANALYSIS	Sequence 1-7 Non-Int	*[==>]*	***[1]***
	Comments: background for coronagraphy with calibration Lamp OFF. This frame should be obtained offset from target Eps Indi at the same location as the orient3flat frame.								
2	orient3background	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1	SAME POS AS 1; RT ANALYSIS	Sequence 1-7 Non-Int	*[==>]*	***[1]***
	Comments: background for coronagraphy with calibration Lamp OFF. This frame should be obtained offset from target Eps Indi at the same location as the orient3flat frame.								
3	orient3flat	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1 ; LAMP=FLAT1	SAME POS AS 1; RT ANALYSIS	Sequence 1-7 Non-Int	*[==>]*	***[1]***
	Comments: lamp flat for coronagraphy with calibration Lamp 1. This flat should be obtained offset from target Eps Indi.								

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
4	orient3flat	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1 ; LAMP=FLAT1	SAME POS AS 1; RT ANALYSIS	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: lamp flat for coronagraphy with calibration Lamp 1. This flat should be obtained offset from target Eps Indi.									
5	INDI_ACQ 3	(1) HD209100	NIC2, BRIGHTOBJ, NIC2-CORON	F160W		POS TARG 6.3568,-6.4564; RT ANALYSIS	Sequence 1-7 Non-Int	0.001024 Secs *[==>]*	***[1]***
Comments: For visit 05, BRIGHTOBJ acquistion of eps Indi, SAVE OFFSET INDI3, after obtaining two background (RT ANALYSIS) and two flat field (RT ANALYSIS) observations with coronagraphy within the same visibility period / orbit.									
6		(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F187N	SAMP-SEQ=SCAMRR; NSAMP=10	POS TARG 6.3568,-6.4564	Sequence 1-7 Non-Int Pattern 6-6 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
Comments: Exptime=2.030 sec									
7		(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F190N	SAMP-SEQ=SCAMRR; NSAMP=10	POS TARG 6.3568,-6.4564	Sequence 1-7 Non-Int Pattern 7-7 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
Comments: Exptime=2.030 sec									

Orbit Structure



Visit

Proposal 10147, Visit 06 Fri Jul 01 01:03:11 GMT 2005

Diagnostic Status: Error

Scientific Instruments: NIC2

Special Requirements: PCS MODE FINE; ORIENT 29.9D TO 29.9D FROM 05; AFTER 05 BY 25 M TO 40 M; ON HOLD ; VISIBILITY INTERVAL CORON

Comments: Third orbit consists of visit 05 and visit 06. Visit 05 will be a BRIGHTOBJ acquisition, followed by a roll, then visit 06 (this visit) will be another BRIGHTOBJ acquistion.

BRIGHTOBJ coronagraphic acquisition with REALTIME downlink and analysis for the second spacecraft orientation (roll by approximately 30 degrees), during the same visibility / orbit as visit 05.

QUICKLOOK data handling is required for Visit 2 and 6.

On Hold Comments: On hold until 6 months after visits 01 through 04 and activation by PI. PI will ensure a candidate companion to epsilon Indi before invoking this second epoch series of observations.

Diagnostics

(Visit 06) Error: Visibility Interval CORON is not allowed when Number of Gyros is 2.

(Visit 06) Warning: POS TARG OUTSIDE OF APERTURE

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(6), (7)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=1.538	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD209100	RA: 22 03 21.6600 (330.8402500d)	Proper Motion RA: 0.48213s/yr	V=4.69+/-0.01	Coordinate Source: HIPPARCOS/TYCHO_CATALOGUE
	Alt Name1: epsilon Indi	Dec: -56 47 9.51 (-56.78598d)	Proper Motion Dec: -2.53833"/yr	H=2.349	
		Equinox: J2000	Parallax: 0.27579"		
		Plate Id: (?)	Epoch of Position: 1991.25		

Comments: This is a high proper motion star (3.96141 arcseconds /year and -2.53833 arcseconds per year in RA and Dec).

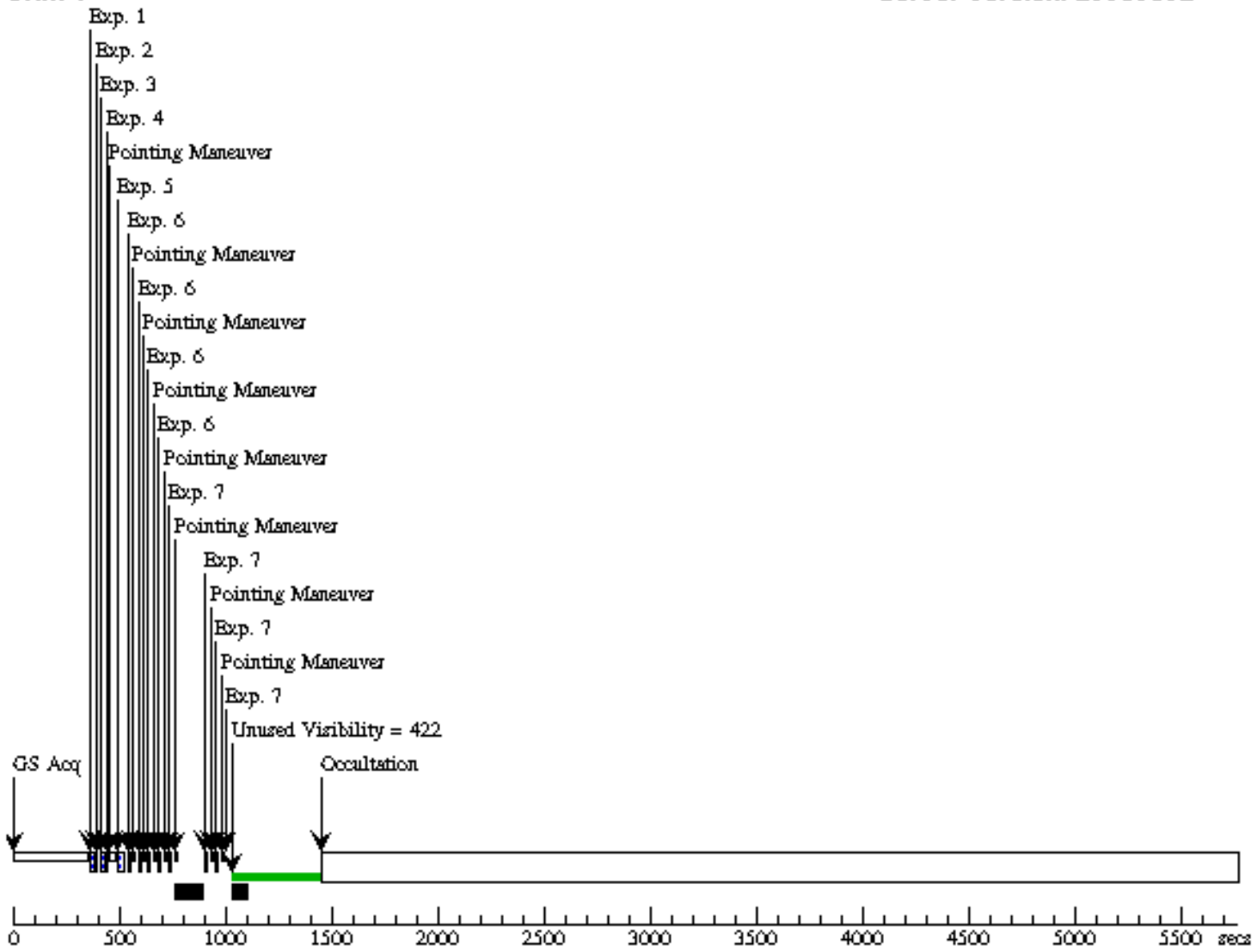
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	orient4background	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1	POS TARG 0,25	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: background for coronagraphy with calibration Lamp OFF. This frame should be obtained offset from target Eps Indi at the same location as the orient4flat frame.									
2	orient4background	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1	SAME POS AS 1	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: background for coronagraphy with calibration Lamp OFF. This frame should be obtained offset from target Eps Indi at the same location as the orient4flat frame.									
3	orient4flat	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1 ; LAMP=FLAT1	SAME POS AS 1	Sequence 1-7 Non-Int	*[==>]*	***[1]***
Comments: lamp flat for coronagraphy at second spacecraft orientation with calibration Lamp 1. This flat should be obtained offset from target Eps Indi.									

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
4	orient4flat	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=7; SAMP-SEQ=STEP1 ; LAMP=FLAT1	SAME POS AS 1	Sequence 1-7 Non-Int	*[==>]*	***[1]***
	Comments: lamp flat for coronagraphy at second spacecraft orientation with calibration Lamp 1. This flat should be obtained offset from target Eps Indi.								
5	INDI_ACQ 4	(1) HD209100	NIC2, BRIGHTOBJ, NIC2-CORON	F160W		POS TARG 6.3568,-6.4564	Sequence 1-7 Non-Int	0.001024 Secs *[==>]*	***[1]***
	Comments: for visit06: BRIGHTOBJ acquistion of eps Indi, SAVE OFFSET INDI4, after obtaining two background (RT ANALYSIS) and two flat field (RT ANALYSIS) observations with coronagraphy within the same visibility period / orbit.								
6		(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F187N	SAMP-SEQ=SCAM RR; NSAMP=10	POS TARG 6.3568,-6.4564	Sequence 1-7 Non-Int Pattern 6-6 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
	Comments: Exptime=2.030 sec								
7		(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F190N	SAMP-SEQ=SCAM RR; NSAMP=10	POS TARG 6.3568,-6.4564	Sequence 1-7 Non-Int Pattern 7-7 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
	Comments: Exptime=2.030 sec								

Orbit Structure



Visit

Proposal 10147, Visit 07 Fri Jul 01 01:03:12 GMT 2005

Diagnostic Status: Error

Scientific Instruments: NIC2

Special Requirements: PCS MODE FINE; SAME ORIENT AS 05; AFTER 05 BY 3.1 Orbits TO 6 Orbits; ON HOLD ; VISIBILITY INTERVAL CORON

Comments: Fourth orbit consisting of visit 07 and visit 08. This is the third set of science exposures. AFTER visit06 BY <=6 Orbits. Visit 07 same guide stars as visit 05 and same spacecraft roll as visit 05. USE OFFSET INDI3 in order to move the star onto the coronagraphic hole.

Because of APT limitations, the realtime uplink, and mid-orbit roll, this orbit is currently packed as 14 multiaccums, roll, then 30 multiaccums. We would prefer 22 multiaccums in this visit, then roll, then 22 multiaccums in visit08. The APT is currently giving errors in this visit because the final buffer dump is occuring outside the visibility period. We understand this is OK, just not incorporated into the current APT.

On Hold Comments: On hold until 6 months after visits 01 through 04 and activation by PI. PI will ensure a candidate companion to epsilon Indi before invoking this second epoch series of observations.

Diagnostics

(Visit 07) Error: Visibility Interval CORON is not allowed when Number of Gyros is 2.

(INDI_SCI3 (07.001) special requirements) Error: Use Offset Id specified, but no Save Offset specified with this Id.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD209100	RA: 22 03 21.6600 (330.8402500d)	Proper Motion RA: 0.48213s/yr	V=4.69+/-0.01	Coordinate Source: HIPPARCOS/TYCHO_CATALOGUE
	Alt Name1: epsilon Indi	Dec: -56 47 9.51 (-56.78598d)	Proper Motion Dec: -2.53833"/yr	H=2.349	
		Equinox: J2000	Parallax: 0.27579"		
		Plate Id: (?)	Epoch of Position: 1991.25		

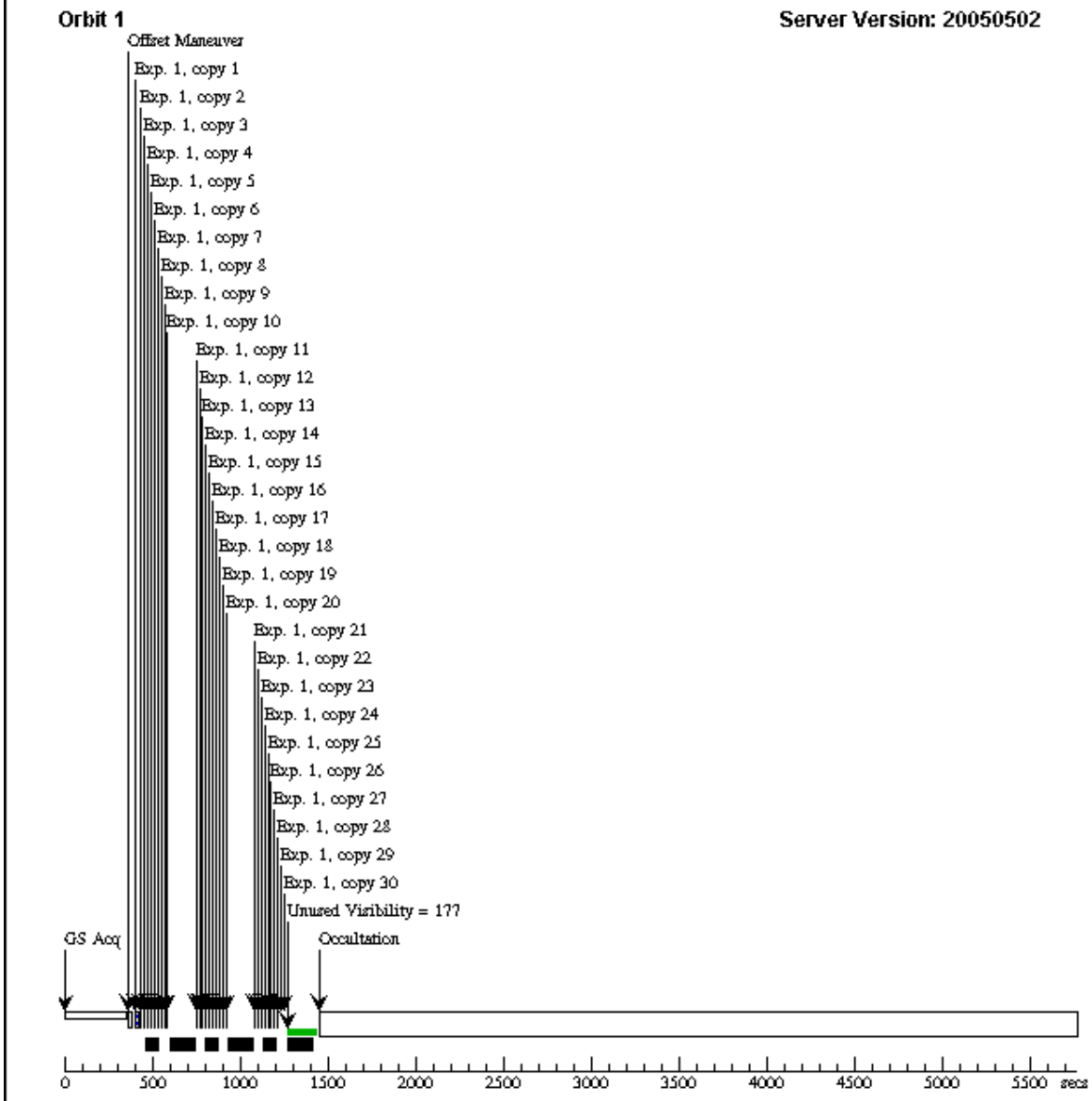
Comments: This is a high proper motion star (3.96141 arcseconds /year and -2.53833 arcseconds per year in RA and Dec).

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	INDI_SCI3	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=12; SAMP-SEQ=STEP1	POS TARG 6.3568,-6.4564; USE OFFSET INDI3	Sequence 1-1 Non-Int	*[==>(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)]* *[==>(Copy 19)]* *[==>(Copy 20)]* *[==>(Copy 21)]* *[==>(Copy 22)]* *[==>(Copy 23)]* *[==>(Copy 24)]* *[==>(Copy 25)]* *[==>(Copy 26)]* *[==>(Copy 27)]* *[==>(Copy 28)]* *[==>(Copy 29)]* *[==>(Copy 30)]*	***[1]***

Comments: Because of APT limitations, the realtime uplink, and mid-orbit roll, this orbit is currently packed as 14 multiaccums, roll, then 30 multiaccums. We would prefer 22 multiaccums in this visit, then roll, then 22 multiaccum in visit08. The APT is currently giving errors in this visit because the final buffer dump is occuring outside the visibility period. We understand this is OK, just not incorporated into the current APT.

Orbit Structure



Visit

Proposal 10147, Visit 08 Fri Jul 01 01:03:13 GMT 2005

Diagnostic Status: Error

Scientific Instruments: NIC2

Special Requirements: PCS MODE FINE; SAME ORIENT AS 06; AFTER 07 BY 25 M TO 40 M; ON HOLD ; VISIBILITY INTERVAL CORON

Comments: Fourth orbit consisting of visit 07 and visit 08. This is the fourth set of science exposures. AFTER visit07, within the same visibility / orbit. Visit 08 same guide stars as visit 06 and same spacecraft roll as visit 06. USE OFFSET INDI4 in order to move the star onto the coronagraphic hole.

Because of APT limitations, the realtime uplink, and mid-orbit roll, this orbit is currently packed as 14 multiaccums, roll, then 30 multiaccums. We would prefer 22 multiaccums in visit 07, then roll, then 22 multiaccums in this visit. The APT is currently giving errors in this visit because the final buffer dump is occuring outside the visibility period. We understand this is OK, just not incorporated into the current APT.

On Hold Comments: On hold until 6 months after visits 01 through 04 and activation by PI. PI will ensure a candidate companion to epsilon Indi before invoking this second epoch series of observations.

Diagnostics

(Visit 08) Error: Visibility Interval CORON is not allowed when Number of Gyros is 2.

(INDI_SCI4 (08.001) special requirements) Error: Use Offset Id specified, but no Save Offset specified with this Id.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD209100	RA: 22 03 21.6600 (330.8402500d)	Proper Motion RA: 0.48213s/yr	V=4.69+/-0.01	Coordinate Source: HIPPARCOS/TYCHO_CATALOGUE
	Alt Name1: epsilon Indi	Dec: -56 47 9.51 (-56.78598d)	Proper Motion Dec: -2.53833"/yr	H=2.349	
		Equinox: J2000	Parallax: 0.27579"		
		Plate Id: (?)	Epoch of Position: 1991.25		

Comments: This is a high proper motion star (3.96141 arcseconds /year and -2.53833 arcseconds per year in RA and Dec).

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	INDI_SCI4	(1) HD209100	NIC2, MULTIACCUM, NIC2-CORON	F160W	NSAMP=12; SAMP-SEQ=STEP1	POS TARG 6.3568,-6.4564; USE OFFSET INDI4	Sequence 1-1 Non-Int	*[==>(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)]* *[==>(Copy 19)]* *[==>(Copy 20)]* *[==>(Copy 21)]* *[==>(Copy 22)]* *[==>(Copy 23)]* *[==>(Copy 24)]* *[==>(Copy 25)]* *[==>(Copy 26)]* *[==>(Copy 27)]* *[==>(Copy 28)]* *[==>(Copy 29)]* *[==>(Copy 30)]*	***[1]***

Comments: Because of APT limitations, the realtime uplink, and mid-orbit roll, this orbit is currently packed as 14 multiaccums, roll, then 30 multiaccums. We would prefer also to have 22 multiaccums in this post-roll visit, assuming the roll can be placed such that there are ~22 multiaccums in visit07. The APT is currently giving errors in this visit because the final buffer dump is occuring outside the visibility period. We understand this is OK, just not incorporated into the current APT.

Orbit Structure