9970 - The Best Brown Dwarf Yet?: FGS Astrometry of the Companion to the Hyades Eclipsing Binary V471 Tau

Cycle: 12, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
Prof. Edward F. Guinan (PI)	**Villanova University**	**edward.guinan@villanova.edu**
Dr. Ignasi Ribas (CoI) (ESA Member)	Universidad de Barcelona	iribas@am.ub.es
Dr. Alfred B. Schultz (CoI)	Computer Sciences Corporation	schultz@stsci.edu
Dr. John L. Hershey (CoI)	Computer Sciences Corporation	
Dr. Frederic Arenou (CoI) (ESA Member)	Observatoire de Paris - Section de Meudon	frederic.arenou@obspm.fr

VISITS

Visit	*Targets*	*Configurations*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(6) V471-REF-4 (5) V471-REF-3 (9) V471-REF-7 (8) V471-REF-6 (3) V471-REF-1 (2) HD24040 (4) V471-REF-2 (7) V471-REF-5 (1) V471-TAU	FGS	1	25-Apr-2006 10:47:06.0	yes

Visit	*Targets*	*Configurations*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
02	(6) V471-REF-4 (5) V471-REF-3 (9) V471-REF-7 (8) V471-REF-6 (3) V471-REF-1 (2) HD24040 (4) V471-REF-2 (7) V471-REF-5 (1) V471-TAU	FGS	1	25-Apr-2006 10:47:15.0	yes
03	(6) V471-REF-4 (5) V471-REF-3 (9) V471-REF-7 (8) V471-REF-6 (3) V471-REF-1 (2) HD24040 (4) V471-REF-2 (7) V471-REF-5 (1) V471-TAU	FGS	1	25-Apr-2006 10:47:27.0	yes
53	(6) V471-REF-4 (5) V471-REF-3 (9) V471-REF-7 (8) V471-REF-6 (2) HD24040 (4) V471-REF-2 (1) V471-TAU	FGS	1	25-Apr-2006 10:47:33.0	yes

4 Total Orbits Used

ABSTRACT

The analysis of over 30 yr of 161 eclipse timings of the Hyades eclipsing binary V471 Tauri shows the presence of a low mass tertiary companion. A third body was found from periodic variations in the observed arrival times of the eclipses - known as the ``light time" effect. The light time effect occurs as the relative distance (and light travel time) changes as the eclipsing binary moves around the barycenter of the triple system. Our analysis yields an orbital period of P_3=30.5+/-1.6 yr, e_3=0.31+/-0.04, a semi-major axis of a_3=11.2+/-0.4 AU, and a tertiary mass M_3 sin i_3 =0.039+/-0.004 Mo. For orbital inclinations >35 degrees the mass of the third body would be below the stable hydrogen burning limit of M~0.07 Mo and thus would be a brown dwarf. We propose HST/FGS observations of V471 Tau over the next 3 years (2 HST orbits/year) to determine its astrometric orbit. These HST observations, when combined with Hipparcos astrometry and the light time orbit, will unambiguously yield the orbital inclination and the mass of the third body. The identification of a brown dwarf in V471 Tau will provide the first direct dynamical mass determination of a brown dwarf with a known age (tau(Hyades)=625 Myr), chemical composition, and distance. In a few years (near maximum elongation), it should be feasible to obtain IR images and spectra of this object that will provide crucial tests of

brown dwarf models.

OBSERVING DESCRIPTION

A star and its companion (BD or more massive) orbit a common center of mass. The presence of an unseen companion can be inferred from the motion of the central star about the center of mass, astrometrically, photometrically (light time), and with radial velocity techniques. Besides being unfeasible because of the long period and the expected small reflex radial velocity amplitude of the binary pair, the information provided by the radial velocity method is redundant since it yields essentially the same information as the light-time orbit, but not the much needed value of i_3. The astrometric wobble of a star on the plane of the sky due to a companion can be determined by measuring the position of the star over time relative to fixed, background stars. A frame of reference is set up and all measurements of the target are relative to this reference frame. FGS astrometry is obtained by using two FGSs for guiding while the third FGS determines the positions of selected target stars within its field of view. Long and intensive series of FGS observations of this type have been done on Proxima Centauri and Barnard's star (Benedict et al. 1998). We have extracted an image of V471 Tau from the GSSS plate scans and there are four good close reference stars that could be used for astrometry. The position on the sky of V471 Tau will be measured relative to

these reference stars. An observation set will consist of FGS POS mode observations of V471 Tau (beginning, middle, and end as a drift check star) and with at least two passes through the reference frame of stars. The necessity of a drift check star has arisen from the experience of all previous FGS POS mode programs. The sequence will be repeated as many times as possible to fill an entire orbit.

REAL TIME JUSTIFICATION

We need to observe V471 Tau at minimum parallax factor, which occurs in November. Thus, we request observing time during the time interval November 21 to November 24 each cycle. Observing at these time intervals has the bonus of minimizing the effects of any inaccuracy in the Hipparcos parallax determination. V471 Tau is a close binary with a 12.5-hr period and at optical wavelengths the white dwarf contributes less than 1% of the light. The orbital wobble of the photocenter is thus insignificantly small and there is no requirement of phasing the FGS observations with the orbital motion of the close binary. Even though coordinated photometric observations to determine further eclipse arrival times will be carried out with ground-based facilities during Cycle 10, these will not affect HST scheduling.

Visit

Proposal 9970, Visit 01 Tue Apr 25 14:47:36 GMT 2006

Diagnostic Status: Warning

Scientific Instruments: FGS

Special Requirements: ORIENT 358.0D TO 359.3 D; BETWEEN 21-NOV-2003:00:00:00 AND 22-NOV-2003:00:00:00; VISIBILITY INTERVAL 50 M

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V471-TAU	RA: 03 50 24.8500 (57.6035417d)	Proper Motion RA: 0.00908s/yr	V=9.45+/-0.09	Coordinate Source: HIPPARCOS_INPUT_CATALOGUE
	Alt Name1: BD+16516	Dec: +17 14 47.73 (17.24659d)	Proper Motion Dec: -0.0233"/yr	B-V = +0.60+/-0.32	
	Alt Name2: HIP17962	Equinox: J2000	Parallax: 0.02137"		
			Epoch of Position: 2000.0		
Comments: coordinates from Hipparcos Input Catalogue, proper motion and parallax from Hipparcos Output Catalogue. sp type = K0V					
(2)	HD24040	RA: 03 50 22.9600 (57.5956667d)	Proper Motion RA: 0.00798s/yr	V=7.512+/-0.0050	Coordinate Source: HIPPARCOS_INPUT_CATALOGUE
	Alt Name1: BD+17638	Dec: +17 28 34.91 (17.47636d)	Proper Motion Dec: -0.25231"/yr	B-V = +0.653+/-0.003	
	Alt Name2: HIP17960	Equinox: J2000	Parallax: 0.0215"		
			Epoch of Position: 2000.0		
Comments: coordinates from Hipparcos Input Catalogue, proper motion and parallax from Hipparcos Output Catalogue. sp type = G0					
(3)	V471-REF-1	RA: 03 50 27.7800 (57.6157500d)	Parallax: 0.0"	V=12.21+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
	Alt Name1: GSC1252.00098	Dec: +17 27 22.30 (17.45619d)	Epoch of Position:		
		Equinox: J2000			
		Plate Id: 00FH			
Comments: coordinates from Guide Star Catalogue					
(4)	V471-REF-2	RA: 03 50 18.2900 (57.5762083d)	Parallax: 0.0"	V=13.58+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
	Alt Name1: GSC1252.00666	Dec: +17 25 49.40 (17.43039d)	Epoch of Position:		
		Equinox: J2000			
		Plate Id: 00FH			
Comments: coordinates from Guide Star Catalogue					
(5)	V471-REF-3	RA: 03 50 13.3200 (57.5555000d)	Parallax: 0.0"	V=13.21+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
	Alt Name1: GSC1252.00172	Dec: +17 26 19.40 (17.43872d)	Epoch of Position:		
		Equinox: J2000			
		Plate Id: 00FH			
Comments: coordinates from Guide Star Catalogue					

Fixed Targets (continued)

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	V471-REF-4 Alt Name1: GSC1252.00672	RA: 03 50 17.1800 (57.5715833d) Dec: +17 22 39.90 (17.37775d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=15.15+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					
(7)	V471-REF-5 Alt Name1: GSC1252.0726	RA: 03 50 6.9500 (57.5289583d) Dec: +17 21 39.00 (17.36083d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=13.37+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					
(8)	V471-REF-6 Alt Name1: GSC1252.00250	RA: 03 50 16.0200 (57.5667500d) Dec: +17 17 43.80 (17.29550d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=14.42+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					
(9)	V471-REF-7 Alt Name1: GSC1252.00792	RA: 03 50 15.4800 (57.5645000d) Dec: +17 16 41.30 (17.27814d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=14.15+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					

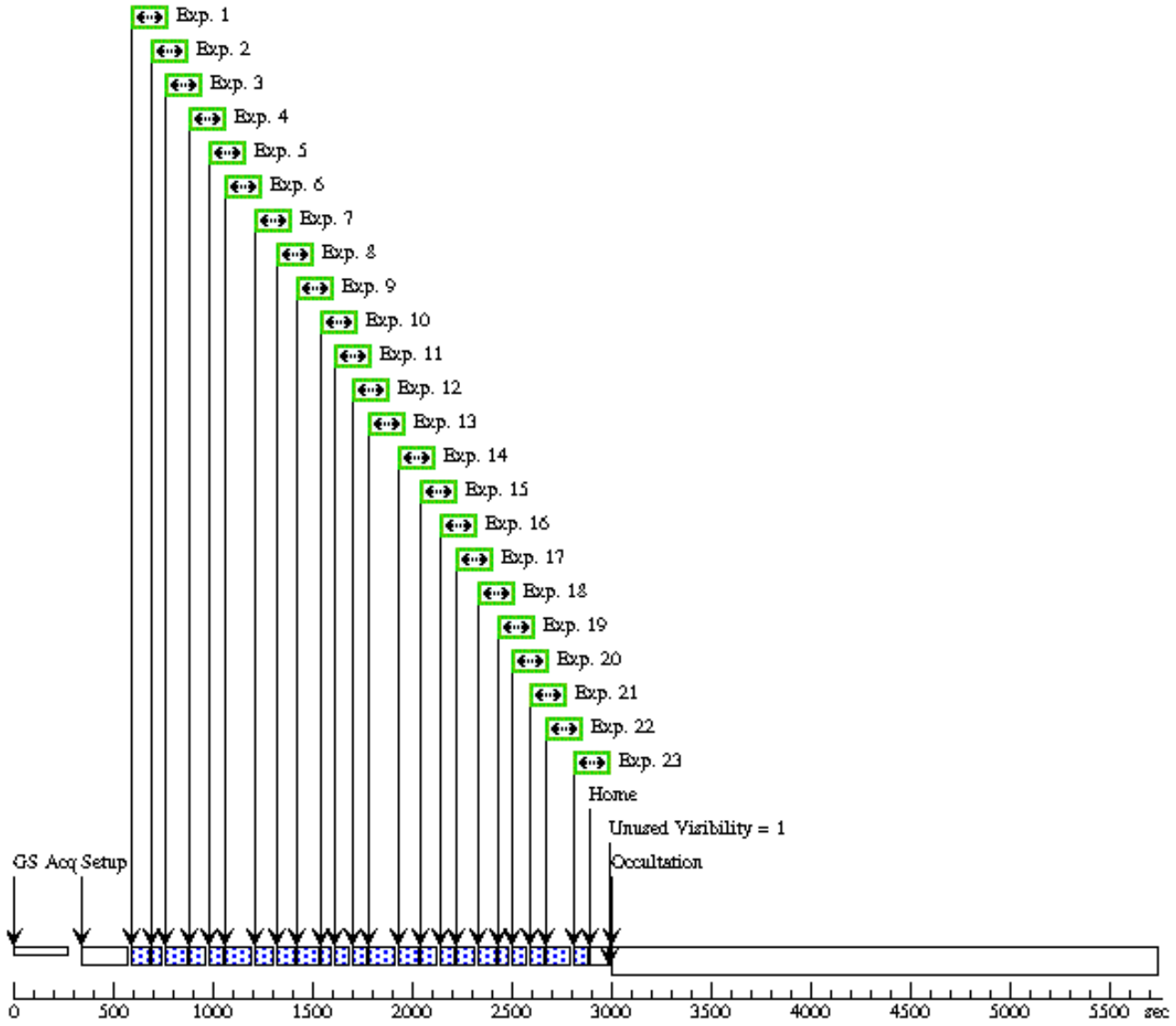
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	10	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 3; GS ACQ SCENARIO SINGLE	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
2	20	(3) V471-REF-1	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
3	30	(1) V471-TAU	FGS, POS, 1	F583W		POS TARG 400,-150	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
4	40	(9) V471-REF-7	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
5	50	(8) V471-REF-6	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
6	60	(6) V471-REF-4	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	22.0 Secs *[==>]*	 ***[1]***
7	70	(7) V471-REF-5	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
8	80	(1) V471-TAU	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
9	90	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
10	100	(3) V471-REF-1	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
11	110	(4) V471-REF-2	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
12	120	(5) V471-REF-3	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
13	130	(6) V471-REF-4	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	22.0 Secs	
								[==>]	***[1]***
14	140	(1) V471-TAU	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
15	150	(9) V471-REF-7	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
16	160	(8) V471-REF-6	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
17	170	(7) V471-REF-5	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
18	180	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
19	190	(3) V471-REF-1	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
20	200	(4) V471-REF-2	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
21	210	(5) V471-REF-3	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
22	220	(9) V471-REF-7	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
23	230	(1) V471-TAU	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 9970, Visit 02 Tue Apr 25 14:47:38 GMT 2006

Diagnostic Status: Warning

Scientific Instruments: FGS

Special Requirements: SAME ORIENT AS 01; AFTER 01 BY 5 Orbits TO 10 Orbits; VISIBILITY INTERVAL 50 M

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V471-TAU	RA: 03 50 24.8500 (57.6035417d)	Proper Motion RA: 0.00908s/yr	V=9.45+/-0.09	Coordinate Source: HIPPARCOS_INPUT_CATALOGUE
	Alt Name1: BD+16516	Dec: +17 14 47.73 (17.24659d)	Proper Motion Dec: -0.0233"/yr	B-V = +0.60+/-0.32	
	Alt Name2: HIP17962	Equinox: J2000	Parallax: 0.02137"		
			Epoch of Position: 2000.0		
Comments: coordinates from Hipparcos Input Catalogue, proper motion and parallax from Hipparcos Output Catalogue. sp type = K0V					
(2)	HD24040	RA: 03 50 22.9600 (57.5956667d)	Proper Motion RA: 0.00798s/yr	V=7.512+/-0.0050	Coordinate Source: HIPPARCOS_INPUT_CATALOGUE
	Alt Name1: BD+17638	Dec: +17 28 34.91 (17.47636d)	Proper Motion Dec: -0.25231"/yr	B-V = +0.653+/-0.003	
	Alt Name2: HIP17960	Equinox: J2000	Parallax: 0.0215"		
			Epoch of Position: 2000.0		
Comments: coordinates from Hipparcos Input Catalogue, proper motion and parallax from Hipparcos Output Catalogue. sp type = G0					
(3)	V471-REF-1	RA: 03 50 27.7800 (57.6157500d)	Parallax: 0.0"	V=12.21+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
	Alt Name1: GSC1252.00098	Dec: +17 27 22.30 (17.45619d)	Epoch of Position:		
		Equinox: J2000			
		Plate Id: 00FH			
Comments: coordinates from Guide Star Catalogue					
(4)	V471-REF-2	RA: 03 50 18.2900 (57.5762083d)	Parallax: 0.0"	V=13.58+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
	Alt Name1: GSC1252.00666	Dec: +17 25 49.40 (17.43039d)	Epoch of Position:		
		Equinox: J2000			
		Plate Id: 00FH			
Comments: coordinates from Guide Star Catalogue					
(5)	V471-REF-3	RA: 03 50 13.3200 (57.5555000d)	Parallax: 0.0"	V=13.21+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
	Alt Name1: GSC1252.00172	Dec: +17 26 19.40 (17.43872d)	Epoch of Position:		
		Equinox: J2000			
		Plate Id: 00FH			
Comments: coordinates from Guide Star Catalogue					

Fixed Targets (continued)

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	V471-REF-4 Alt Name1: GSC1252.00672	RA: 03 50 17.1800 (57.5715833d) Dec: +17 22 39.90 (17.37775d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=15.15+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					
(7)	V471-REF-5 Alt Name1: GSC1252.0726	RA: 03 50 6.9500 (57.5289583d) Dec: +17 21 39.00 (17.36083d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=13.37+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					
(8)	V471-REF-6 Alt Name1: GSC1252.00250	RA: 03 50 16.0200 (57.5667500d) Dec: +17 17 43.80 (17.29550d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=14.42+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					
(9)	V471-REF-7 Alt Name1: GSC1252.00792	RA: 03 50 15.4800 (57.5645000d) Dec: +17 16 41.30 (17.27814d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=14.15+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					

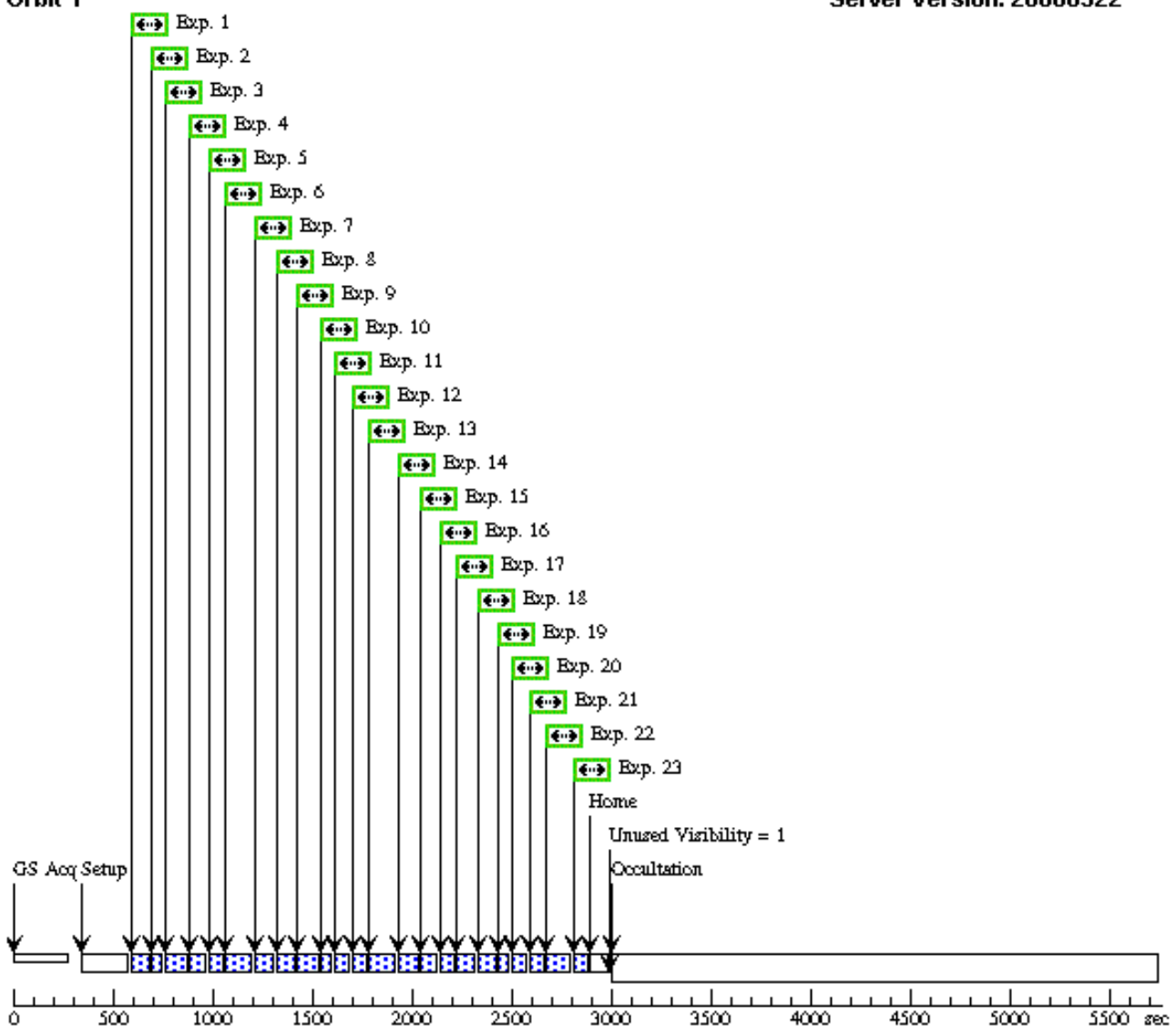
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	10	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 3; GS ACQ SCENARIO SINGLE	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
2	20	(3) V471-REF-1	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
3	30	(1) V471-TAU	FGS, POS, 1	F583W		POS TARG 400,-150	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
4	40	(9) V471-REF-7	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
5	50	(8) V471-REF-6	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
6	60	(6) V471-REF-4	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	22.0 Secs *[==>]*	 ***[1]***
7	70	(7) V471-REF-5	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
8	80	(1) V471-TAU	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
9	90	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
10	100	(3) V471-REF-1	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
11	110	(4) V471-REF-2	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
12	120	(5) V471-REF-3	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
13	130	(6) V471-REF-4	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	22.0 Secs	
								[==>]	***[1]***
14	140	(1) V471-TAU	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
15	150	(9) V471-REF-7	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
16	160	(8) V471-REF-6	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
17	170	(7) V471-REF-5	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
18	180	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
19	190	(3) V471-REF-1	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
20	200	(4) V471-REF-2	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
21	210	(5) V471-REF-3	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
22	220	(9) V471-REF-7	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
23	230	(1) V471-TAU	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 9970, Visit 03 Tue Apr 25 14:47:39 GMT 2006

Diagnostic Status: Warning

Scientific Instruments: FGS

Special Requirements: ORIENT 358.2D TO 358.2 D; VISIBILITY INTERVAL 50 M

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V471-TAU	RA: 03 50 24.8500 (57.6035417d)	Proper Motion RA: 0.00908s/yr	V=9.45+/-0.09	Coordinate Source: HIPPARCOS_INPUT_CATALOGUE
	Alt Name1: BD+16516	Dec: +17 14 47.73 (17.24659d)	Proper Motion Dec: -0.0233"/yr	B-V = +0.60+/-0.32	
	Alt Name2: HIP17962	Equinox: J2000	Parallax: 0.02137"		
			Epoch of Position: 2000.0		
Comments: coordinates from Hipparcos Input Catalogue, proper motion and parallax from Hipparcos Output Catalogue. sp type = K0V					
(2)	HD24040	RA: 03 50 22.9600 (57.5956667d)	Proper Motion RA: 0.00798s/yr	V=7.512+/-0.0050	Coordinate Source: HIPPARCOS_INPUT_CATALOGUE
	Alt Name1: BD+17638	Dec: +17 28 34.91 (17.47636d)	Proper Motion Dec: -0.25231"/yr	B-V = +0.653+/-0.003	
	Alt Name2: HIP17960	Equinox: J2000	Parallax: 0.0215"		
			Epoch of Position: 2000.0		
Comments: coordinates from Hipparcos Input Catalogue, proper motion and parallax from Hipparcos Output Catalogue. sp type = G0					
(3)	V471-REF-1	RA: 03 50 27.7800 (57.6157500d)	Parallax: 0.0"	V=12.21+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
	Alt Name1: GSC1252.00098	Dec: +17 27 22.30 (17.45619d)	Epoch of Position:		
		Equinox: J2000			
		Plate Id: 00FH			
Comments: coordinates from Guide Star Catalogue					
(4)	V471-REF-2	RA: 03 50 18.2900 (57.5762083d)	Parallax: 0.0"	V=13.58+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
	Alt Name1: GSC1252.00666	Dec: +17 25 49.40 (17.43039d)	Epoch of Position:		
		Equinox: J2000			
		Plate Id: 00FH			
Comments: coordinates from Guide Star Catalogue					
(5)	V471-REF-3	RA: 03 50 13.3200 (57.5555000d)	Parallax: 0.0"	V=13.21+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
	Alt Name1: GSC1252.00172	Dec: +17 26 19.40 (17.43872d)	Epoch of Position:		
		Equinox: J2000			
		Plate Id: 00FH			
Comments: coordinates from Guide Star Catalogue					

Fixed Targets (continued)

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	V471-REF-4 Alt Name1: GSC1252.00672	RA: 03 50 17.1800 (57.5715833d) Dec: +17 22 39.90 (17.37775d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=15.15+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					
(7)	V471-REF-5 Alt Name1: GSC1252.0726	RA: 03 50 6.9500 (57.5289583d) Dec: +17 21 39.00 (17.36083d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=13.37+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					
(8)	V471-REF-6 Alt Name1: GSC1252.00250	RA: 03 50 16.0200 (57.5667500d) Dec: +17 17 43.80 (17.29550d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=14.42+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					
(9)	V471-REF-7 Alt Name1: GSC1252.00792	RA: 03 50 15.4800 (57.5645000d) Dec: +17 16 41.30 (17.27814d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=14.15+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					

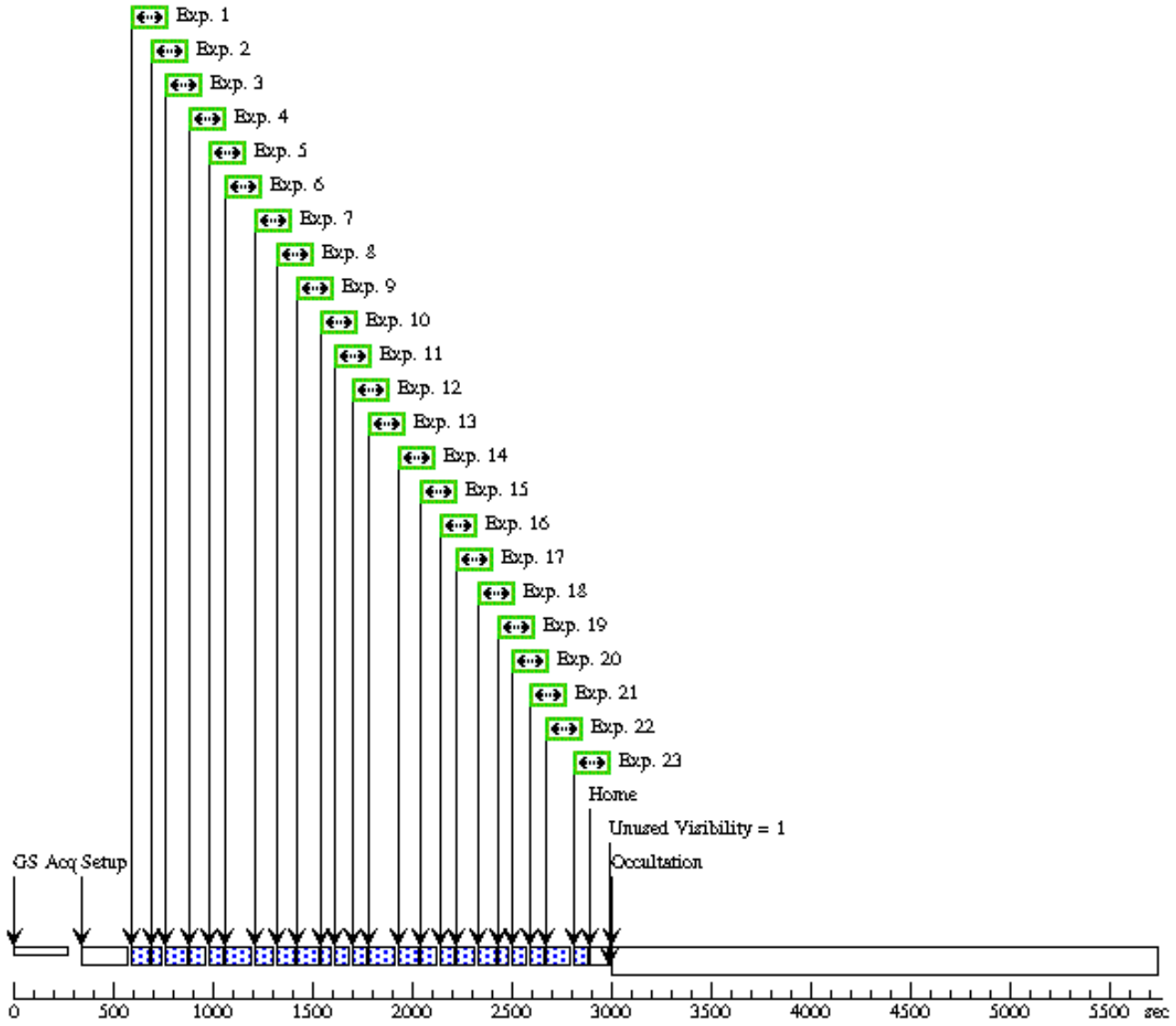
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	10	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 3; GS ACQ SCENARIO SINGLE	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
2	20	(3) V471-REF-1	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
3	30	(1) V471-TAU	FGS, POS, 1	F583W		POS TARG 400,-150	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
4	40	(9) V471-REF-7	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
5	50	(8) V471-REF-6	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
6	60	(6) V471-REF-4	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	22.0 Secs *[==>]*	 ***[1]***
7	70	(7) V471-REF-5	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***
8	80	(1) V471-TAU	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs *[==>]*	 ***[1]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
9	90	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
10	100	(3) V471-REF-1	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
11	110	(4) V471-REF-2	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
12	120	(5) V471-REF-3	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
13	130	(6) V471-REF-4	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	22.0 Secs	
								[==>]	***[1]***
14	140	(1) V471-TAU	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
15	150	(9) V471-REF-7	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
16	160	(8) V471-REF-6	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
17	170	(7) V471-REF-5	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
18	180	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
19	190	(3) V471-REF-1	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
20	200	(4) V471-REF-2	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
21	210	(5) V471-REF-3	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
22	220	(9) V471-REF-7	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***
23	230	(1) V471-TAU	FGS, POS, 1	F583W		SAME POS AS 3	Sequence 1-23 Non-Int	8.0 Secs	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 9970, Visit 53 Tue Apr 25 14:47:41 GMT 2006

Diagnostic Status: Warning

Scientific Instruments: FGS

Special Requirements: ORIENT 351.0D TO 351.0 D; BETWEEN 20-NOV-2006:00:00:00 AND 24-NOV-2006:00:00:00; VISIBILITY INTERVAL 50 M

Diagnostics

(10 (53.001) special requirements) Warning: The specified GS Acq Scenario is not in the current list of valid scenarios.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V471-TAU	RA: 03 50 24.8500 (57.6035417d)	Proper Motion RA: 0.00908s/yr	V=9.45+/-0.09	Coordinate Source: HIPPARCOS_INPUT_CATALOGUE
	Alt Name1: BD+16516	Dec: +17 14 47.73 (17.24659d)	Proper Motion Dec: -0.0233"/yr	B-V = +0.60+/-0.32	
	Alt Name2: HIP17962	Equinox: J2000	Parallax: 0.02137"		
			Epoch of Position: 2000.0		
Comments: coordinates from Hipparcos Input Catalogue, proper motion and parallax from Hipparcos Output Catalogue. sp type = K0V					
(2)	HD24040	RA: 03 50 22.9600 (57.5956667d)	Proper Motion RA: 0.00798s/yr	V=7.512+/-0.0050	Coordinate Source: HIPPARCOS_INPUT_CATALOGUE
	Alt Name1: BD+17638	Dec: +17 28 34.91 (17.47636d)	Proper Motion Dec: -0.25231"/yr	B-V = +0.653+/-0.003	
	Alt Name2: HIP17960	Equinox: J2000	Parallax: 0.0215"		
			Epoch of Position: 2000.0		
Comments: coordinates from Hipparcos Input Catalogue, proper motion and parallax from Hipparcos Output Catalogue. sp type = G0					
(4)	V471-REF-2	RA: 03 50 18.2900 (57.5762083d)	Parallax: 0.0"	V=13.58+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
	Alt Name1: GSC1252.00666	Dec: +17 25 49.40 (17.43039d)	Epoch of Position:		
		Equinox: J2000			
		Plate Id: 00FH			
Comments: coordinates from Guide Star Catalogue					
(5)	V471-REF-3	RA: 03 50 13.3200 (57.5555000d)	Parallax: 0.0"	V=13.21+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
	Alt Name1: GSC1252.00172	Dec: +17 26 19.40 (17.43872d)	Epoch of Position:		
		Equinox: J2000			
		Plate Id: 00FH			
Comments: coordinates from Guide Star Catalogue					
(6)	V471-REF-4	RA: 03 50 17.1800 (57.5715833d)	Parallax: 0.0"	V=15.15+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
	Alt Name1: GSC1252.00672	Dec: +17 22 39.90 (17.37775d)	Epoch of Position:		
		Equinox: J2000			
		Plate Id: 00FH			
Comments: coordinates from Guide Star Catalogue					

Fixed Targets (continued)

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	V471-REF-6 Alt Name1: GSC1252.00250	RA: 03 50 16.0200 (57.5667500d) Dec: +17 17 43.80 (17.29550d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=14.42+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					
(9)	V471-REF-7 Alt Name1: GSC1252.00792	RA: 03 50 15.4800 (57.5645000d) Dec: +17 16 41.30 (17.27814d) Equinox: J2000 Plate Id: 00FH	Parallax: 0.0" Epoch of Position:	V=14.15+/-0.3	Coordinate Source: GUIDE_STAR_CATALOG
Comments: coordinates from Guide Star Catalogue					

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	10	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 2; GS ACQ SCENARIO ONEB1T	Sequence 1-20 Non-Int	8.0 Secs *[==>]*	 ***[1]***
2	30	(1) V471-TAU	FGS, POS, 1	F583W		POS TARG 420,-90	Sequence 1-20 Non-Int	8.0 Secs *[==>]*	 ***[1]***
3	40	(9) V471-REF-7	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs *[==>]*	 ***[1]***
4	50	(8) V471-REF-6	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs *[==>]*	 ***[1]***
5	60	(6) V471-REF-4	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	22.0 Secs *[==>]*	 ***[1]***
6	80	(1) V471-TAU	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs *[==>]*	 ***[1]***
7	90	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs *[==>]*	 ***[1]***
8	110	(4) V471-REF-2	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs *[==>]*	 ***[1]***
9	120	(5) V471-REF-3	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs *[==>]*	 ***[1]***
10	130	(6) V471-REF-4	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	22.0 Secs *[==>]*	 ***[1]***
11	140	(1) V471-TAU	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs *[==>]*	 ***[1]***
12	150	(9) V471-REF-7	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs *[==>]*	 ***[1]***
13	160	(8) V471-REF-6	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs *[==>]*	 ***[1]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
14	180	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs	
								[==>]	***[1]***
15	200	(4) V471-REF-2	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs	
								[==>]	***[1]***
16	210	(5) V471-REF-3	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs	
								[==>]	***[1]***
17	220	(9) V471-REF-7	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs	
								[==>]	***[1]***
18	230	(1) V471-TAU	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs	
								[==>]	***[1]***
19	240	(2) HD24040	FGS, POS, 1	F550W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs	
								[==>]	***[1]***
20	250	(6) V471-REF-4	FGS, POS, 1	F583W		SAME POS AS 2	Sequence 1-20 Non-Int	8.0 Secs	
								[==>]	***[1]***

Orbit Structure