17832 - Deciphering an Adolescent Warm Sub-Neptune to Unify Formation Models with Primordial Atmospheres

Cycle: 32, Proposal Category: GO

(UV Initiative)

(Availability Mode: AVAILABLE)

INVESTIGATORS

Name	*Institution*
Ms. Amy Joan Louca (PI) (ESA Member) (Contact)	**Universiteit Leiden**
Dr. Billy Edwards (CoI) (ESA Member) (CoPI) (Contact)	Space Research Organization Netherlands
Dr. Yamila Miguel (CoI) (ESA Member)	Universiteit Leiden
Dr. Nestor Espinoza (CoI) (AdminUSPI)	Space Telescope Science Institute

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) HD-222259A	WFC3/IR	1	02-Jul-2025 09:00:14.0	yes
02	(1) HD-222259A	WFC3/IR	1	02-Jul-2025 09:00:16.0	yes
03	(1) HD-222259A	WFC3/IR	1	02-Jul-2025 09:00:18.0	yes
04	(1) HD-222259A	WFC3/IR	1	02-Jul-2025 09:00:20.0	yes
05	(1) HD-222259A	WFC3/IR	1	02-Jul-2025 09:00:22.0	yes
06	(1) HD-222259A	WFC3/IR	1	02-Jul-2025 09:00:23.0	yes
07	(1) HD-222259A CCDFLAT	STIS/CCD STIS/FUV-MAMA	2	02-Jul-2025 09:00:25.0	yes

8 Total Orbits Used

ABSTRACT

Prior observations of mature gas giants have shown evidence of metal-enhanced atmospheres with respect to their host-star. This enrichment could happen during the birth of the planet or it could be caused by atmospheric evolution. While formation and evolution models are able to provide various physical explanations, observational evidence to support any specific hypothesis is still missing due to an inability to distinguish the root-cause of metal-enhancement when studying evolved worlds. Atmospheric characterization of very young planets (<100 Myr), which are yet to experience significant atmospheric evolution, allows us to break the formation/evolution degeneracy and uncover the cause of metal-enrichment.

We propose to observe the young (45 Myr) planet DS Tuc Ab using simultaneous transmission spectroscopy with HST WFC3 and JWST NIRSpec to measure the atmospheric metallicity and the carbon-to-oxygen ratio. Forward models show that water, methane, and carbon dioxide are the fundamental tracers of these characteristics, which are best distinguished by having a broad wavelength coverage. This can only be achieved by using both facilities. These data will also allow us to constrain the planet's mass which, in combination with the proposed STIS observations of the host star, will allow us to generate models of the planet's evolution to predict its final fate.

Therefore, these observations will give us strict constraints on formation and evolution pathways for this adolescent world. By also using observations of analogue mature planets, we will be able to construct a timeline of atmospheric evolution and find the source of metal-enrichment in exoplanetary atmospheres.

OBSERVING DESCRIPTION

We will perform a time-series observation using WFC3 G141 to measure the transmission spectrum of DS Tuc A b. As the name suggests, DS Tuc A has a companion star (DS Tuc B) with a projected separation of 6.16". Due to the restraints of RGM, and the brightness of DS Tuc A, the spectra from these stars will overlap before the first NDR. Therefore, in order to correct for contamination from this companion star, each orbit contains a single G141 stare mode spectrum to measure the relative flux of the two stars. We have placed orient constraints such that the spectra of DS Tuc A and DS Tuc B do not overlap in this stare mode image.

The scan observations will be taken with the 512x512 subarray. We will use the SPARS25, NSAMP=3 sampling sequence and the spatial scan mode with bi-directional scans to maximize the duty cycle. We will use a scan rate of ~0.93"/s, which will give peak counts of ~30K e-/pix from DS Tuc A and ~20K e-/pix from DS Tuc B. Hence,the regions in which these spectra overlap shall be <50K e-/pix. To mid-orbit avoid buffer dumps, each

WFC3 orbit has been made into a different visit.

Furthermore, we will utilise 3 orbits of time to observer DS Tuc A with COS and STIS to understand the planet's irradiation environment. We will take exposures with STIS G230L, G430L, and G750L as well as with COS G140L.

Visit

Proposal 17832, WFC3 G141 Transit (01), scheduling Wed Jul 02 13:00:25 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 70%; ORIENT 80D TO 220 D; ORIENT 260D TO 40 D; Period 8.1382123415 D AND ZERO-PHASE HJD2458332.3098858669

Diagnostics

(WFC3 G141 Transit (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(WFC3 G141 Transit (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(WFC3 G141 Transit (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-222259A	RA: 23 39 39.4808 (354.9145033d) Dec: -69 11 44.71 (-69.19575d) Equinox: J2000	Proper Motion RA: 79.529 mas/yr Proper Motion Dec: -67.55100000646053 mas/yr Parallax: 0.022636700000000003" Epoch of Position: 2000	V=8.226	Reference Frame: ICRS

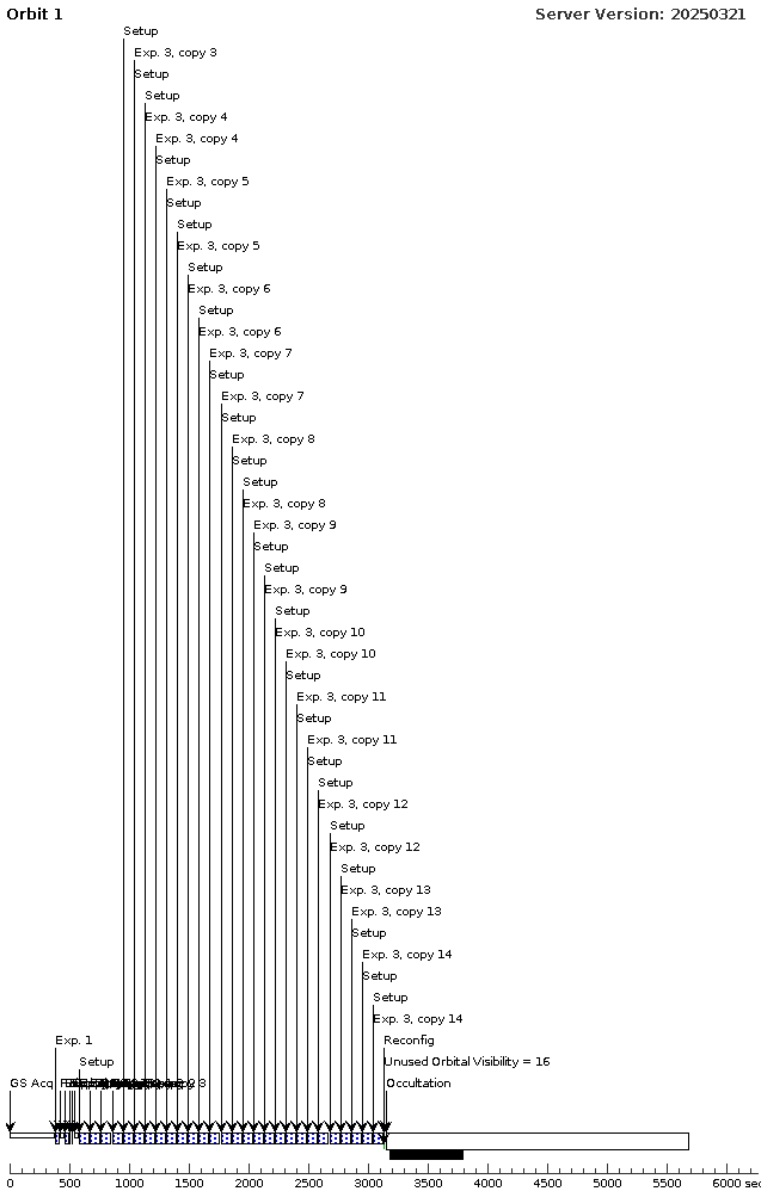
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Direct Image	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM512	F130N	NSAMP=3; SAMP-SEQ=RAPID	PHASE 0.97 TO 0.976	Sequence 1-3 Non-Int in WFC3 G141 Transit (01)	2.559081 Secs (2.559 Secs) *[==>]*	 ***[1]***
2	Stare	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=RAPID	POS TARG -30,null	Sequence 1-3 Non-Int in WFC3 G141 Transit (01)	0.55563 Secs X 3 (1.667 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]*	 ***[1]***
3	F/R Scans	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM512	G141	SAMP-SEQ=SPARS25; NSAMP=3	POS TARG -30,-27; SPATIAL SCAN 0.930386,90.0 Degrees, Round trip	Sequence 1-3 Non-Int in WFC3 G141 Transit (01)	46.695529 Secs X 14 (1307.475 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]* *[==>(Copy 8, Forward)]* *[==>(Copy 8, Reverse)]* *[==>(Copy 9, Forward)]* *[==>(Copy 9, Reverse)]* *[==>(Copy 10, Forward)]* *[==>(Copy 10, Reverse)]* *[==>(Copy 11, Forward)]* *[==>(Copy 11, Reverse)]* *[==>(Copy 12, Forward)]* *[==>(Copy 12, Reverse)]* *[==>(Copy 13, Forward)]* *[==>(Copy 13, Reverse)]* *[==>(Copy 14, Forward)]* *[==>(Copy 14, Reverse)]*	 ***[1]***

Orbit Structure



Visit

Proposal 17832, WFC3 G141 Transit (02), scheduling Wed Jul 02 13:00:26 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 70%; ORIENT 80D TO 220 D; ORIENT 260D TO 40 D; AFTER 01 BY 0.95 Orbits TO 1.05 Orbits

Diagnostics

(WFC3 G141 Transit (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(WFC3 G141 Transit (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-222259A	RA: 23 39 39.4808 (354.9145033d) Dec: -69 11 44.71 (-69.19575d) Equinox: J2000	Proper Motion RA: 79.529 mas/yr Proper Motion Dec: -67.55100000646053 mas/yr Parallax: 0.022636700000000003" Epoch of Position: 2000	V=8.226	Reference Frame: ICRS

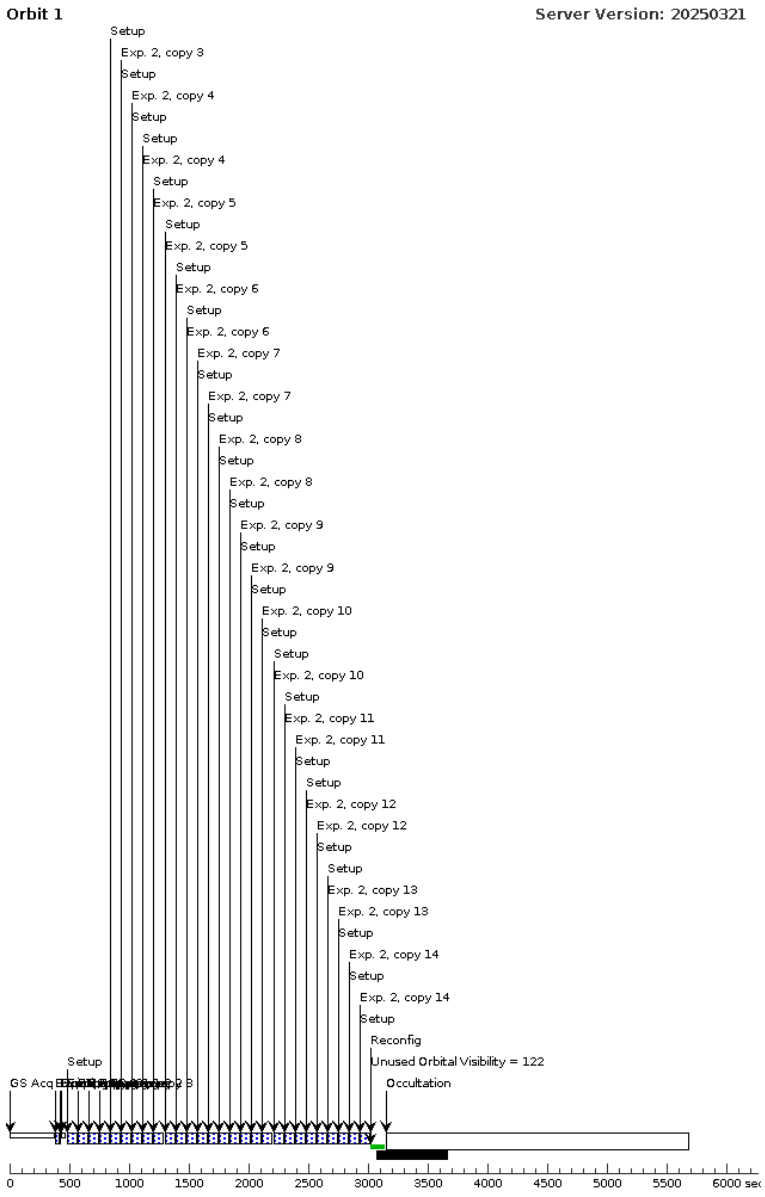
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Stare	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=RAPID	POS TARG -30,null	Sequence 1-2 Non-Int in WFC3 G141 Transit (02)	0.55563 Secs X 2 (1.111 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]*	 ***[1]***
2	F/R Scans	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM512	G141	SAMP-SEQ=SPARS25; NSAMP=3	POS TARG -30,-27; SPATIAL SCAN 0.930386,90.0 Degrees, Round trip	Sequence 1-2 Non-Int in WFC3 G141 Transit (02)	46.695529 Secs X 14 (1307.475 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]* *[==>(Copy 8, Forward)]* *[==>(Copy 8, Reverse)]* *[==>(Copy 9, Forward)]* *[==>(Copy 9, Reverse)]* *[==>(Copy 10, Forward)]* *[==>(Copy 10, Reverse)]* *[==>(Copy 11, Forward)]* *[==>(Copy 11, Reverse)]* *[==>(Copy 12, Forward)]* *[==>(Copy 12, Reverse)]* *[==>(Copy 13, Forward)]* *[==>(Copy 13, Reverse)]* *[==>(Copy 14, Forward)]* *[==>(Copy 14, Reverse)]*	 ***[1]***

Orbit Structure



Visit

Proposal 17832, WFC3 G141 Transit (03), scheduling Wed Jul 02 13:00:26 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 70%; ORIENT 80D TO 220 D; ORIENT 260D TO 40 D; AFTER 02 BY 0.95 Orbits TO 1.05 Orbits

Diagnostics

(WFC3 G141 Transit (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(WFC3 G141 Transit (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-222259A	RA: 23 39 39.4808 (354.9145033d) Dec: -69 11 44.71 (-69.19575d) Equinox: J2000	Proper Motion RA: 79.529 mas/yr Proper Motion Dec: -67.55100000646053 mas/yr Parallax: 0.022636700000000003" Epoch of Position: 2000	V=8.226	Reference Frame: ICRS

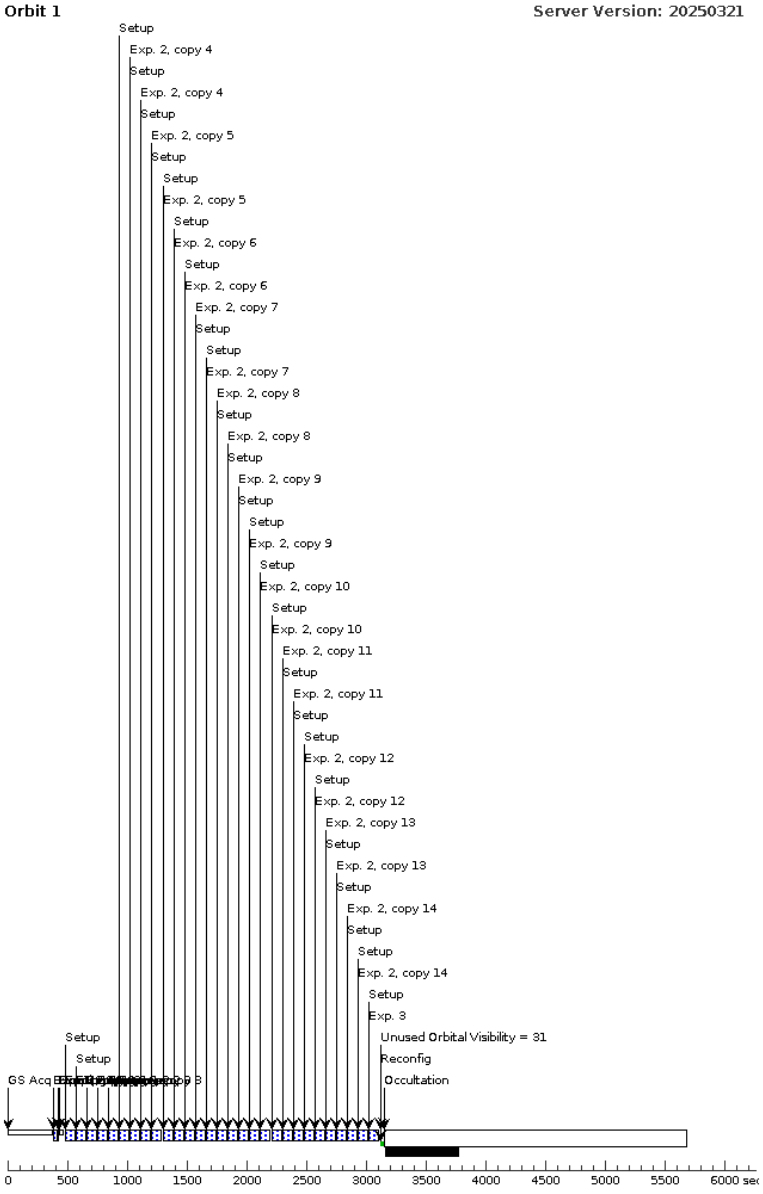
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Stare	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=RAPID	POS TARG -30,null	Sequence 1-3 Non-Int in WFC3 G141 Transit (03)	0.55563 Secs X 2 (1.111 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]*	 ***[1]***
2	F/R Scans	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM512	G141	SAMP-SEQ=SPARS25; NSAMP=3	POS TARG -30,-27; SPATIAL SCAN 0.930386,90.0 Degrees, Round trip	Sequence 1-3 Non-Int in WFC3 G141 Transit (03)	46.695529 Secs X 14 (1307.475 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]* *[==>(Copy 8, Forward)]* *[==>(Copy 8, Reverse)]* *[==>(Copy 9, Forward)]* *[==>(Copy 9, Reverse)]* *[==>(Copy 10, Forward)]* *[==>(Copy 10, Reverse)]* *[==>(Copy 11, Forward)]* *[==>(Copy 11, Reverse)]* *[==>(Copy 12, Forward)]* *[==>(Copy 12, Reverse)]* *[==>(Copy 13, Forward)]* *[==>(Copy 13, Reverse)]* *[==>(Copy 14, Forward)]* *[==>(Copy 14, Reverse)]*	 ***[1]***
3	F Scans	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM512	G141	SAMP-SEQ=SPARS25; NSAMP=3	POS TARG -30,-27; SPATIAL SCAN 0.930386,90.0 Degrees, Forward	Sequence 1-3 Non-Int in WFC3 G141 Transit (03)	46.695529 Secs (46.696 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17832, WFC3 G141 Transit (04), scheduling Wed Jul 02 13:00:26 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 70%; ORIENT 80D TO 220 D; ORIENT 260D TO 40 D; AFTER 03 BY 0.95 Orbits TO 1.05 Orbits

Diagnostics

(WFC3 G141 Transit (04)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(WFC3 G141 Transit (04)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-222259A	RA: 23 39 39.4808 (354.9145033d) Dec: -69 11 44.71 (-69.19575d) Equinox: J2000	Proper Motion RA: 79.529 mas/yr Proper Motion Dec: -67.55100000646053 mas/yr Parallax: 0.022636700000000003" Epoch of Position: 2000	V=8.226	Reference Frame: ICRS

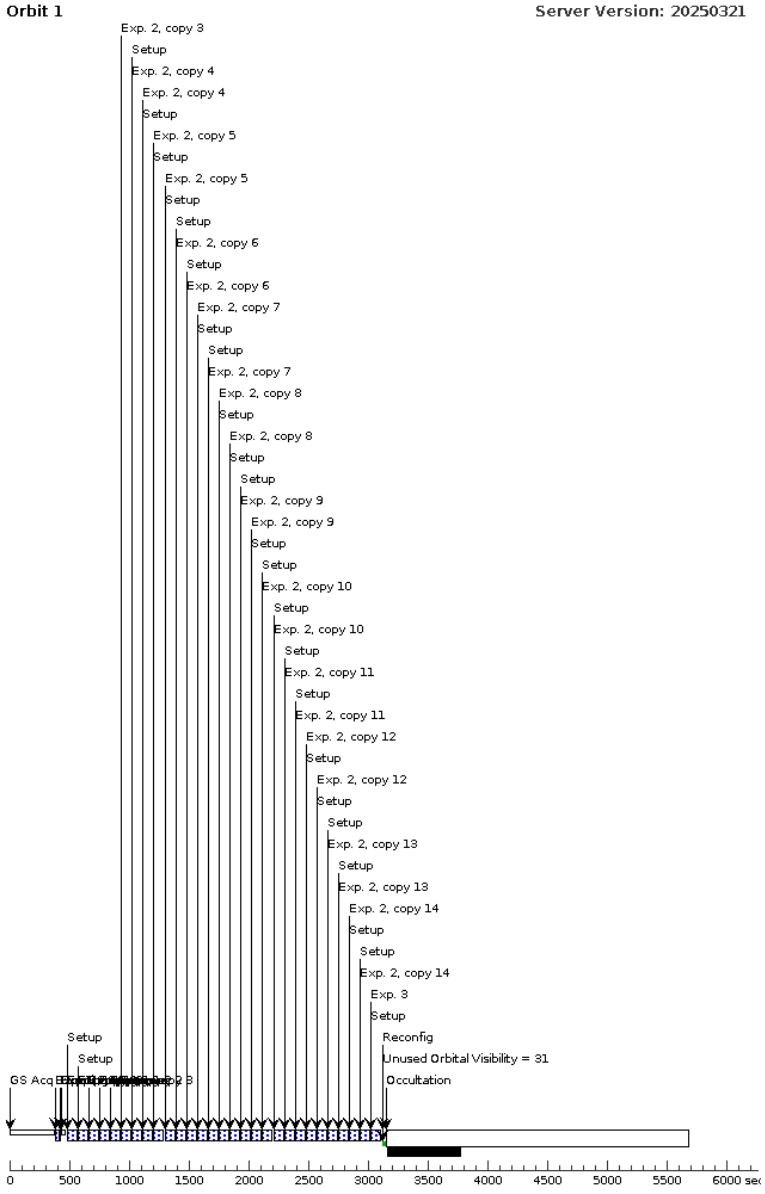
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Stare	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=RAPID	POS TARG -30,null	Sequence 1-3 Non-Int in WFC3 G141 Transit (04)	0.55563 Secs X 2 (1.111 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]*	 ***[1]***
2	F/R Scans	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM512	G141	SAMP-SEQ=SPARS25; NSAMP=3	POS TARG -30,-27; SPATIAL SCAN 0.930386,90.0 Degrees, Round trip	Sequence 1-3 Non-Int in WFC3 G141 Transit (04)	46.695529 Secs X 14 (1307.475 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]* *[==>(Copy 8, Forward)]* *[==>(Copy 8, Reverse)]* *[==>(Copy 9, Forward)]* *[==>(Copy 9, Reverse)]* *[==>(Copy 10, Forward)]* *[==>(Copy 10, Reverse)]* *[==>(Copy 11, Forward)]* *[==>(Copy 11, Reverse)]* *[==>(Copy 12, Forward)]* *[==>(Copy 12, Reverse)]* *[==>(Copy 13, Forward)]* *[==>(Copy 13, Reverse)]* *[==>(Copy 14, Forward)]* *[==>(Copy 14, Reverse)]*	 ***[1]***
3	F Scans	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM512	G141	SAMP-SEQ=SPARS25; NSAMP=3	POS TARG -30,-27; SPATIAL SCAN 0.930386,90.0 Degrees, Forward	Sequence 1-3 Non-Int in WFC3 G141 Transit (04)	46.695529 Secs (46.696 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17832, WFC3 G141 Transit (05), scheduling Wed Jul 02 13:00:26 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 70%; ORIENT 80D TO 220 D; ORIENT 260D TO 40 D; AFTER 04 BY 0.95 Orbits TO 1.05 Orbits

Diagnostics

(WFC3 G141 Transit (05)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(WFC3 G141 Transit (05)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-222259A	RA: 23 39 39.4808 (354.9145033d) Dec: -69 11 44.71 (-69.19575d) Equinox: J2000	Proper Motion RA: 79.529 mas/yr Proper Motion Dec: -67.55100000646053 mas/yr Parallax: 0.022636700000000003" Epoch of Position: 2000	V=8.226	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

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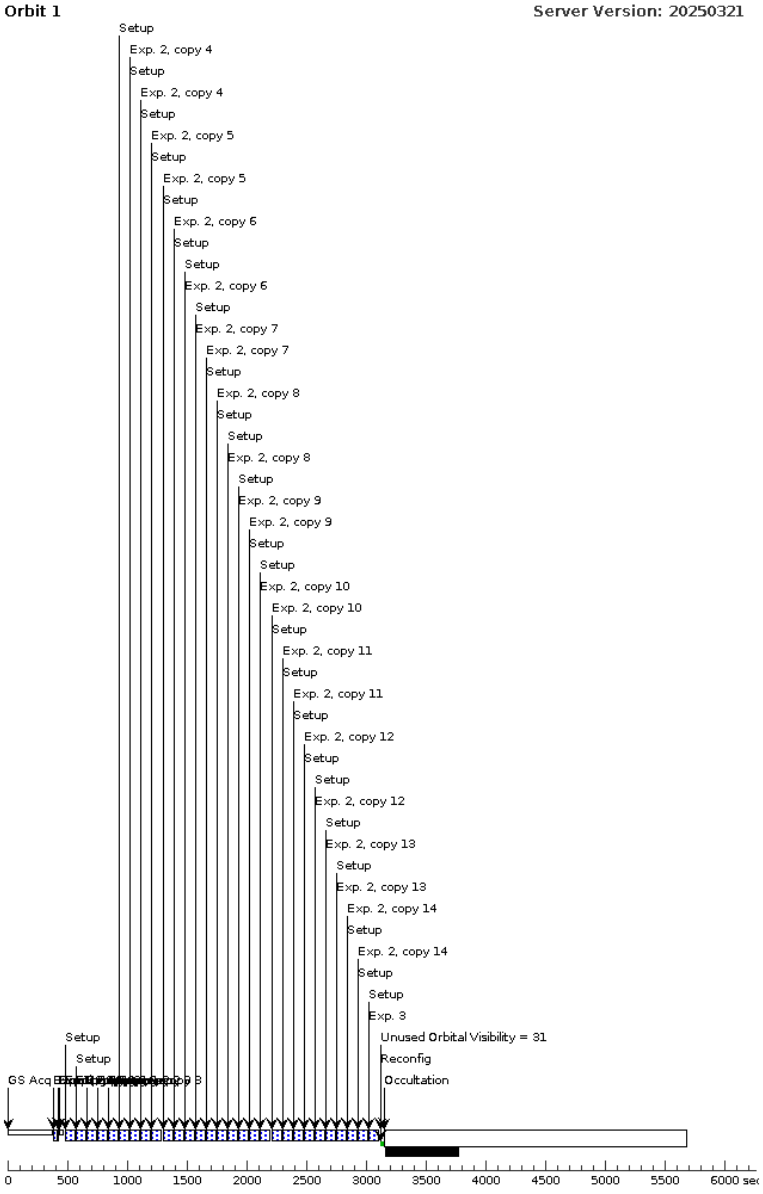
Description=[EXTRA-SOLAR PLANET]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Stare	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=RAPID	POS TARG -30,null	Sequence 1-3 Non-Int in WFC3 G141 Transit (05)	0.55563 Secs X 2 (1.111 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***
2	F/R Scans	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM512	G141	SAMP-SEQ=SPARS25; NSAMP=3	POS TARG -30,-27; SPATIAL SCAN 0.930386,90.0 Degrees, Round trip	Sequence 1-3 Non-Int in WFC3 G141 Transit (05)	46.695529 Secs X 14 (1307.475 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]* *[==>(Copy 8, Forward)]* *[==>(Copy 8, Reverse)]* *[==>(Copy 9, Forward)]* *[==>(Copy 9, Reverse)]* *[==>(Copy 10, Forward)]* *[==>(Copy 10, Reverse)]* *[==>(Copy 11, Forward)]* *[==>(Copy 11, Reverse)]* *[==>(Copy 12, Forward)]* *[==>(Copy 12, Reverse)]* *[==>(Copy 13, Forward)]* *[==>(Copy 13, Reverse)]* *[==>(Copy 14, Forward)]* *[==>(Copy 14, Reverse)]*	***[1]***
3	F Scans	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM512	G141	SAMP-SEQ=SPARS25; NSAMP=3	POS TARG -30,-27; SPATIAL SCAN 0.930386,90.0 Degrees, Forward	Sequence 1-3 Non-Int in WFC3 G141 Transit (05)	46.695529 Secs (46.696 Secs) *[==>]*	***[1]***

Orbit Structure



Visit

Proposal 17832, WFC3 G141 Transit (06), scheduling Wed Jul 02 13:00:26 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 70%; ORIENT 80D TO 220 D; ORIENT 260D TO 40 D; AFTER 05 BY 0.95 Orbits TO 1.05 Orbits

Diagnostics

(WFC3 G141 Transit (06)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(WFC3 G141 Transit (06)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(WFC3 G141 Transit (06)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-222259A	RA: 23 39 39.4808 (354.9145033d) Dec: -69 11 44.71 (-69.19575d) Equinox: J2000	Proper Motion RA: 79.529 mas/yr Proper Motion Dec: -67.55100000646053 mas/yr Parallax: 0.022636700000000003" Epoch of Position: 2000	V=8.226	Reference Frame: ICRS

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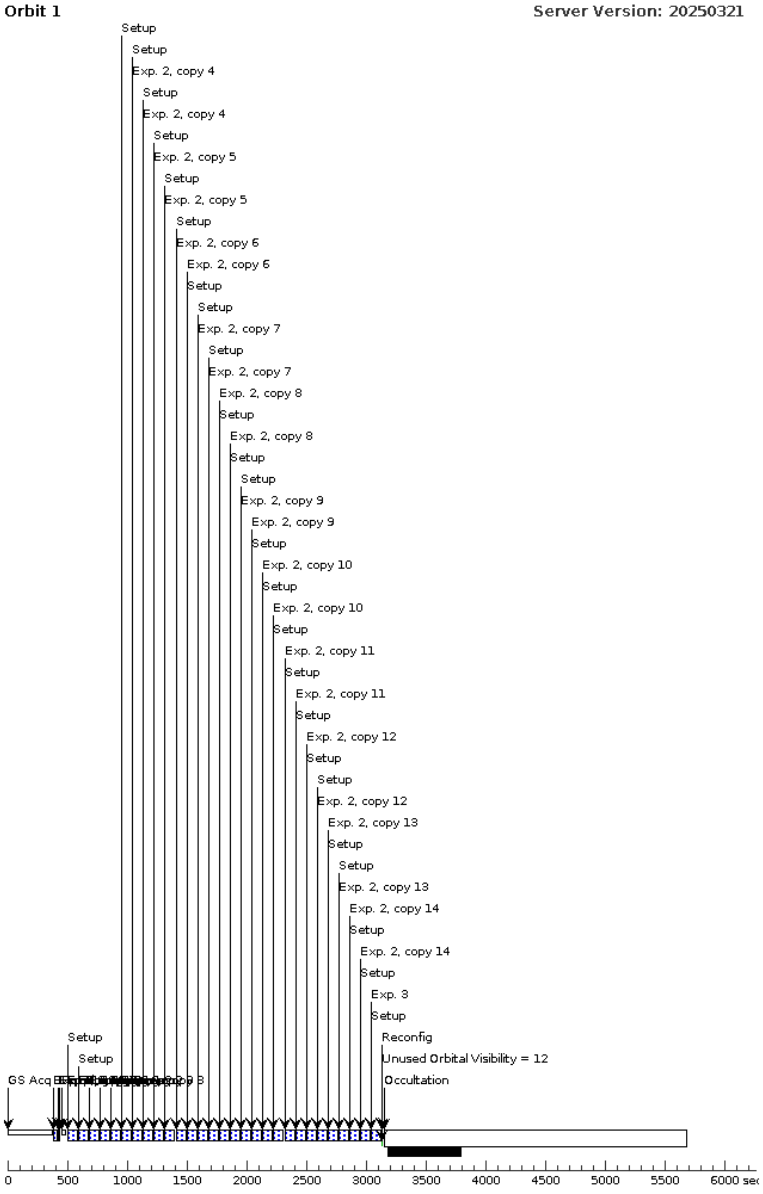
SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Stare	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=RAPID	POS TARG -30,null; SAA CONTOUR 25	Sequence 1-3 Non-Int in WFC3 G141 Transit (06)	0.55563 Secs X 3 (1.667 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]*	 ***[1]***
2	F/R Scans	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM512	G141	SAMP-SEQ=SPARS25; NSAMP=3	POS TARG -30,-27; SPATIAL SCAN 0.9 30386,90.0 Degrees, Round trip; SAA CONTOUR 25	Sequence 1-3 Non-Int in WFC3 G141 Transit (06)	46.695529 Secs X 14 (1307.475 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]* *[==>(Copy 8, Forward)]* *[==>(Copy 8, Reverse)]* *[==>(Copy 9, Forward)]* *[==>(Copy 9, Reverse)]* *[==>(Copy 10, Forward)]* *[==>(Copy 10, Reverse)]* *[==>(Copy 11, Forward)]* *[==>(Copy 11, Reverse)]* *[==>(Copy 12, Forward)]* *[==>(Copy 12, Reverse)]* *[==>(Copy 13, Forward)]* *[==>(Copy 13, Reverse)]* *[==>(Copy 14, Forward)]* *[==>(Copy 14, Reverse)]*	 ***[1]***
3	F Scans	(1) HD-222259A	WFC3/IR, MULTIACCUM, GRISM512	G141	SAMP-SEQ=SPARS25; NSAMP=3	POS TARG -30,-27; SPATIAL SCAN 0.9 30386,90.0 Degrees, Forward; SAA CONTOUR 25	Sequence 1-3 Non-Int in WFC3 G141 Transit (06)	46.695529 Secs (46.696 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17832, STIS (07), completed Wed Jul 02 13:00:26 GMT 2025

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: SCHED 70%

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-222259A	RA: 23 39 39.4808 (354.9145033d) Dec: -69 11 44.71 (-69.19575d) Equinox: J2000	Proper Motion RA: 79.529 mas/yr Proper Motion Dec: -67.55100000646053 mas/yr Parallax: 0.022636700000000003" Epoch of Position: 2000	V=8.226	Reference Frame: ICRS

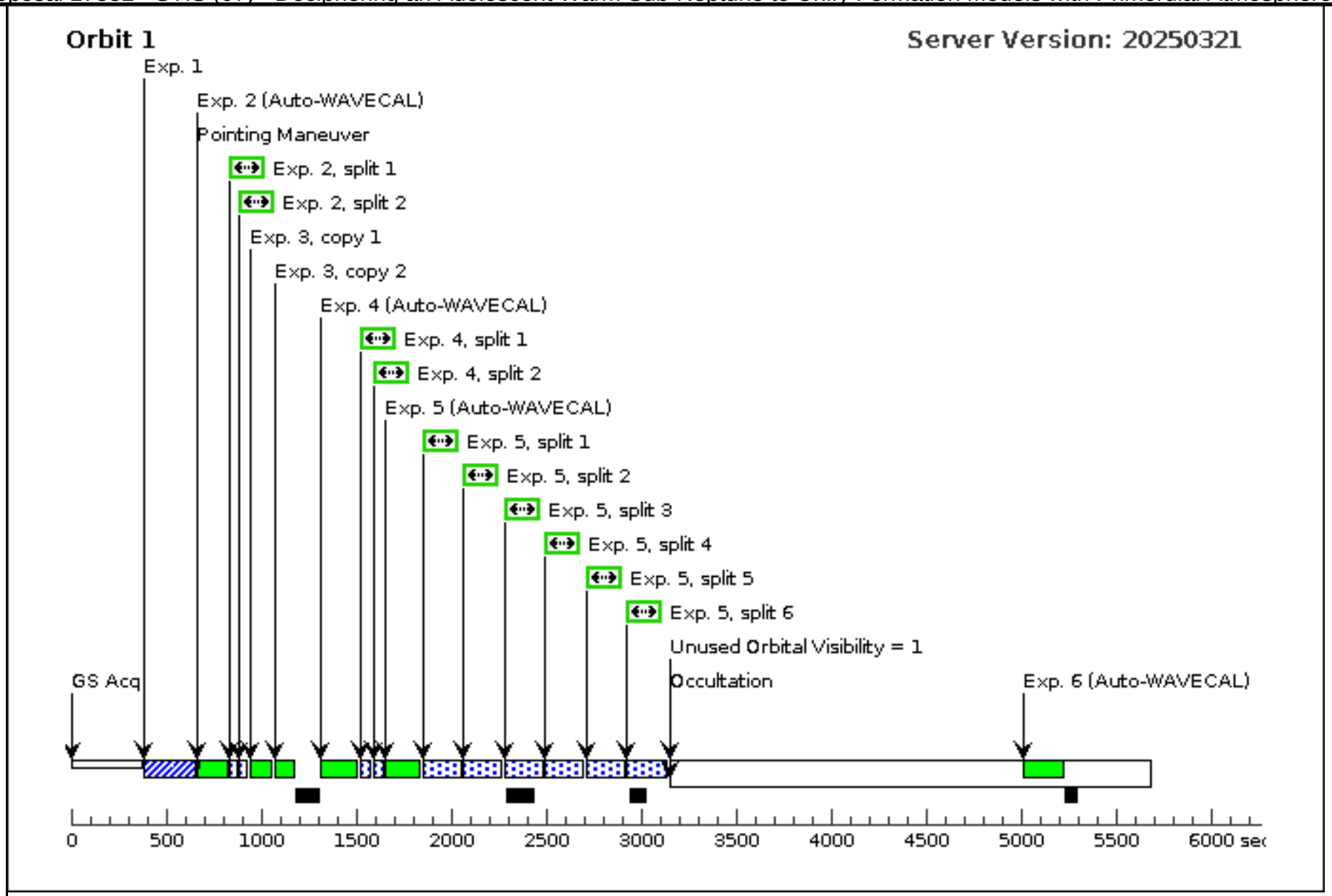
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

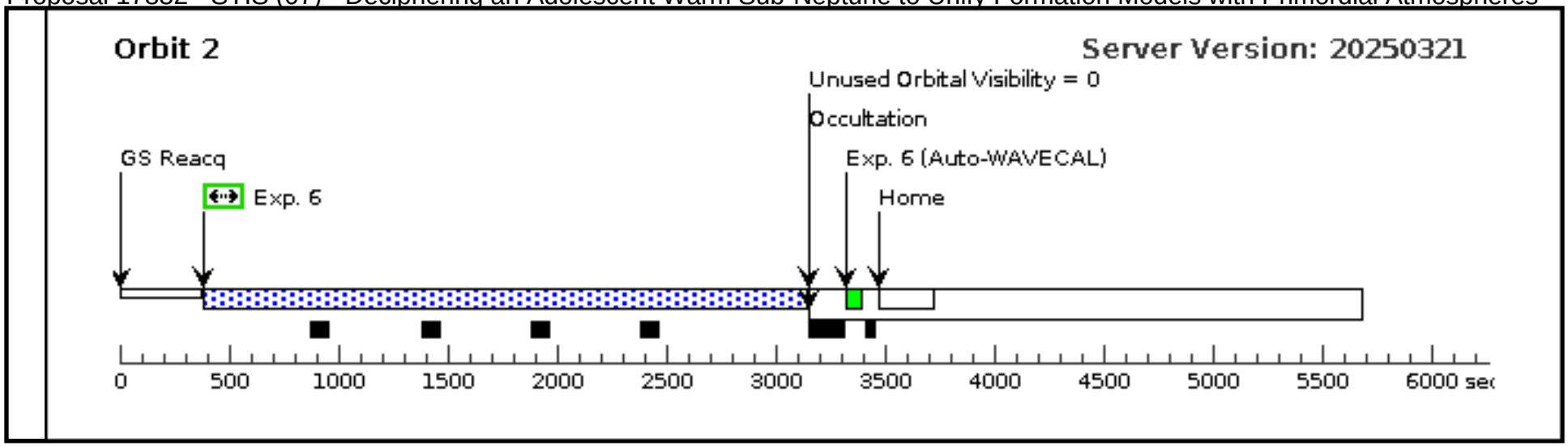
SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) HD-222259A	STIS/CCD, ACQ, F28X50OII	MIRROR	ACQTYPE=POINT			2 Secs (2 Secs) *[==>]*	***[1]***
2		(1) HD-222259A	STIS/CCD, ACCUM, 52X0.2	G750L 7751 A	CR-SPLIT=2			16 Secs (16 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
3		CCDFLAT	STIS/CCD, ACCUM, 0.3X0.09	G750L 7751 A				*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***
4		(1) HD-222259A	STIS/CCD, ACCUM, 52X0.2	G430L 4300 A	CR-SPLIT=2			30 Secs (30 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
5		(1) HD-222259A	STIS/CCD, ACCUM, 52X0.2	G230LB 2375 A	CR-SPLIT=6			1026 Secs (1026 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]* *[==>(Split 5)]* *[==>(Split 6)]*	***[1]***
6	(STIS.sp.1937484)	(1) HD-222259A	STIS/FUV-MAMA, TIME-TAG, 52X0.2	G140L 1425 A	BUFFER-TIME=500			2743 Secs (2743 Secs) *[==>]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20250321
Unused Orbital Visibility = 0
Occultation
GS Reacq
Exp. 6
Exp. 6 (Auto-WAVECAL)
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec