11309 - Chemical Composition of an Exo-Neptune

Cycle: 15, Proposal Category: GO/DD

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) GJ436 (2) GJ436-REF-1 (4) GJ436-REF-3	FGS	1	12-Dec-2007 21:00:51.0	yes
02	(1) GJ436 (2) GJ436-REF-1 (4) GJ436-REF-3	FGS	1	12-Dec-2007 21:00:55.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
03	(1) GJ436 (2) GJ436-REF-1 (4) GJ436-REF-3	FGS	1	12-Dec-2007 21:00:57.0	yes
04	(1) GJ436 (2) GJ436-REF-1 (4) GJ436-REF-3	FGS	1	12-Dec-2007 21:01:00.0	yes
05	(1) GJ436 (2) GJ436-REF-1 (4) GJ436-REF-3	FGS	1	12-Dec-2007 21:01:02.0	yes
06	(1) GJ436 (2) GJ436-REF-1 (4) GJ436-REF-3	FGS	1	12-Dec-2007 21:01:05.0	yes

6 Total Orbits Used

ABSTRACT

The recent discovery that the Neptune-like exoplanet GJ 436 b transits its host star has presented us the first chance to observationally study ice giant formation beyond our solar system (Gillon et al. 2007). Using Directors Discretionary time, we propose to obtain a high-precision light curve of the GJ 436 b transit with the FGS in order to improve the current radius determination for this planet. Measuring a precise radius for GJ 436 b will allow us to ascertain whether the planet has a pure water vapor or H/He envelope like Uranus and Neptune. Knowing this will constrain its formation and evolution and help place our own solar system ice giants in a broader context. Additionally, a precise radius for GJ 436 b will be a necessity for interpreting the certain follow-up observations of this unique system.

OBSERVING DESCRIPTION

enter description here

Visit

Proposal 11309, Visit 01, scheduling Thu Dec 13 02:01:08 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: FGS

Special Requirements: PCS MODE FINE; SCHED 70%; ORIENT 293.3D TO 293.3 D; BETWEEN 02-JAN-2008:23:00:00 AND 03-JAN-2008:00:30:00

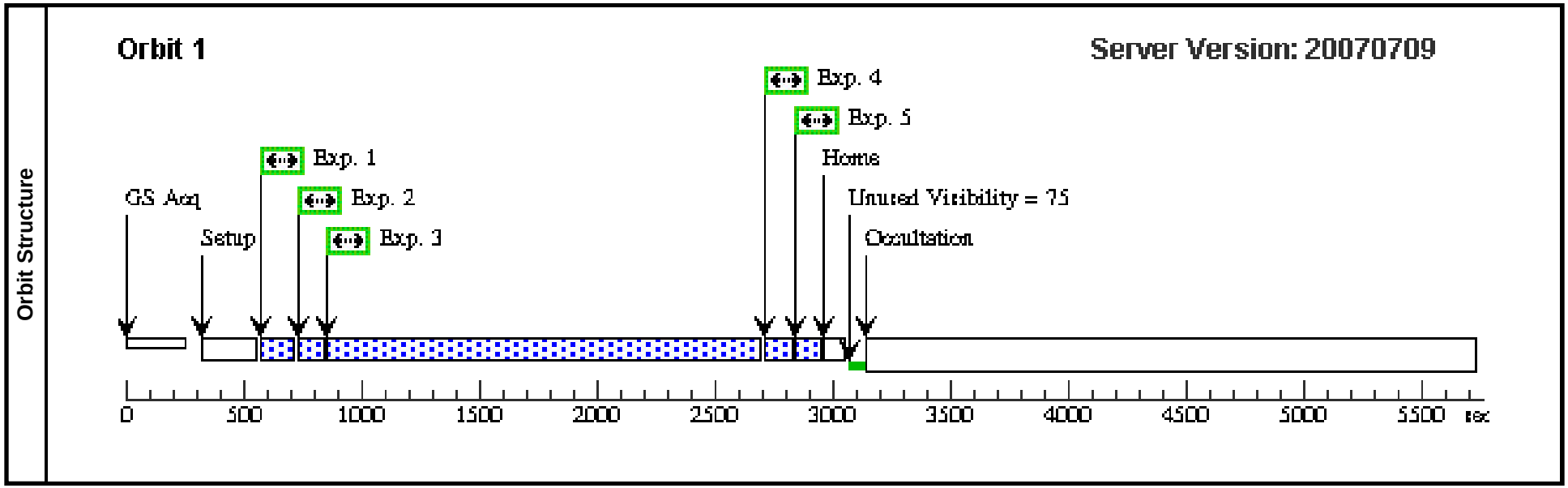
Comments: The phase requirement is attached to the first photometric reference star, not the transit target, GJ436. Given that the observation of GJ436-REF-1 begins at the indicated phase, and that the observations of GJ436-REF-1 and GJ436-REF-2 with overheads take a total of 281 seconds, our phases have been adjusted by -281 seconds (= -0.0012 in phase) so that the GJ 436 exposure starts at the required phase of the transit. Phase = 0 is assumed to be the midpoint of the transit. This particular visit should capture a little after transit mid-point through egress.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GJ436	RA: 11 42 11.0941 (175.5462254d) Dec: +26 42 23.65 (26.70657d) Equinox: J2000	Proper Motion RA: 0.06689s/yr Proper Motion Dec: -0.8137"/yr Parallax: 0.09773" Epoch of Position: 2000.0	V=10.68+/-0.05	Reference Frame: ICRS
(2)	GJ436-REF-1	RA: 11 42 12.1056 (175.5504400d) Dec: +26 46 7.86 (26.76885d) Equinox: J2000		V=10.8	Reference Frame: ICRS
(4)	GJ436-REF-3	RA: 11 42 0.4000 (175.5016667d) Dec: +26 45 56.90 (26.76581d) Equinox: J2000		V=12.35+/-0.1	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	GJ436-REF-1	(2) GJ436-REF-1	FGS, POS, 1	F583W		POS TARG -311,-164; GS ACQ SCENARIO SINGLE	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
2	GJ436-REF-3	(4) GJ436-REF-3	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
3	GJ436	(1) GJ436	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	1780.0 Secs *[==>]*	 ***[1]***
4	GJ436-REF-3	(4) GJ436-REF-3	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
5	GJ436-REF-1	(2) GJ436-REF-1	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20070709
Exp. 4
Exp. 5
Exp. 1
Home
GS Acq
Exp. 2
Unused Visibility = 75
Setup
Exp. 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11309, Visit 02, scheduling Thu Dec 13 02:01:09 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: FGS

Special Requirements: PCS MODE FINE; SCHED 70%; ORIENT 293.3D TO 293.3 D; BETWEEN 28-DEC-2007:15:30:00 AND 28-DEC-2007:16:30:00

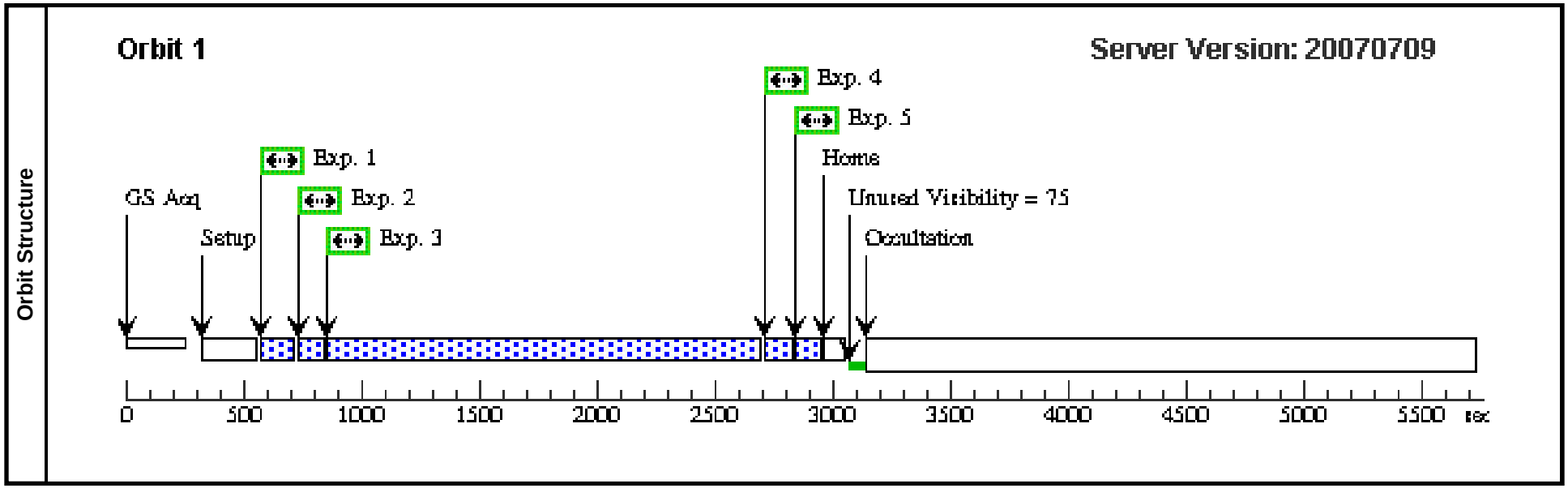
Comments: The phase requirement is attached to the first photometric reference star, not the transit target, GJ436. Given that the observation of GJ436-REF-1 begins at the indicated phase, and that the observations of GJ436-REF-1 and GJ436-REF-2 with overheads take a total of 281 seconds, our phases have been adjusted by -281 seconds (= -0.0012 in phase) so that the GJ 436 exposure starts at the required phase of the transit. Phase = 0 is assumed to be the midpoint of the transit. This particular visit should capture a little before ingress to just before transit mid-point.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GJ436	RA: 11 42 11.0941 (175.5462254d) Dec: +26 42 23.65 (26.70657d) Equinox: J2000	Proper Motion RA: 0.06689s/yr Proper Motion Dec: -0.8137"/yr Parallax: 0.09773" Epoch of Position: 2000.0	V=10.68+/-0.05	Reference Frame: ICRS
(2)	GJ436-REF-1	RA: 11 42 12.1056 (175.5504400d) Dec: +26 46 7.86 (26.76885d) Equinox: J2000		V=10.8	Reference Frame: ICRS
(4)	GJ436-REF-3	RA: 11 42 0.4000 (175.5016667d) Dec: +26 45 56.90 (26.76581d) Equinox: J2000		V=12.35+/-0.1	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	GJ436-REF-1	(2) GJ436-REF-1	FGS, POS, 1	F583W		POS TARG -311,-164; GS ACQ SCENARIO SINGLE	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
2	GJ436-REF-3	(4) GJ436-REF-3	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
3	GJ436	(1) GJ436	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	1780.0 Secs *[==>]*	 ***[1]***
4	GJ436-REF-3	(4) GJ436-REF-3	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
5	GJ436-REF-1	(2) GJ436-REF-1	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20070709
Exp. 4
Exp. 5
Exp. 1
Home
GS Acq
Exp. 2
Unused Visibility = 75
Setup
Exp. 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11309, Visit 03, scheduling Thu Dec 13 02:01:09 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: FGS

Special Requirements: PCS MODE FINE; SCHED 70%; ORIENT 290.0D TO 345.0 D; BETWEEN 12-DEC-2007:19:00:00 AND 12-DEC-2007:20:00:00

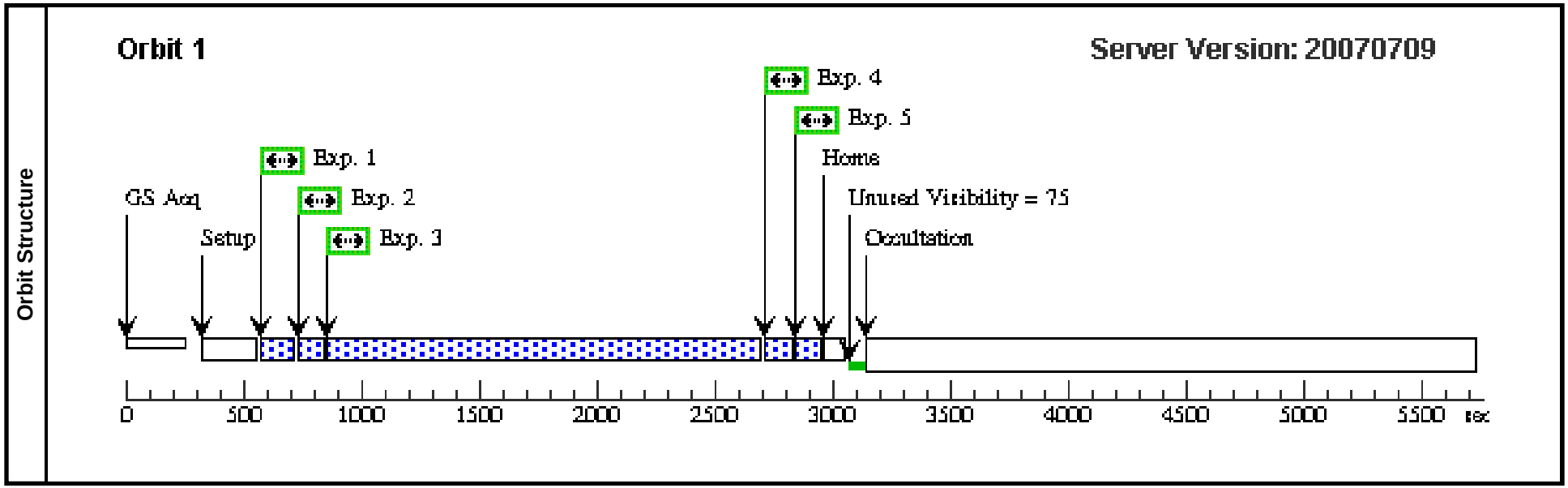
Comments: The phase requirement is attached to the first photometric reference star, not the transit target, GJ436. Given that the observation of GJ436-REF-1 begins at the indicated phase, and that the observations of GJ436-REF-1 and GJ436-REF-2 with overheads take a total of 281 seconds, our phases have been adjusted by -281 seconds (= -0.0012 in phase) so that the GJ 436 exposure starts at the required phase of the transit. Phase = 0 is assumed to be the midpoint of the transit. This particular visit should be centered on the transit mid-point.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GJ436	RA: 11 42 11.0941 (175.5462254d) Dec: +26 42 23.65 (26.70657d) Equinox: J2000	Proper Motion RA: 0.06689s/yr Proper Motion Dec: -0.8137"/yr Parallax: 0.09773" Epoch of Position: 2000.0	V=10.68+/-0.05	Reference Frame: ICRS
(2)	GJ436-REF-1	RA: 11 42 12.1056 (175.5504400d) Dec: +26 46 7.86 (26.76885d) Equinox: J2000		V=10.8	Reference Frame: ICRS
(4)	GJ436-REF-3	RA: 11 42 0.4000 (175.5016667d) Dec: +26 45 56.90 (26.76581d) Equinox: J2000		V=12.35+/-0.1	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	GJ436-REF-1	(2) GJ436-REF-1	FGS, POS, 1	F583W		POS TARG -311,-164; GS ACQ SCENARIO SINGLE	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
2	GJ436-REF-3	(4) GJ436-REF-3	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
3	GJ436	(1) GJ436	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	1780.0 Secs *[==>]*	 ***[1]***
4	GJ436-REF-3	(4) GJ436-REF-3	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
5	GJ436-REF-1	(2) GJ436-REF-1	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20070709
Exp. 4
Exp. 5
Exp. 1
Home
GS Acq
Exp. 2
Unused Visibility = 75
Setup
Exp. 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11309, Visit 04, completed Thu Dec 13 02:01:10 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: FGS

Special Requirements: PCS MODE FINE; SCHED 70%; ORIENT 304.0D TO 311.0 D; BETWEEN 07-DEC-2007:12:30:00 AND 07-DEC-2007:13:40:00

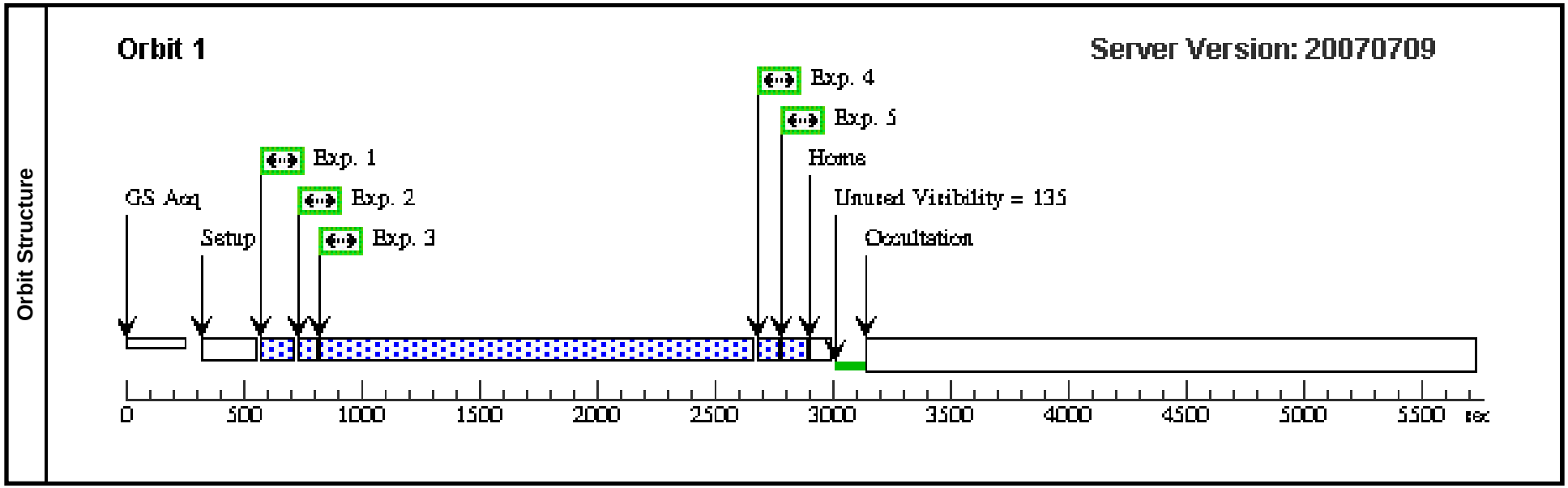
Comments: The phase requirement is attached to the first photometric reference star, not the transit target, GJ436. Given that the observation of GJ436-REF-1 begins at the indicated phase, and that the observations of GJ436-REF-1 and GJ436-REF-2 with overheads take a total of 281 seconds, our phases have been adjusted by -281 seconds (= -0.0012 in phase) so that the GJ 436 exposure starts at the required phase of the transit. Phase = 0 is assumed to be the midpoint of the transit. This particular visit should capture a little after transit mid-point through egress.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GJ436	RA: 11 42 11.0941 (175.5462254d) Dec: +26 42 23.65 (26.70657d) Equinox: J2000	Proper Motion RA: 0.06689s/yr Proper Motion Dec: -0.8137"/yr Parallax: 0.09773" Epoch of Position: 2000.0	V=10.68+/-0.05	Reference Frame: ICRS
(2)	GJ436-REF-1	RA: 11 42 12.1056 (175.5504400d) Dec: +26 46 7.86 (26.76885d) Equinox: J2000		V=10.8	Reference Frame: ICRS
(4)	GJ436-REF-3	RA: 11 42 0.4000 (175.5016667d) Dec: +26 45 56.90 (26.76581d) Equinox: J2000		V=12.35+/-0.1	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	GJ436-REF-1	(2) GJ436-REF-1	FGS, POS, 1	F583W		POS TARG -311,-164; GS ACQ SCENARIO SINGLE	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
2	GJ436-REF-3	(4) GJ436-REF-3	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	30.0 Secs *[==>]*	 ***[1]***
3	GJ436	(1) GJ436	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	1780.0 Secs *[==>]*	 ***[1]***
4	GJ436-REF-3	(4) GJ436-REF-3	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	30.0 Secs *[==>]*	 ***[1]***
5	GJ436-REF-1	(2) GJ436-REF-1	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20070709
Exp. 4
Exp. 5
Exp. 1
Home
GS Acq
Exp. 2
Unused Visibility = 135
Setup
Exp. 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11309, Visit 05, scheduling Thu Dec 13 02:01:11 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: FGS

Special Requirements: PCS MODE FINE; SCHED 70%; ORIENT 293.3D TO 293.3 D; BETWEEN 05-JAN-2008:13:45:00 AND 05-JAN-2008:14:45:00

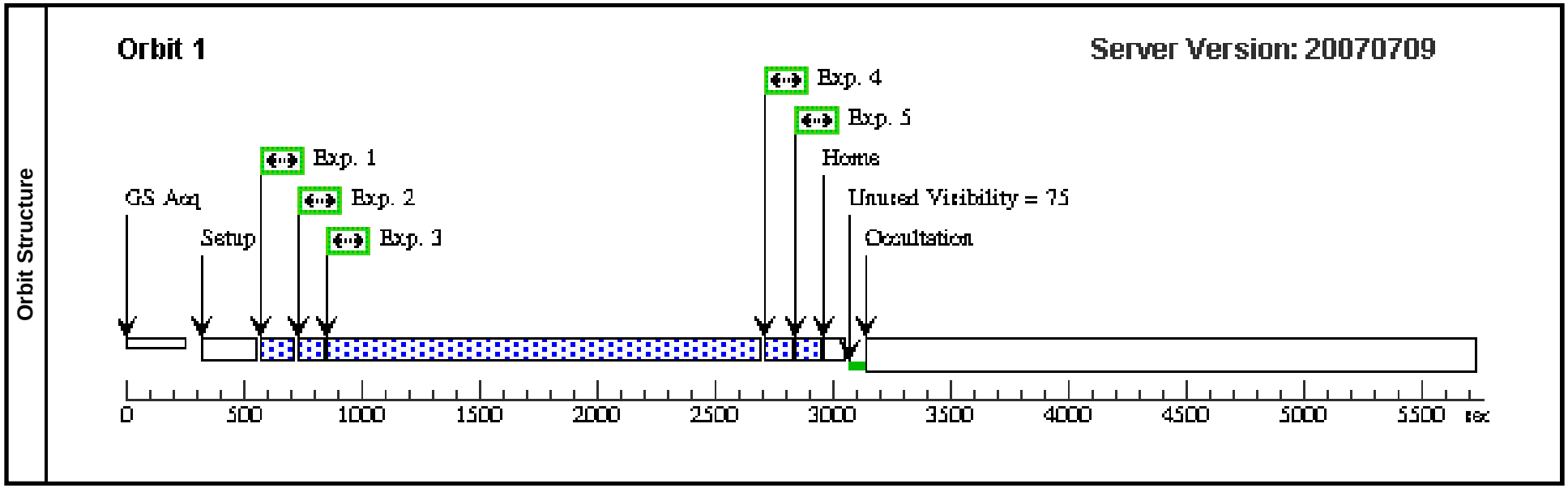
Comments: The phase requirement is attached to the first photometric reference star, not the transit target, GJ436. Given that the observation of GJ436-REF-1 begins at the indicated phase, and that the observations of GJ436-REF-1 and GJ436-REF-2 with overheads take a total of 281 seconds, our phases have been adjusted by -281 seconds (= -0.0012 in phase) so that the GJ 436 exposure starts at the required phase of the transit. Phase = 0 is assumed to be the midpoint of the transit. This particular visit should capture a little before ingress to just before transit mid-point.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GJ436	RA: 11 42 11.0941 (175.5462254d) Dec: +26 42 23.65 (26.70657d) Equinox: J2000	Proper Motion RA: 0.06689s/yr Proper Motion Dec: -0.8137"/yr Parallax: 0.09773" Epoch of Position: 2000.0	V=10.68+/-0.05	Reference Frame: ICRS
(2)	GJ436-REF-1	RA: 11 42 12.1056 (175.5504400d) Dec: +26 46 7.86 (26.76885d) Equinox: J2000		V=10.8	Reference Frame: ICRS
(4)	GJ436-REF-3	RA: 11 42 0.4000 (175.5016667d) Dec: +26 45 56.90 (26.76581d) Equinox: J2000		V=12.35+/-0.1	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	GJ436-REF-1	(2) GJ436-REF-1	FGS, POS, 1	F583W		POS TARG -311,-164; GS ACQ SCENARIO SINGLE	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
2	GJ436-REF-3	(4) GJ436-REF-3	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
3	GJ436	(1) GJ436	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	1780.0 Secs *[==>]*	 ***[1]***
4	GJ436-REF-3	(4) GJ436-REF-3	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
5	GJ436-REF-1	(2) GJ436-REF-1	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20070709
Exp. 4
Exp. 5
Exp. 1
Home
GS Acq
Exp. 2
Unused Visibility = 75
Setup
Exp. 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11309, Visit 06, completed Thu Dec 13 02:01:11 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: FGS

Special Requirements: PCS MODE FINE; SCHED 70%; ORIENT 290.0D TO 345.0 D; BETWEEN 04-DEC-2007:21:00:00 AND 04-DEC-2007:22:00:00

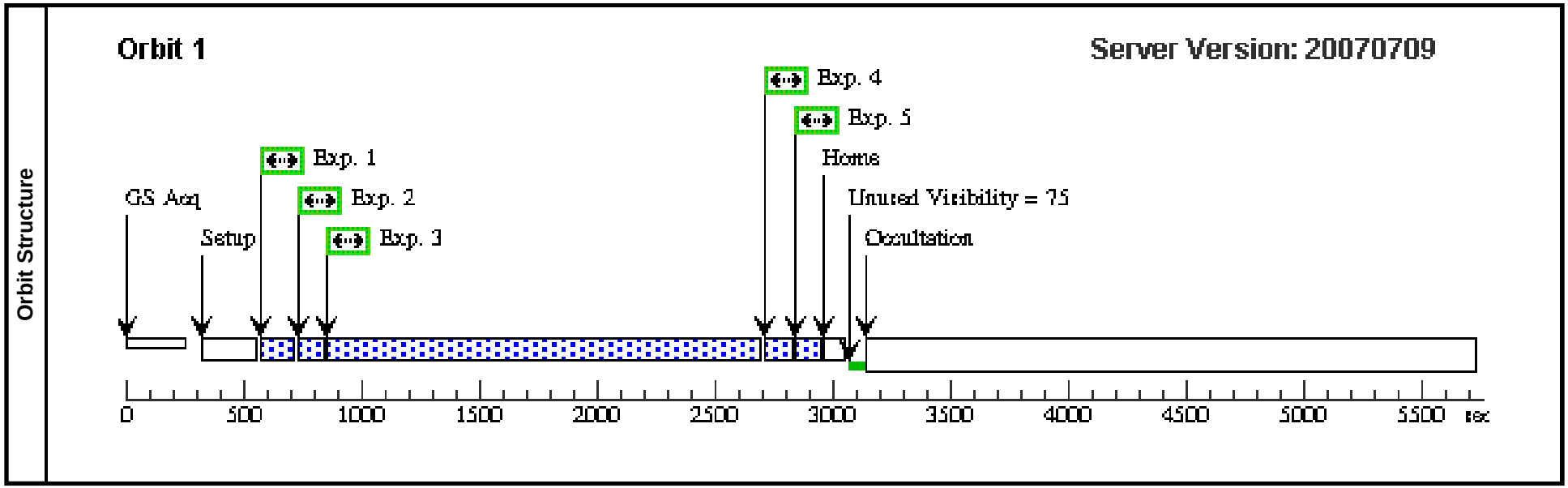
Comments: The phase requirement is attached to the first photometric reference star, not the transit target, GJ436. Given that the observation of GJ436-REF-1 begins at the indicated phase, and that the observations of GJ436-REF-1 and GJ436-REF-2 with overheads take a total of 281 seconds, our phases have been adjusted by -281 seconds (= -0.0012 in phase) so that the GJ 436 exposure starts at the required phase of the transit. Phase = 0 is assumed to be the midpoint of the transit. This particular visit should be centered on the transit mid-point.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GJ436	RA: 11 42 11.0941 (175.5462254d) Dec: +26 42 23.65 (26.70657d) Equinox: J2000	Proper Motion RA: 0.06689s/yr Proper Motion Dec: -0.8137"/yr Parallax: 0.09773" Epoch of Position: 2000.0	V=10.68+/-0.05	Reference Frame: ICRS
(2)	GJ436-REF-1	RA: 11 42 12.1056 (175.5504400d) Dec: +26 46 7.86 (26.76885d) Equinox: J2000		V=10.8	Reference Frame: ICRS
(4)	GJ436-REF-3	RA: 11 42 0.4000 (175.5016667d) Dec: +26 45 56.90 (26.76581d) Equinox: J2000		V=12.35+/-0.1	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	GJ436-REF-1	(2) GJ436-REF-1	FGS, POS, 1	F583W		POS TARG -311,-164; GS ACQ SCENARIO SINGLE	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
2	GJ436-REF-3	(4) GJ436-REF-3	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
3	GJ436	(1) GJ436	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	1780.0 Secs *[==>]*	 ***[1]***
4	GJ436-REF-3	(4) GJ436-REF-3	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***
5	GJ436-REF-1	(2) GJ436-REF-1	FGS, POS, 1	F583W		SAME POS AS 1	Sequence 1-5 Non-Int	60.0 Secs *[==>]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20070709
Exp. 4
Exp. 5
Exp. 1
Home
GS Acq
Exp. 2
Unused Visibility = 75
Setup
Exp. 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec