



## 15139 - Metals from deep atmosphere to exosphere in hot-Jupiters

Cycle: 25, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

### INVESTIGATORS

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### VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) WASP-94A WAVE	STIS/CCD STIS/NUV-MAMA	5	02-Apr-2019 07:00:22.0	yes
02	(1) WASP-94A WAVE	STIS/CCD STIS/NUV-MAMA	5	02-Apr-2019 07:00:27.0	yes
11	(2) WASP-33 WAVE	STIS/CCD STIS/NUV-MAMA	5	02-Apr-2019 07:00:33.0	yes

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
12	(2) WASP-33 WAVE	STIS/CCD STIS/NUV-MAMA	5	02-Apr-2019 07:00:37.0	yes

20 Total Orbits Used

## **ABSTRACT**

With STIS/UV observations we detected magnesium atoms at high altitude in the atmosphere of the hot-Jupiter HD209458b, probing lower regions in the atmosphere than previously done with Lyman-alpha observations (Vidal-Madjar et al. 2013). With the present program, we will search for magnesium and other heavy species in escaping atmospheres of 2 giant planets orbiting hot A and F-type stars: WASP-94Ab and WASP-33b. The observations will provide unprecedented information on the physical conditions (velocity, temperature, and density) in the upper atmosphere of these two hot-Jupiters. Targets have been selected for the expected high significance level of the atmospheric detections (>10 sigma). These exoplanets present favorable configuration for upper atmosphere observations because of the combination of high escape rates and large spatial extensions of the magnesium clouds surrounding them. The atmospheric signatures of the magnesium and other metals are therefore expected to be easily detectable. Moreover, the two selected exoplanets have highly different equilibrium temperatures, below and above the MgSiO<sub>3</sub> condensation temperature. Consequently, because the metals observed in the escaping flow originate from deeper in the atmosphere where haze can condensate, the observations will constrain the physical processes taking place in the clouds that cannot be observed directly.

## **OBSERVING DESCRIPTION**

We plan to execute 2 visits for each of the 2 exoplanets, each visit consisting of 5 consecutive HST orbits. All observations will be done with the STIS E230M echelle grating.

The phase constraints will provide one to two HST orbits before the planetary transit, to measure the baseline stellar flux. With transit durations of 2.2 and 3.6 hours, we will obtain 1.5 to 2 HST orbits during the transit. The last orbit after the transit will be used to search for the presence of a comet-like tail, expected from the strong radiation pressure of the host stars.

WASP-33 is too bright for a Time-tag exposure, we adopt ACCUM exposure of 400 seconds, as already done in our HST program ID#11576. This will provide 7 exposures per orbit, and enough individual exposures to allow efficient modeling and removal of the HST orbital phase trend (Vidal-Madjar et al. 2013).

Although WASP-94 should allow for Time-Tag exposure with a buffer-time of 400 s, this would imply a too large number of buffer dumps. Therefore we chose to also adopt ACCUM exposure of 400 seconds for WASP-94 as for WASP-33.

To have the WAVE exposures obtained during the Earth occultation, we put the keyword WAVE=NO for all ACCUM exposures and added explicit WAVE exposures, that should be obtained during the Earth occultation.

Proposal 15139 - WASP-94 Visit 1 (01) - Metals from deep atmosphere to exosphere in hot-Jupiters

Tue Apr 02 11:00:38 GMT 2019

<b>Visit</b>	<p><b>Proposal 15139, WASP-94 Visit 1 (01), completed</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: STIS/NUV-MAMA, STIS/CCD</p> <p>Special Requirements: Period 3.9501907 D AND ZERO-PHASE HJD2456416.40138</p>					
<b>Diagnostics</b>	<p>(WASP-94 Visit 1 (01)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(WASP-94 Visit 1 (01)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(WASP-94 Visit 1 (01)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(WASP-94 Visit 1 (01)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(WASP-94 Visit 1 (01)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p>					
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(1)	WASP-94A	RA: 20 55 7.9460 (313.7831083d) Dec: -34 08 8.00 (-34.13556d) Equinox: J2000	Proper Motion RA: 26.2 mas/yr Proper Motion Dec: -44.2 mas/yr Epoch of Position: 2000	V=10.05	Reference Frame: ICRS
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p>Category=STAR Description=[F3-F9] Extended=NO</p>					

Proposal 15139 - WASP-94 Visit 1 (01) - Metals from deep atmosphere to exosphere in hot-Jupiters

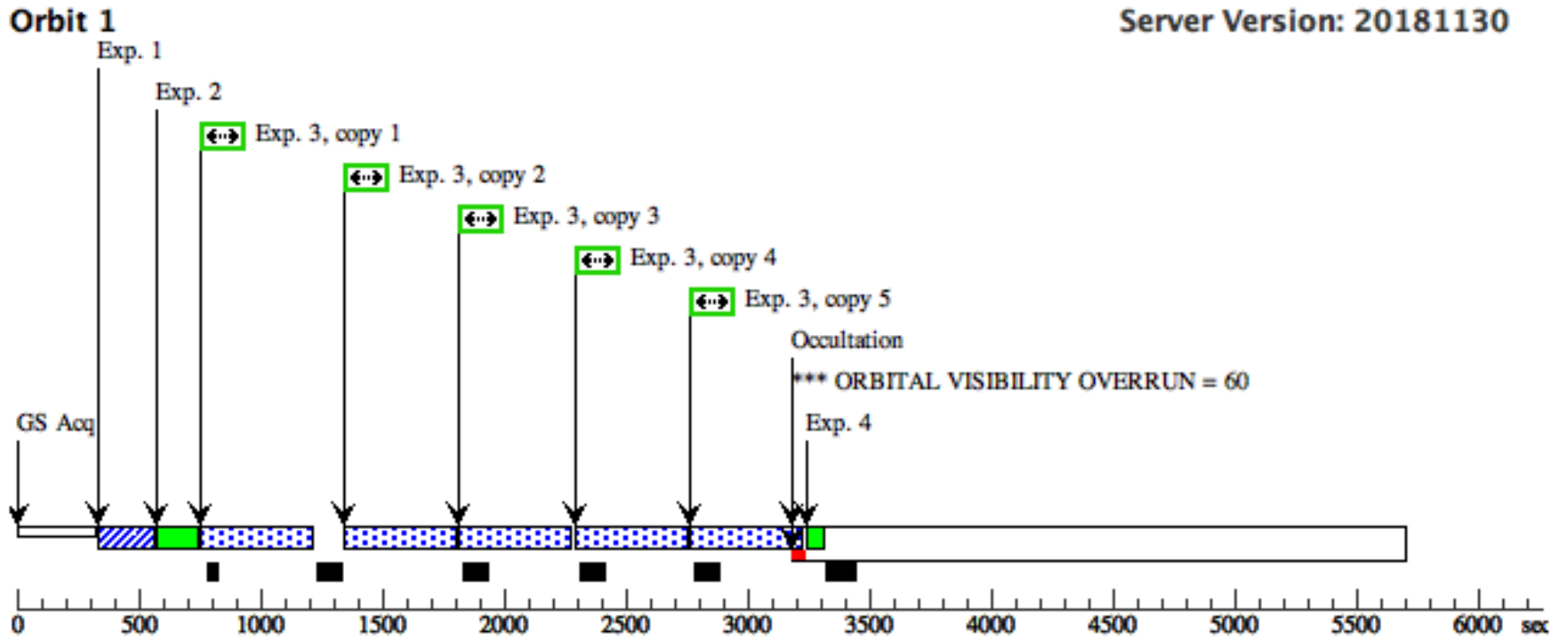
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.100 5928)	(1) WASP-94A	STIS/CCD, ACQ, F28X50LP	MIRROR		PHASE 0.9565 TO 0 .9677		0.1 Secs (0.1 Secs) [==>]	[1]
2	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[1]
3	Orb#1 Exp. (STIS.sp.10 05924)	(1) WASP-94A	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 5 (2245 Secs) [==>449.0 Secs (Copy 1)] [==>449.0 Secs (Copy 2)] [==>449.0 Secs (Copy 3)] [==>449.0 Secs (Copy 4)] [==>449.0 Secs (Copy 5)]	[1]
4	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[1]
<i>Comments: To be executed during Earth occultation</i>									
5	Orb#2 Exp. (STIS.sp.10 05924)	(1) WASP-94A	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 7 (2842 Secs) [==>406.0 Secs (Copy 1)] [==>406.0 Secs (Copy 2)] [==>406.0 Secs (Copy 3)] [==>406.0 Secs (Copy 4)] [==>406.0 Secs (Copy 5)] [==>406.0 Secs (Copy 6)] [==>406.0 Secs (Copy 7)]	[2]
6	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[2]
<i>Comments: To be executed during Earth occultation</i>									
7	Orb#3 Exp. (STIS.sp.10 05924)	(1) WASP-94A	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 7 (2842 Secs) [==>406.0 Secs (Copy 1)] [==>406.0 Secs (Copy 2)] [==>406.0 Secs (Copy 3)] [==>406.0 Secs (Copy 4)] [==>406.0 Secs (Copy 5)] [==>406.0 Secs (Copy 6)] [==>406.0 Secs (Copy 7)]	[3]
8	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[3]
<i>Comments: To be executed during Earth occultation</i>									
9	Orb#4 Exp. (STIS.sp.10 05924)	(1) WASP-94A	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 7 (2842 Secs) [==>406.0 Secs (Copy 1)] [==>406.0 Secs (Copy 2)] [==>406.0 Secs (Copy 3)] [==>406.0 Secs (Copy 4)] [==>406.0 Secs (Copy 5)] [==>406.0 Secs (Copy 6)] [==>406.0 Secs (Copy 7)]	[4]

Exposures

Proposal 15139 - WASP-94 Visit 1 (01) - Metals from deep atmosphere to exosphere in hot-Jupiters

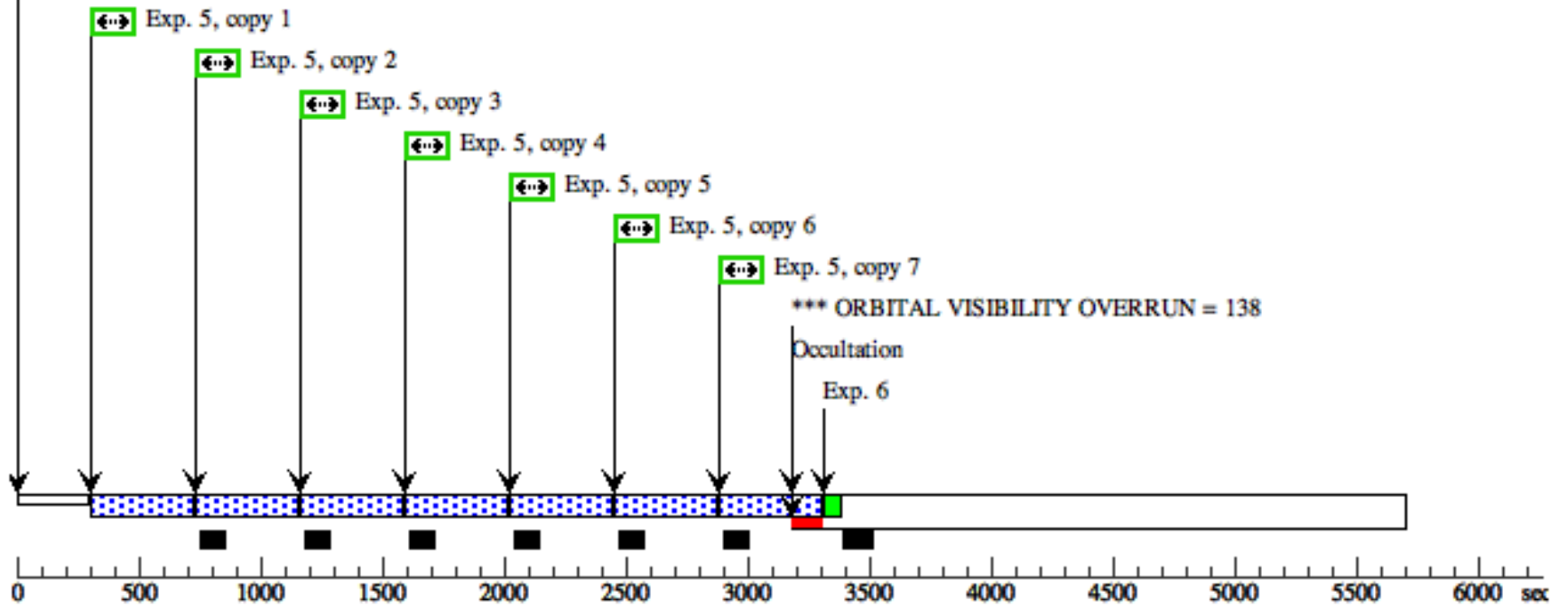
10	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A		[==>]	[4]
<i>Comments: To be executed during Earth occultation</i>							
11	Orb#5 Exp. (STIS.sp.10 05924)	(1) WASP-94A	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO	400 Secs X 7 (2842 Secs) [==>406.0 Secs (Copy 1)] [==>406.0 Secs (Copy 2)] [==>406.0 Secs (Copy 3)] [==>406.0 Secs (Copy 4)] [==>406.0 Secs (Copy 5)] [==>406.0 Secs (Copy 6)] [==>406.0 Secs (Copy 7)]	[5]
12	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A		[==>]	[5]
<i>Comments: To be executed during Earth occultation</i>							

Orbit Structure



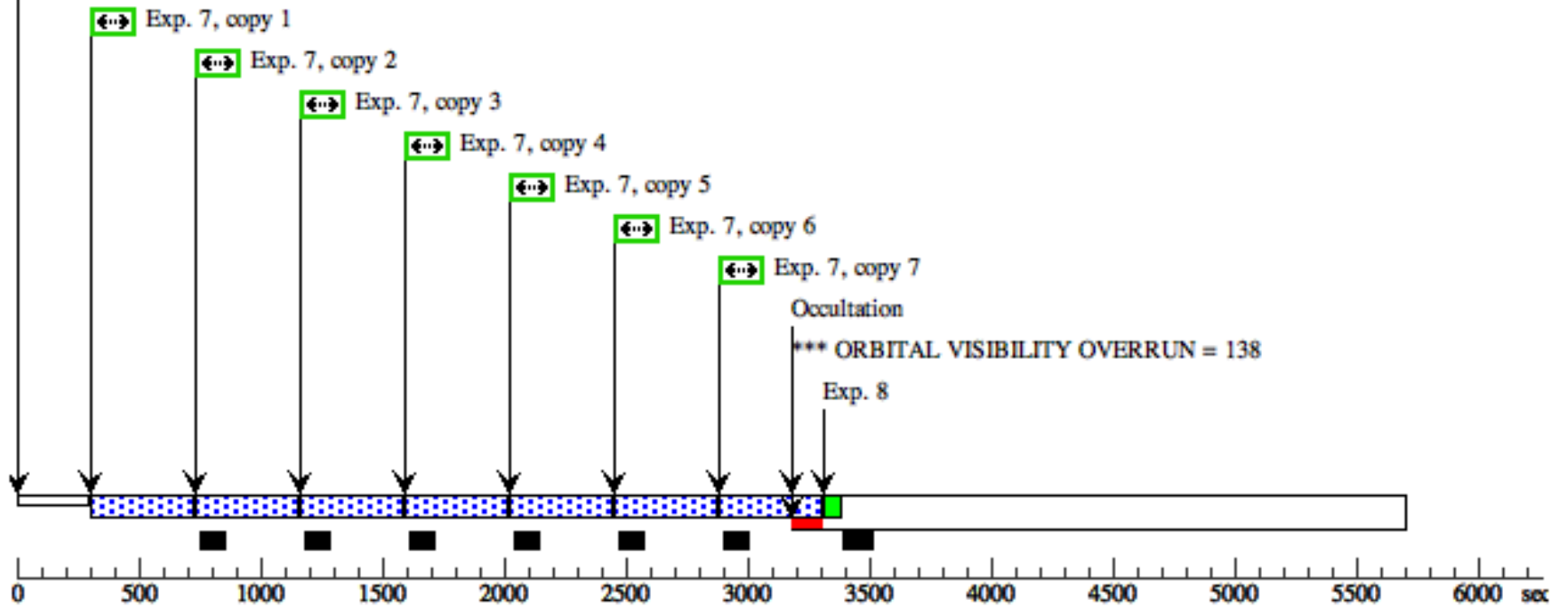
Orbit 2

GS Reacq



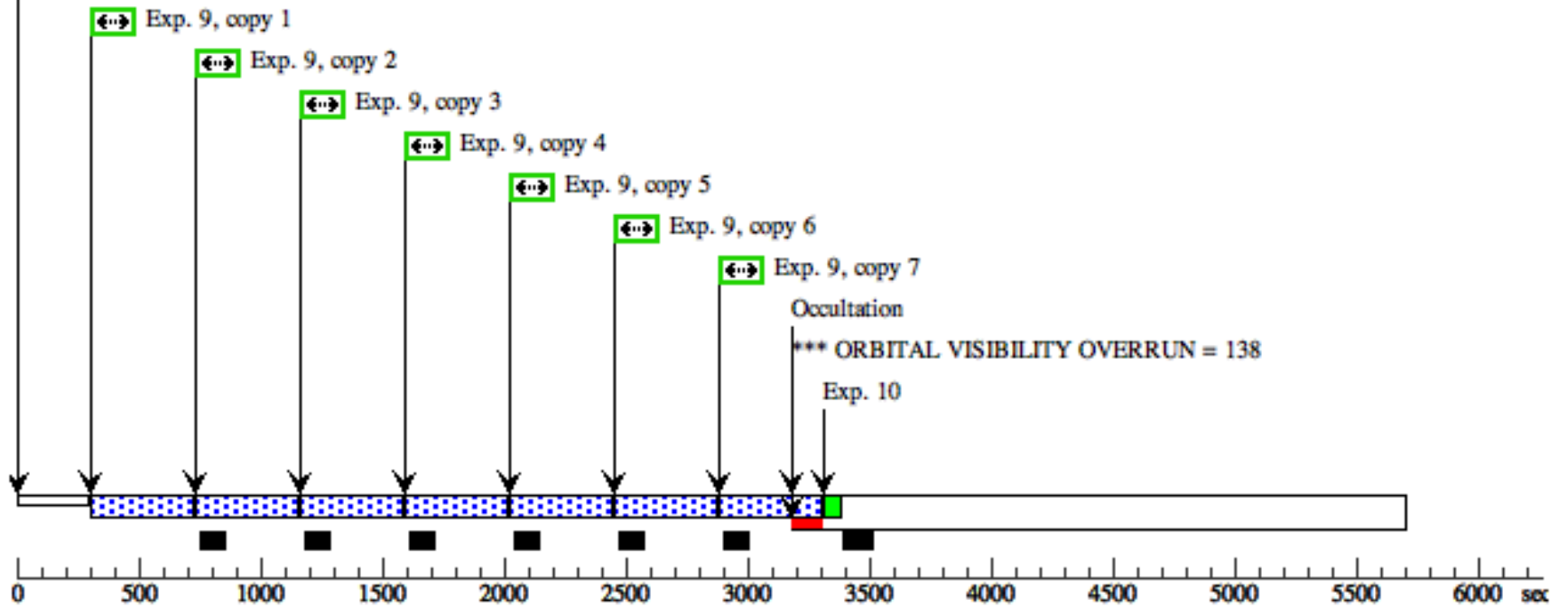
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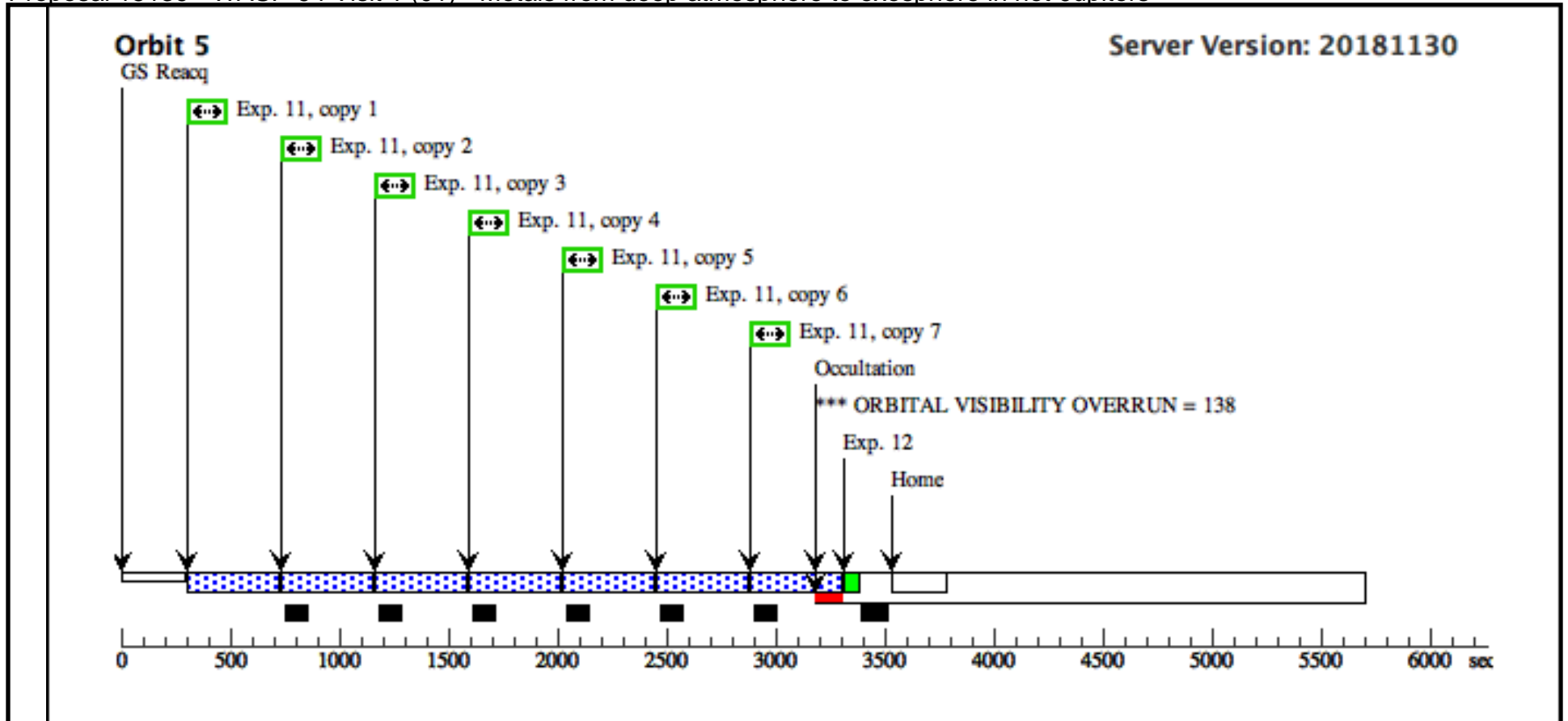
GS Reacq



Orbit 4

GS Reacq





Proposal 15139 - WASP-94 Visit 2 (02) - Metals from deep atmosphere to exosphere in hot-Jupiters

Tue Apr 02 11:00:39 GMT 2019

<b>Visit</b>	<p><b>Proposal 15139, WASP-94 Visit 2 (02), completed</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: STIS/NUV-MAMA, STIS/CCD</p> <p>Special Requirements: Period 3.9501907 D AND ZERO-PHASE HJD2456416.40138</p>					
<b>Diagnostics</b>	<p>(WASP-94 Visit 2 (02)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(WASP-94 Visit 2 (02)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(WASP-94 Visit 2 (02)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(WASP-94 Visit 2 (02)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(WASP-94 Visit 2 (02)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p>					
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(1)	WASP-94A	RA: 20 55 7.9460 (313.7831083d) Dec: -34 08 8.00 (-34.13556d) Equinox: J2000	Proper Motion RA: 26.2 mas/yr Proper Motion Dec: -44.2 mas/yr Epoch of Position: 2000	V=10.05	Reference Frame: ICRS
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p>Category=STAR Description=[F3-F9] Extended=NO</p>					

Proposal 15139 - WASP-94 Visit 2 (02) - Metals from deep atmosphere to exosphere in hot-Jupiters

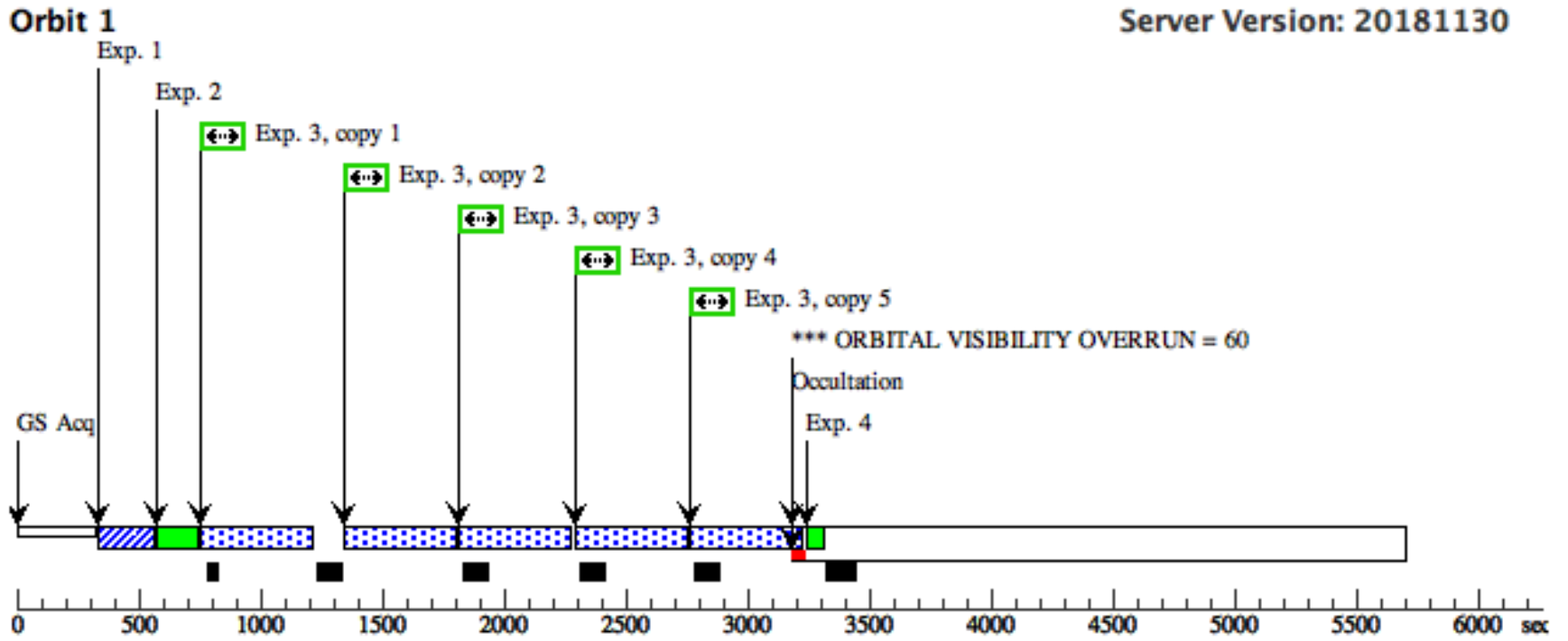
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.100 5928)	(1) WASP-94A	STIS/CCD, ACQ, F28X50LP	MIRROR		PHASE 0.9565 TO 0 .9677		0.1 Secs (0.1 Secs) [==>]	[1]
2	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[1]
3	Orb#1 Exp. (STIS.sp.10 05924)	(1) WASP-94A	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 5 (2245 Secs) [==>449.0 Secs (Copy 1)] [==>449.0 Secs (Copy 2)] [==>449.0 Secs (Copy 3)] [==>449.0 Secs (Copy 4)] [==>449.0 Secs (Copy 5)]	[1]
4	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[1]
<i>Comments: To be executed during Earth occultation</i>									
5	Orb#2 Exp. (STIS.sp.10 05924)	(1) WASP-94A	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 7 (2842 Secs) [==>406.0 Secs (Copy 1)] [==>406.0 Secs (Copy 2)] [==>406.0 Secs (Copy 3)] [==>406.0 Secs (Copy 4)] [==>406.0 Secs (Copy 5)] [==>406.0 Secs (Copy 6)] [==>406.0 Secs (Copy 7)]	[2]
6	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[2]
<i>Comments: To be executed during Earth occultation</i>									
7	Orb#3 Exp. (STIS.sp.10 05924)	(1) WASP-94A	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 7 (2842 Secs) [==>406.0 Secs (Copy 1)] [==>406.0 Secs (Copy 2)] [==>406.0 Secs (Copy 3)] [==>406.0 Secs (Copy 4)] [==>406.0 Secs (Copy 5)] [==>406.0 Secs (Copy 6)] [==>406.0 Secs (Copy 7)]	[3]
8	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[3]
<i>Comments: To be executed during Earth occultation</i>									
9	Orb#4 Exp. (STIS.sp.10 05924)	(1) WASP-94A	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 7 (2842 Secs) [==>406.0 Secs (Copy 1)] [==>406.0 Secs (Copy 2)] [==>406.0 Secs (Copy 3)] [==>406.0 Secs (Copy 4)] [==>406.0 Secs (Copy 5)] [==>406.0 Secs (Copy 6)] [==>406.0 Secs (Copy 7)]	[4]

Exposures

Proposal 15139 - WASP-94 Visit 2 (02) - Metals from deep atmosphere to exosphere in hot-Jupiters

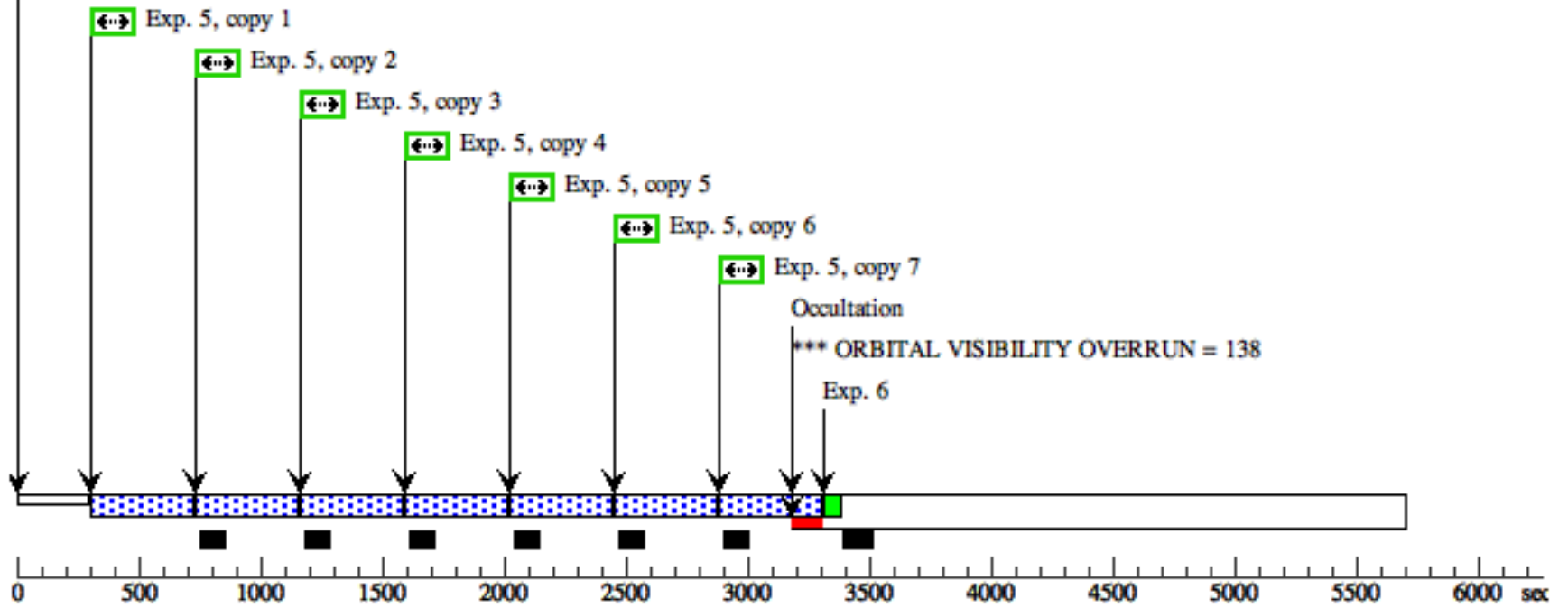
10	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A		[==>]	[4]
<i>Comments: To be executed during Earth occultation</i>							
11	Orb#5 Exp. (STIS.sp.10 05924)	(1) WASP-94A	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO	400 Secs X 7 (2842 Secs) [==>406.0 Secs (Copy 1)] [==>406.0 Secs (Copy 2)] [==>406.0 Secs (Copy 3)] [==>406.0 Secs (Copy 4)] [==>406.0 Secs (Copy 5)] [==>406.0 Secs (Copy 6)] [==>406.0 Secs (Copy 7)]	[5]
12	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A		[==>]	[5]
<i>Comments: To be executed during Earth occultation</i>							

Orbit Structure



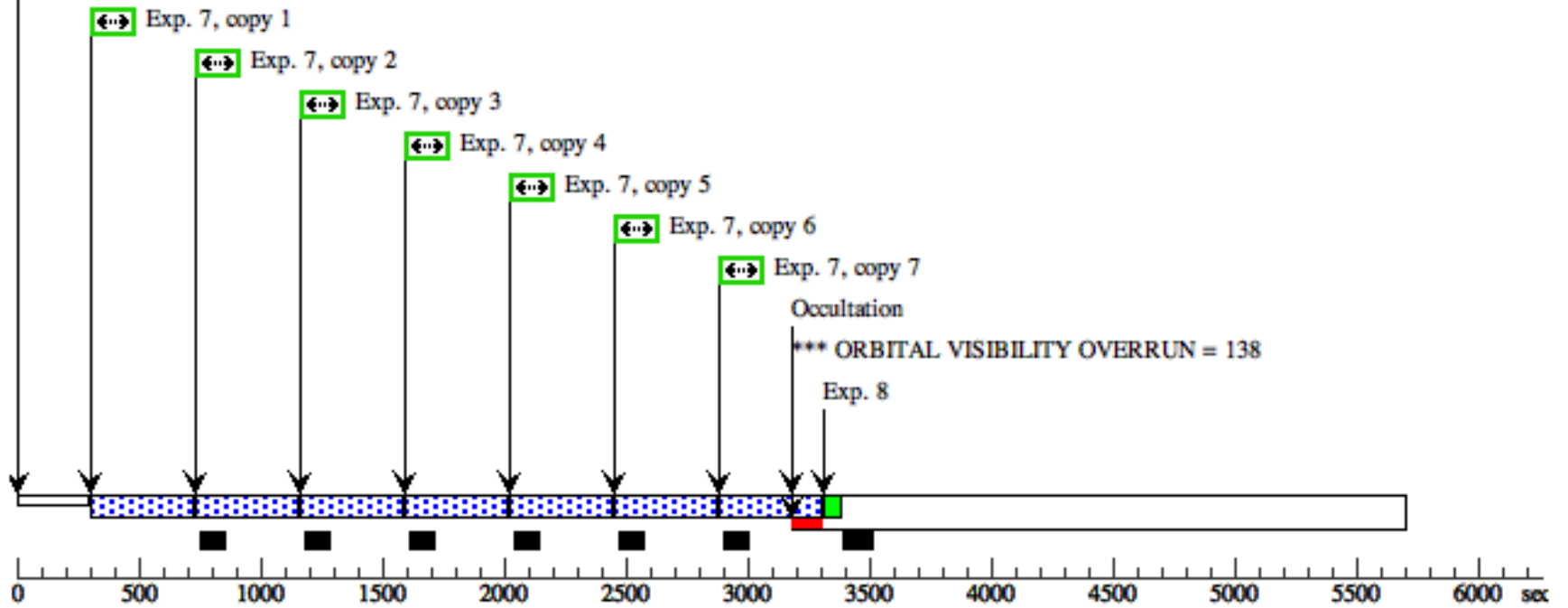
Orbit 2

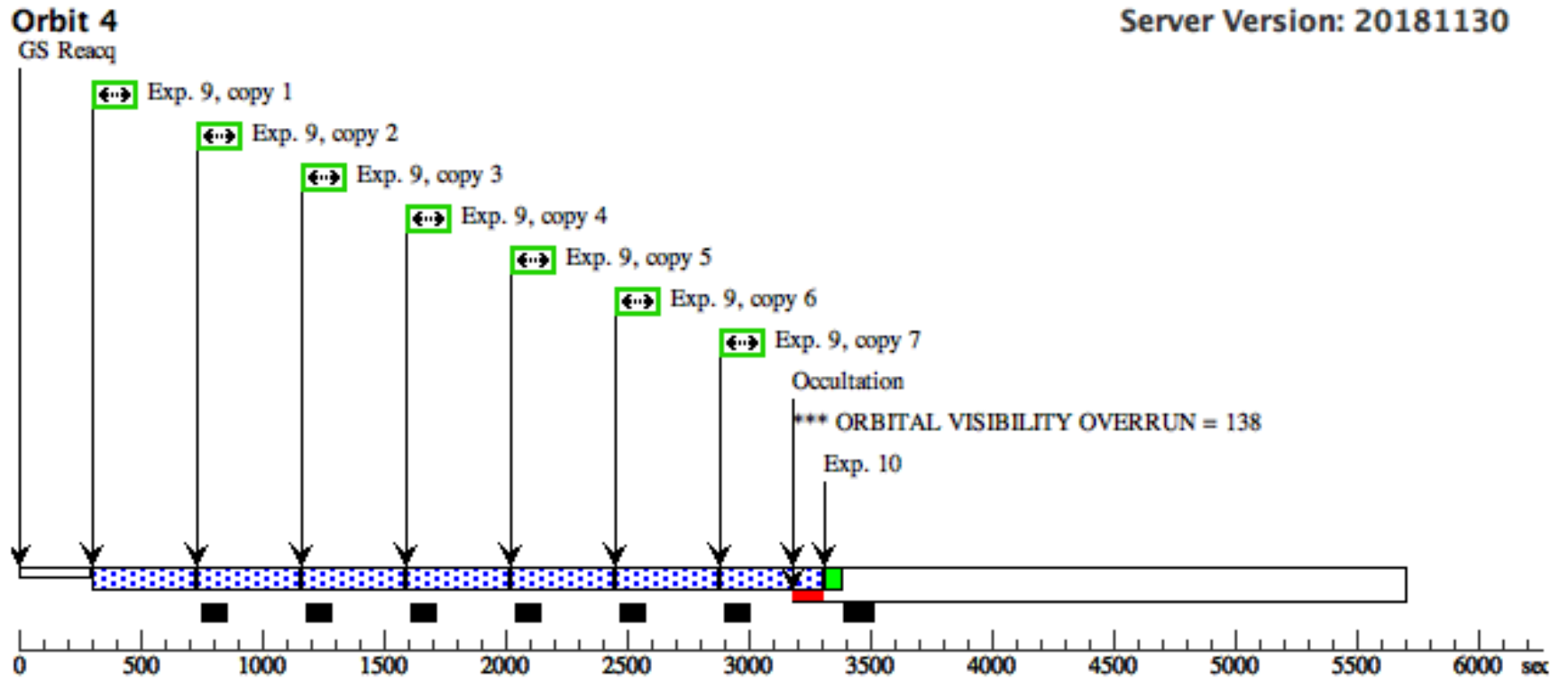
GS Reacq

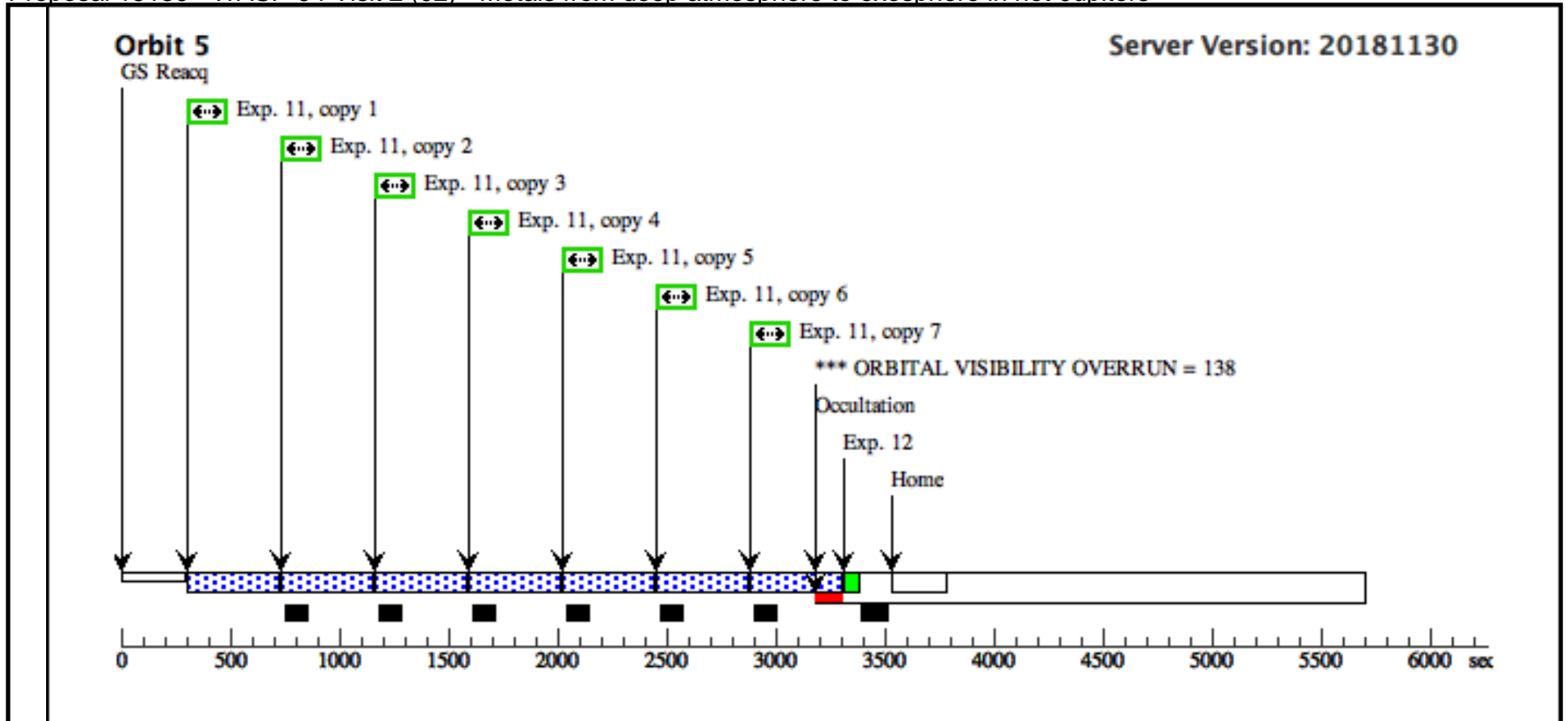


**Orbit 3**

GS Reacq







Proposal 15139 - WASP-33 Visit 1 (11) - Metals from deep atmosphere to exosphere in hot-Jupiters

<b>Visit</b>	<b>Proposal 15139, WASP-33 Visit 1 (11), completed</b> <span style="float: right;">Tue Apr 02 11:00:39 GMT 2019</span> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/NUV-MAMA, STIS/CCD Special Requirements: Period 1.2198675 D AND ZERO-PHASE HJD2456934.7714					
	<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>
(2)		WASP-33 Alt Name1: HD15082	RA: 02 26 51.0584 (36.7127433d) Dec: +37 33 1.74 (37.55048d) Equinox: J2000	Proper Motion RA: -1.26 mas/yr Proper Motion Dec: -9.22 mas/yr Epoch of Position: 2000	V=8.14	Reference Frame: ICRS
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=STAR Description=[A4-A9 V-IV] Extended=NO						

Proposal 15139 - WASP-33 Visit 1 (11) - Metals from deep atmosphere to exosphere in hot-Jupiters

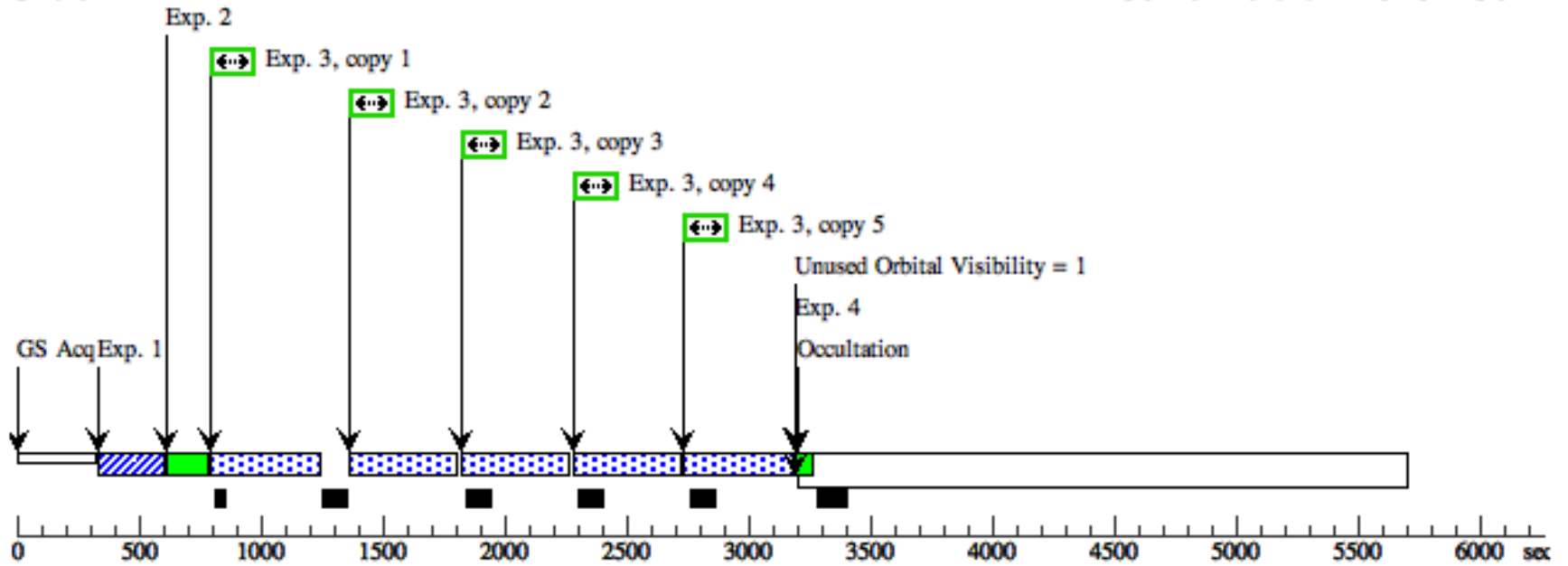
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.100 5940)	(2) WASP-33	STIS/CCD, ACQ, F28X500II	MIRROR		PHASE 0.9013 TO 0 .9081		2 Secs (2 Secs) [==>]	[1]
2	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[1]
3	Orb#1 Exp. (STIS.sp.10 05947)	(2) WASP-33	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 5 (2165 Secs) [==>433.0 Secs (Copy 1)] [==>433.0 Secs (Copy 2)] [==>433.0 Secs (Copy 3)] [==>433.0 Secs (Copy 4)] [==>433.0 Secs (Copy 5)]	[1]
4	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[1]
<i>Comments: To be executed during Earth occultation</i>									
5	Orb#2 Exp. (STIS.sp.10 05947)	(2) WASP-33	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 7 (2723 Secs) [==>389.0 Secs (Copy 1)] [==>389.0 Secs (Copy 2)] [==>389.0 Secs (Copy 3)] [==>389.0 Secs (Copy 4)] [==>389.0 Secs (Copy 5)] [==>389.0 Secs (Copy 6)] [==>389.0 Secs (Copy 7)]	[2]
6	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[2]
<i>Comments: To be executed during Earth occultation</i>									
7	Orb#3 Exp. (STIS.sp.10 05947)	(2) WASP-33	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 7 (2723 Secs) [==>389.0 Secs (Copy 1)] [==>389.0 Secs (Copy 2)] [==>389.0 Secs (Copy 3)] [==>389.0 Secs (Copy 4)] [==>389.0 Secs (Copy 5)] [==>389.0 Secs (Copy 6)] [==>389.0 Secs (Copy 7)]	[3]
8	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[3]
<i>Comments: To be executed during Earth occultation</i>									
9	Orb#4 Exp. (STIS.sp.10 05947)	(2) WASP-33	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 7 (2723 Secs) [==>389.0 Secs (Copy 1)] [==>389.0 Secs (Copy 2)] [==>389.0 Secs (Copy 3)] [==>389.0 Secs (Copy 4)] [==>389.0 Secs (Copy 5)] [==>389.0 Secs (Copy 6)] [==>389.0 Secs (Copy 7)]	[4]

Exposures

Proposal 15139 - WASP-33 Visit 1 (11) - Metals from deep atmosphere to exosphere in hot-Jupiters

10	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A		[==>]	[4]
<i>Comments: To be executed during Earth occultation</i>							
11	Orb#5 Exp. (STIS.sp.10 05947)	(2) WASP-33	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO	400 Secs X 7 (2723 Secs) [==>389.0 Secs (Copy 1)] [==>389.0 Secs (Copy 2)] [==>389.0 Secs (Copy 3)] [==>389.0 Secs (Copy 4)] [==>389.0 Secs (Copy 5)] [==>389.0 Secs (Copy 6)] [==>389.0 Secs (Copy 7)]	[5]
12	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A		[==>]	[5]
<i>Comments: To be executed during Earth occultation</i>							

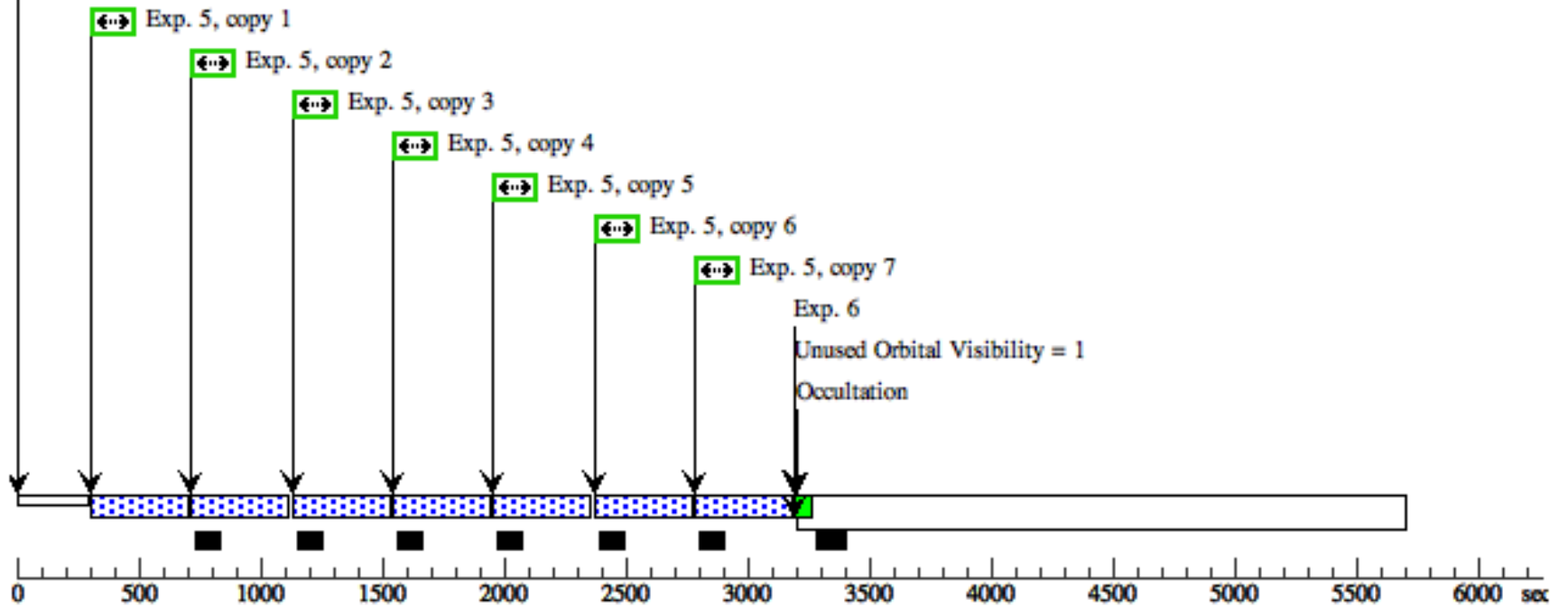
Orbit 1



Orbit Structure

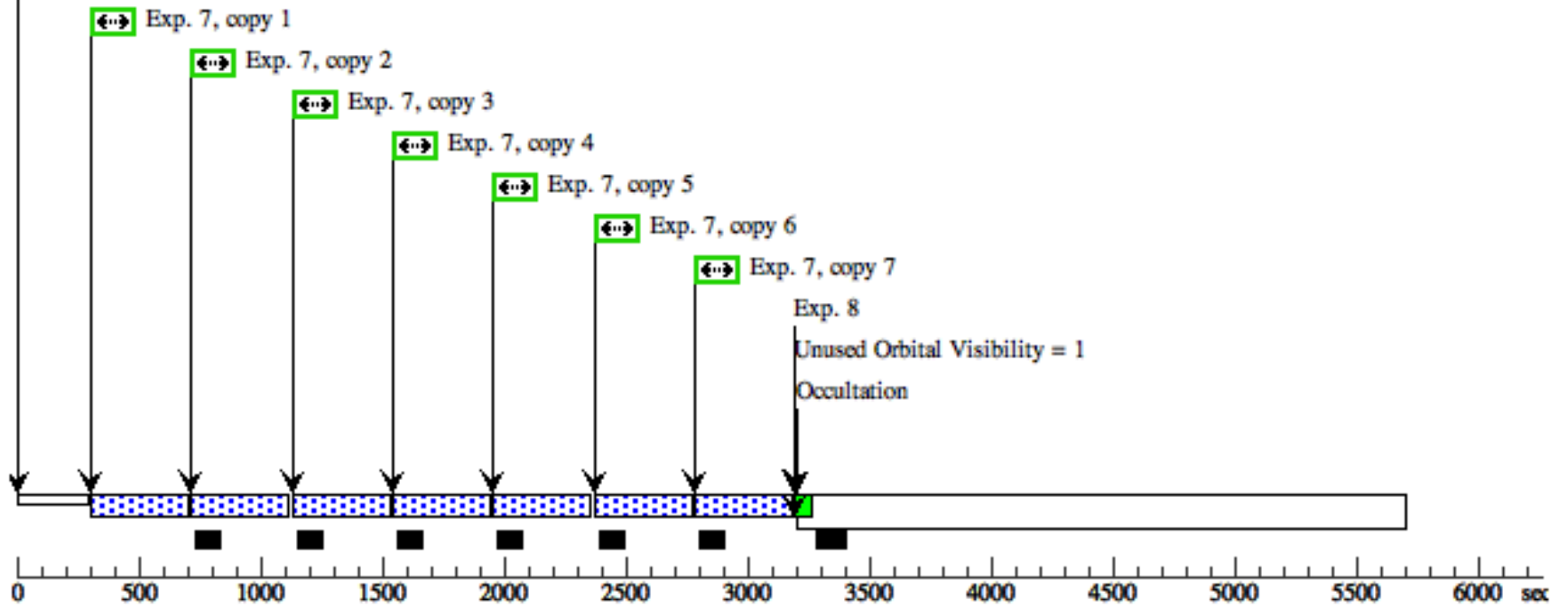
**Orbit 2**

GS Reacq



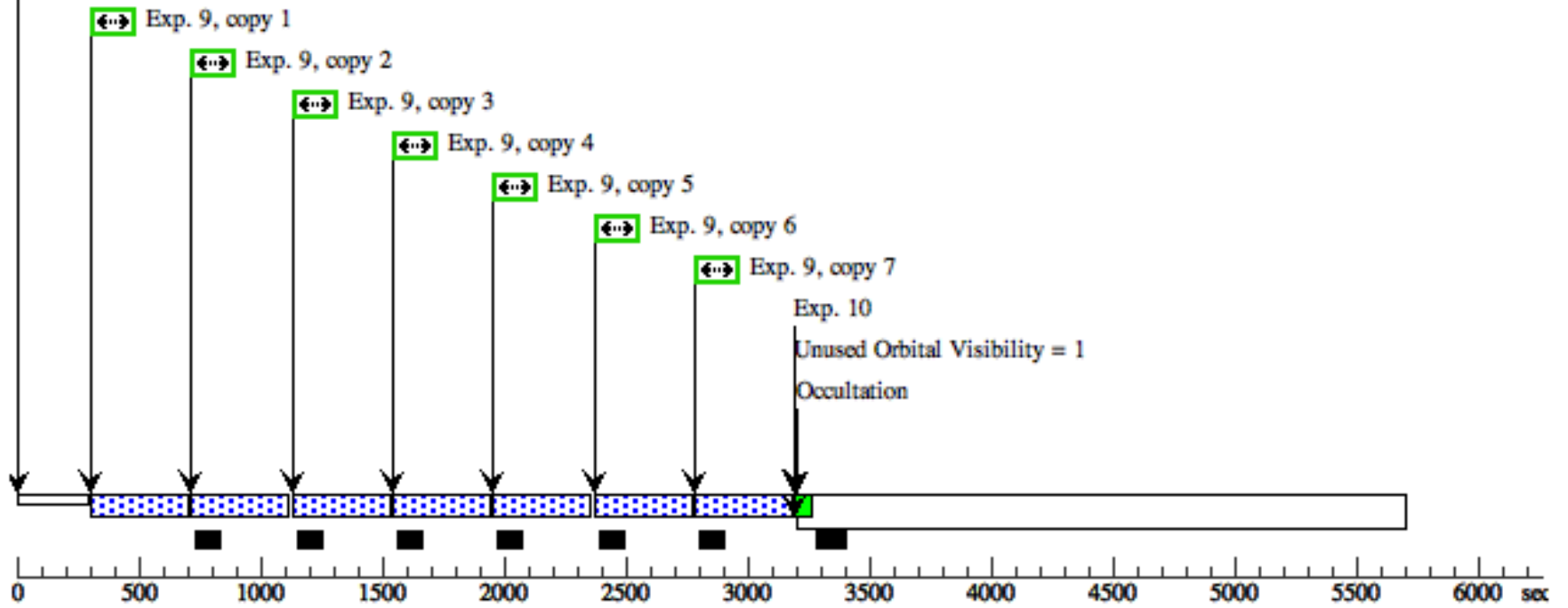
**Orbit 3**

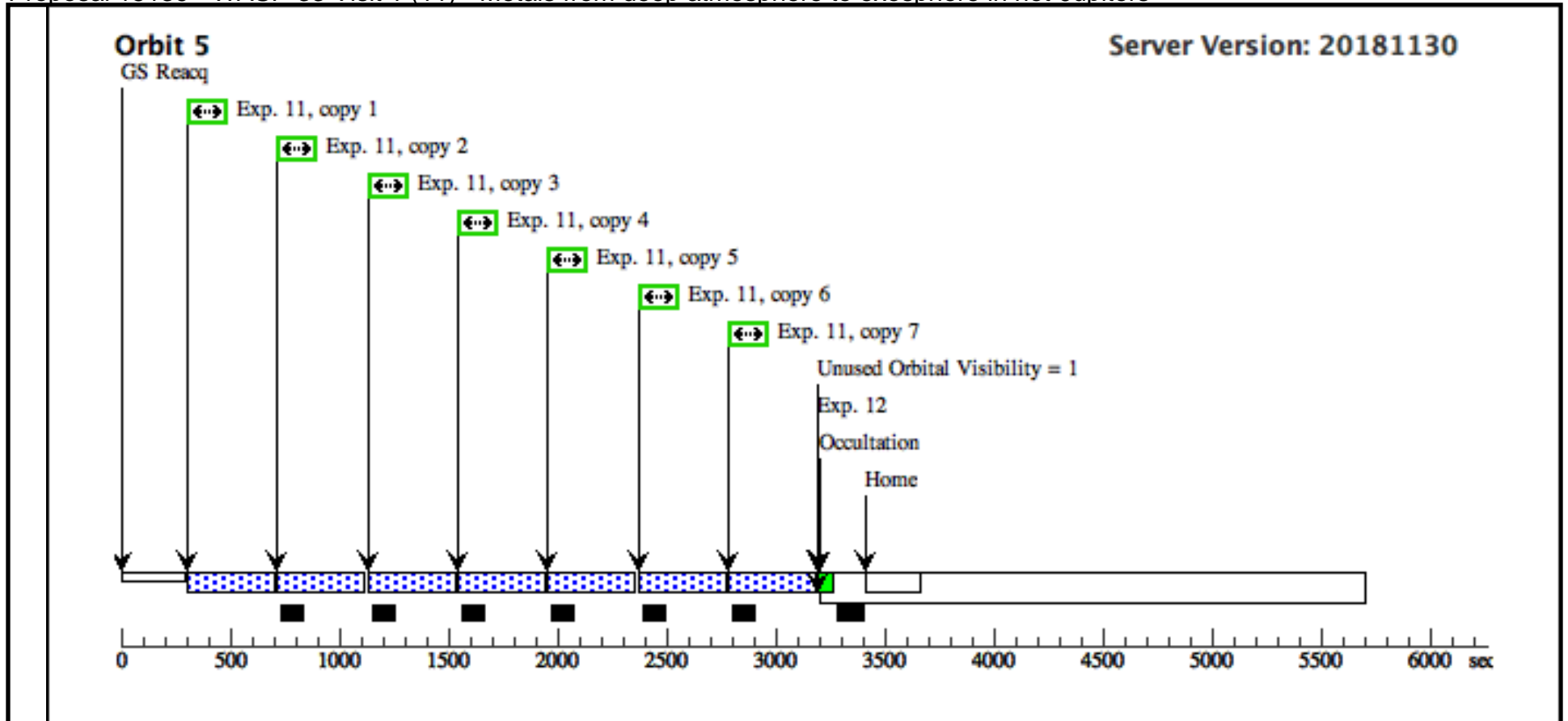
GS Reacq



**Orbit 4**

GS Reacq





Proposal 15139 - WASP-33 Visit 2 (12) - Metals from deep atmosphere to exosphere in hot-Jupiters

<b>Visit</b>	<b>Proposal 15139, WASP-33 Visit 2 (12), implementation</b> <span style="float: right;">Tue Apr 02 11:00:39 GMT 2019</span>					
	<b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/NUV-MAMA, STIS/CCD Special Requirements: SCHED 40%; Period 1.2198675 D AND ZERO-PHASE HJD2456934.7714					
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(2)	WASP-33 Alt Name1: HD15082	RA: 02 26 51.0584 (36.7127433d) Dec: +37 33 1.74 (37.55048d) Equinox: J2000	Proper Motion RA: -1.26 mas/yr Proper Motion Dec: -9.22 mas/yr Epoch of Position: 2000	V=8.14	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STAR Description=[A4-A9 V-IV] Extended=NO						

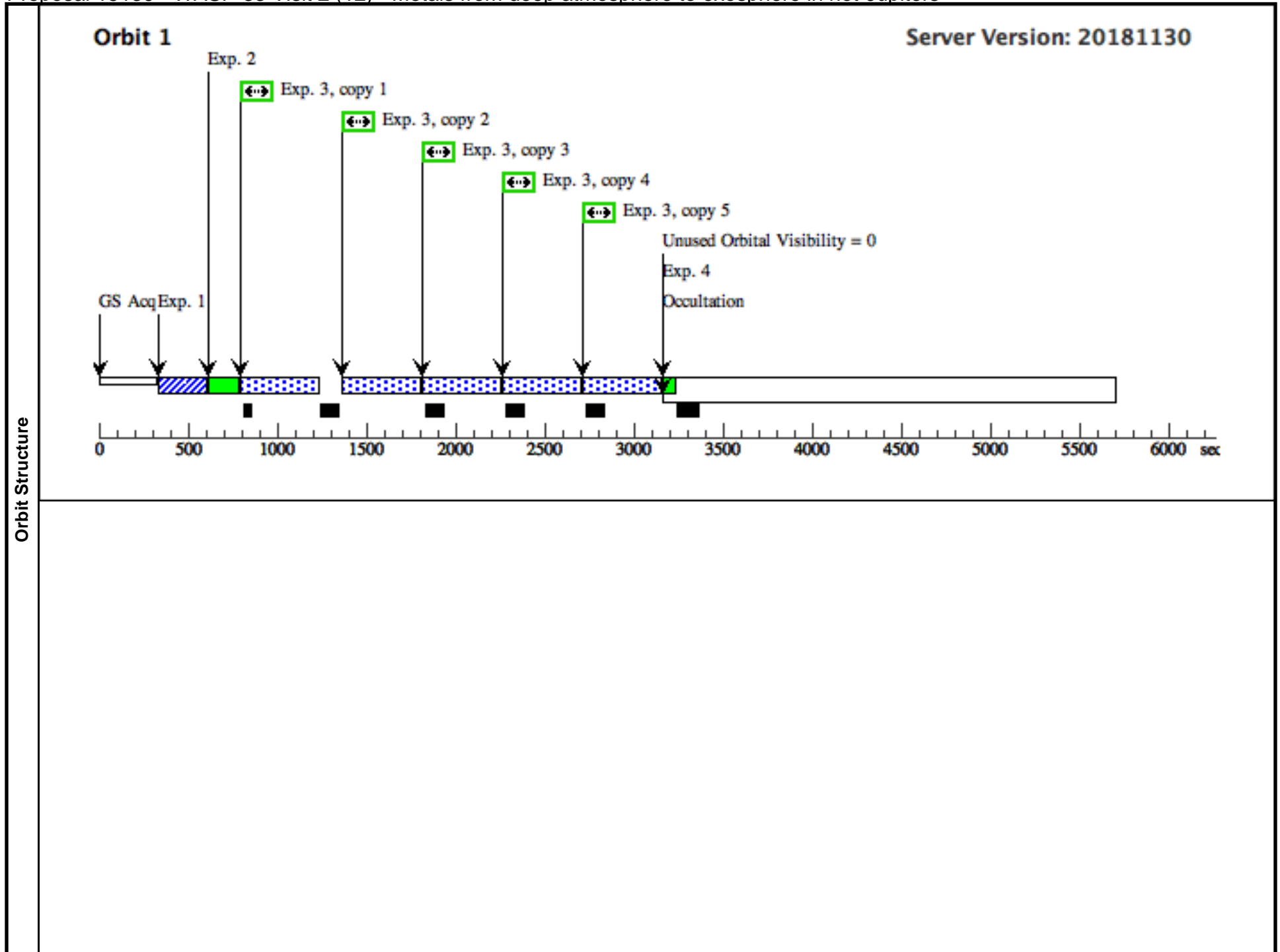
Proposal 15139 - WASP-33 Visit 2 (12) - Metals from deep atmosphere to exosphere in hot-Jupiters

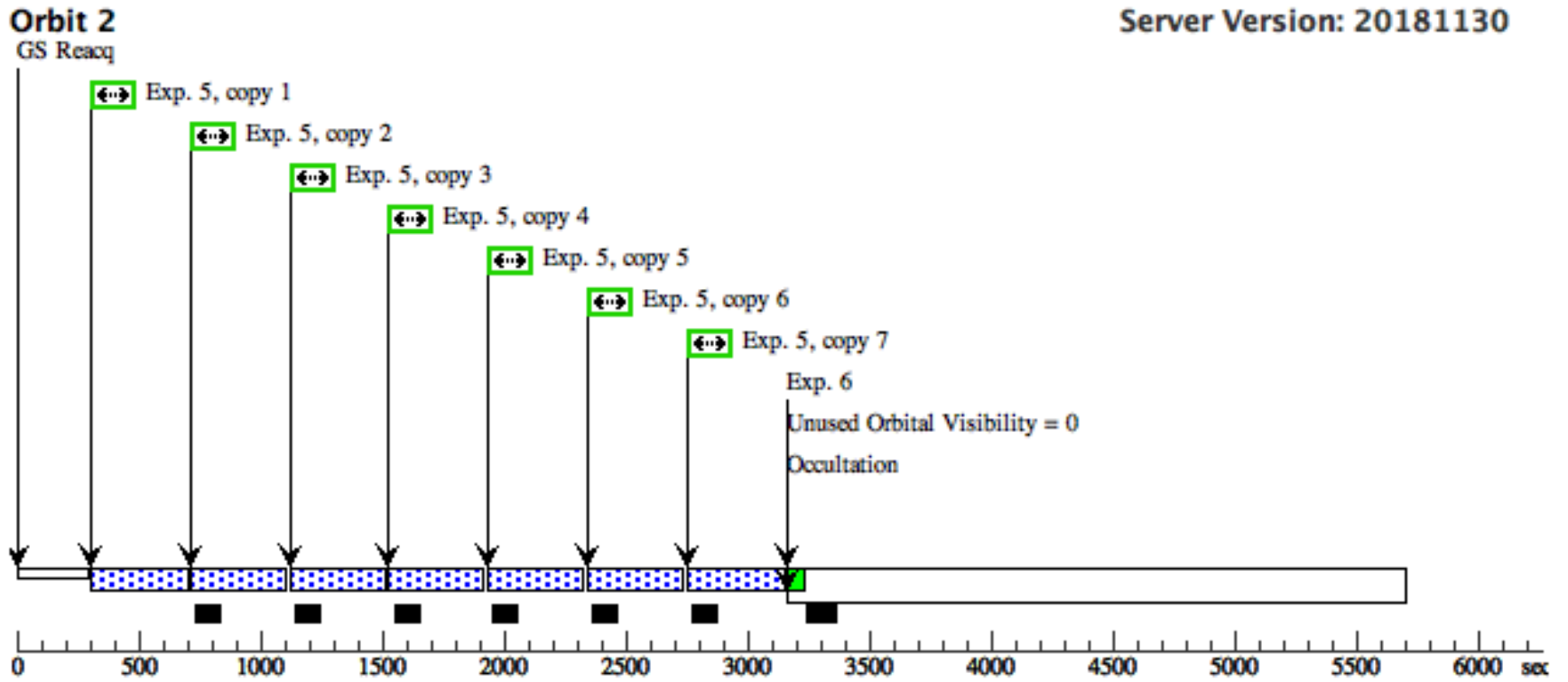
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.100 5940)	(2) WASP-33	STIS/CCD, ACQ, F28X500II	MIRROR		PHASE 0.9013 TO 0 .9081; GS ACQ SCENARI O BASE1B3		2 Secs (2 Secs) [==>]	[1]
2	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[1]
3	Orb#1 Exp. (STIS.sp.10 05947)	(2) WASP-33	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 5 (2130 Secs) [==>426.0 Secs (Copy 1)] [==>426.0 Secs (Copy 2)] [==>426.0 Secs (Copy 3)] [==>426.0 Secs (Copy 4)] [==>426.0 Secs (Copy 5)]	[1]
4	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[1]
<i>Comments: To be executed during Earth occultation</i>									
5	Orb#2 Exp. (STIS.sp.10 05947)	(2) WASP-33	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 7 (2688 Secs) [==>384.0 Secs (Copy 1)] [==>384.0 Secs (Copy 2)] [==>384.0 Secs (Copy 3)] [==>384.0 Secs (Copy 4)] [==>384.0 Secs (Copy 5)] [==>384.0 Secs (Copy 6)] [==>384.0 Secs (Copy 7)]	[2]
6	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[2]
<i>Comments: To be executed during Earth occultation</i>									
7	Orb#3 Exp. (STIS.sp.10 05947)	(2) WASP-33	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO			400 Secs X 7 (2688 Secs) [==>384.0 Secs (Copy 1)] [==>384.0 Secs (Copy 2)] [==>384.0 Secs (Copy 3)] [==>384.0 Secs (Copy 4)] [==>384.0 Secs (Copy 5)] [==>384.0 Secs (Copy 6)] [==>384.0 Secs (Copy 7)]	[3]
8	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				[==>]	[3]
<i>Comments: To be executed during Earth occultation</i>									

Exposures

Proposal 15139 - WASP-33 Visit 2 (12) - Metals from deep atmosphere to exosphere in hot-Jupiters

9	Orb#4 Exp. (STIS.sp.10 05947)	(2) WASP-33	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO	400 Secs X 7 (2688 Secs) [==>384.0 Secs (Copy 1)] [==>384.0 Secs (Copy 2)] [==>384.0 Secs (Copy 3)] [==>384.0 Secs (Copy 4)] [==>384.0 Secs (Copy 5)] [==>384.0 Secs (Copy 6)] [==>384.0 Secs (Copy 7)]	[4]
10	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A		[==>]	[4]
<i>Comments: To be executed during Earth occultation</i>							
11	Orb#5 Exp. (STIS.sp.10 05947)	(2) WASP-33	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A	WAVECAL=NO	400 Secs X 7 (2688 Secs) [==>384.0 Secs (Copy 1)] [==>384.0 Secs (Copy 2)] [==>384.0 Secs (Copy 3)] [==>384.0 Secs (Copy 4)] [==>384.0 Secs (Copy 5)] [==>384.0 Secs (Copy 6)] [==>384.0 Secs (Copy 7)]	[5]
12	WAVE	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A		[==>]	[5]
<i>Comments: To be executed during Earth occultation</i>							





**Orbit 3**

GS Reacq

