



15301 - Now you see me - the WASP-117b version

Cycle: 25, Proposal Category: GO

(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) CD-50-714	WFC3/IR	11	30-Aug-2019 20:01:22.0	yes

11 Total Orbits Used

ABSTRACT

WASP-117b is an unique exoplanet as its elliptical orbit causes the temperature of the atmosphere to cross the 970 K temperature boundary, which separates the disequilibrium and equilibrium chemistry regime. Due to the long orbital period (10.022 days) compared to chemistry and dynamical time scales and due to the orbital orientation, we can expect the planet to be well in the disequilibrium chemistry temperature regime ($T_{\text{eff}} < 970 \text{ K}$) during transit, which is identifiable by the under-abundance of methane compared to predictions with equilibrium chemistry.

To characterize the atmosphere of WASP-117b, we thus propose to observe its primary transit with HST/WFC3. It is the only instrument currently available with sufficient stability to cover the 6 hour long, relatively deep (0.75%) transit over a quiet, bright ($m_v=10.14$) host star and to obtain accurate transit spectroscopy to constrain methane-content in the atmosphere of WASP-117b.

Two important science objectives can thus be fulfilled with only one HST measurement: a) Determining if the planet's atmosphere is in chemical equilibrium or not and b) Constraining the effective temperature, albedo and cloud coverage. Since the planet is expected to spend several days each in the disequilibrium and equilibrium chemistry regime over the course of one orbit, HST observations will also provide a vital first input for planning future phase resolved JWST observations. The latter will allow to investigate atmosphere and cloud composition changes as WASP-117b switches in between chemical regimes.

OBSERVING DESCRIPTION

We ask for a single HST/WFC3 transit observation in spatial scan and round trip mode over the course of 11 or 9 orbits (see below):

We choose scan rate of 0.12 arcsec/sec and scan length of 10 arcsec with FGS control. Pos y for the scan was adjusted to -4.84. Each orbit begins with a direct image through the F126N filter for wavelength calibration.

This scan rate was selected, using the exposure time calculator (ETC, pandexo) to keep the electron count [e-] between 20 000 and 40 000 per pixel over the observed 1.1 - 1.6 micron wavelength range. This selection minimises non-linearity in the ramp effect as the dominant source for systematics in WFC3, making it easier to correct for it.

We further select the G141 grism to resolve the 1.1 -1.7 near infrared wavelength range with subarray GRISM 256, using sample mode SPARS10

Proposal 15301 (STScI Edit Number: 14, Created: Friday, August 30, 2019 at 7:01:29 PM Eastern Standard Time) - Overview and 15 samples. By resampling the G141 spectra into 15 bins, the resulting transmission spectra will have 50 ppm precision

We like to use one visit with 11 or (alternatively) 9 consecutive orbits, pending success of ground based broad band photometry observations, which become possible after end of July. Thus we ask for observation to start after October 2017 to ensure success of observation.

We are aware that such long visit with more than 8 orbits will have one orbit during the South Atlantic Anomaly without fine guidance. We accept this, but ask

- (1) that the SAA crossing orbit should not include orbits 4-9 for the 11 orbit case (without transit ephemeris update from ground based observations)
- or
- (2) that the SAA crossing orbit is put as the first orbit for the 9 orbit case (with transit ephemeris update from ground based observations)

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Sat Aug 31 00:01:29 GMT 2019

Visit	Proposal 15301, Visit 01, implementation Diagnostic Status: Warning Scientific Instruments: WFC3/IR Special Requirements: SCHED 90%: ORIENT 313.0D TO 313.0 D; Period 10.0205810 D AND ZERO-PHASE HJD2456533.826166				
	Diagnostics	(Visit 01) Warning (Orbit Planner): LONG SU LIKELY TO INTERSECT THE SAA			
(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN					
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Fixed Targets		#	Name	Target Coordinates	Targ. Coord. Corrections
	(1)	CD-50-714	RA: 02 27 6.0972 (36.7754050d) Dec: -50 17 4.35 (-50.28454d) Equinox: J2000		V=10.14
Miscellaneous: Reference Frame: SIMBAD Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=STAR Description=[EXTRA-SOLAR PLANETARY SYSTEM, F3-F9]					

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#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
Exposures	1	Image	(1) CD-50-714	WFC3/IR, MULTIACCUM, GRISM256	F126N	NSAMP=3; SAMP-SEQ=RAPID	PHASE .958 TO .964; GSPAIR S2TH000129F2S2TH000107F3; GS ACQ SCENARIO BASE1BE	Sequence 1-2 Non-Int in Visit 01 0.833445 Secs (0.833 Secs) [==>]	[1]
	2	(WFC3IR.ss .1007863)	(1) CD-50-714	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.84; SPATIAL SCAN 0.12,90.0 Degrees,Rounded trip	Sequence 1-2 Non-Int in Visit 01 103.128633 Secs X 8 (1650.058 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)]	[1]
	3	Image	(1) CD-50-714	WFC3/IR, MULTIACCUM, GRISM256	F126N	NSAMP=3; SAMP-SEQ=RAPID	NEW OBSET FULL ACQ; GSPAIR S2TH000129F2S2TH000107F3; GS ACQ SCENARIO BASE1BE	Sequence 3-5 Non-Int in Visit 01 0.833445 Secs (0.833 Secs) [==>]	[2]

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4	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Round trip	Sequence 3-5 Non-Int in Visit 01	103.128633 Secs X 8 (1650.058 Secs)	[2]
							[==>(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)]	
5	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 3-5 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[2]
							[==>]	
6	Image (1) CD-50-714	WFC3/IR, MULTIACCUM, GRISM256	F126N	NSAMP=3; SAMP-SEQ=RAPID	NEW OBSET FULL ACQ; GSPAIR S2TH0001 29F2S2TH000107F3 ; GS ACQ SCENARIO BASE1BE	Sequence 6-9 Non-Int in Visit 01	0.833445 Secs (0.833 Secs)	[3]
							[==>]	
7	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Round trip	Sequence 6-9 Non-Int in Visit 01	103.128633 Secs X 8 (1650.058 Secs)	[3]
							[==>(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)]	

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8	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPAR S10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 6-9 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[3]
9	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPAR S10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 6-9 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[3]
10	Image (1) CD-50-714	WFC3/IR, MULTIACCUM, GRISM256	F126N	NSAMP=3; SAMP-SEQ=RAPID	NEW OBSET FULL ACQ; GSPAIR S2TH0001 29F2S2TH000107F3 ; GS ACQ SCENARIO BASE1BE	Sequence 10-13 Non-Int in Visit 01	0.833445 Secs (0.833 Secs)	[4]
11	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPAR S10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Round trip	Sequence 10-13 Non-Int in Visit 01	103.128633 Secs X 8 (1650.058 Secs)	[4]
							[==>(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)]	
12	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPAR S10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 10-13 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[4]
13	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPAR S10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 10-13 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[4]
14	Image (1) CD-50-714	WFC3/IR, MULTIACCUM, GRISM256	F126N	NSAMP=3; SAMP-SEQ=RAPID	NEW OBSET FULL ACQ; GSPAIR S2TH0001 29F2S2TH000107F3 ; GS ACQ SCENARIO BASE1BE	Sequence 14-17 Non-Int in Visit 01	0.833445 Secs (0.833 Secs)	[5]

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15	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Rounded trip	Sequence 14-17 Non-Int in Visit 01	103.128633 Secs X 8 (1650.058 Secs)	[5]
							[==>(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)]	
16	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 14-17 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[5]
							[==>]	
17	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 14-17 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[5]
							[==>]	
18	Image (1) CD-50-714	WFC3/IR, MULTIACCUM, GRISM256	F126N	NSAMP=3; SAMP-SEQ=RAPID	NEW OBSET FULL ACQ; GSPAIR S2TH0001 29F2S2TH000107F3 ; GS ACQ SCENARIO BASE1BE	Sequence 18-22 Non-Int in Visit 01	0.833445 Secs (0.833 Secs)	[6]
							[==>]	

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19	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Rounded trip	Sequence 18-22 Non-Int in Visit 01	103.128633 Secs X 8 (1650.058 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)]	[6]
20	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 18-22 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[6]
21	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 18-22 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[6]
22	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 18-22 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[6]
23	Image (1) CD-50-714	WFC3/IR, MULTIACCUM, GRISM256	F126N	NSAMP=3; SAMP-SEQ=RAPID	NEW OBSET FULL ACQ; GSPAIR S2TH000129F2S2TH000107F3; GS ACQ SCENARIO BASE1BE	Sequence 23-27 Non-Int in Visit 01	0.833445 Secs (0.833 Secs)	[==>]	[7]

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24	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Round trip	Sequence 23-27 Non-Int in Visit 01	103.128633 Secs X 8 (1650.058 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)]	[7]
25	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 23-27 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[7]
26	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 23-27 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[7]
27	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 23-27 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[7]
28	Image (1) CD-50-714	WFC3/IR, MULTIACCUM, GRISM256	F126N	NSAMP=3; SAMP-SEQ=RAPID	NEW OBSET FULL ACQ; GSPAIR S2TH0001 29F2S2TH000107F3 ; GS ACQ SCENARIO BASE1BE	Sequence 28-32 Non-Int in Visit 01	0.833445 Secs (0.833 Secs)	[==>]	[8]

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29	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Round trip	Sequence 28-32 Non-Int in Visit 01	103.128633 Secs X 8 (1650.058 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)]	[8]
30	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 28-32 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[8]
31	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 28-32 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[8]
32	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 28-32 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[8]
33	Image (1) CD-50-714	WFC3/IR, MULTIACCUM, GRISM256	F126N	NSAMP=3; SAMP-SEQ=RAPID	NEW OBSET FULL ACQ; GSPAIR S2TH0001 29F2S2TH000107F3 ; GS ACQ SCENARIO BASE1BE	Sequence 33-37 Non-Int in Visit 01	0.833445 Secs (0.833 Secs)	[==>]	[9]

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34	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Round trip	Sequence 33-37 Non-Int in Visit 01	103.128633 Secs X 8 (1650.058 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)]	[9]
35	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 33-37 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[9]
36	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 33-37 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[9]
37	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 33-37 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[9]
38	Image (1) CD-50-714	WFC3/IR, MULTIACCUM, GRISM256	F126N	NSAMP=3; SAMP-SEQ=RAPID	NEW OBSET FULL ACQ; GSPAIR S2TH0001 29F2S2TH000107F3 ; GS ACQ SCENARIO BASE1BE	Sequence 38-42 Non-Int in Visit 01	0.833445 Secs (0.833 Secs)	[==>]	[10]

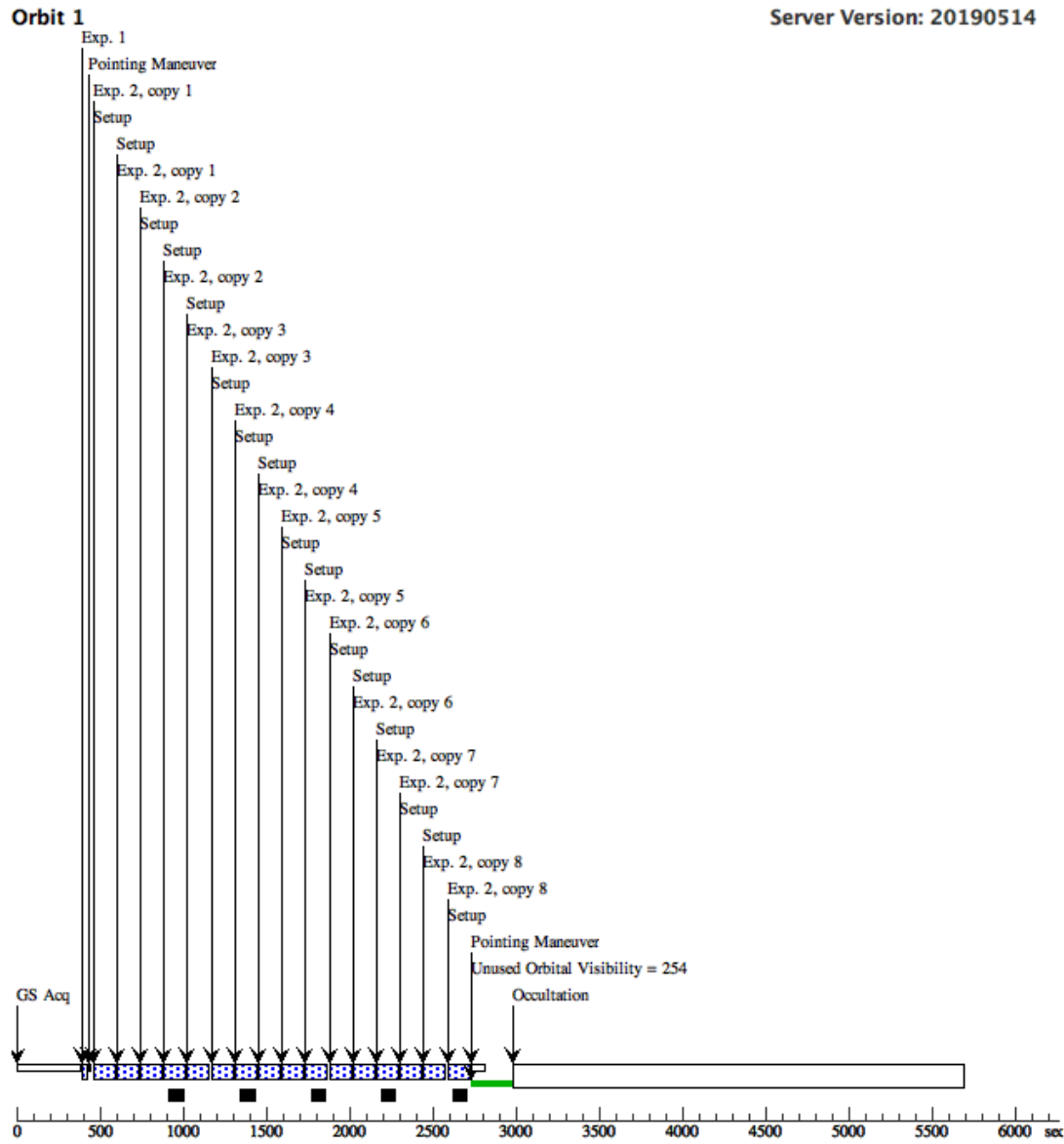
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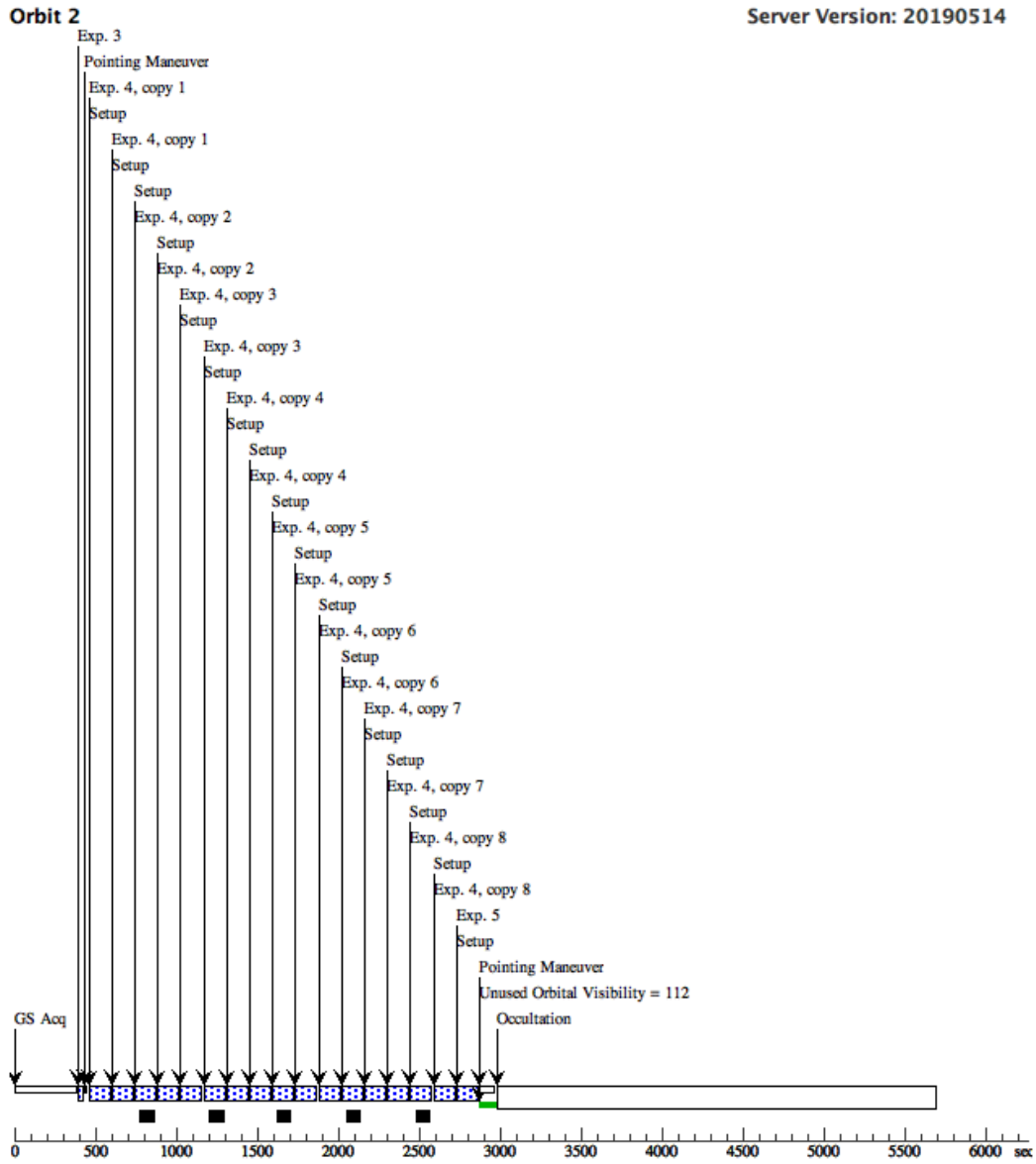
39	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Round trip	Sequence 38-42 Non-Int in Visit 01	103.128633 Secs X 8 (1650.058 Secs)	[==>(Copy 1, Forward)] [==>(Copy 1, Reverse)] [==>(Copy 2, Forward)] [==>(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)]	[10]
40	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 38-42 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[10]
41	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 38-42 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[10]
42	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPARS10	POS TARG null,-4.8 SPATIAL SCAN 0.1 2,90.0 Degrees,Forward	Sequence 38-42 Non-Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[10]
43	Image (1) CD-50-714	WFC3/IR, MULTIACCUM, GRISM256	F126N	NSAMP=3; SAMP-SEQ=RAPID	NEW OBSET FULL ACQ; GSPAIR S2TH0001 29F2S2TH000107F3 ; GS ACQ SCENARIO BASE1BE	Sequence 43-47 Non-Int in Visit 01	0.833445 Secs (0.833 Secs)	[==>]	[11]

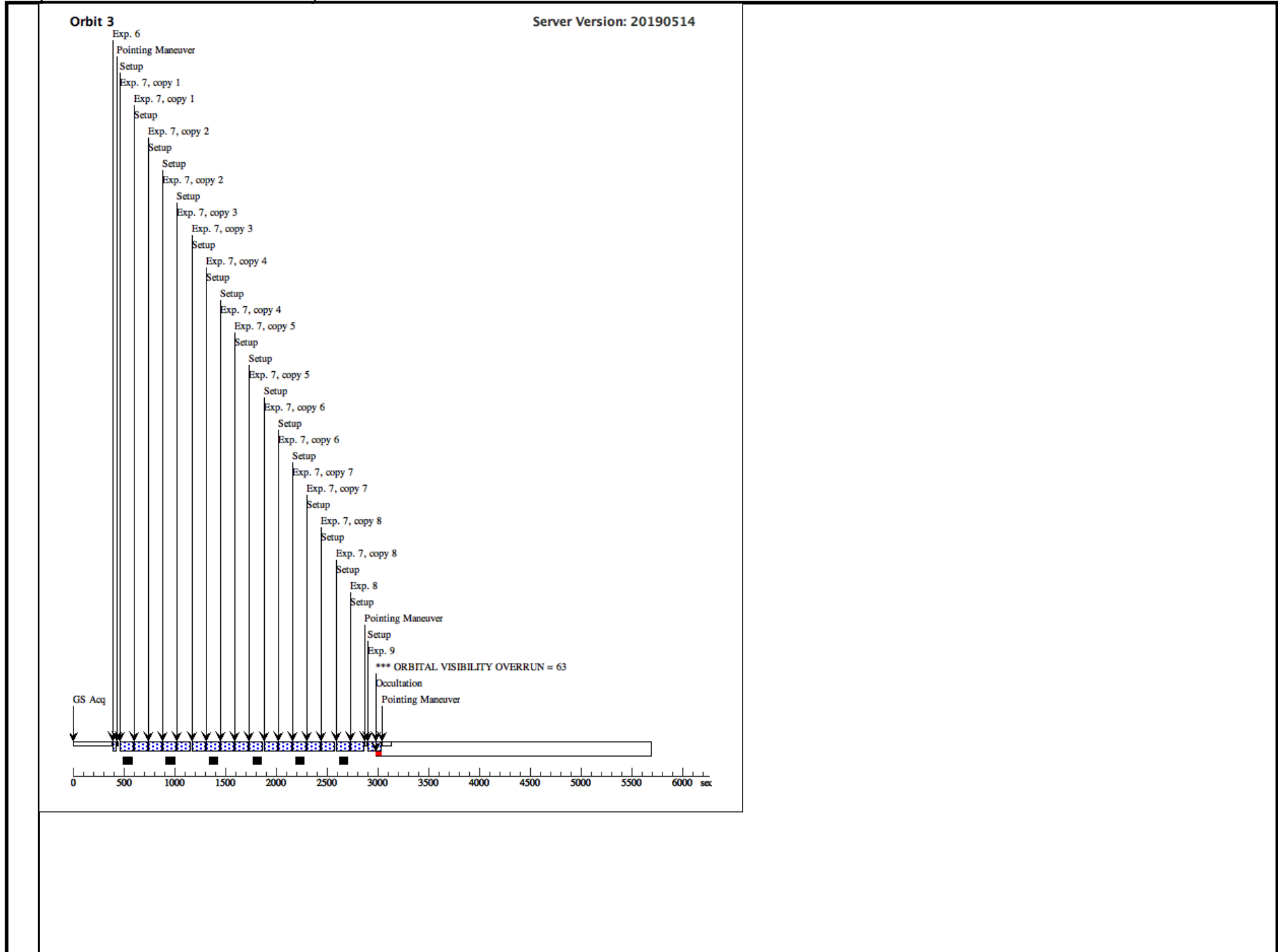
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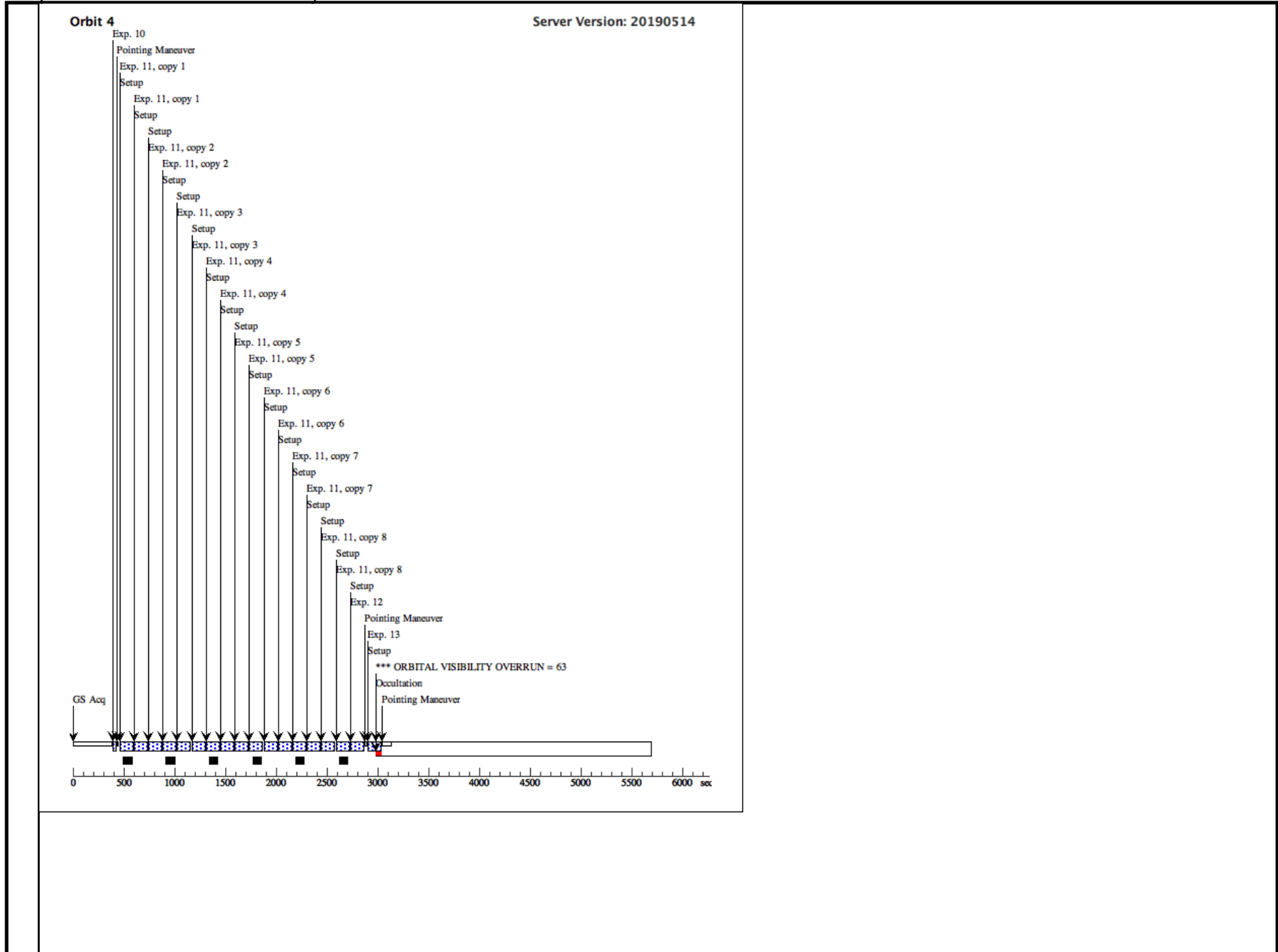
44	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPAR S10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Roun d trip	Sequence 43-47 Non -Int in Visit 01	103.128633 Secs X 8 (1650.058 Sec s)	[==>(Copy 1, Forward)] [==>(Copy 1, Reverse)] [==>(Copy 2, Forward)] [==>(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)]	[11]
45	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPAR S10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Forw ard	Sequence 43-47 Non -Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[11]
46	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPAR S10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Forw ard	Sequence 43-47 Non -Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[11]
47	(WFC3IR.ss (1) CD-50-714 .1007863)	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=15; SAMP-SEQ=SPAR S10	POS TARG null,-4.8 4; SPATIAL SCAN 0.1 2,90.0 Degrees,Forw ard	Sequence 43-47 Non -Int in Visit 01	103.128633 Secs (103.129 Secs)	[==>]	[11]

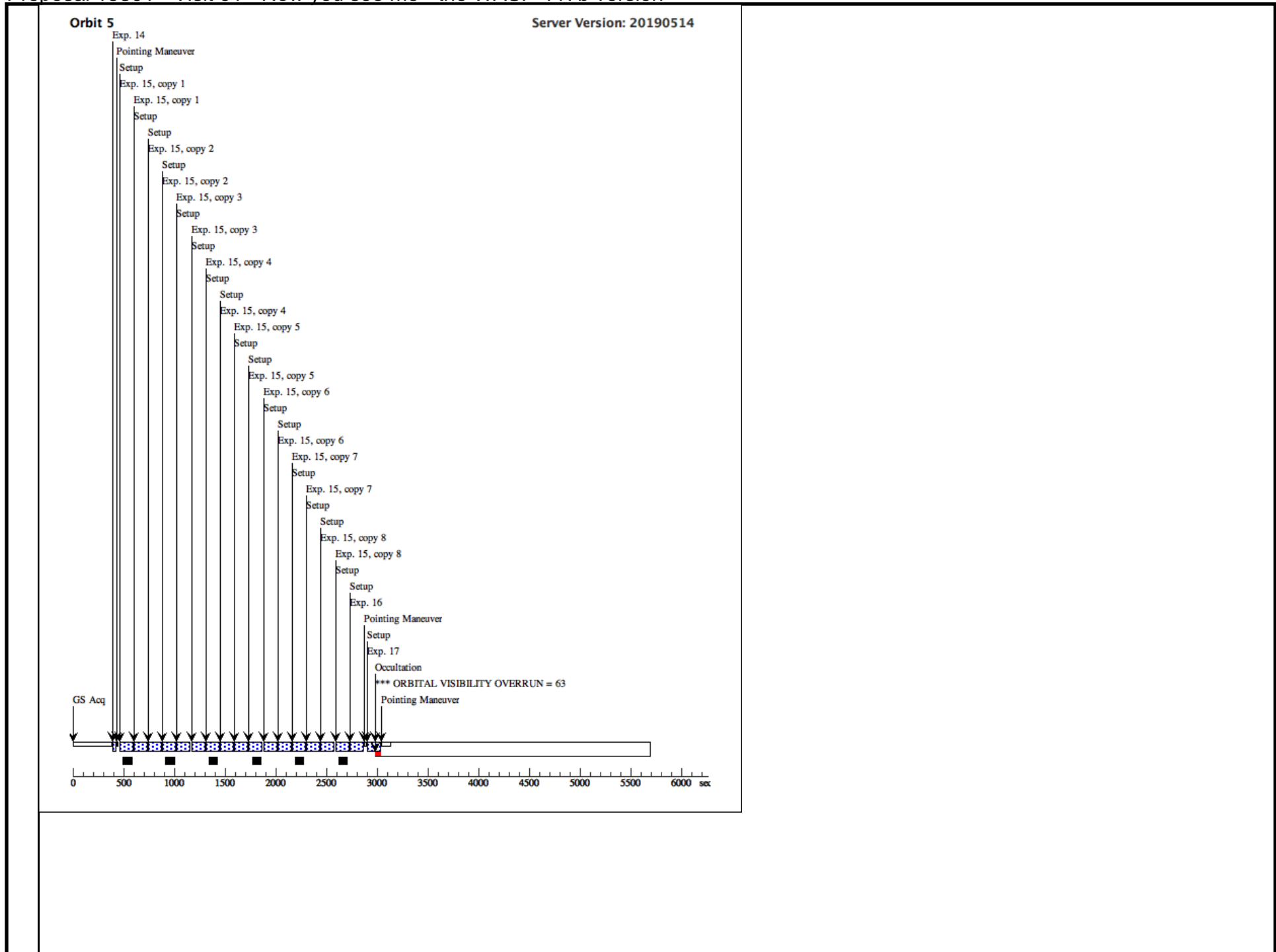
Orbit Structure



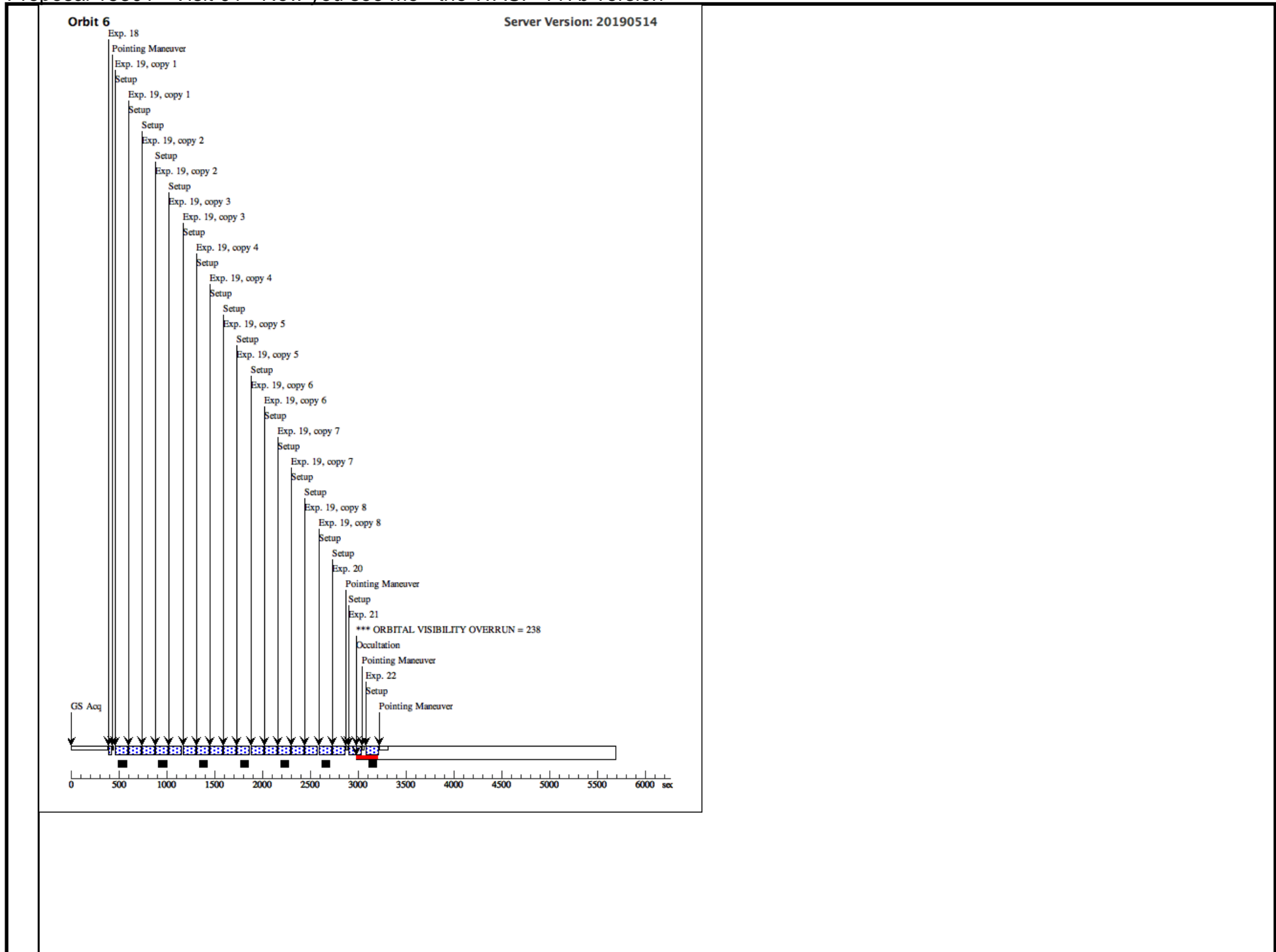




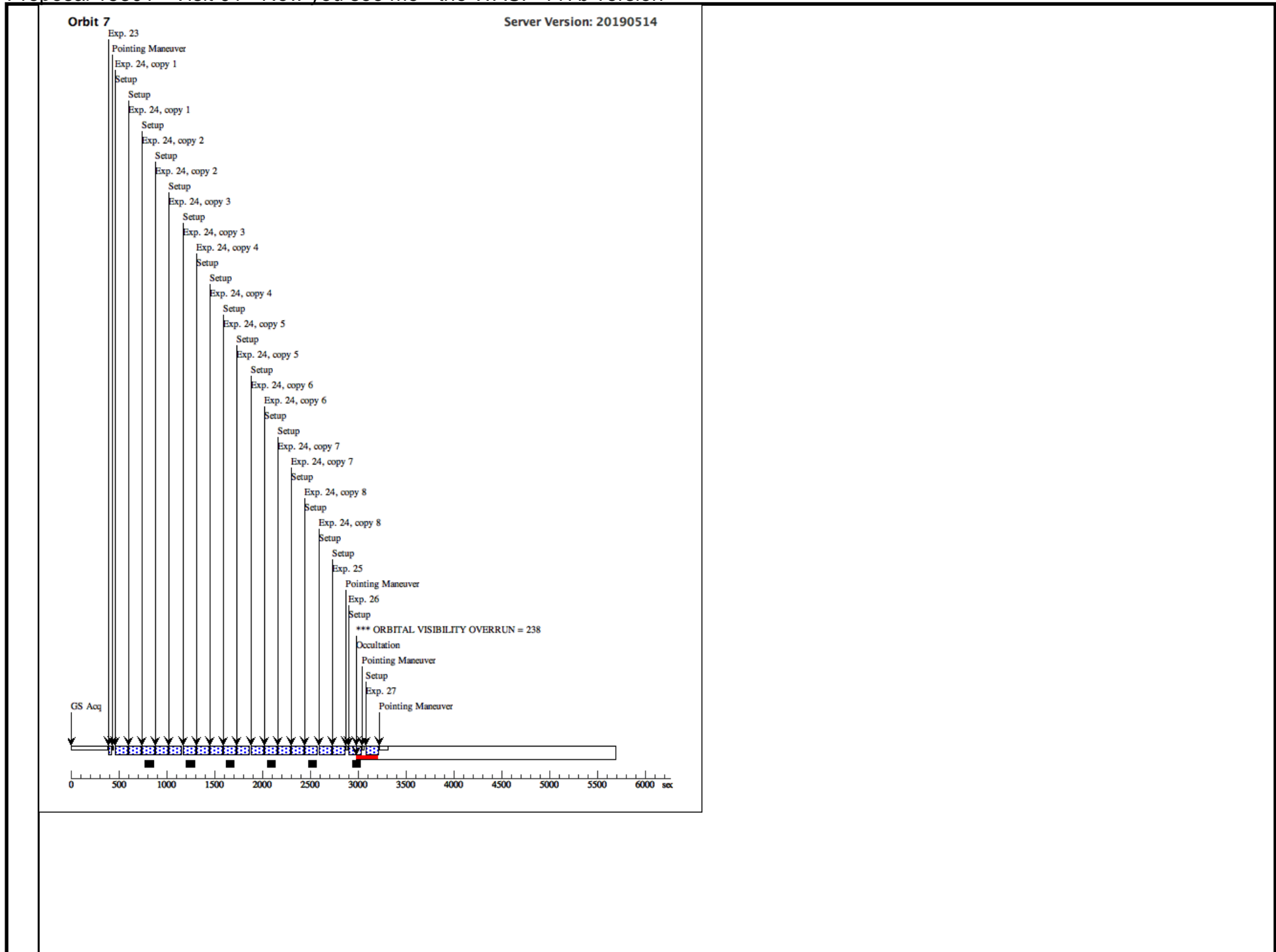




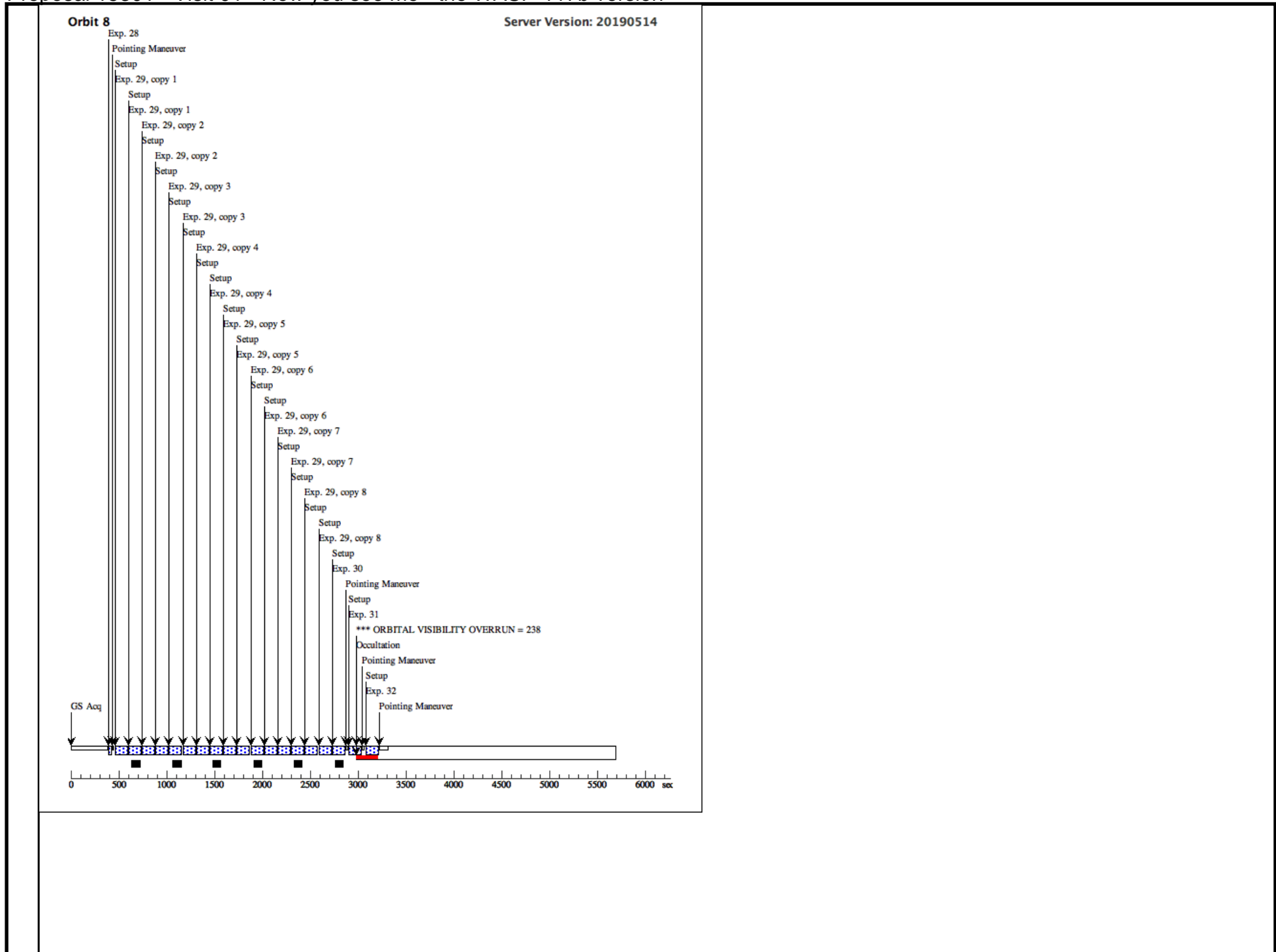
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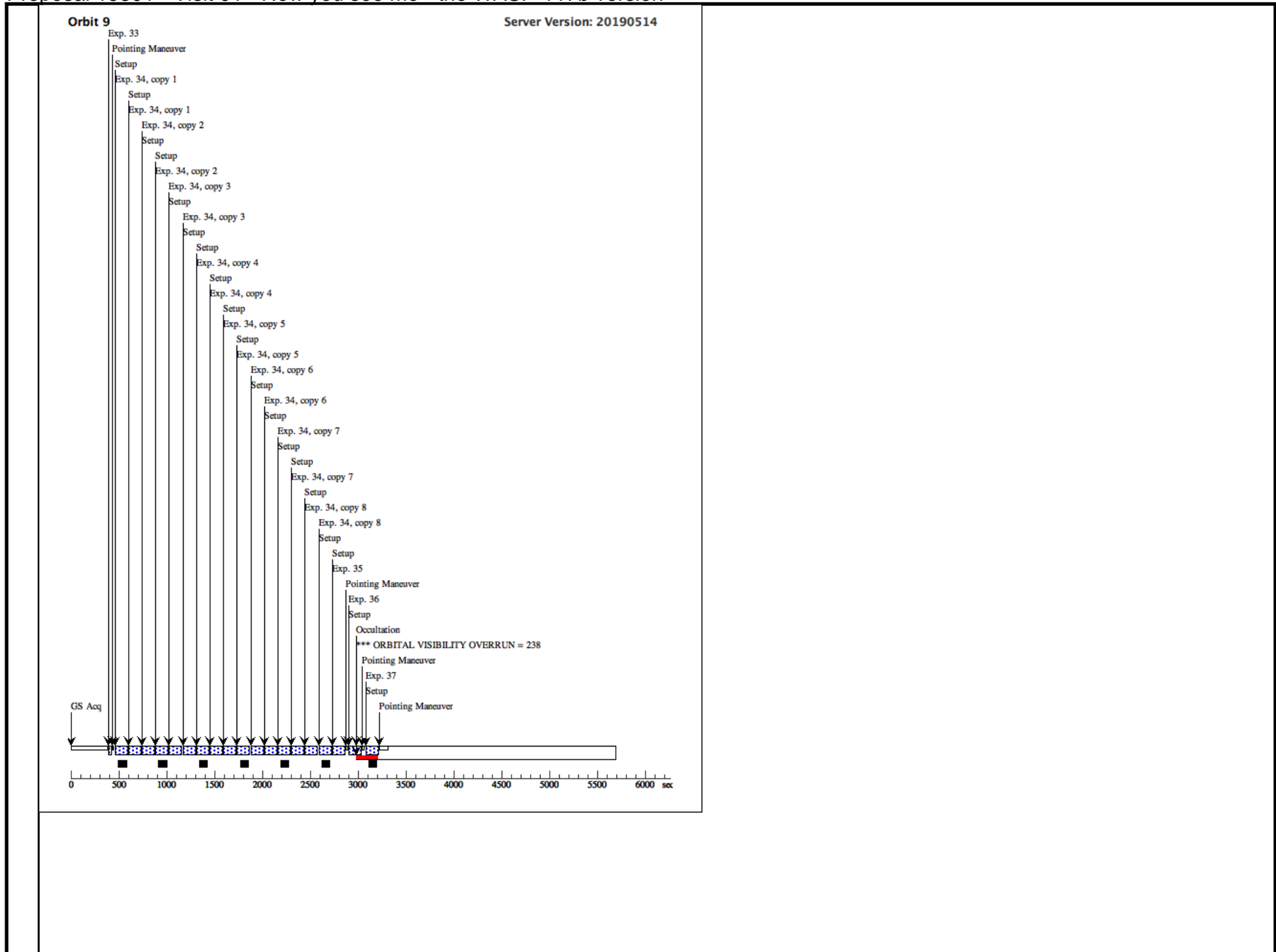
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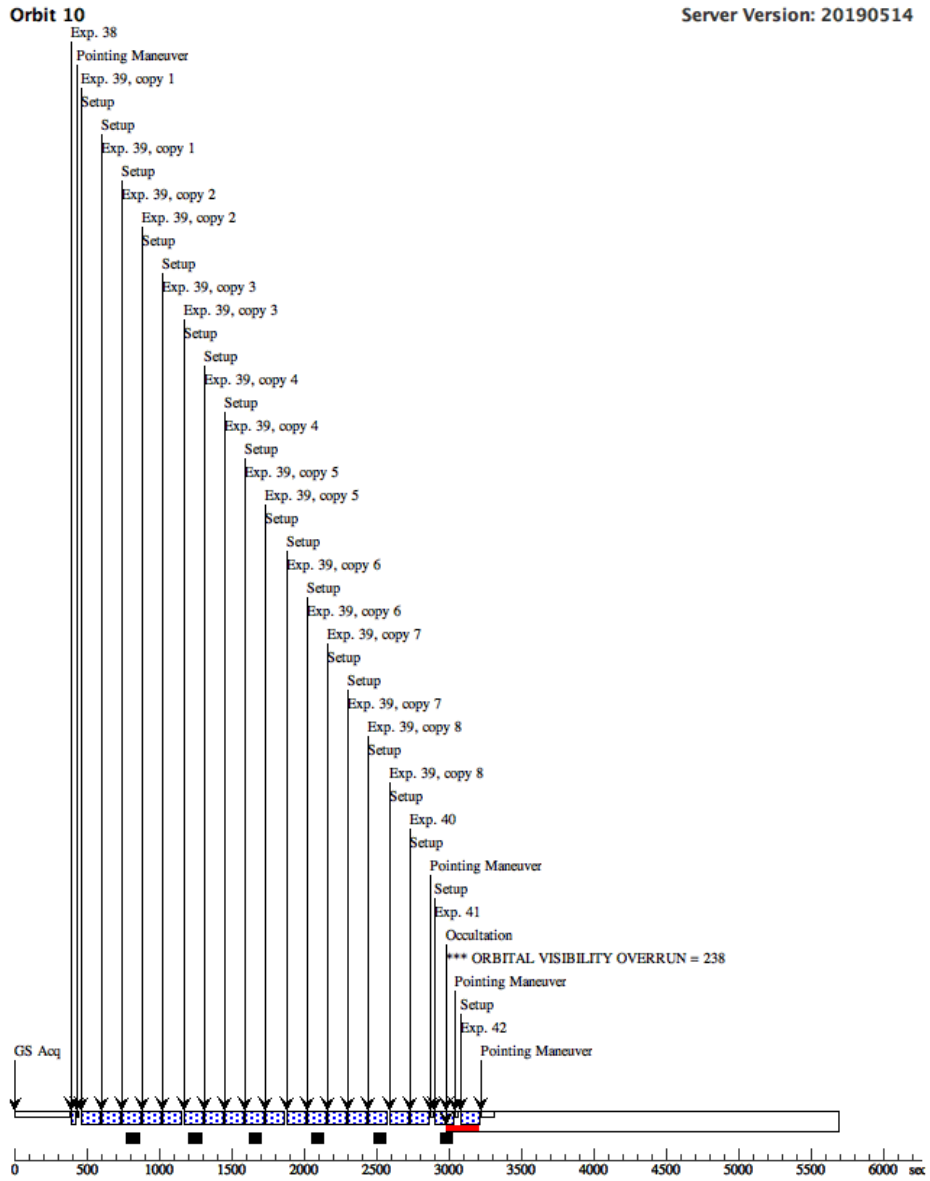


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