



13660 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b

Cycle: 22, 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) 2MASS-J16371556+0711000	WFC3/IR	5	20-May-2015 21:01:36.0	yes
02	(1) 2MASS-J16371556+0711000	WFC3/IR	5	20-May-2015 21:02:48.0	yes

10 Total Orbits Used

ABSTRACT

We propose to use the WFC3 IR-G141 grism to measure the near-IR emission spectrum of the newly discovered hot Jupiter WASP-103b at secondary eclipse. WASP-103b is one of the three best targets for thermal emission spectroscopy, but is the only one with no existing data of any kind. It receives relatively little far UV flux from its early-type host star as compared to other hot Jupiters, implying potentially different atmospheric

chemistry. Because understanding the complex physics and chemistry of planetary atmospheres requires high significance, high fidelity measurements, WASP-103b provides an essential benchmark for testing planetary atmosphere models. The high quality WFC3 observations will definitively determine the presence or absence of a thermal inversion in the planet's upper atmosphere and constrain the efficiency of heat recirculation to its night side by probing the water bands between 1.1-1.7 microns. When combined with complementary ground-based and Spitzer measurements at longer wavelengths these observations will also provide constraints to the C/O ratio of the atmosphere. They will therefore provide insight on whether or not some hot Jupiters have C/O ratios that deviate from those of their host stars. This study can only be done with HST because of the ultra-high precision requisite for meaningful model constraints, and the coverage of water bands that are critical for constraining elemental compositions but are inaccessible from the ground.

Proposal 13660 - Visit 01 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b

Visit	Proposal 13660, Visit 01, implementation Thu May 21 01:02:55 GMT 2015				
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: SCHED 70%; ORIENT 95D TO 247 D; Period 0.925542 D AND ZERO-PHASE HJD2456459.59957				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
	(1)	2MASS-J16371556+0711000 Alt Name1: WASP-103	RA: 16 37 15.5680 (249.3148667d) Dec: +07 11 0.07 (7.18335d) Equinox: J2000		V=12.1+/-0.01 K=10.76 +/- 0.020
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.					

Proposal 13660 - Visit 01 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b

Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) 2MASS-J16371556+0711000	WFC3/IR, MULTIACCUM, GRISM256	F139M	NSAMP=4; SAMP-SEQ=RAPID	PHASE 0.294 TO 0.312; GS ACQ SCENARIO BASE1B3	Sequence 1-2 Non-Int in Visit 01	1.11126 Secs (1.111 Secs) [==>]	[1]
	2	(WFC3IR.sp .622776)	(1) 2MASS-J16371556+0711000	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=12; SAMP-SEQ=SPARS10	SPATIAL SCAN 0.0 25,90.0 Degrees, Round trip	Sequence 1-2 Non-Int in Visit 01	81.089172 Secs X 11 (1783.962 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)]	[1]

Proposal 13660 - Visit 01 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b

3	(WFC3IR.sp (1) 2MASS-J163715 WFC3/IR, MULTIACCUM, G141 NSAMP=12; SPATIAL SCAN 0.0 Sequence 3-3 Non-In	81.089172 Secs X 12 (1946.14 Secs)	
	.622776) 56+0711000 GRISM256 SAMP-SEQ=SPAR S10 25,90.0 Degrees,Rou t in Visit 01 nd trip	[==>(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)]	[2]

Proposal 13660 - Visit 01 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b

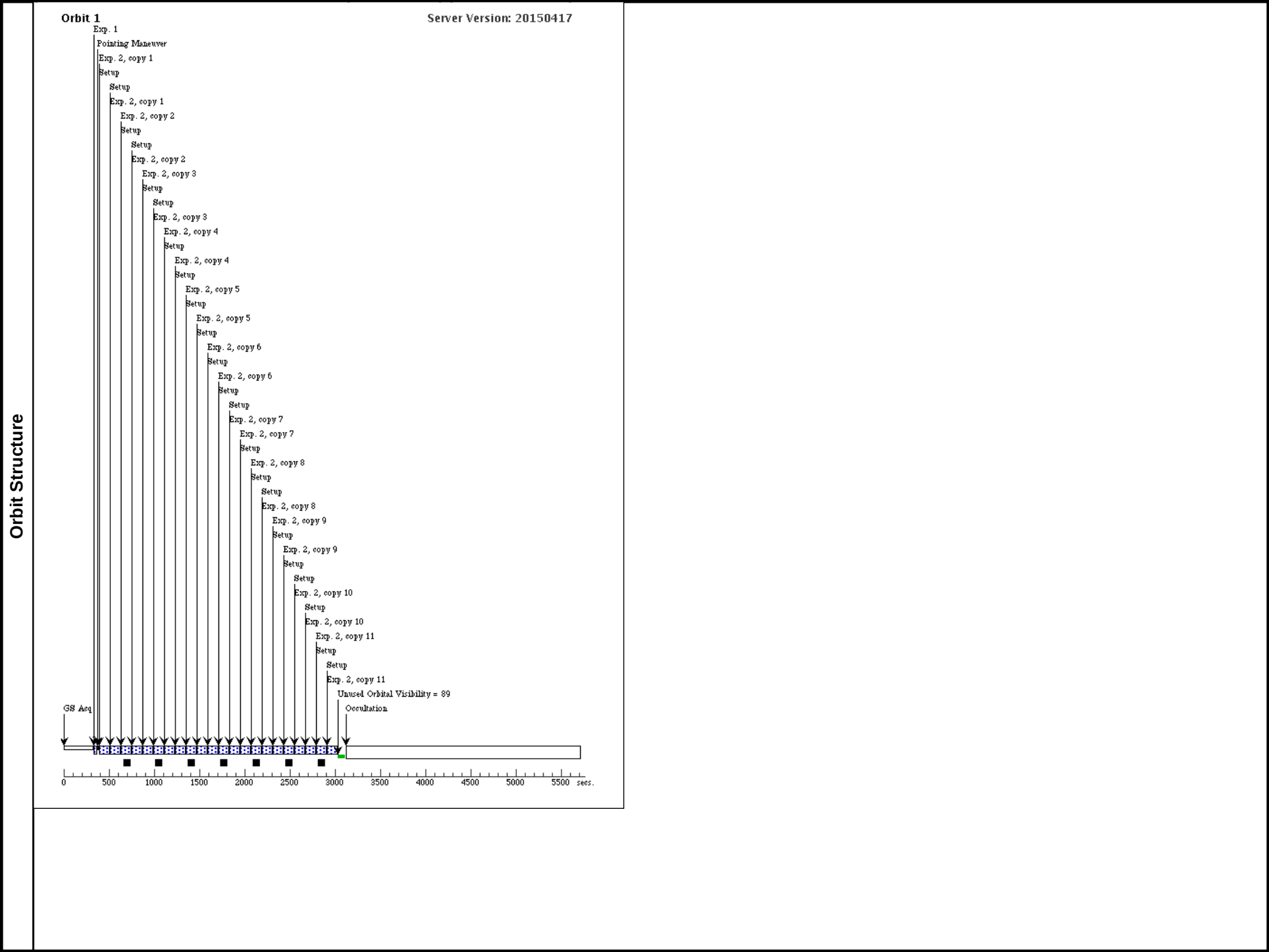
4	(1) 2MASS-J163715 56+0711000	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=12; SAMP-SEQ=SPAR S10	SPATIAL SCAN 0.0 25,90.0 Degrees,Rou nd trip	Sequence 4-4 Non-In t in Visit 01	81.089172 Secs X 12 (1946.14 Secs)	[3]
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Proposal 13660 - Visit 01 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b

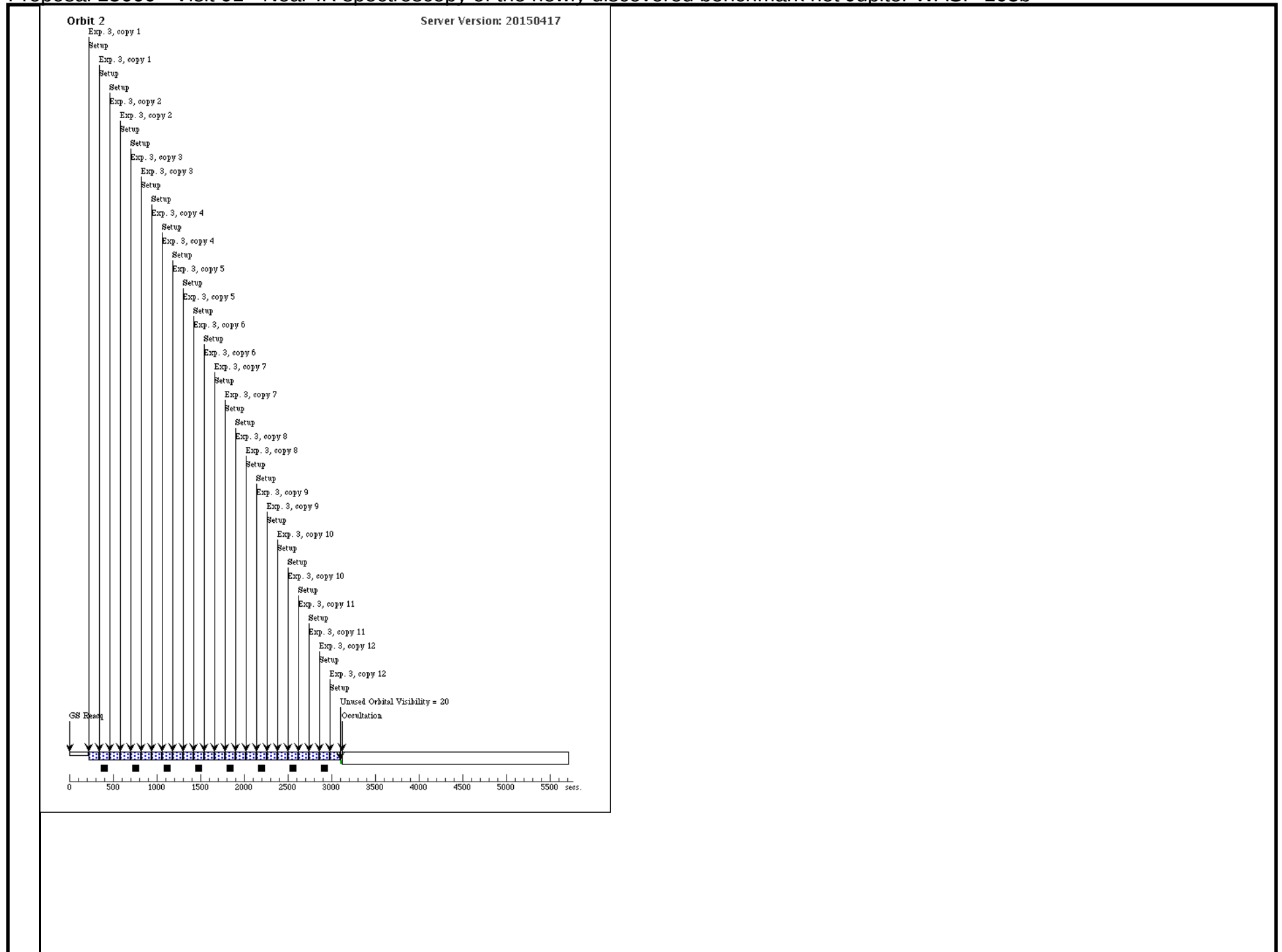
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Proposal 13660 - Visit 01 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b

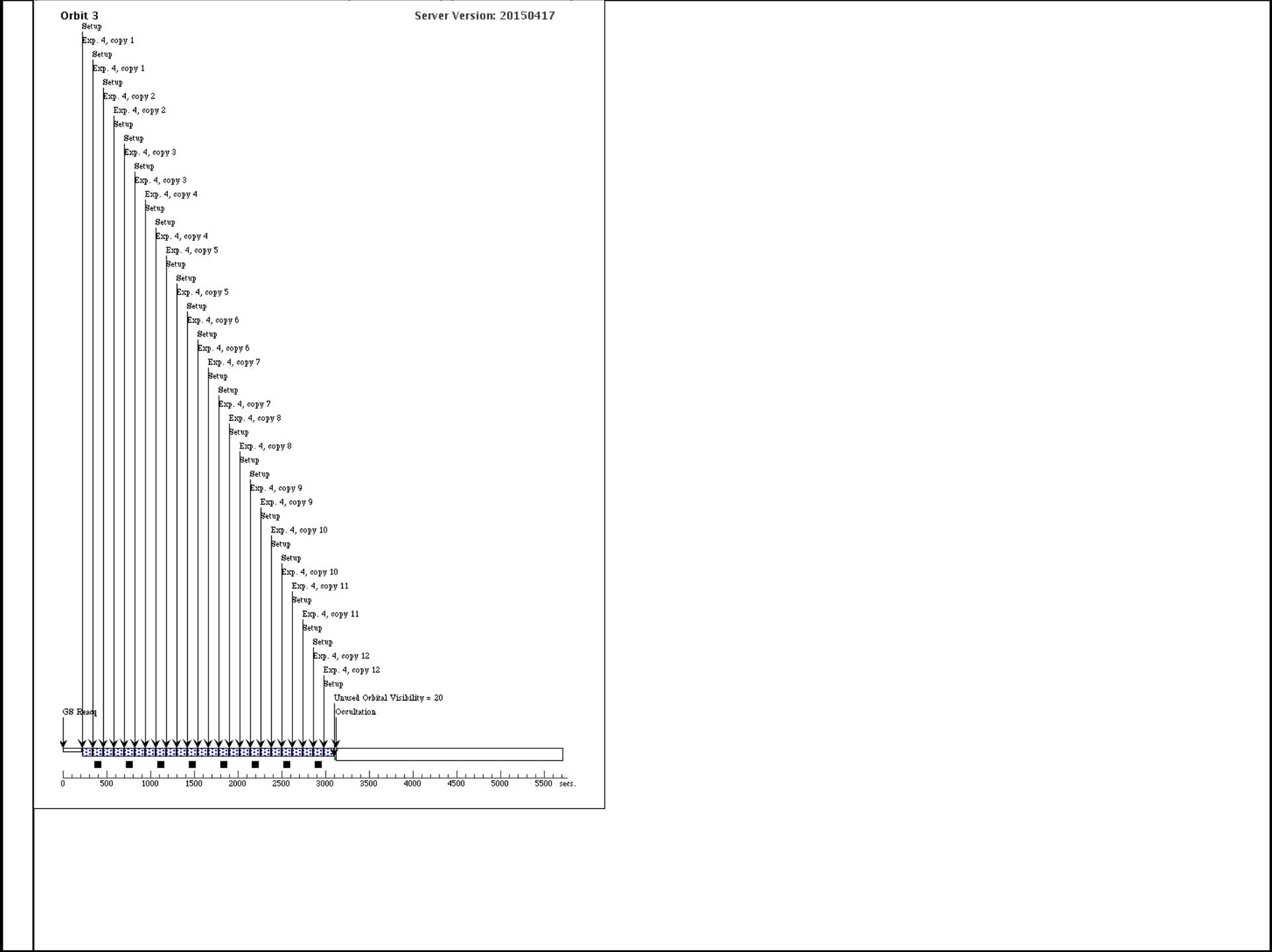
6	(1) 2MASS-J163715 56+0711000	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=12; SAMP-SEQ=SPAR S10	SPATIAL SCAN 0.0 25,90.0 Degrees, Round trip	Sequence 6-6 Non-In t in Visit 01	81.089172 Secs X 12 (1946.14 Secs)	[5]
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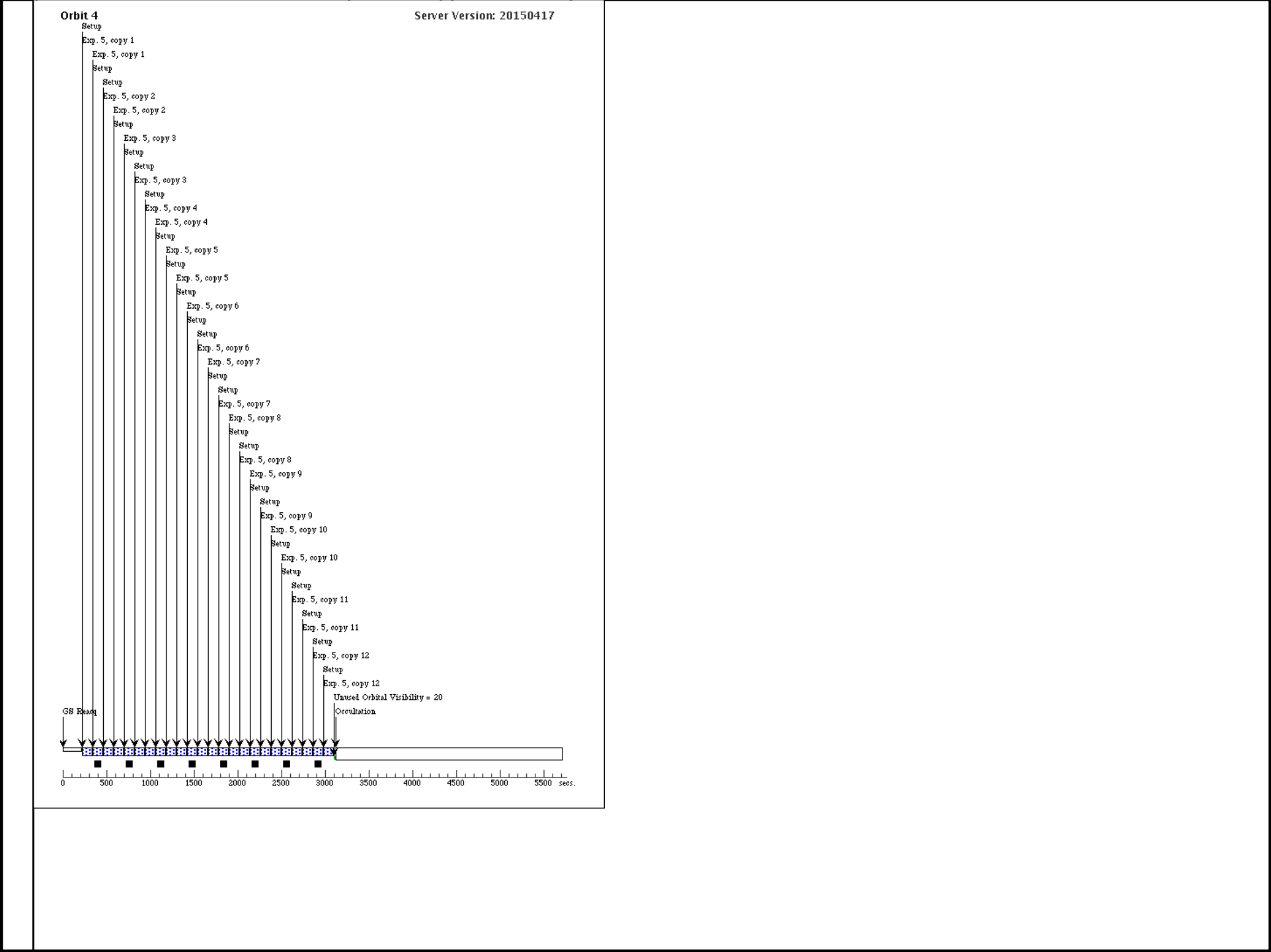
Proposal 13660 - Visit 01 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b



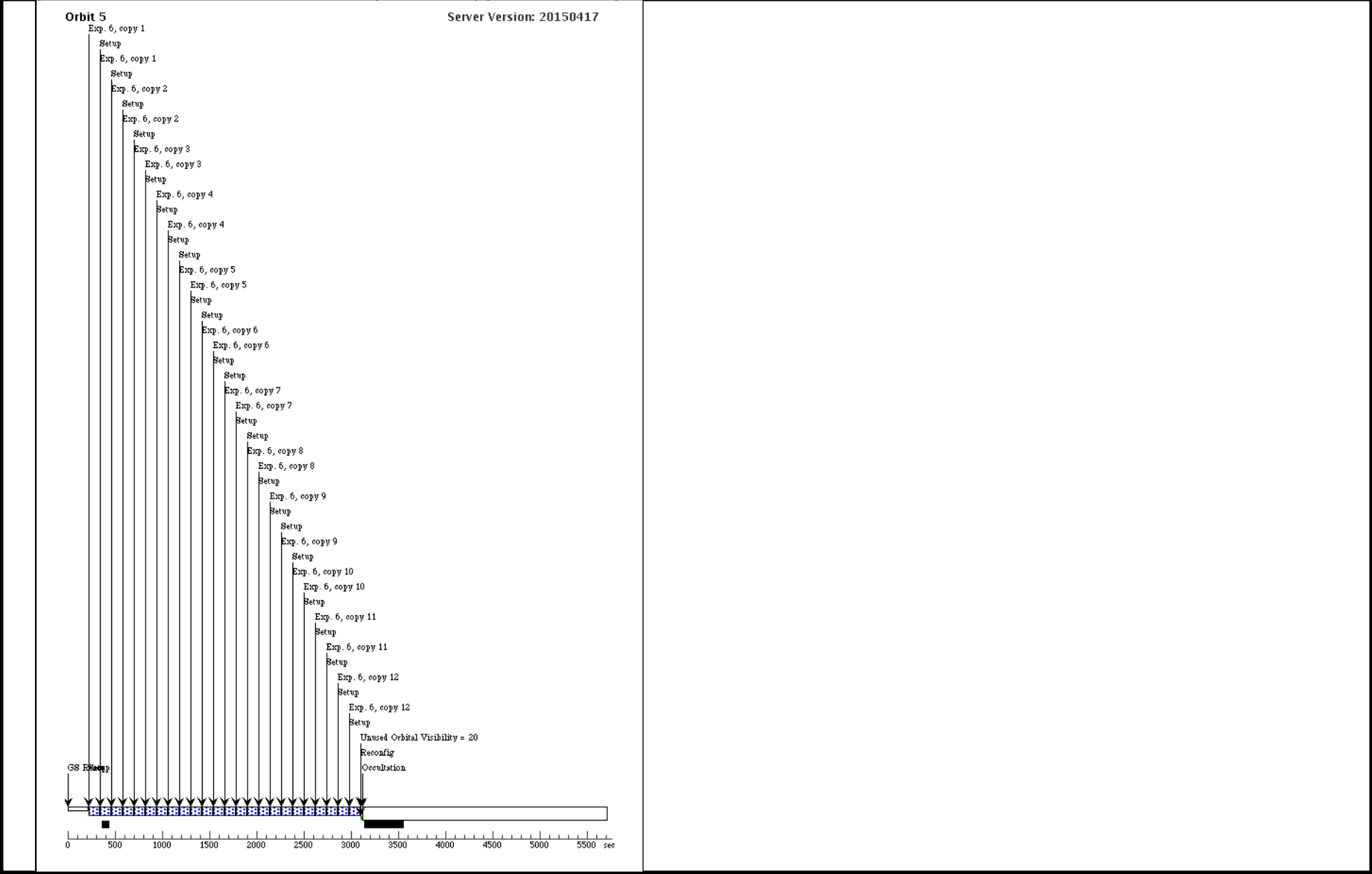
Proposal 13660 - Visit 01 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b



Proposal 13660 - Visit 01 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b



Proposal 13660 - Visit 01 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b



Proposal 13660 - Visit 02 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b

Visit	Proposal 13660, Visit 02, implementation Thu May 21 01:02:57 GMT 2015				
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: SCHED 70%; ORIENT 95D TO 247 D; Period 0.925542 D AND ZERO-PHASE HJD2456459.59957				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
	(1)	2MASS- J16371556+0711000 Alt Name1: WASP-103	RA: 16 37 15.5680 (249.3148667d) Dec: +07 11 0.07 (7.18335d) Equinox: J2000		V=12.1+/-0.01 K=10.76 +/- 0.020
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.					

Proposal 13660 - Visit 02 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b

Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) 2MASS-J16371556+0711000	WFC3/IR, MULTIACCUM, GRISM256	F139M	NSAMP=4; SAMP-SEQ=RAPID	PHASE 0.294 TO 0.312; GS ACQ SCENARIO BASE1B3	Sequence 1-2 Non-Int in Visit 02	1.11126 Secs (1.111 Secs) [==>]	[1]
	2	(WFC3IR.sp .622776)	(1) 2MASS-J16371556+0711000	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=12; SAMP-SEQ=SPARS10	SPATIAL SCAN 0.0 25,90.0 Degrees, Round trip	Sequence 1-2 Non-Int in Visit 02	81.089172 Secs X 11 (1783.962 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)]	[1]

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3	(WFC3IR.sp .622776)	(1) 2MASS-J163715 56+0711000	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=12; SAMP-SEQ=SPAR S10	SPATIAL SCAN 0.0 25,90.0 Degrees,Rou nd trip	Sequence 3-3 Non-In t in Visit 02	81.089172 Secs X 12 (1946.14 Secs)	
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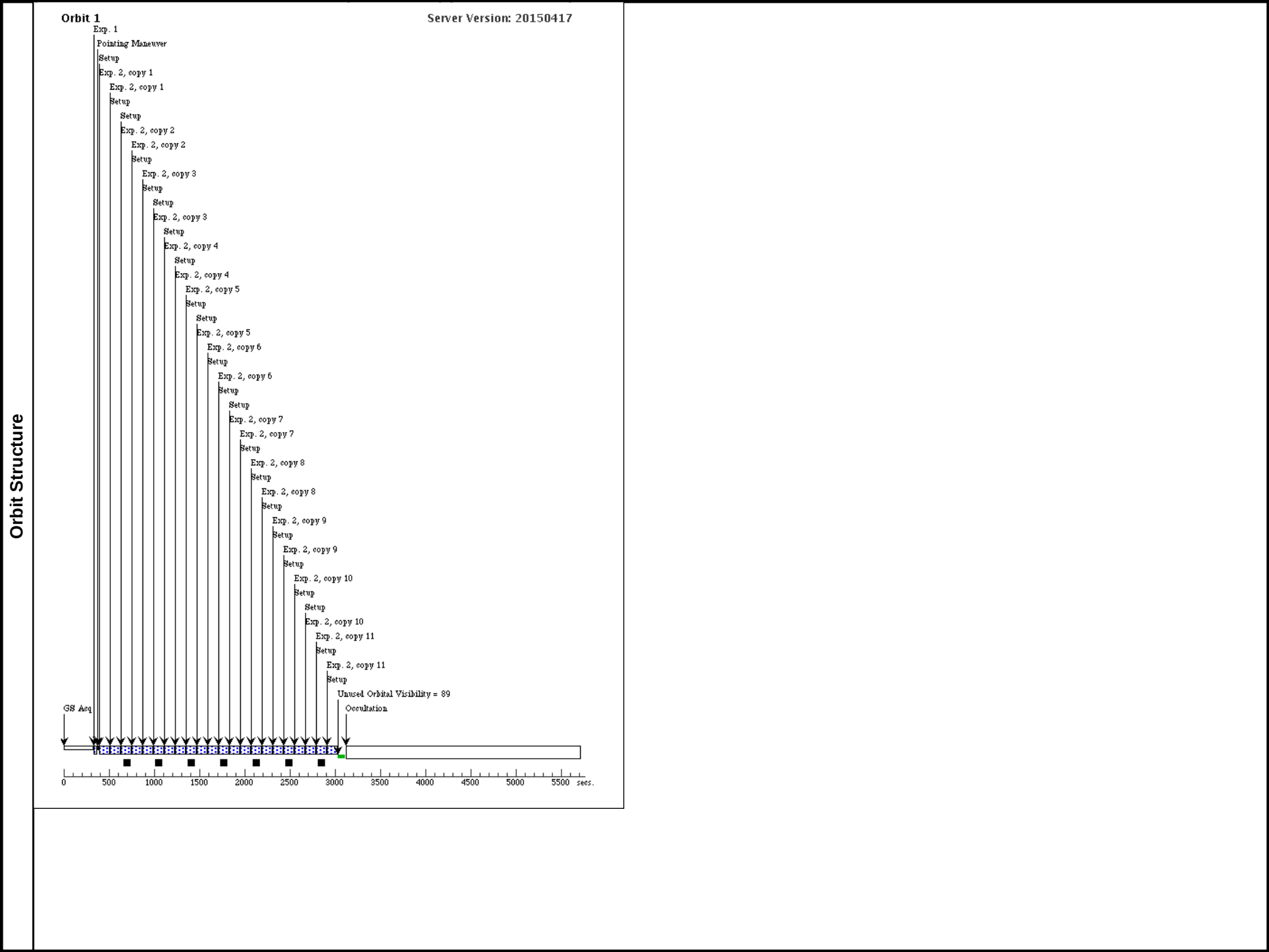
4	(1) 2MASS-J163715 56+0711000	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=12; SAMP-SEQ=SPAR S10	SPATIAL SCAN 0.0 25,90.0 Degrees,Rou nd trip	Sequence 4-4 Non-In t in Visit 02	81.089172 Secs X 12 (1946.14 Secs)	[==>(Copy 1, Forward)] [==>(Copy 1, Reverse)] [==>(Copy 2, Forward)] [==>(Copy 2, Reverse)] [==>(Copy 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)]	[3]
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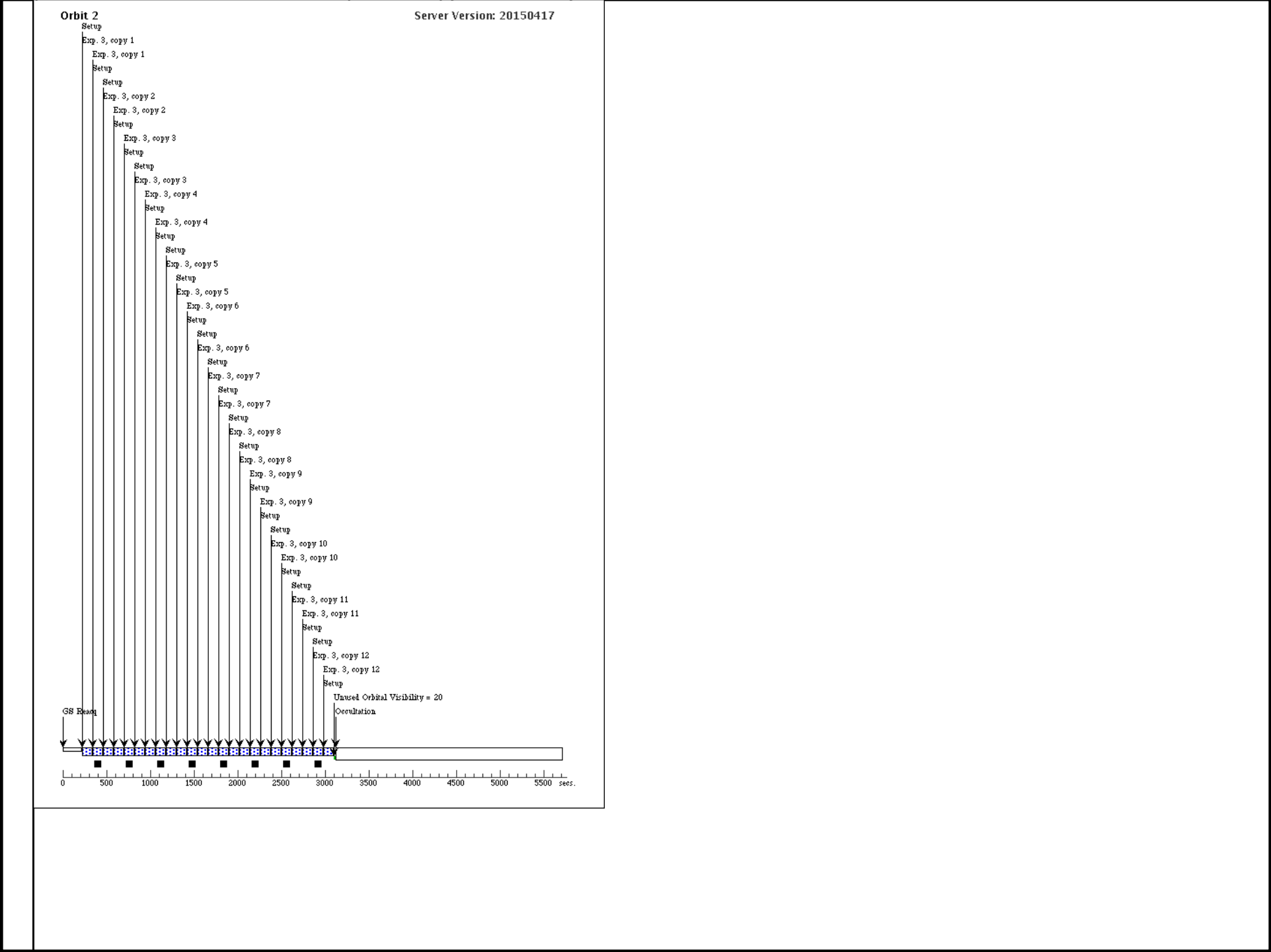
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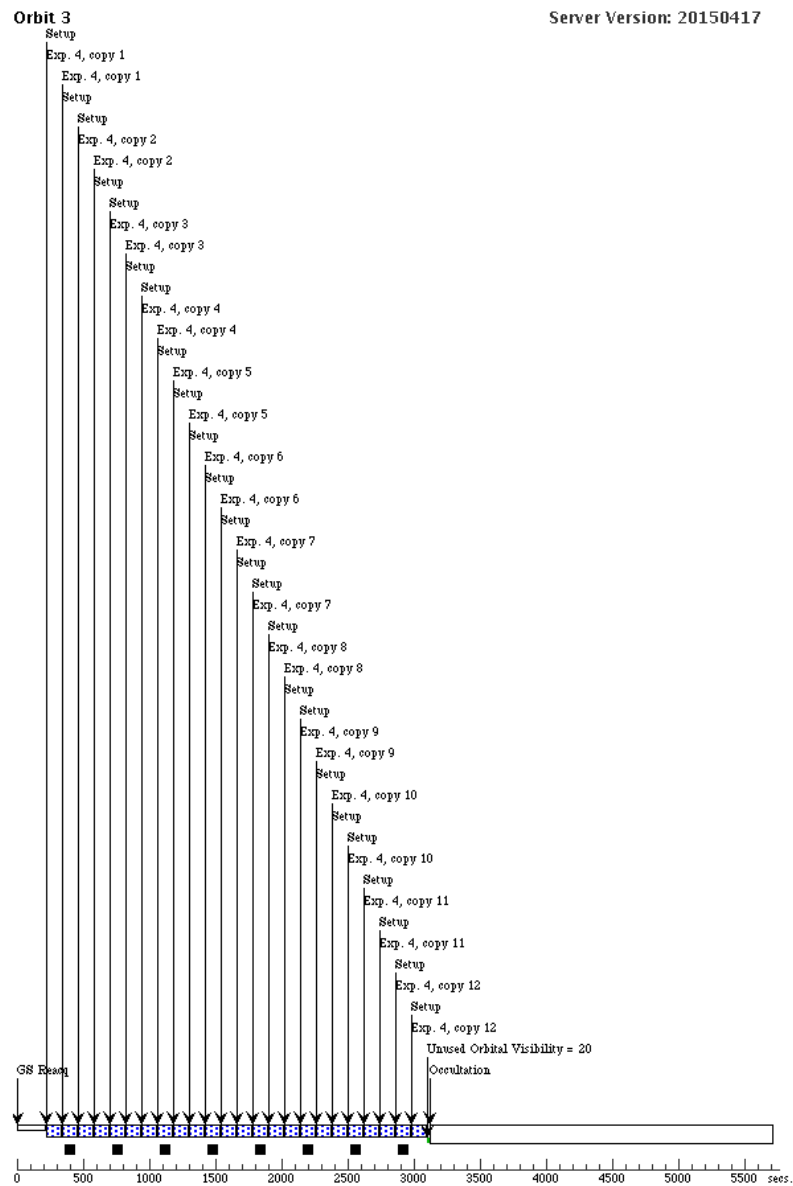
6	(1) 2MASS-J163715 56+0711000	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=12; SAMP-SEQ=SPAR S10	SPATIAL SCAN 0.0 25,90.0 Degrees,Rou nd trip	Sequence 6-6 Non-In t in Visit 02	81.089172 Secs X 12 (1946.14 Secs)	
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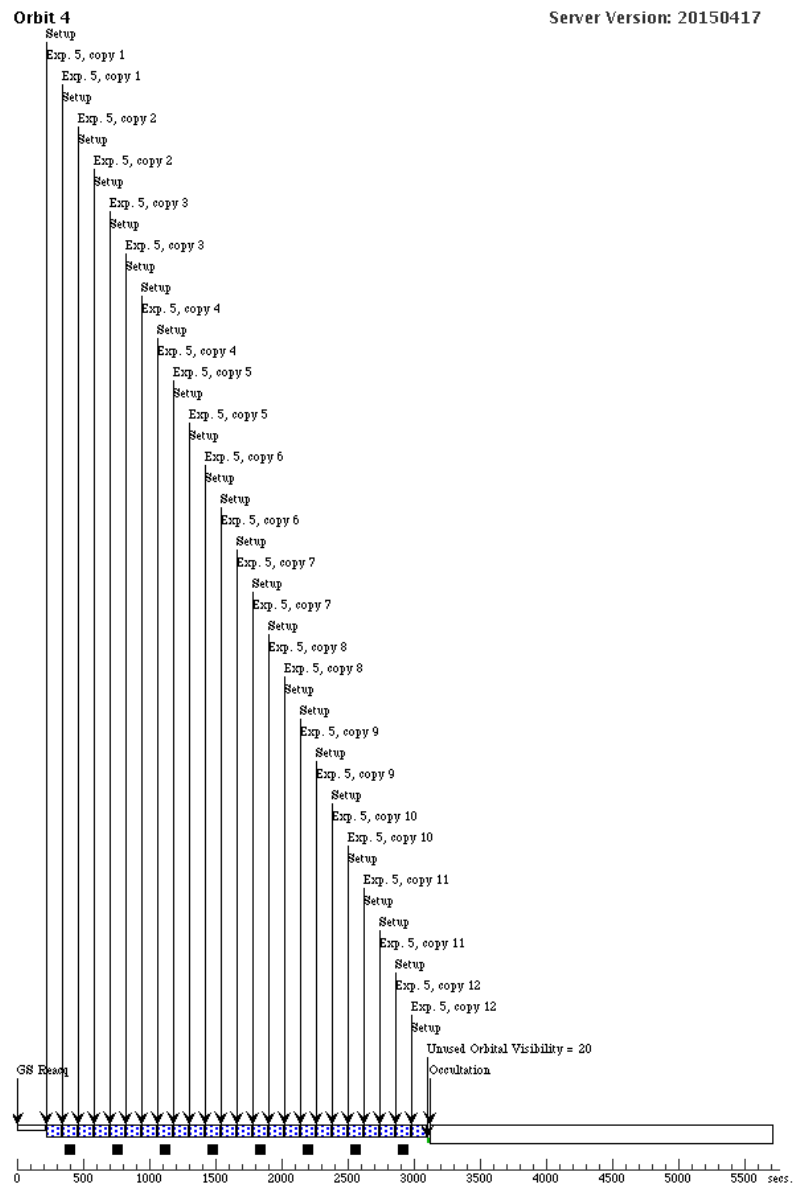
Proposal 13660 - Visit 02 - Near-IR spectroscopy of the newly discovered benchmark hot Jupiter WASP-103b



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