



16296 - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

Cycle: 28, 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) NAME-LUHMAN-16	WFC3/IR	5	25-Apr-2022 16:01:15.0	yes
02	(1) NAME-LUHMAN-16	WFC3/IR	5	25-Apr-2022 16:02:25.0	yes
03	(1) NAME-LUHMAN-16	WFC3/IR	5	25-Apr-2022 16:03:35.0	yes
R1	(2) LUHMAN-16-UPDATED	WFC3/IR	4	25-Apr-2022 16:04:28.0	yes
1A	(2) LUHMAN-16-UPDATED	WFC3/IR	1	25-Apr-2022 16:04:39.0	yes
R2	(2) LUHMAN-16-UPDATED	WFC3/IR	5	25-Apr-2022 16:05:40.0	yes
R3	(2) LUHMAN-16-UPDATED	WFC3/IR	5	25-Apr-2022 16:06:51.0	yes

30 Total Orbits Used

ABSTRACT

To date three brown dwarfs in the L/T transition show signs of planetary-wave light-curve beating. Here, the differential rotation of wave-derived structure in various latitudinal bands causes their individual light curves alternately to constructively and destructively interfere. Luhman 16AB is an intriguing target, with both components exhibiting peculiar behaviors that hint to the existence of bands in their atmospheres. Recently, indirect evidence for bands on Luhman 16A were found using polarization. However, no data exists to date that is able to verify the existence of bands on 16A or B. We propose to observe Luhman 16AB with WFC3 to test the existence of bands in these two L/T transition brown dwarfs. Our observations will 1) test the hypothesis that there are planetary-scale waves and bands in L/T transition atmospheres, 2) verify the ability of polarization to detect bands in exoatmospheres, and 3) nearly double the sample of long-temporal-baseline observations available to detect planetary-scale waves in L/T transition brown dwarfs.

OBSERVING DESCRIPTION

Our main goal is to observe the light curve evolution of Luhman 16A and B across different rotations with time-series spectroscopy in WFC3/IR/G141 grism mode. At the beginning of each orbit, we obtain a direct image in F132N for wavelength calibration of G141 images. We restrict the orientation range so that the dispersed spectra of the two objects will be at about ~ 7 pixels away from each other. To obtain a continuous baseline for monitoring the light curve evolution, we require the separation between visits to be less than or equal to two HST orbits.

One of the science goals of our program involves verifying the ability of polarization to detect banded structures in exoatmospheres. To maximize our science case we aim to acquire ground based polarimetric observations nearly simultaneous with the HST observations. We would therefore like to ask that our observations take place in a time when that is possible, namely in order of preference, in April, May-June.

Proposal 16296 - Visit1 (01) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

Mon Apr 25 20:06:59 GMT 2022

Visit	<p>Proposal 16296, Visit1 (01), failed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/IR</p> <p>Special Requirements: PCS MODE FINE; ORIENT 71D TO 101 D; ORIENT 251D TO 281 D</p> <p><i>Comments: PA from Luhman 16A to B = 131 deg (north to east) at ~2021.5</i> <i>offset angle of WFC3/IR +y axis = 135</i> <i>ORIENT = 266 deg +/- 15</i></p> <p><i>observational time preference in order: April, May-June.</i></p>					
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
	(1)	NAME-LUHMAN-16	RA: 10 49 14.1430 (162.3089292d) Dec: -53 19 4.59 (-53.31794d) Equinox: J2000	Proper Motion RA: -0.3079031198719211 sec of time/yr Proper Motion Dec: 0.354 arcsec/yr Epoch of Position: 2015.5	V=16.2	Reference Frame: SIMBAD
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>Category=STAR</i></p> <p><i>Description=[BROWN DWARF]</i></p>					

Proposal 16296 - Visit1 (01) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10		Sequence 1-2 Non-Int in Visit1 (01)	0.277815 Secs (0.278 Secs) [==>]	[1]

Exposures

Proposal 16296 - Visit1 (01) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

2	G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 1-2 Non-Int in Visit1 (01)	7.624302 Secs X 100 (762.43 Secs)
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3	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 3-4 Non-Int in Visit1 (01)	0.277815 Secs (0.278 Secs)	[==>]
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Proposal 16296 - Visit1 (01) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

4	G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 3-4 Non-Int in Visit1 (01)	7.624302 Secs X 100 (762.43 Secs)
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7	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	NEW OBSET	Sequence 7-8 Non-Int in Visit1 (01)	0.277815 Secs (0.278 Secs) [==>]	

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Proposal 16296 - Visit1 (01) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

8	G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 7-8 Non-Int in Visit1 (01)	7.624302 Secs X 100 (762.43 Secs)
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9	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 9-10 Non-Int in Visit1 (01)	0.277815 Secs (0.278 Secs)	
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Proposal 16296 - Visit1 (01) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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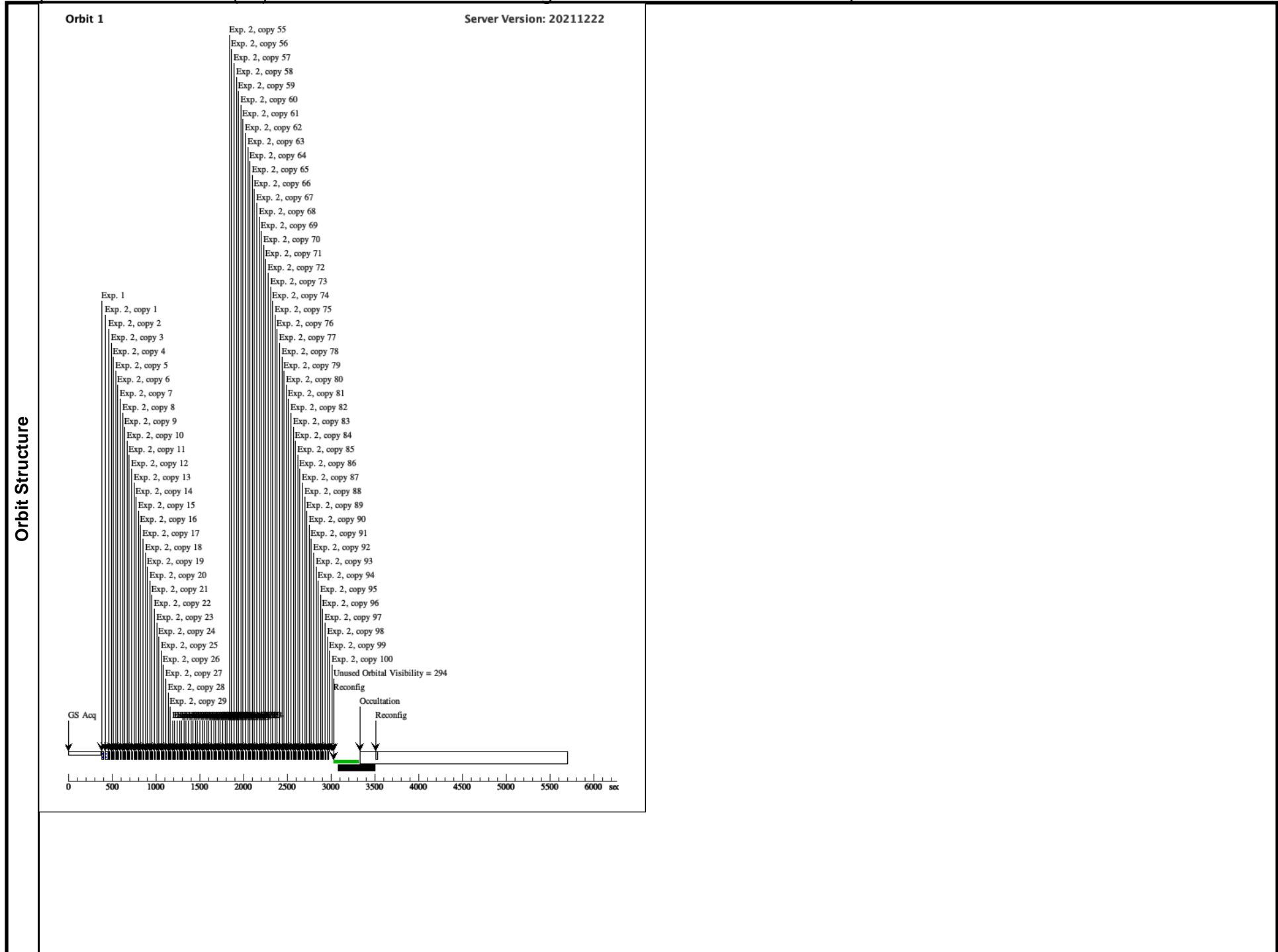
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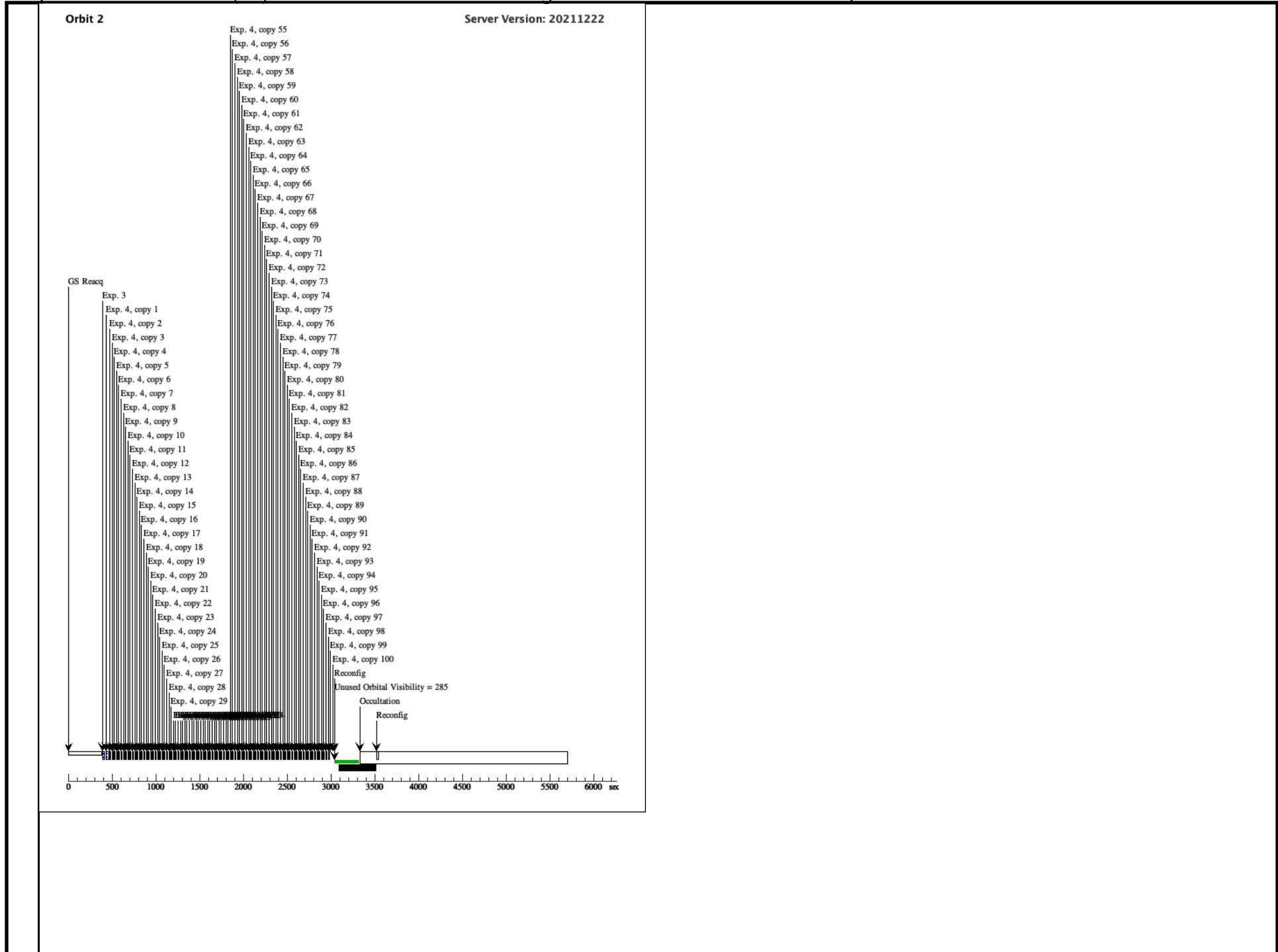
Proposal 16296 - Visit1 (01) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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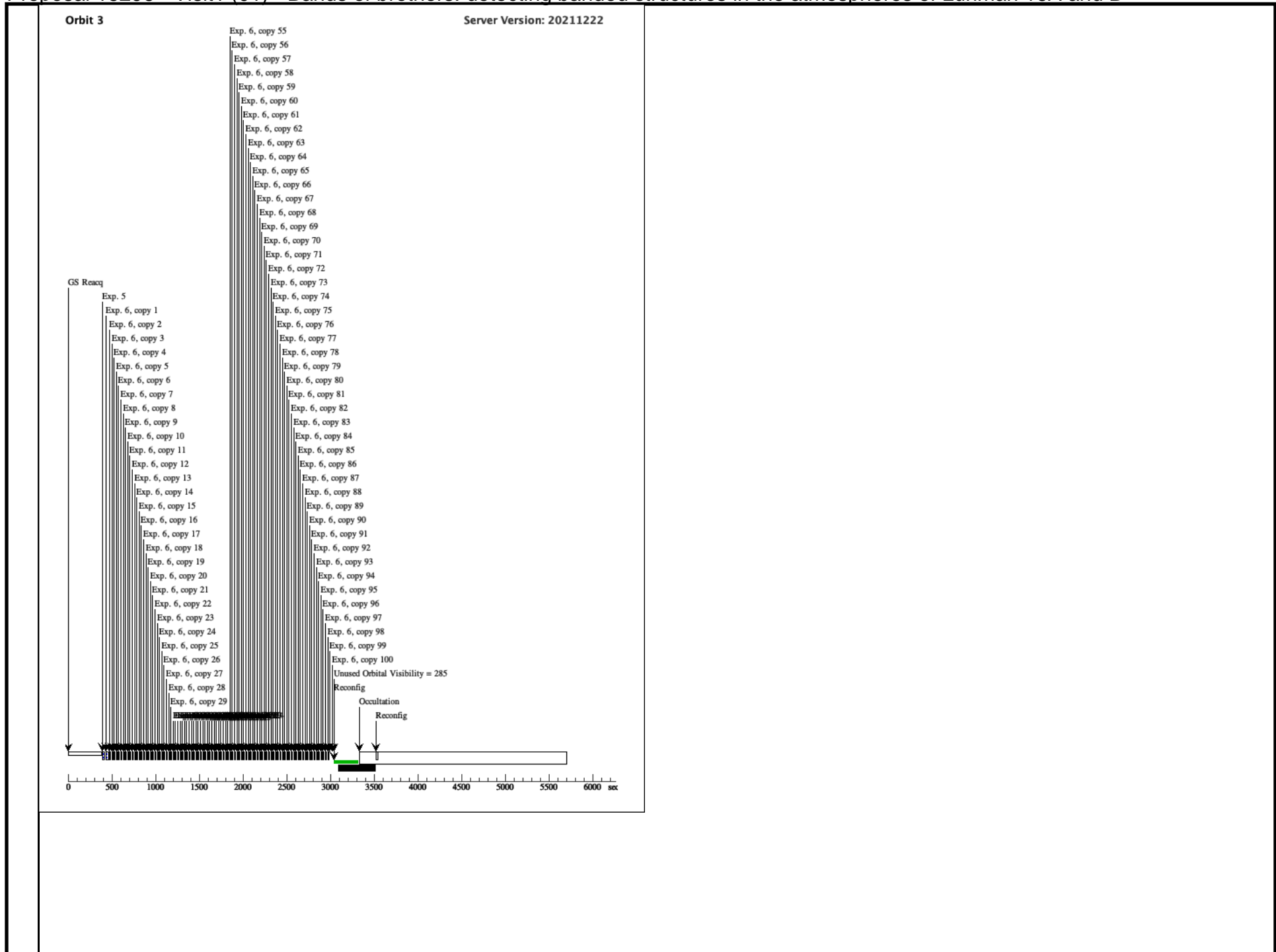
Proposal 16296 - Visit1 (01) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



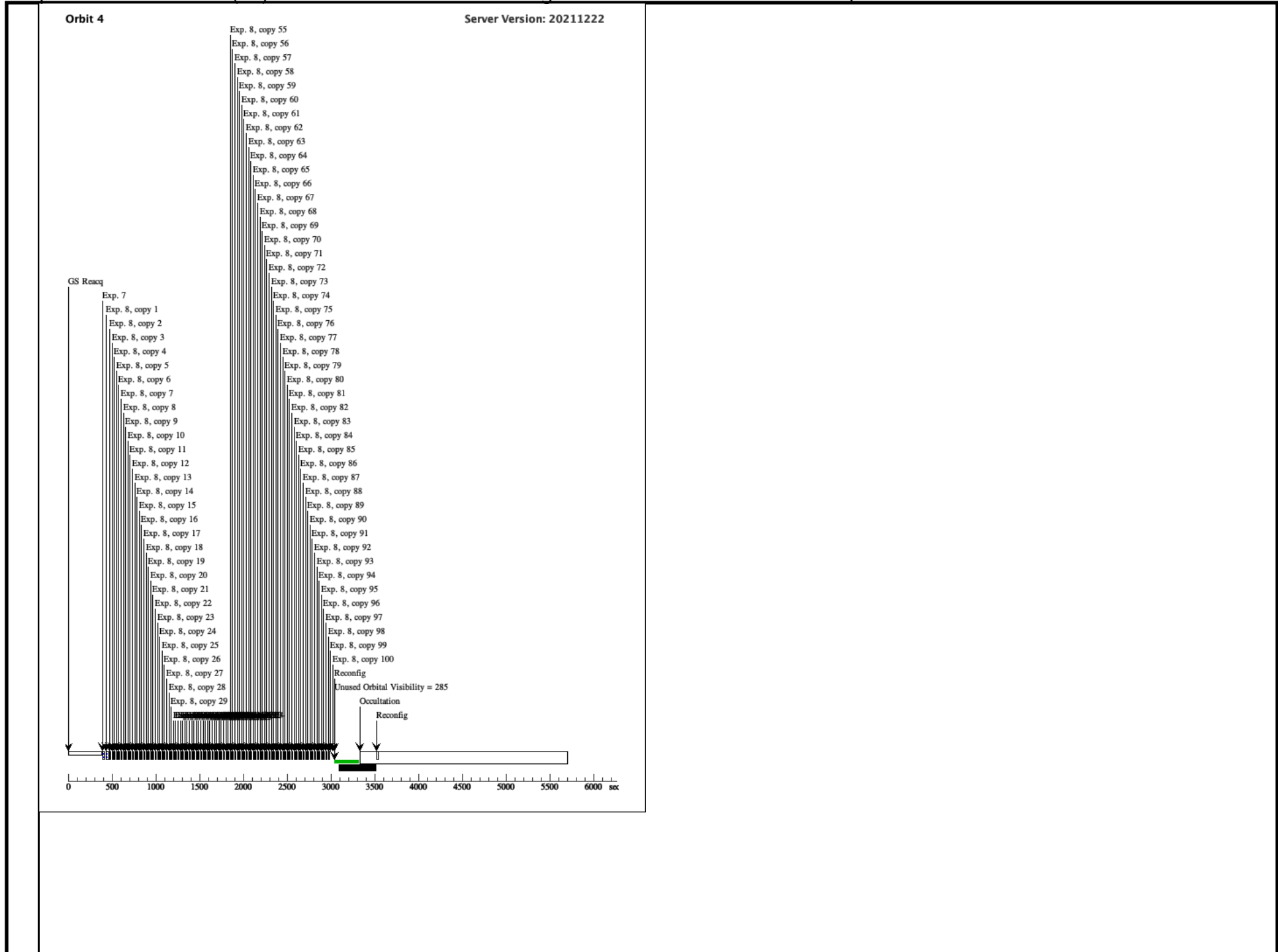
Proposal 16296 - Visit1 (01) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



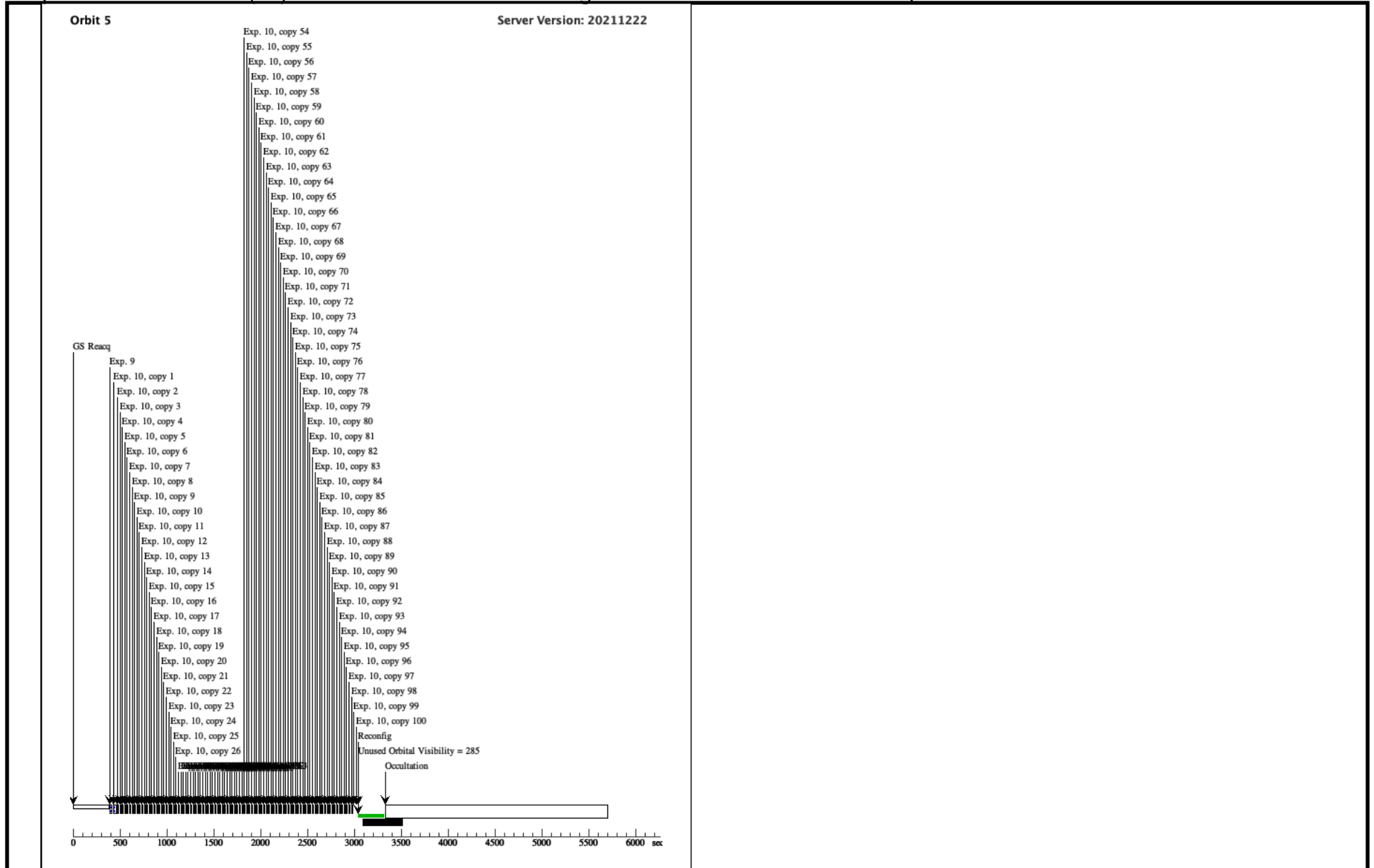
Proposal 16296 - Visit1 (01) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Visit1 (01) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Visit1 (01) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Visit2 (02) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

Mon Apr 25 20:07:01 GMT 2022

Visit	<p>Proposal 16296, Visit2 (02), failed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/IR</p> <p>Special Requirements: PCS MODE FINE; SAME ORIENT AS 01; AFTER 01 BY 5 Orbits TO 7 Orbits</p> <p><i>Comments: PA from Luhman 16A to B = 131 deg (north to east) at ~2021.5</i> <i>offset angle of WFC3/IR +y axis = 135</i> <i>ORIENT = 266 deg +/- 15</i></p> <p><i>observational time preference in order: April, May-June.</i></p>					
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
(1)		NAME-LUHMAN-16	RA: 10 49 14.1430 (162.3089292d) Dec: -53 19 4.59 (-53.31794d) Equinox: J2000	Proper Motion RA: -0.3079031198719211 sec of time/yr Proper Motion Dec: 0.354 arcsec/yr Epoch of Position: 2015.5	V=16.2	Reference Frame: SIMBAD
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> <i>Category=STAR</i> <i>Description=[BROWN DWARF]</i></p>						

Proposal 16296 - Visit2 (02) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10		Sequence 1-2 Non-Int in Visit2 (02)	0.277815 Secs (0.278 Secs) [==>]	[1]

Exposures

Proposal 16296 - Visit2 (02) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

2	G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 1-2 Non-Int in Visit2 (02)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Visit2 (02) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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3	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 3-4 Non-Int in Visit2 (02)	0.277815 Secs (0.278 Secs)	[==>]
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Proposal 16296 - Visit2 (02) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

4	G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 3-4 Non-Int in Visit2 (02)	7.624302 Secs X 100 (762.43 Secs)
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5	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 5-6 Non-Int in Visit2 (02)	0.277815 Secs (0.278 Secs) [==>]	

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Proposal 16296 - Visit2 (02) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

6	G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 5-6 Non-Int in Visit2 (02)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Visit2 (02) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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7	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	NEW OBSET	Sequence 7-8 Non-Int in Visit2 (02)	0.277815 Secs (0.278 Secs) [==>]	

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Proposal 16296 - Visit2 (02) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

8	G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 7-8 Non-Int in Visit2 (02)	7.624302 Secs X 100 (762.43 Secs)
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9	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 9-10 Non-Int in Visit2 (02)	0.277815 Secs (0.278 Secs)	
							[==>]	[5]

Proposal 16296 - Visit2 (02) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

	10 G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 9-10 Non-I nt in Visit2 (02)	7.624302 Secs X 100 (762.43 Secs)	
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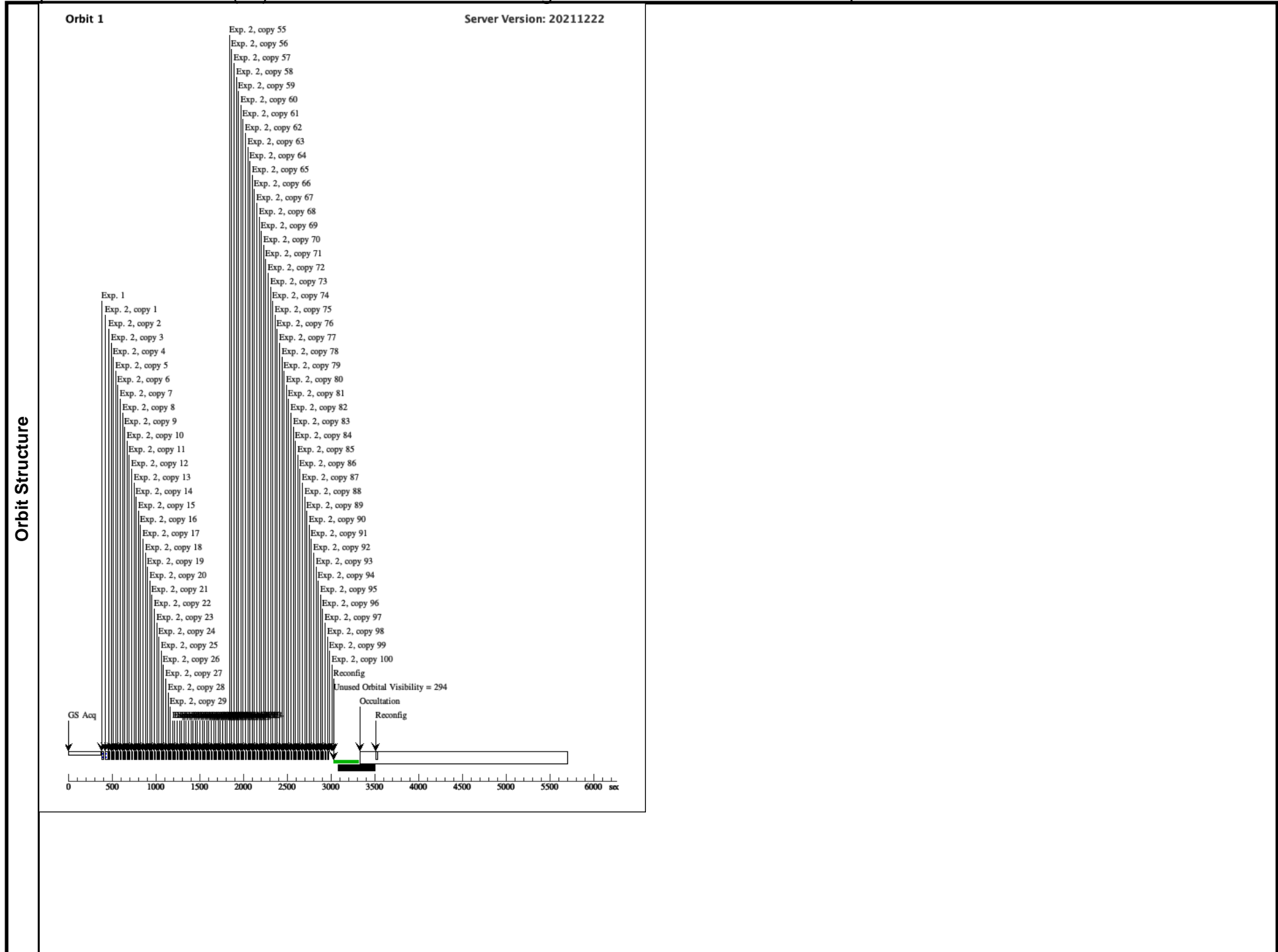
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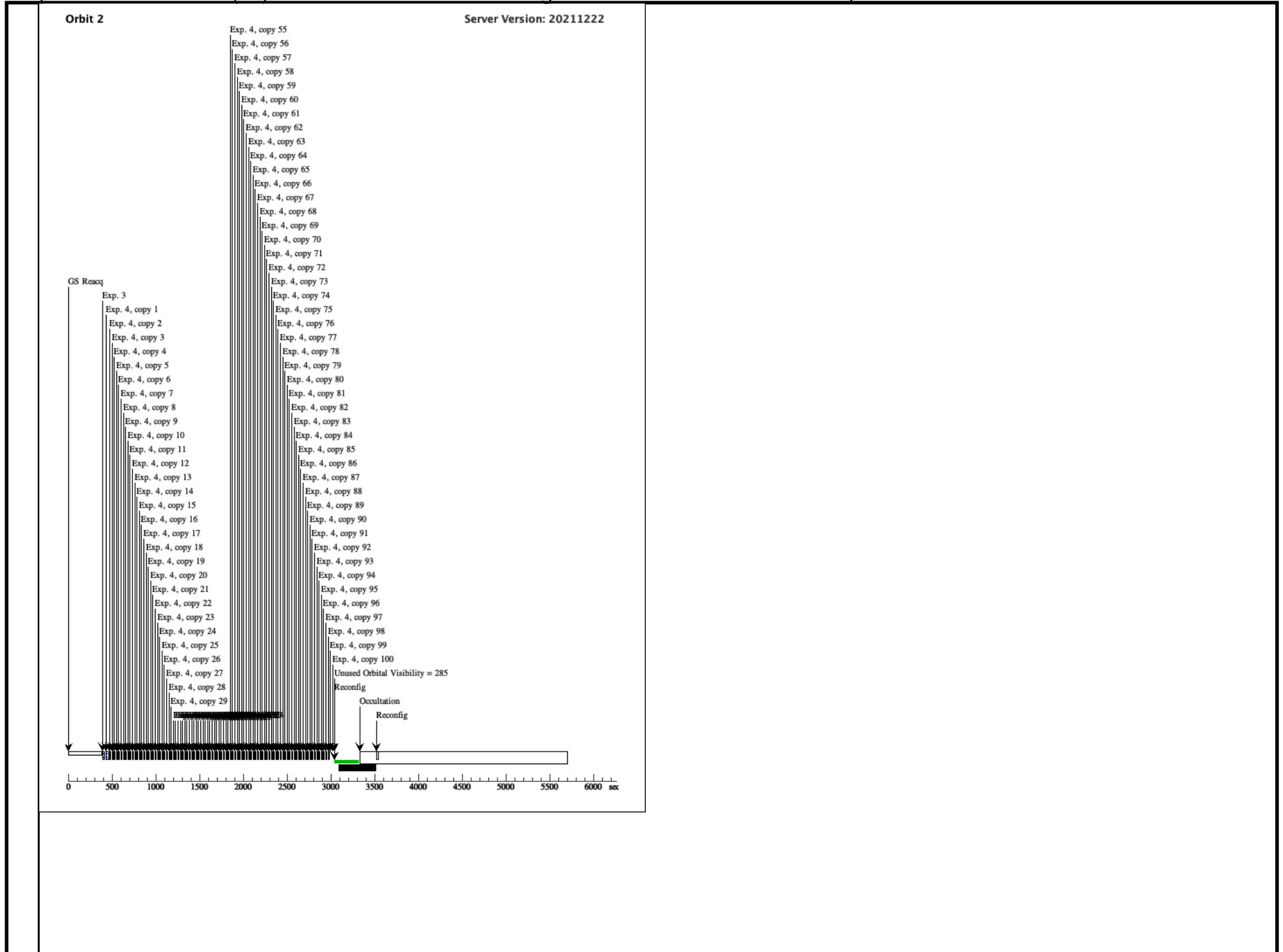
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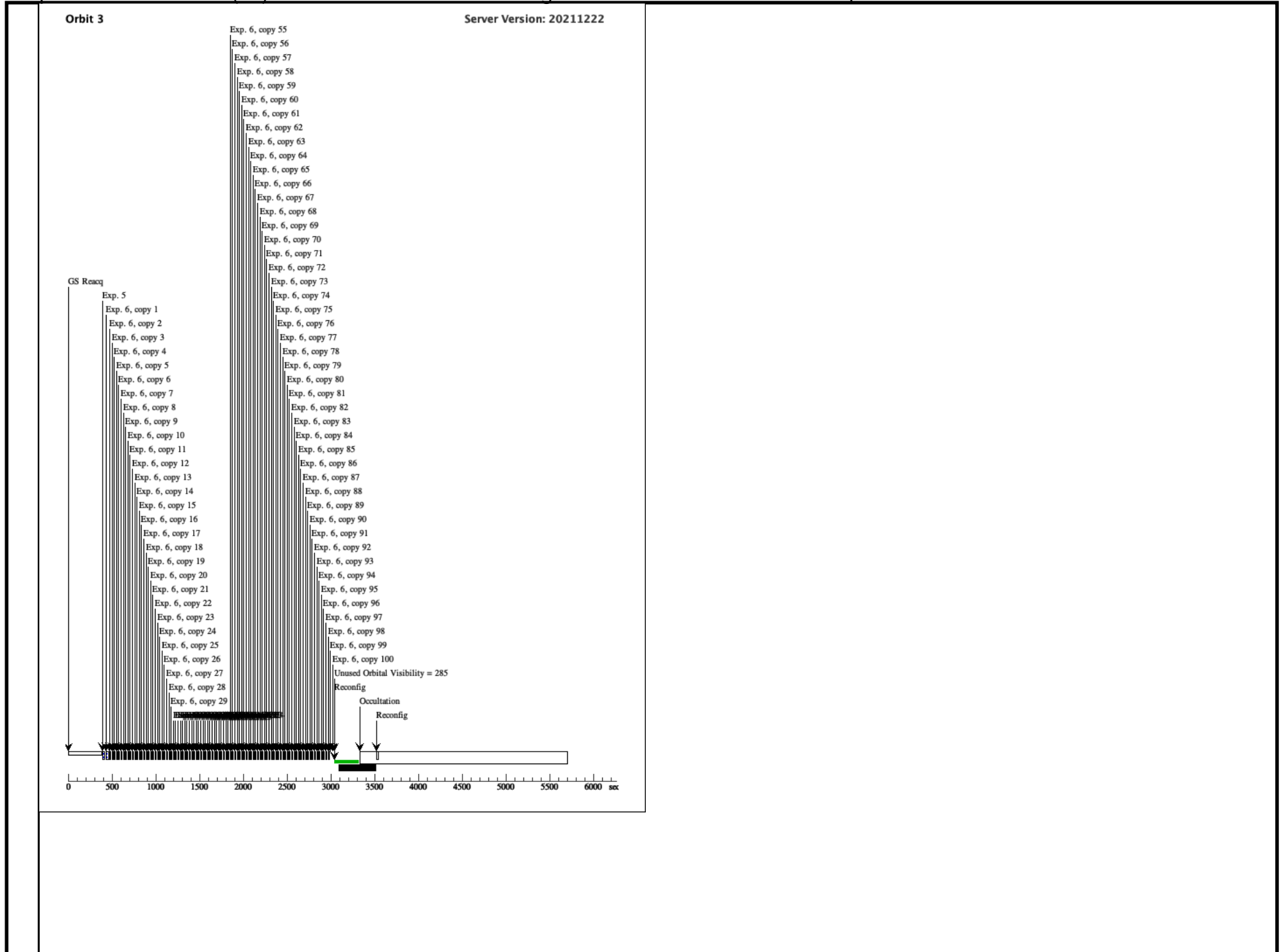
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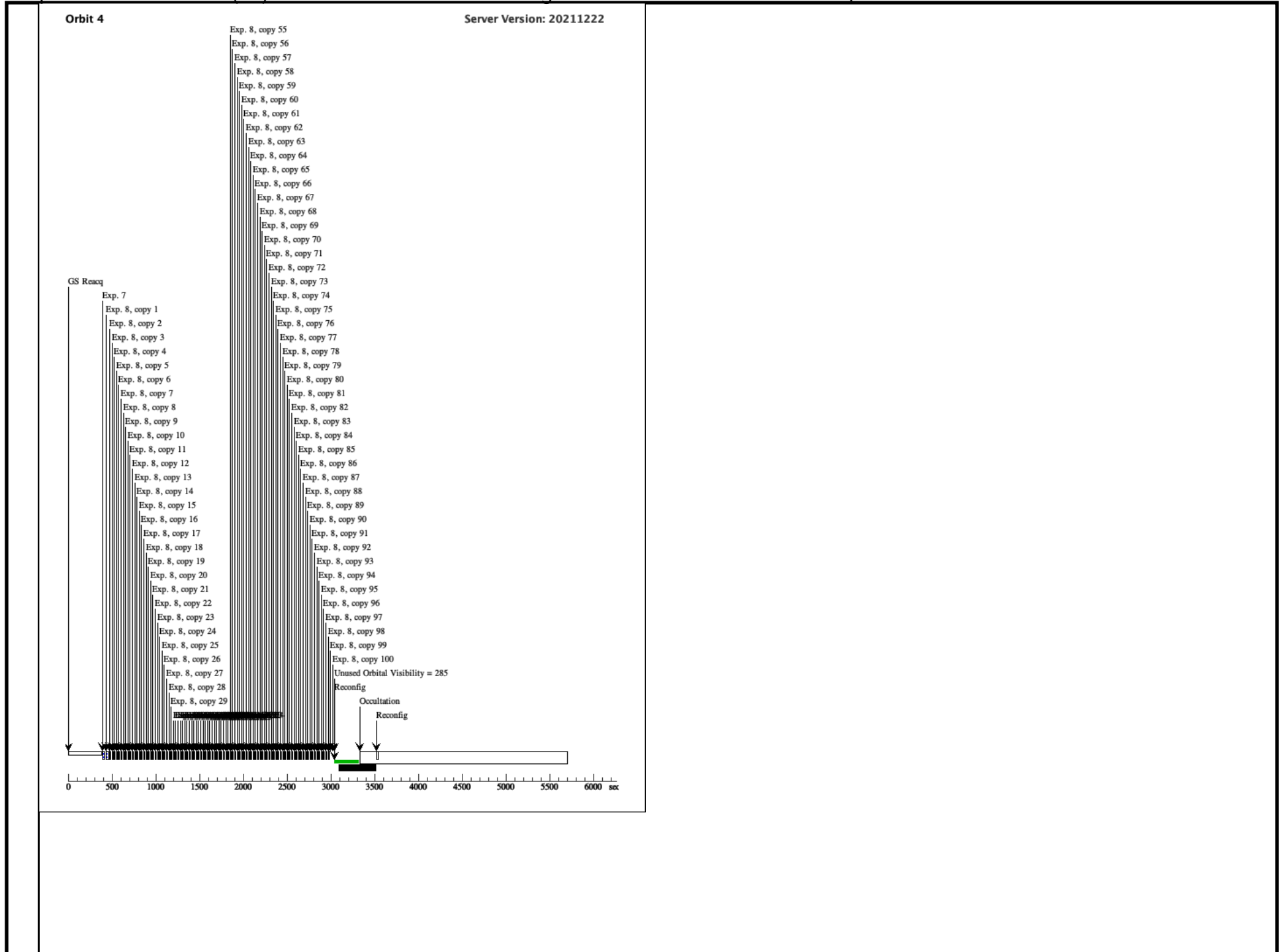
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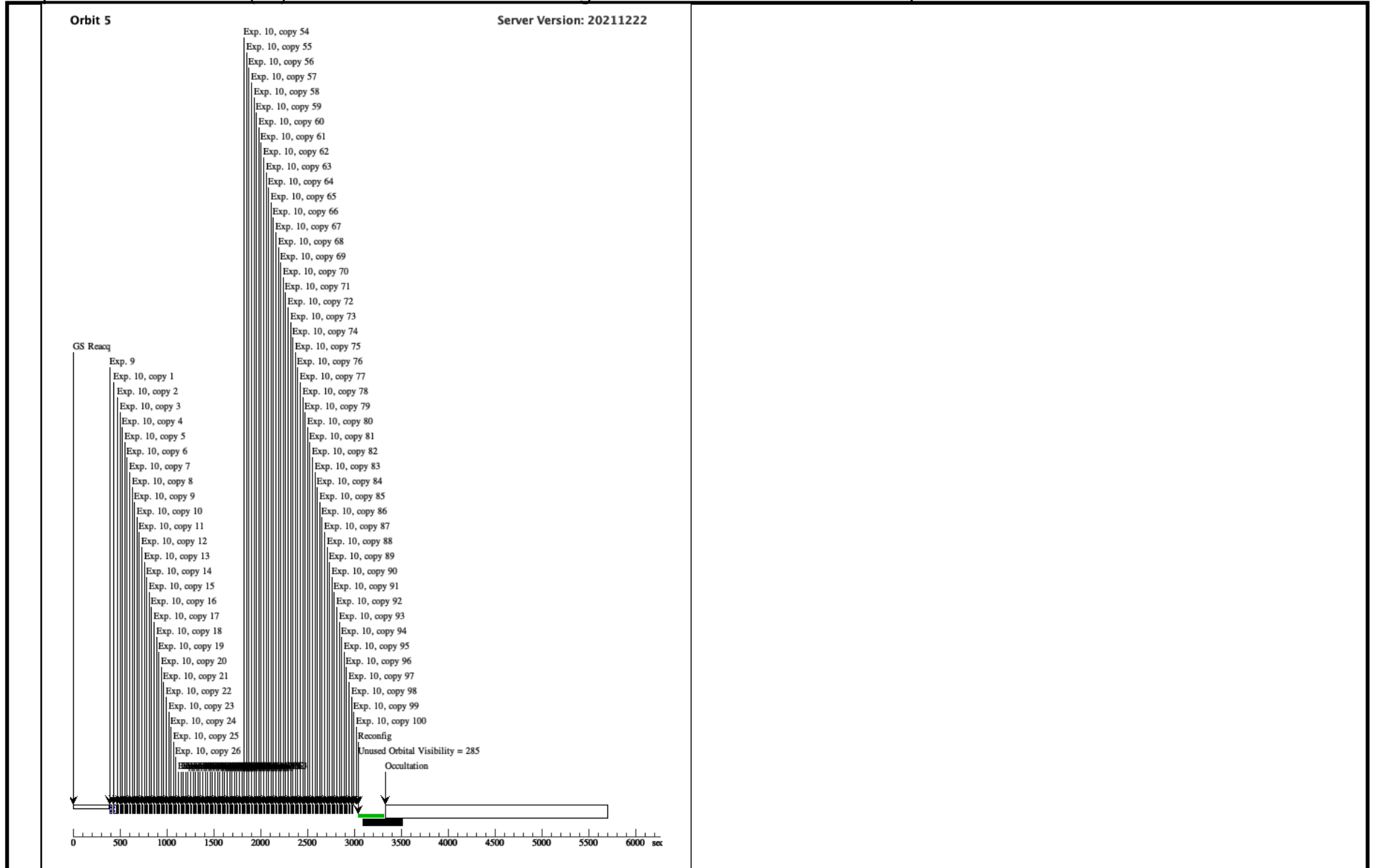
Proposal 16296 - Visit2 (02) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Visit2 (02) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Visit2 (02) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Visit3 (03) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

Mon Apr 25 20:07:02 GMT 2022

Visit	<p>Proposal 16296, Visit3 (03), failed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/IR</p> <p>Special Requirements: PCS MODE FINE; SAME ORIENT AS 01; AFTER 02 BY 5 Orbits TO 7 Orbits</p> <p><i>Comments: PA from Luhman 16A to B = 131 deg (north to east) at ~2021.5</i> <i>offset angle of WFC3/IR +y axis = 135</i> <i>ORIENT = 266 deg +/- 15</i></p> <p><i>observational time preference in order: April, May-June.</i></p>					
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
(1)		NAME-LUHMAN-16	RA: 10 49 14.1430 (162.3089292d) Dec: -53 19 4.59 (-53.31794d) Equinox: J2000	Proper Motion RA: -0.3079031198719211 sec of time/yr Proper Motion Dec: 0.354 arcsec/yr Epoch of Position: 2015.5	V=16.2	Reference Frame: SIMBAD
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> <i>Category=STAR</i> <i>Description=[BROWN DWARF]</i></p>						

Proposal 16296 - Visit3 (03) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10		Sequence 1-2 Non-Int in Visit3 (03)	0.277815 Secs (0.278 Secs) [==>]	[1]

Exposures

Proposal 16296 - Visit3 (03) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

2	G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 1-2 Non-In- t in Visit3 (03)	7.624302 Secs X 100 (762.43 Secs)
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3	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 3-4 Non-Int in Visit3 (03)	0.277815 Secs (0.278 Secs)	[==>]
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Proposal 16296 - Visit3 (03) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

4	G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 3-4 Non-Int in Visit3 (03)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Visit3 (03) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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5	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 5-6 Non-Int in Visit3 (03)	0.277815 Secs (0.278 Secs)	[==>]
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Proposal 16296 - Visit3 (03) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

6	G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 5-6 Non-Int in Visit3 (03)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Visit3 (03) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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7	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	NEW OBSET	Sequence 7-8 Non-Int in Visit3 (03)	0.277815 Secs (0.278 Secs) [==>]	

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Proposal 16296 - Visit3 (03) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

8	G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 7-8 Non-Int in Visit3 (03)	7.624302 Secs X 100 (762.43 Secs)
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9	F132N	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 9-10 Non-Int in Visit3 (03)	0.277815 Secs (0.278 Secs)	
							[==>]	[5]

Proposal 16296 - Visit3 (03) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

	10 G141	(1) NAME-LUHMA N-16	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 9-10 Non-I nt in Visit3 (03)	7.624302 Secs X 100 (762.43 Secs)	
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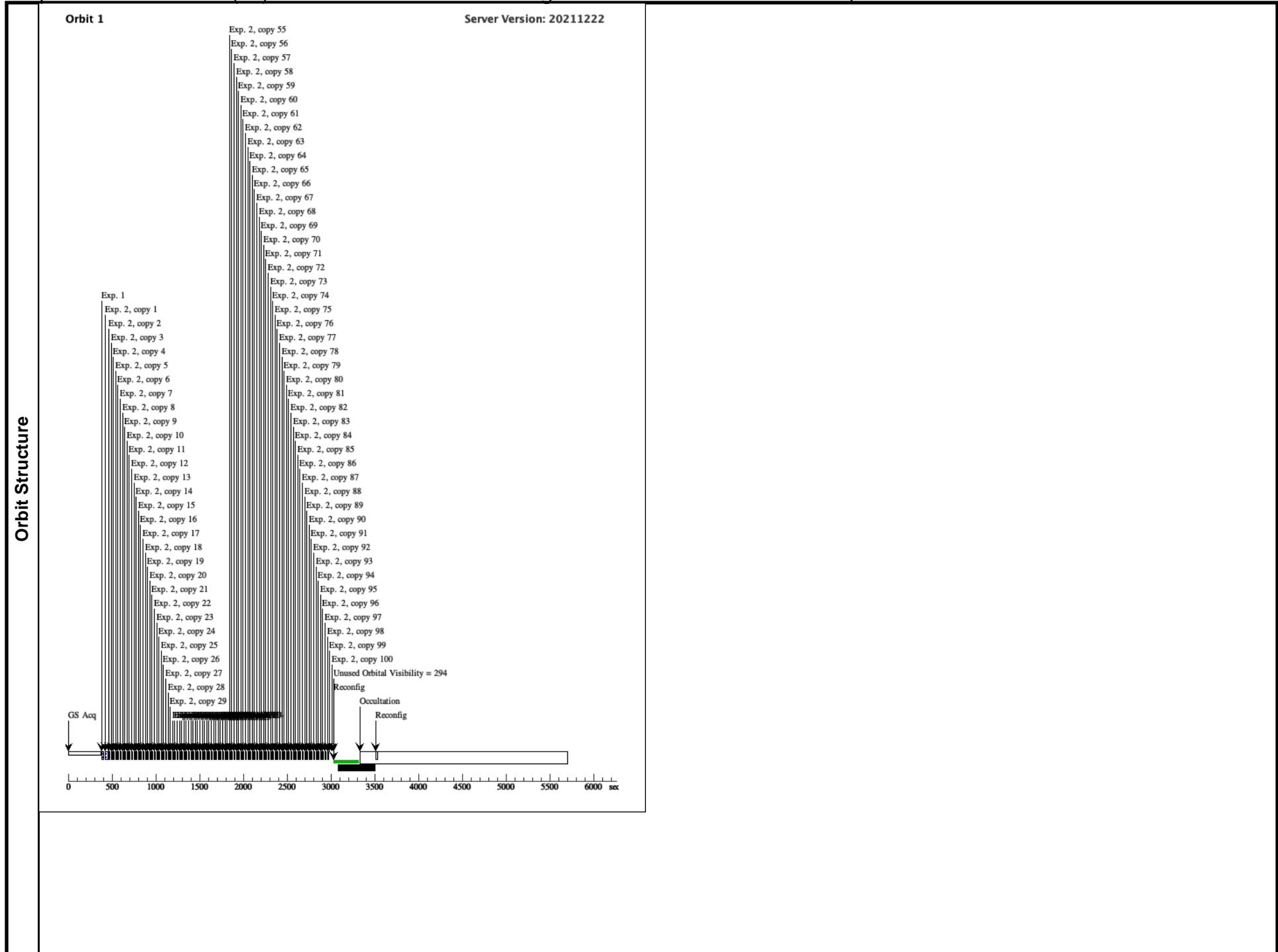
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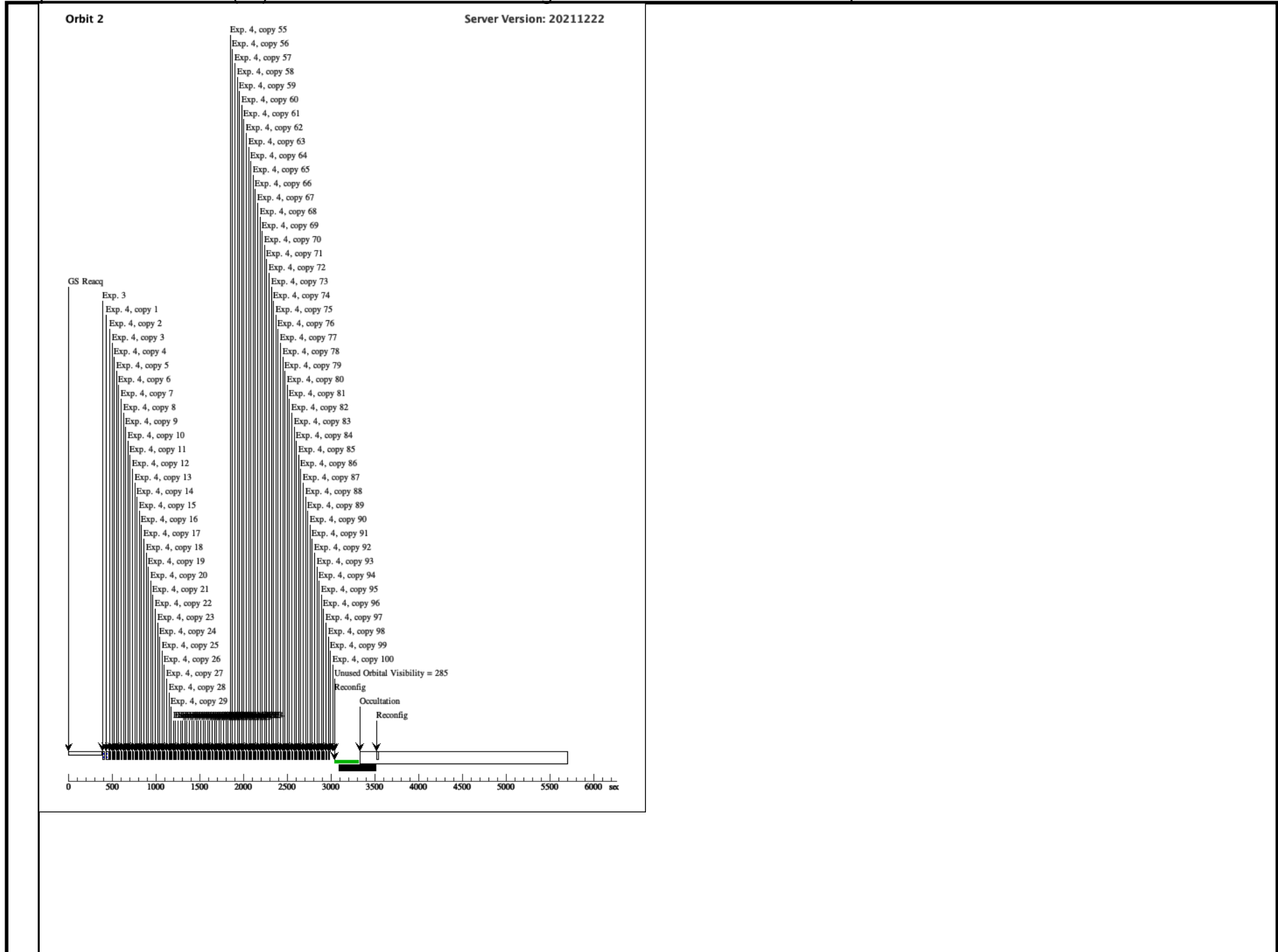
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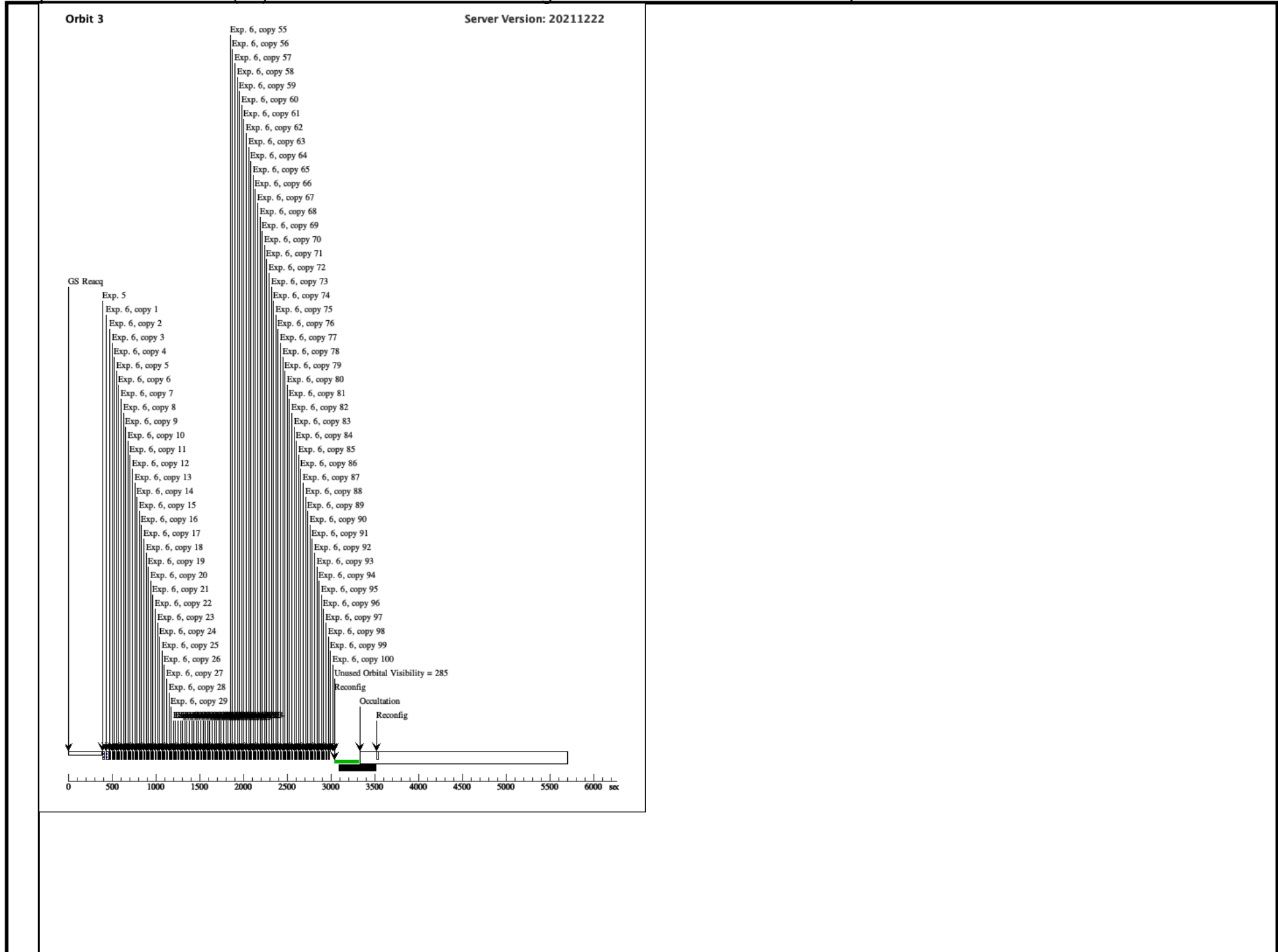
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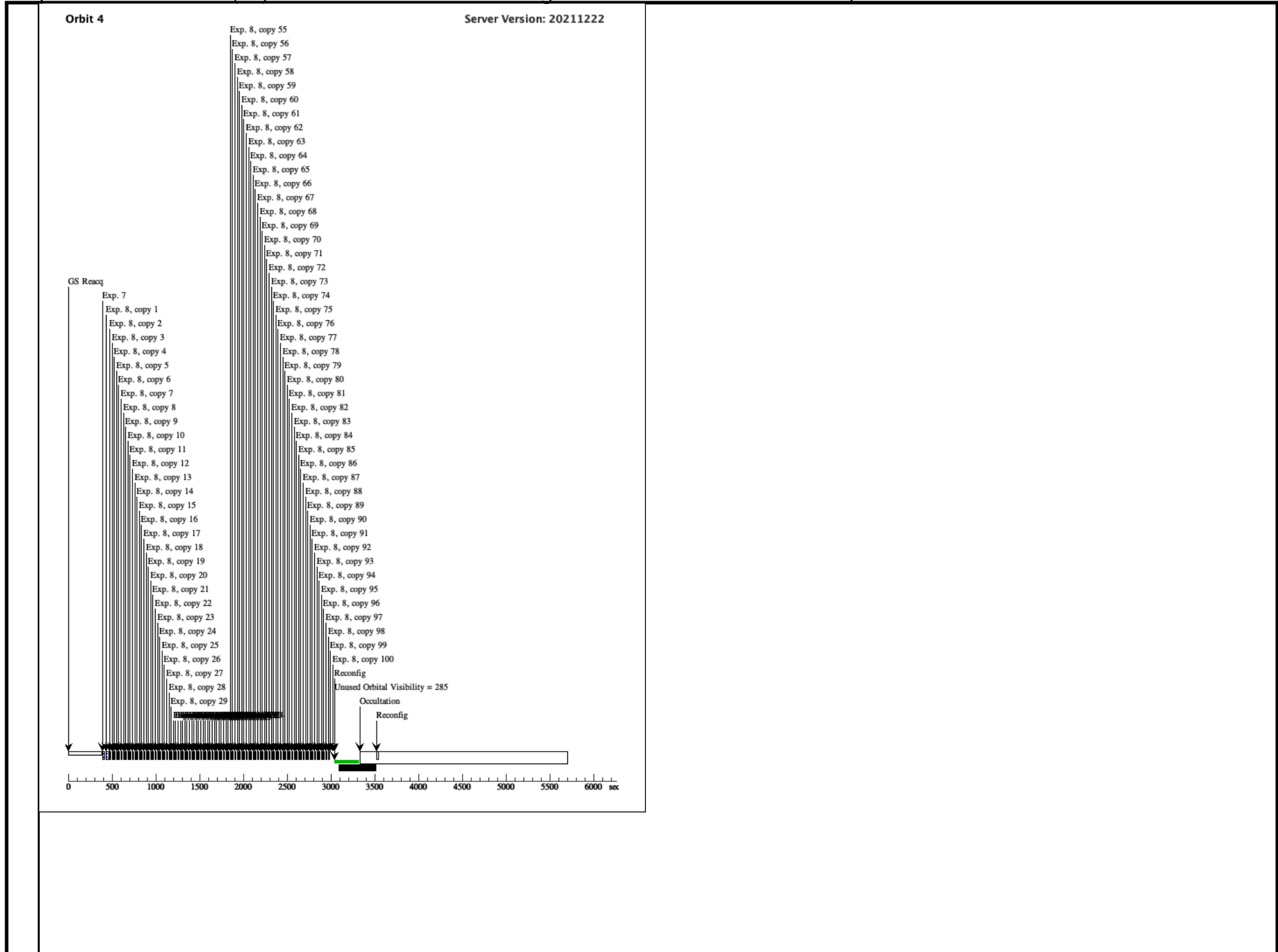
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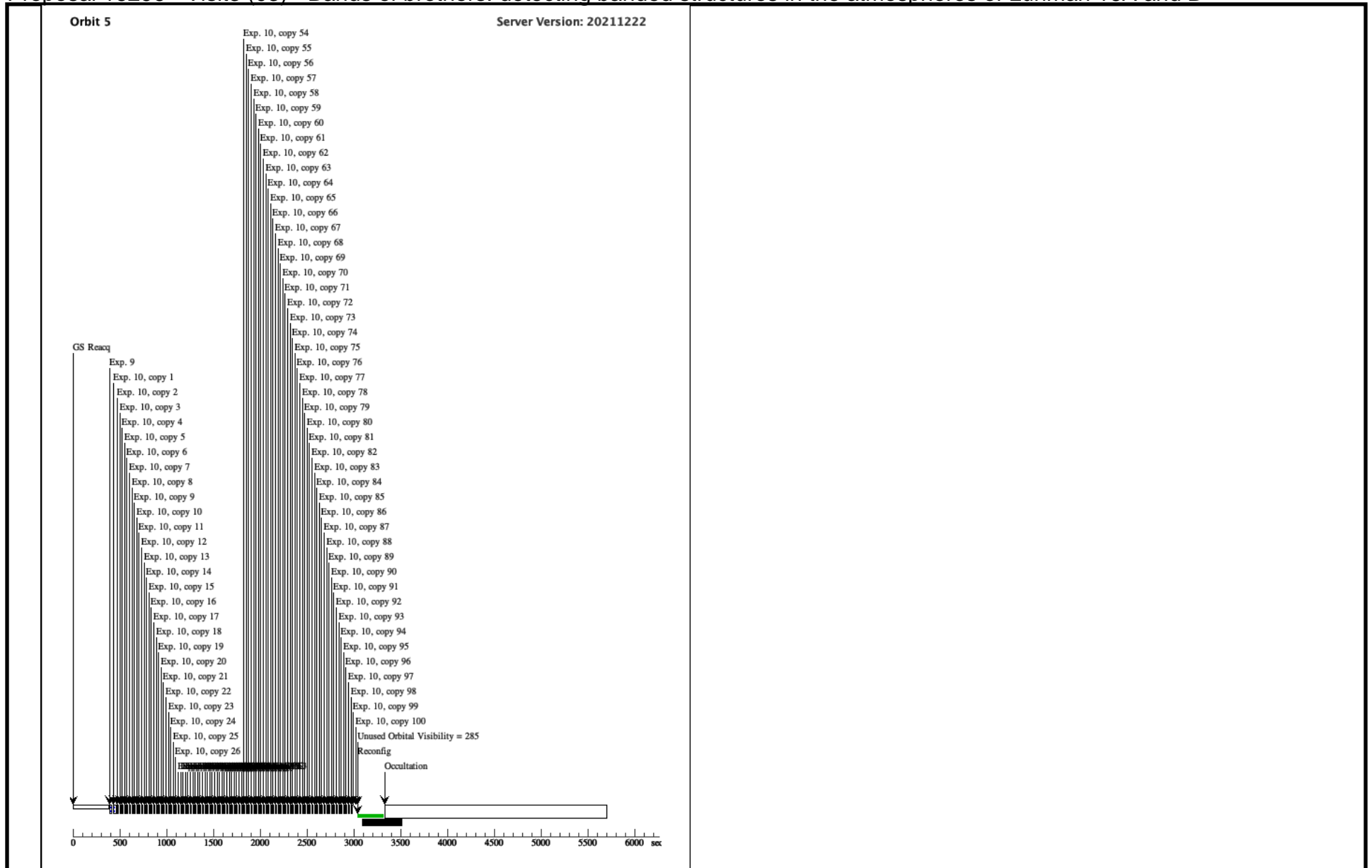
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Proposal 16296 - Visit3 (03) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Visit3 (03) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

Mon Apr 25 20:07:02 GMT 2022

Visit	<p>Proposal 16296, Repeat of Visit 1 (R1), implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/IR</p> <p>Special Requirements: PCS MODE FINE; ORIENT 41D TO 131 D; ORIENT 221D TO 311 D</p> <p><i>Comments: PA from Luhman 16A to B = 131 deg (north to east) at ~2021.5</i> <i>offset angle of WFC3/IR +y axis = 135</i> <i>ORIENT = 266 deg +/- 15</i></p> <p><i>observational time preference in order: April, May-June.</i></p>												
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(2)</td> <td>LUHMAN-16-UPDATED</td> <td>RA: 10 49 11.8200 (162.2992500d) Dec: -53 19 1.97 (-53.31721d) Equinox: J2000</td> <td></td> <td>V=16.2</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table> <p><i>Comments: based on Rolly's astrometric solution 162.299250316 -53.317213006 on JD=2459707.500000000</i> <i>Category=STAR</i> <i>Description=[BROWN DWARF]</i></p>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(2)	LUHMAN-16-UPDATED	RA: 10 49 11.8200 (162.2992500d) Dec: -53 19 1.97 (-53.31721d) Equinox: J2000		V=16.2
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous								
(2)	LUHMAN-16-UPDATED	RA: 10 49 11.8200 (162.2992500d) Dec: -53 19 1.97 (-53.31721d) Equinox: J2000		V=16.2	Reference Frame: ICRS								

Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10		Sequence 1-2 Non-Int in Repeat of Visit 1 (R1)	0.277815 Secs (0.278 Secs) [==>]	[1]

Exposures

Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

2	G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 1-2 Non-Int in Repeat of Visit 1 (R1)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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3	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 3-4 Non-Int in Repeat of Visit 1 (R1)	0.277815 Secs (0.278 Secs) [==>]	

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Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

4	G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 3-4 Non-Int in Repeat of Visit 1 (R1)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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5	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 5-6 Non-Int in Repeat of Visit 1 (R1)	0.277815 Secs (0.278 Secs) [==>]	

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Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

6	G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 5-6 Non-Int in Repeat of Visit 1 (R1)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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7	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	NEW OBSET	Sequence 7-8 Non-Int in Repeat of Visit 1 (R1)	0.277815 Secs (0.278 Secs) [==>]	

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Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

8	G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 7-8 Non-Int in Repeat of Visit 1 (R1)	7.624302 Secs X 100 (762.43 Secs)
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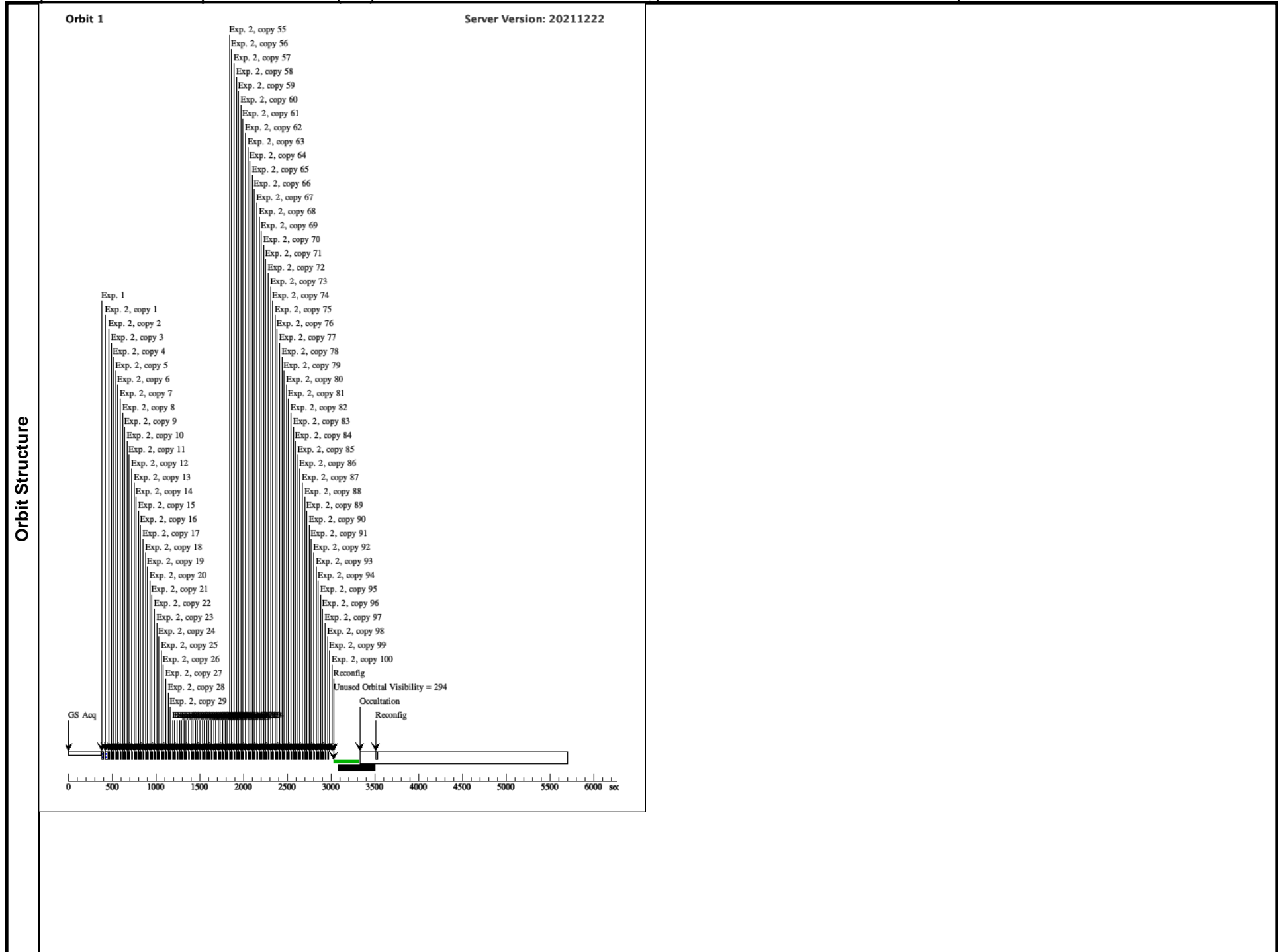
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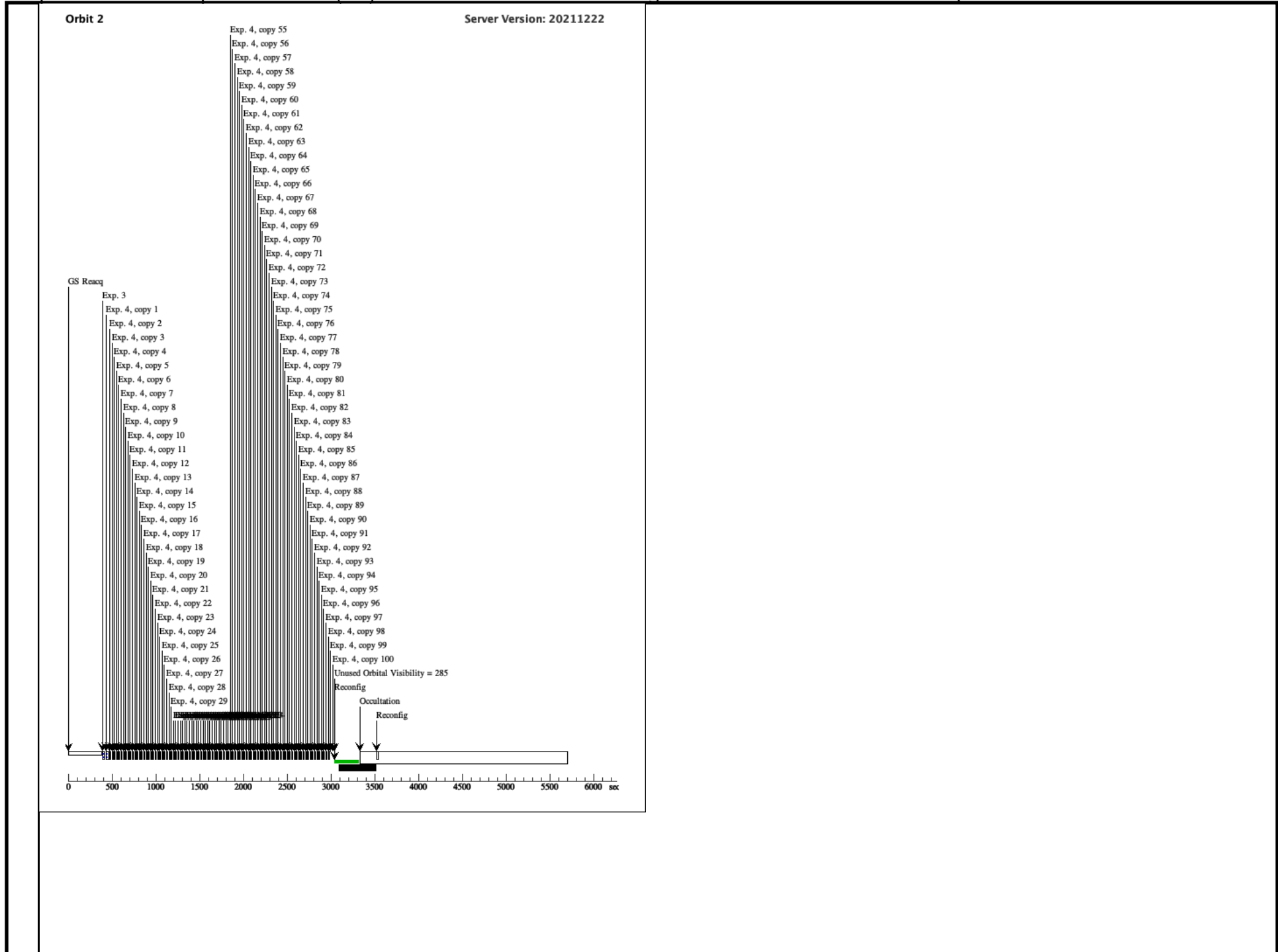
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Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

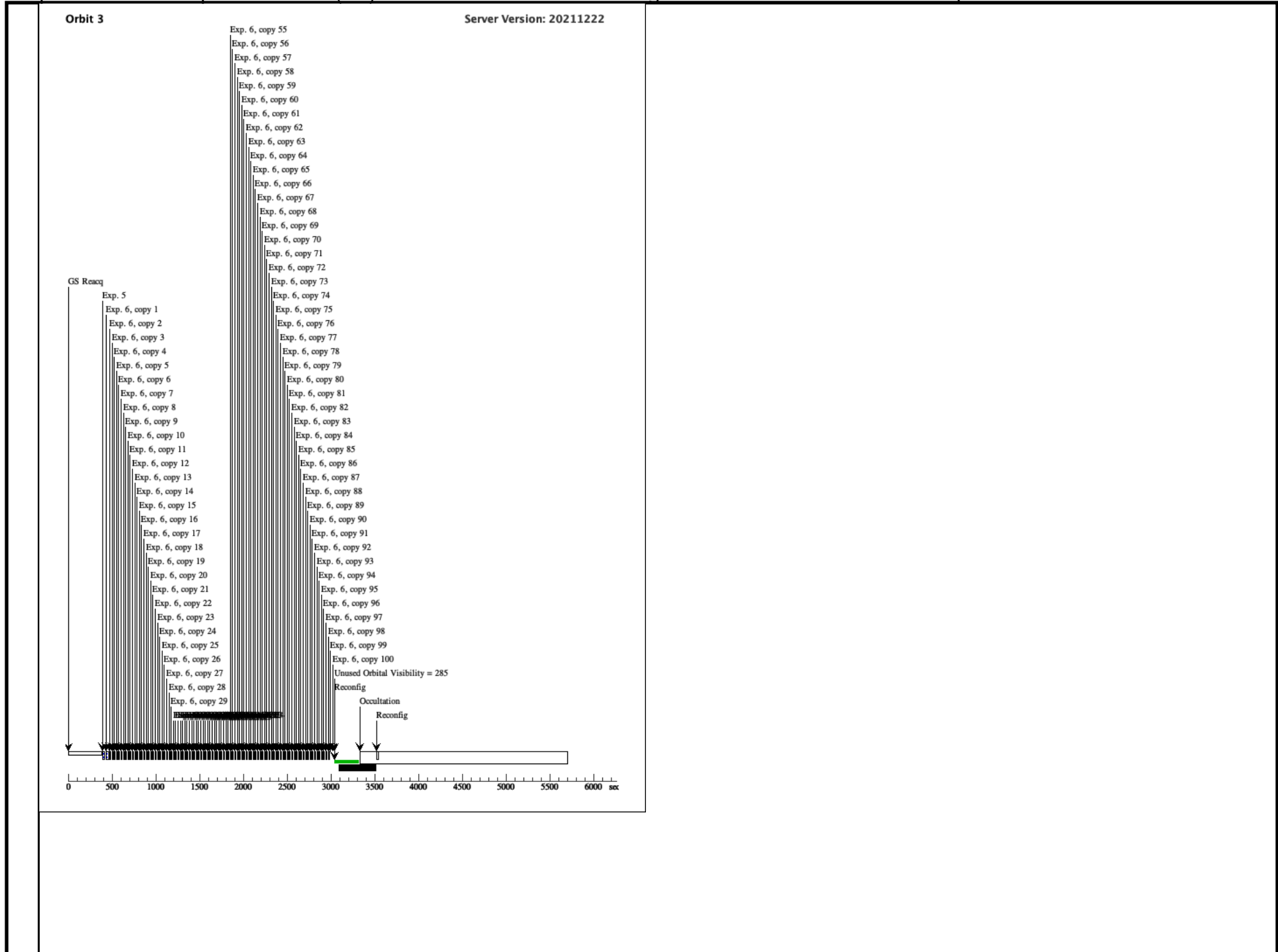
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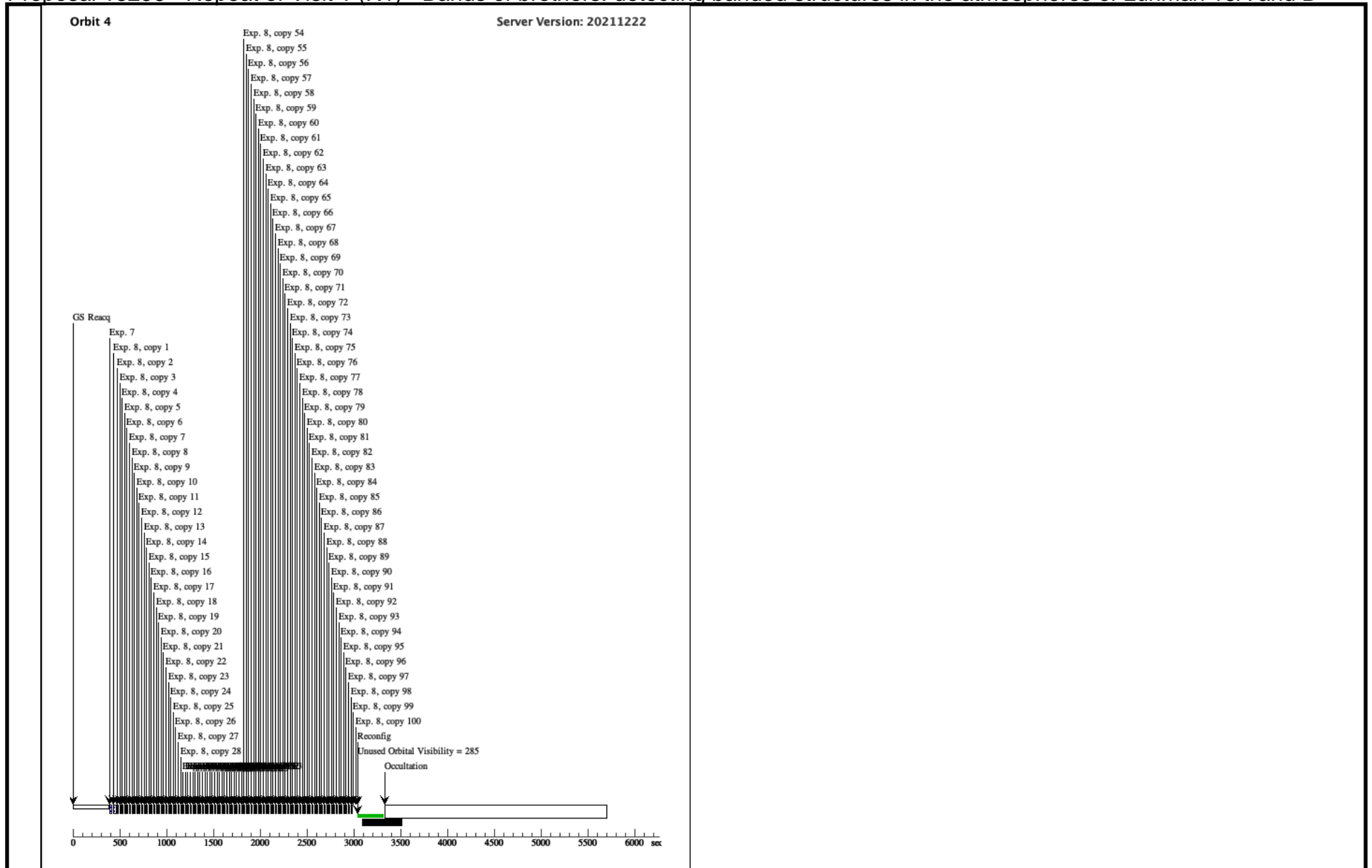
Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Repeat of Visit 1 (R1) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Extension of Repeat Visit R1 (1A) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 1...

Mon Apr 25 20:07:03 GMT 2022

Visit	<p>Proposal 16296, Extension of Repeat Visit R1 (1A), implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/IR</p> <p>Special Requirements: PCS MODE FINE; SAME ORIENT AS R1; AFTER R1 BY 3.5 Orbits TO 4.5 D</p> <p><i>Comments: PA from Luhman 16A to B = 131 deg (north to east) at ~2021.5</i> <i>offset angle of WFC3/IR +y axis = 135</i> <i>ORIENT = 266 deg +/- 15</i></p> <p><i>observational time preference in order: April, May-June.</i></p>												
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(2)</td> <td>LUHMAN-16-UPDATED</td> <td>RA: 10 49 11.8200 (162.2992500d) Dec: -53 19 1.97 (-53.31721d) Equinox: J2000</td> <td></td> <td>V=16.2</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table> <p><i>Comments: based on Rolly's astrometric solution 162.299250316 -53.317213006 on JD=2459707.500000000</i> <i>Category=STAR</i> <i>Description=[BROWN DWARF]</i></p>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(2)	LUHMAN-16-UPDATED	RA: 10 49 11.8200 (162.2992500d) Dec: -53 19 1.97 (-53.31721d) Equinox: J2000		V=16.2
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous								
(2)	LUHMAN-16-UPDATED	RA: 10 49 11.8200 (162.2992500d) Dec: -53 19 1.97 (-53.31721d) Equinox: J2000		V=16.2	Reference Frame: ICRS								

Proposal 16296 - Extension of Repeat Visit R1 (1A) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 1...

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10		Sequence 1-2 Non-Int in Extension of Repeat Visit R1 (1A)	0.277815 Secs (0.278 Secs) [==>]	[1]

Exposures

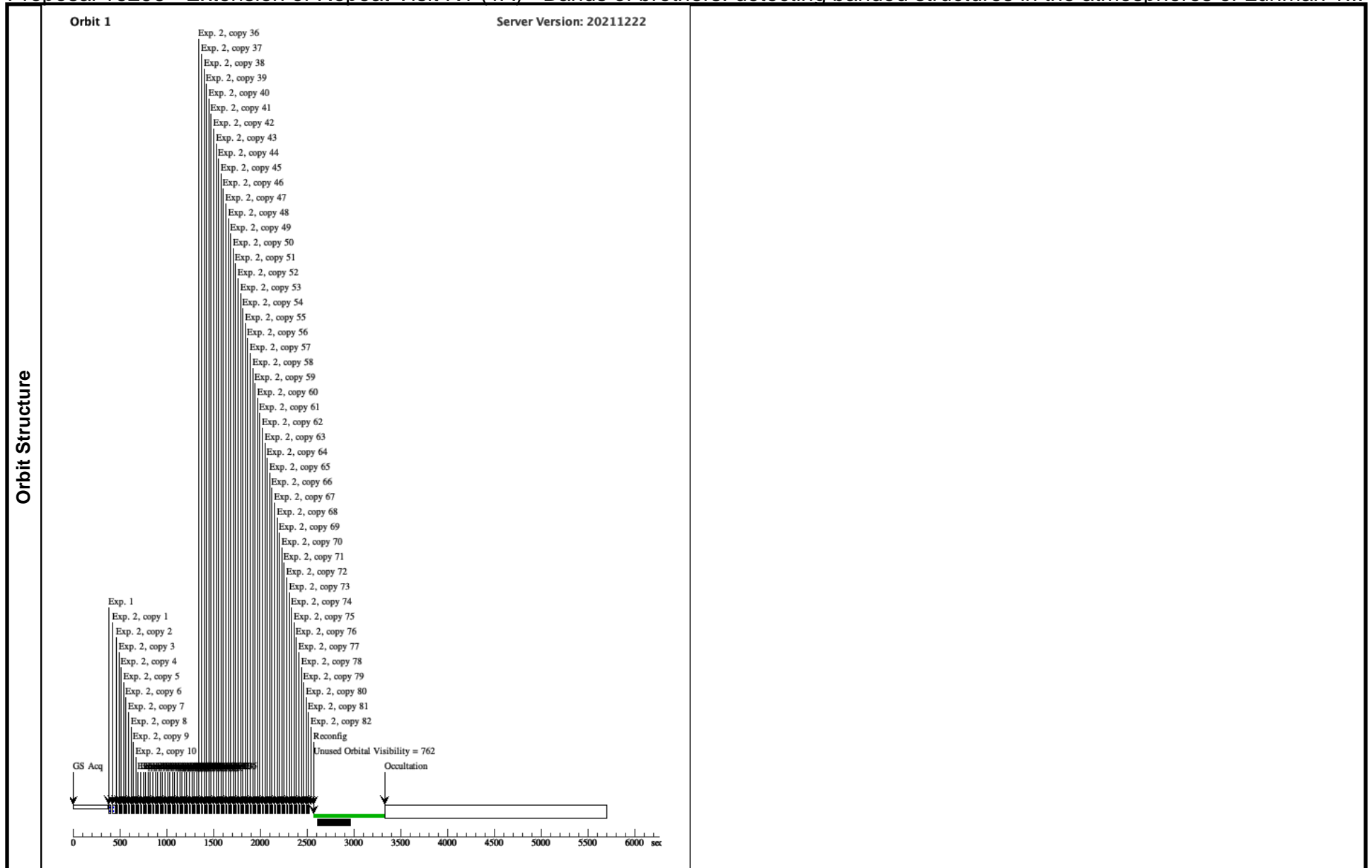
Proposal 16296 - Extension of Repeat Visit R1 (1A) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 1...

2	G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 1-2 Non-Int in Extension of Repeat Visit R1 (1A)	7.624302 Secs X 82 (625.193 Secs)
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Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

Mon Apr 25 20:07:03 GMT 2022

Visit	<p>Proposal 16296, Repeat of Visit 2 (R2), implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/IR</p> <p>Special Requirements: PCS MODE FINE; SAME ORIENT AS R1; AFTER R1 BY 5 Orbits TO 7 Orbits</p> <p><i>Comments: PA from Luhman 16A to B = 131 deg (north to east) at ~2021.5</i> <i>offset angle of WFC3/IR +y axis = 135</i> <i>ORIENT = 266 deg +/- 15</i></p> <p><i>observational time preference in order: April, May-June.</i></p>												
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(2)</td> <td>LUHMAN-16-UPDATED</td> <td>RA: 10 49 11.8200 (162.2992500d) Dec: -53 19 1.97 (-53.31721d) Equinox: J2000</td> <td></td> <td>V=16.2</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table> <p><i>Comments: based on Rolly's astrometric solution 162.299250316 -53.317213006 on JD=2459707.500000000</i> <i>Category=STAR</i> <i>Description=[BROWN DWARF]</i></p>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(2)	LUHMAN-16-UPDATED	RA: 10 49 11.8200 (162.2992500d) Dec: -53 19 1.97 (-53.31721d) Equinox: J2000		V=16.2
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous								
(2)	LUHMAN-16-UPDATED	RA: 10 49 11.8200 (162.2992500d) Dec: -53 19 1.97 (-53.31721d) Equinox: J2000		V=16.2	Reference Frame: ICRS								

Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10		Sequence 1-2 Non-Int in Repeat of Visit 2 (R2)	0.277815 Secs (0.278 Secs) [==>]	[1]

Exposures

Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

2	G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 1-2 Non-Int in Repeat of Visit 2 (R2)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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3	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 3-4 Non-Int in Repeat of Visit 2 (R2)	0.277815 Secs (0.278 Secs) [==>]	

[2]

Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

4	G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 3-4 Non-Int in Repeat of Visit 2 (R2)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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5	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 5-6 Non-Int in Repeat of Visit 2 (R2)	0.277815 Secs (0.278 Secs) [==>]	

[3]

Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

6	G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 5-6 Non-Int in Repeat of Visit 2 (R2)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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7	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	NEW OBSET	Sequence 7-8 Non-Int in Repeat of Visit 2 (R2)	0.277815 Secs (0.278 Secs) [==>]	

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Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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9	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 9-10 Non-Int in Repeat of Visit 2 (R2)	0.277815 Secs (0.278 Secs) [==>]	

[5]

Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

	10 G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 9-10 Non-Int in Repeat of Visit 2 (R2)	7.624302 Secs X 100 (762.43 Secs)
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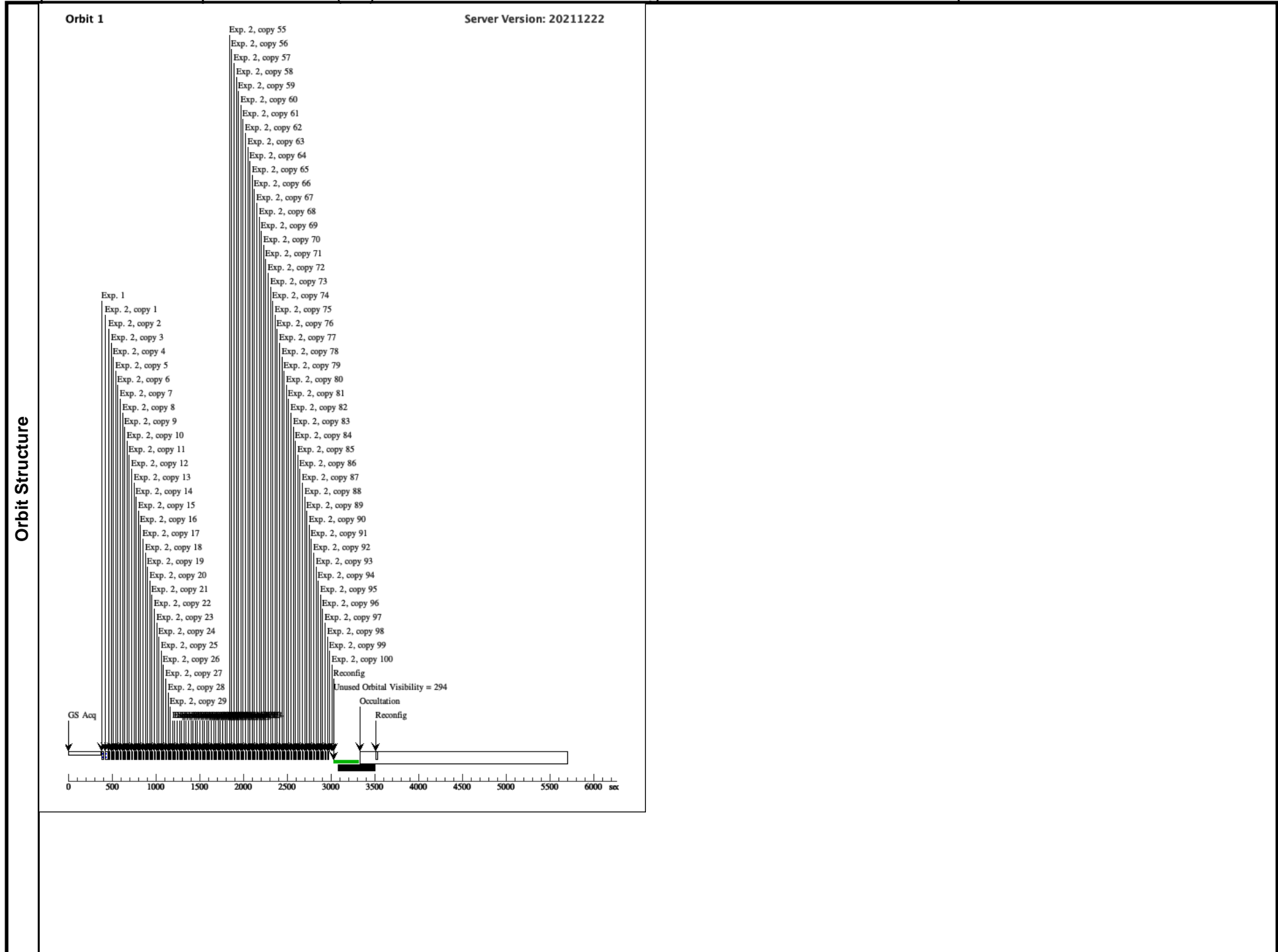
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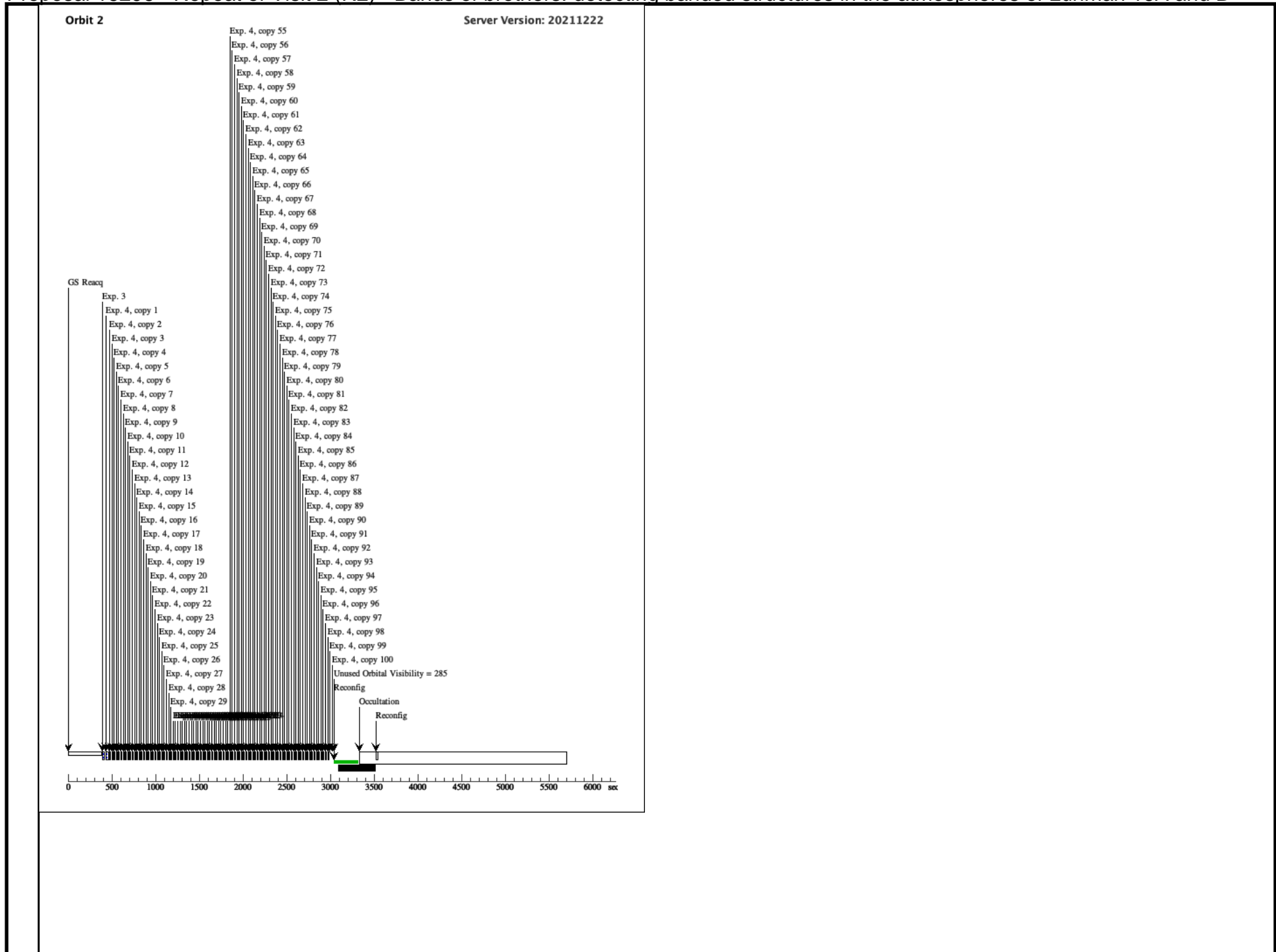
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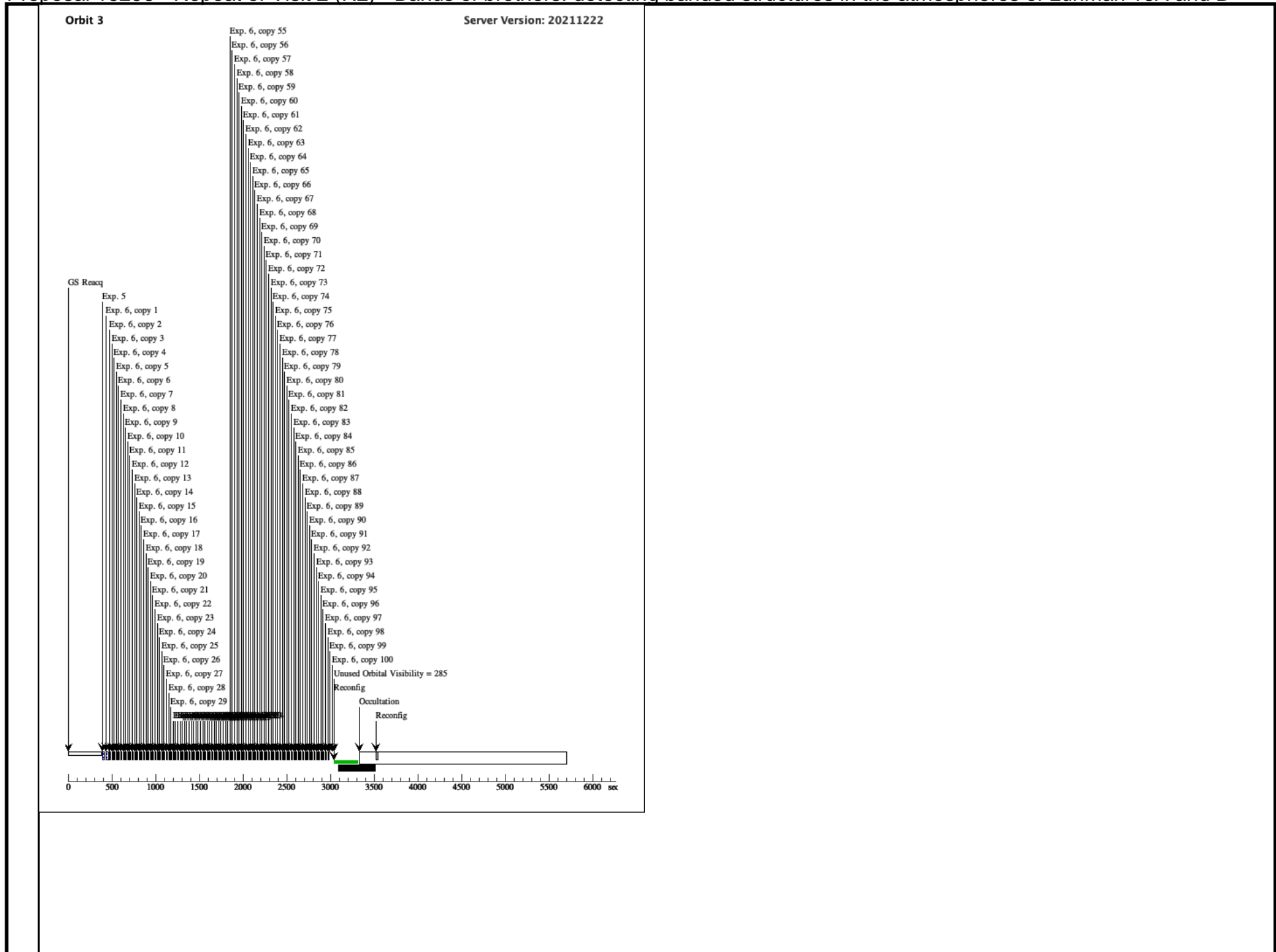
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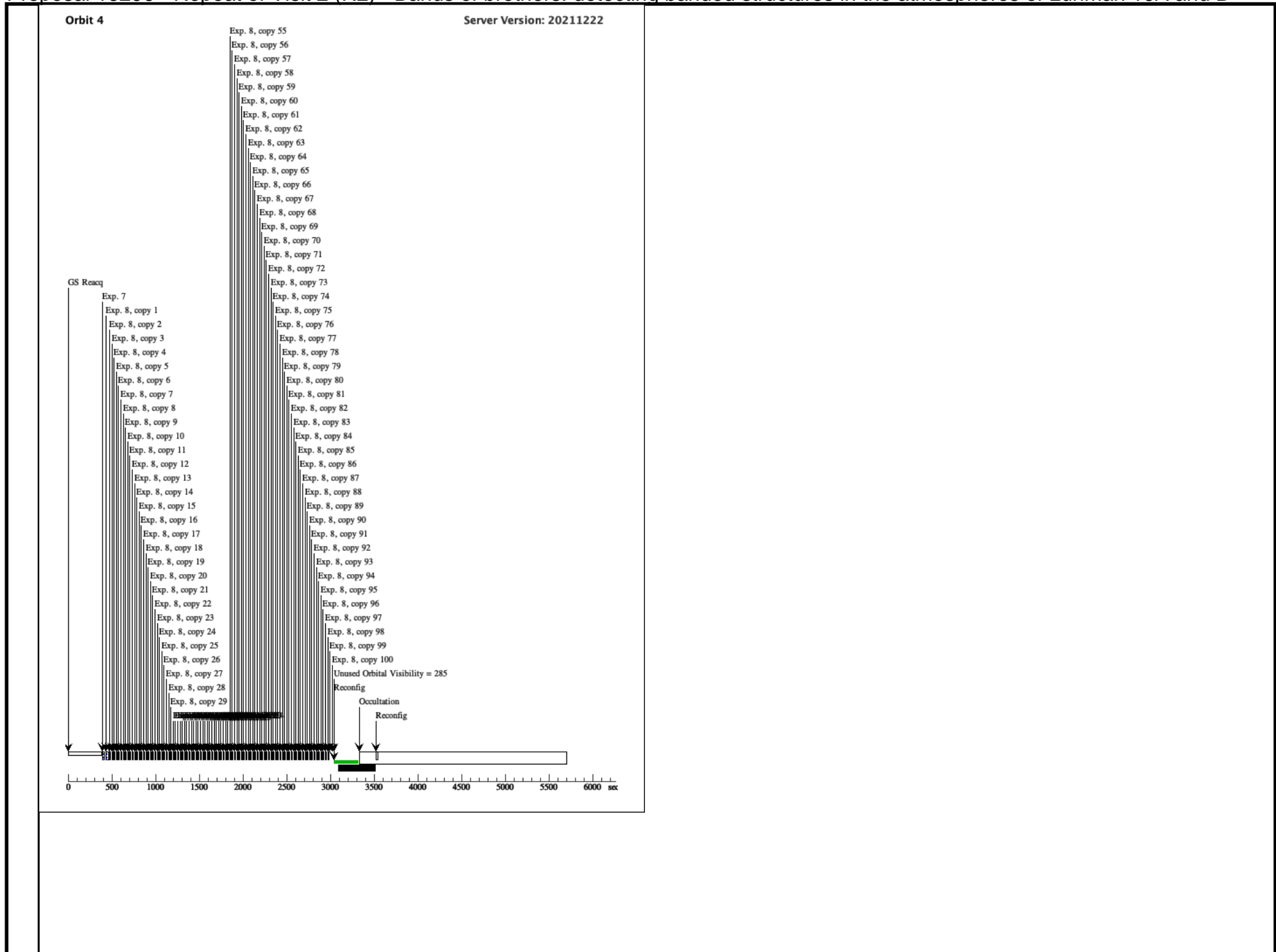


Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

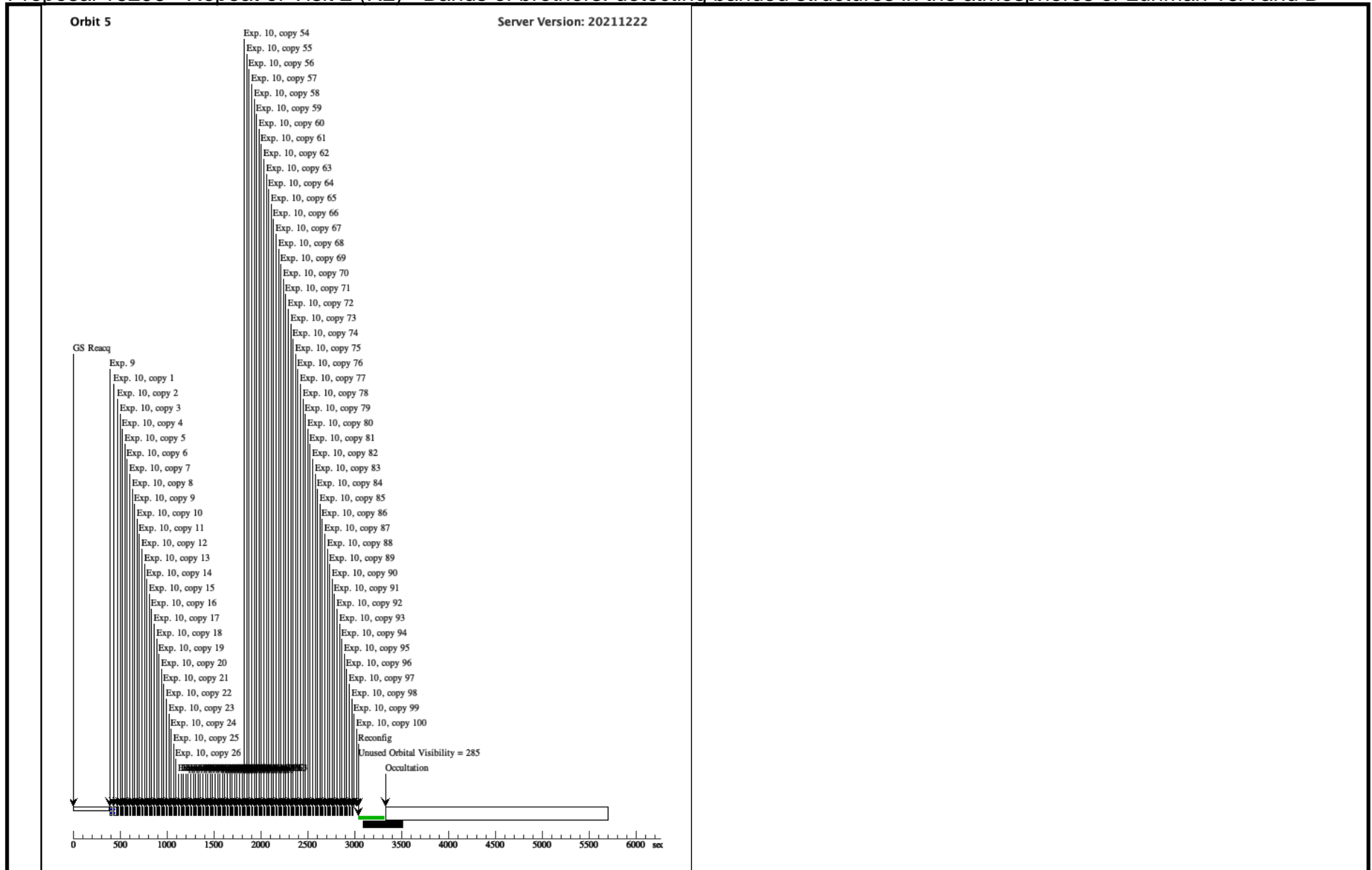




Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Repeat of Visit 2 (R2) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

Mon Apr 25 20:07:04 GMT 2022

Visit	<p>Proposal 16296, Repeat of Visit 3 (R3), implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/IR</p> <p>Special Requirements: PCS MODE FINE; SAME ORIENT AS R1; AFTER R2 BY 5 Orbits TO 7 Orbits</p> <p><i>Comments: PA from Luhman 16A to B = 131 deg (north to east) at ~2021.5</i> <i>offset angle of WFC3/IR +y axis = 135</i> <i>ORIENT = 266 deg +/- 15</i></p> <p><i>observational time preference in order: April, May-June.</i></p>					
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
(2)		LUHMAN-16- UPDATED	RA: 10 49 11.8200 (162.2992500d) Dec: -53 19 1.97 (-53.31721d) Equinox: J2000		V=16.2	Reference Frame: ICRS
<p><i>Comments: based on Rolly's astrometric solution 162.299250316 -53.317213006 on JD=2459707.500000000</i> <i>Category=STAR</i> <i>Description=[BROWN DWARF]</i></p>						

Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10		Sequence 1-2 Non-Int in Repeat of Visit 3 (R3)	0.277815 Secs (0.278 Secs) [==>]	[1]

Exposures

Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

2	G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 1-2 Non-Int in Repeat of Visit 3 (R3)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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3	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 3-4 Non-Int in Repeat of Visit 3 (R3)	0.277815 Secs (0.278 Secs) [==>]	

[2]

Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

4	G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 3-4 Non-Int in Repeat of Visit 3 (R3)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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5	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 5-6 Non-Int in Repeat of Visit 3 (R3)	0.277815 Secs (0.278 Secs) [==>]	

[3]

Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

6	G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 5-6 Non-Int in Repeat of Visit 3 (R3)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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7	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	NEW OBSET	Sequence 7-8 Non-Int in Repeat of Visit 3 (R3)	0.277815 Secs (0.278 Secs) [==>]	

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Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

8	G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 7-8 Non-Int in Repeat of Visit 3 (R3)	7.624302 Secs X 100 (762.43 Secs)
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Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

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9	F132N	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	F132N	NSAMP=1; SAMP-SEQ=SPAR S10	Sequence 9-10 Non-Int in Repeat of Visit 3 (R3)	0.277815 Secs (0.278 Secs) [==>]	
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Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

	10 G141	(2) LUHMAN-16-U PDATED	WFC3/IR, MULTIACCUM, GRISM256	G141	NSAMP=2; SAMP-SEQ=SPAR S10	Sequence 9-10 Non-Int in Repeat of Visit 3 (R3)	7.624302 Secs X 100 (762.43 Secs)
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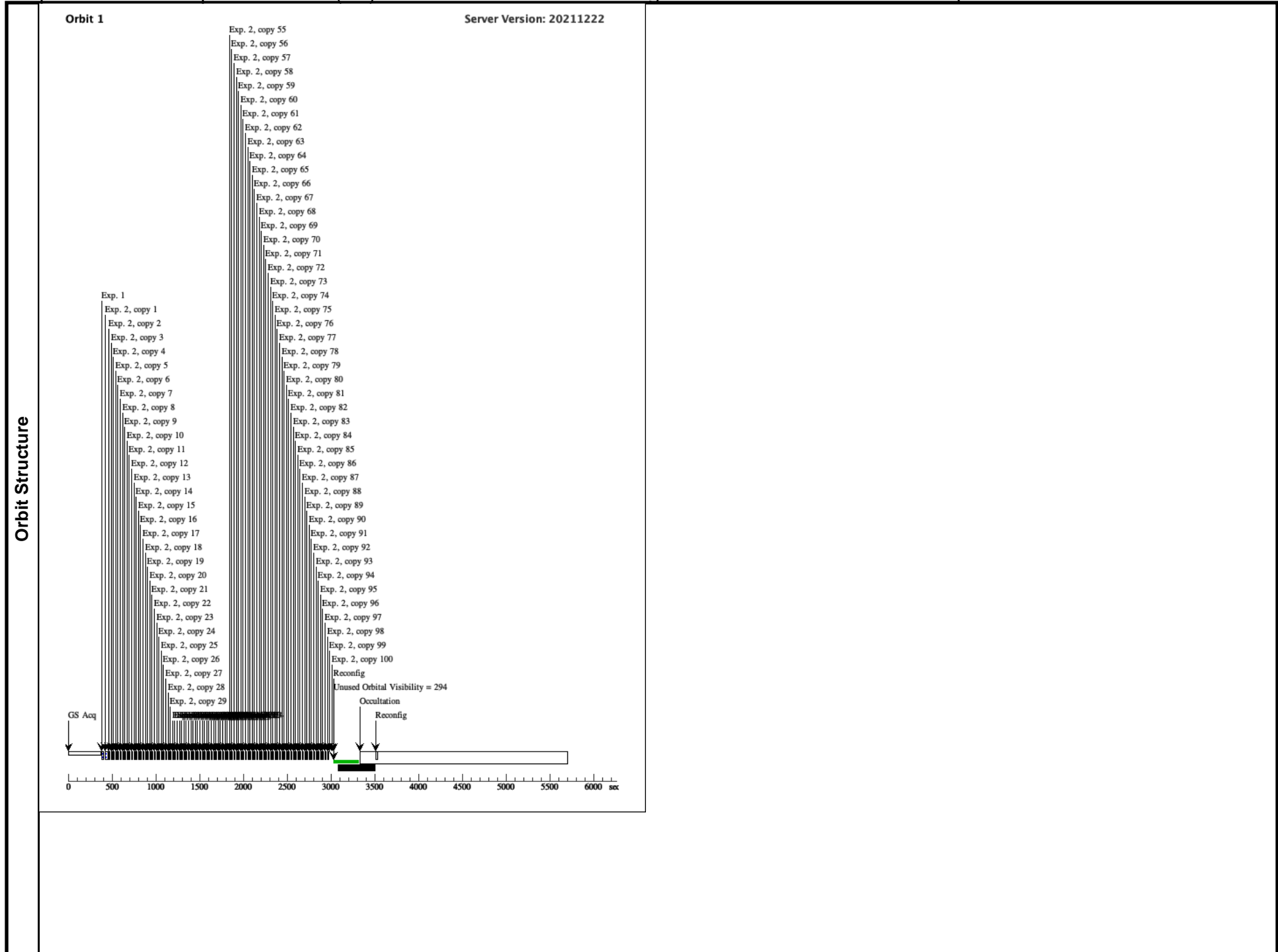
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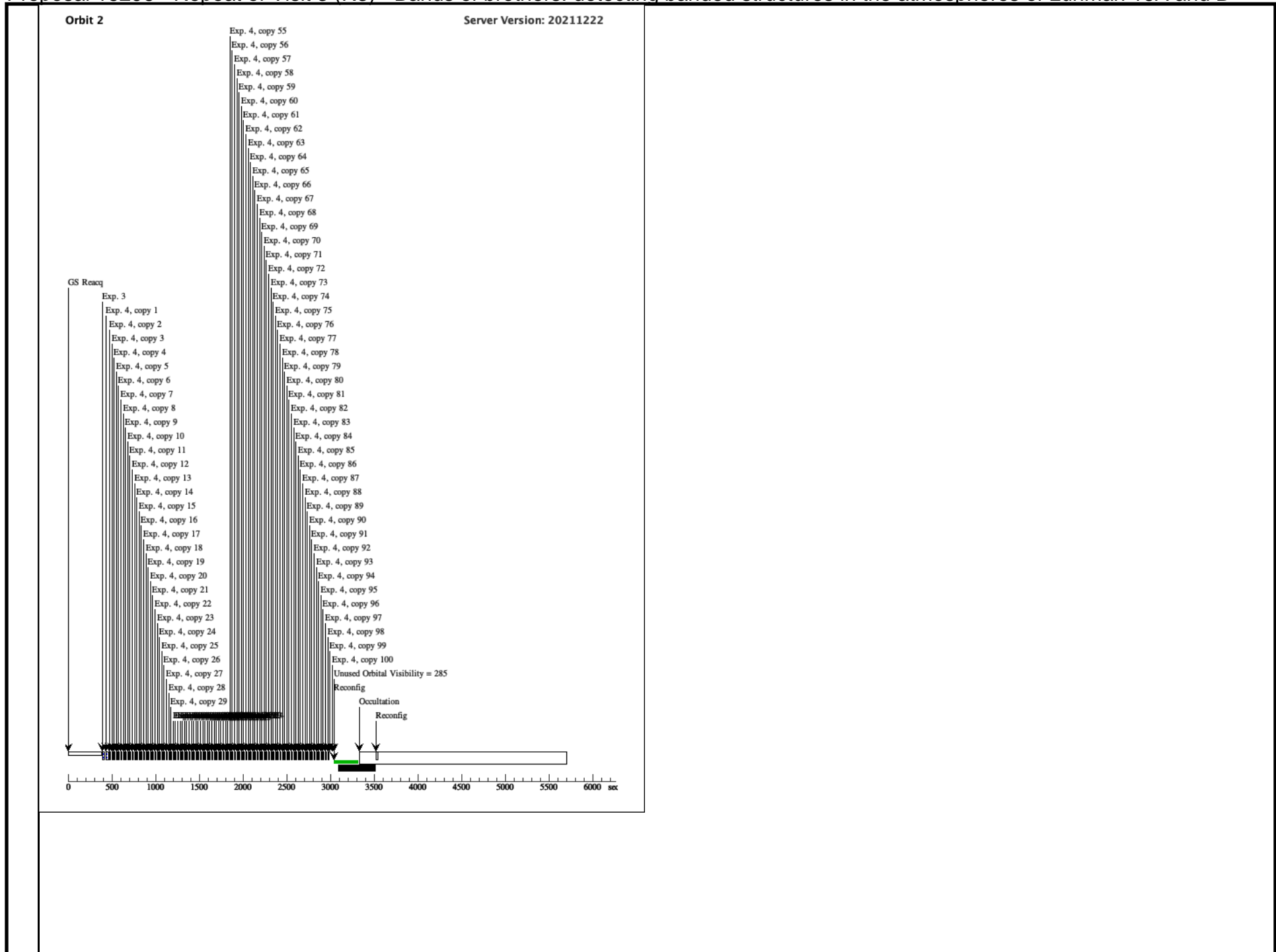
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Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

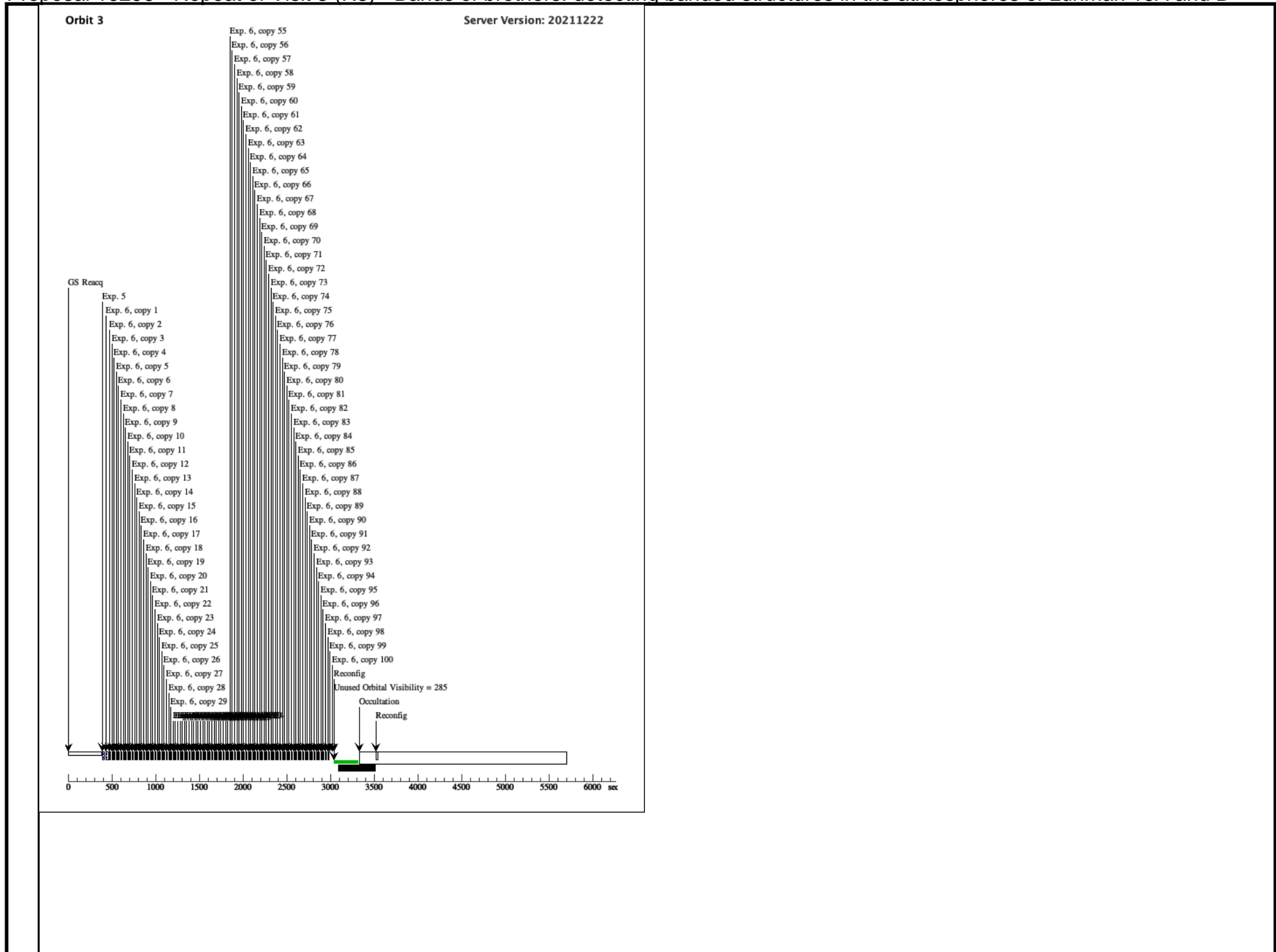
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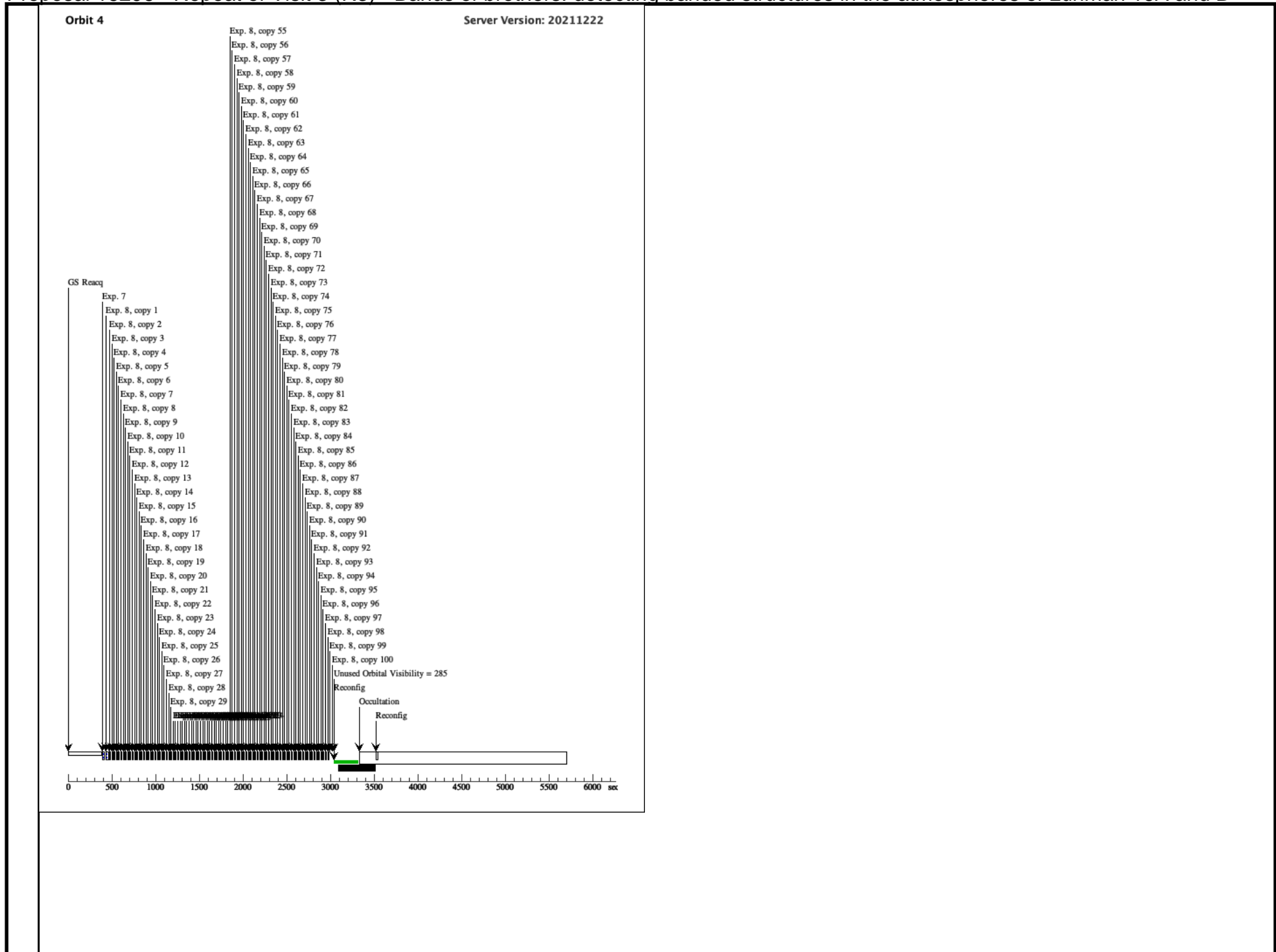
Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B



Proposal 16296 - Repeat of Visit 3 (R3) - Bands of brothers: detecting banded structures in the atmospheres of Luhman 16A and B

