



15595 - Global Dust Storm Effects on Martian Atmospheric Escape

Cycle: 25, Proposal Category: GO/DD

(Availability Mode: AVAILABLE)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
Dr. Dolon Bhattacharyya (PI) (Contact)	Boston University	dolonb@bu.edu
Prof. John T. Clarke (CoI)	Boston University	jclarke@bu.edu
Dr. Majd A Mayyasi (CoI)	Boston University	majdm@bu.edu
Dr. Jean-Ives Chaufray (CoI) (ESA Member)	LATMOS	jean-yves.chaufray@latmos.ipsl.fr
Dr. Franck Montmessin (CoI) (ESA Member)	LATMOS	franck.montmessin@latmos.ipsl.fr

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) MARS-EXOSPHERE-1 (2) MARS-EXOSPHERE-1-OFFSET	ACS/SBC	2	18-Dec-2018 08:01:59.0	yes
02	(3) MARS-EXOSPHERE-STIS-1 (4) SKY-NEAR-MARS-1 WAVE	STIS/FUV-MAMA	2	18-Dec-2018 08:02:01.0	yes
03	(5) MARS-EXOSPHERE-2 (6) MARS-EXOSPHERE-2-OFFSET	ACS/SBC	2	18-Dec-2018 08:02:04.0	yes
04	(7) MARS-EXOSPHERE-STIS-2 (8) SKY-NEAR-MARS-2 WAVE	STIS/FUV-MAMA	2	18-Dec-2018 08:02:05.0	yes
53	(9) MARS-EXOSPHERE-RERUN (10) MARS-EXOSPHERE-OFFSET-RERUN	ACS/SBC	2	18-Dec-2018 08:02:08.0	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>
54	(11) SKY-BACKGROUND-RERUN	ACS/SBC	1	18-Dec-2018 08:02:09.0	yes
63	(9) MARS-EXOSPHERE-RERUN (10) MARS-EXOSPHERE-OFFSET-RERUN	ACS/SBC	2	18-Dec-2018 08:02:12.0	yes
64	(12) SKY-NEAR-MARS-4	ACS/SBC	1	18-Dec-2018 08:02:14.0	yes

14 Total Orbits Used

ABSTRACT

HST observations revealed an order of magnitude seasonal changes in martian H escape flux which peaked at southern summer solstice. This large seasonal change is due to transport of H₂O into the upper atmosphere which is either driven by seasonal winds from solar heating, or dust storms, or both. The currently ongoing global dust storm at Mars (~3 months before perihelion), provide an opportunity to separate the effects of solar flux from dust activity. In this DD proposal, ACS-SBC imaging of the extended H corona along with STIS spectra of D emission at Mars is proposed to characterize the effects of the global dust storm on martian atmospheric escape. While currently orbiting spacecraft at Mars effectively trace the dynamical changes occurring at lower altitudes, HST is uniquely positioned to image the highest exospheric altitudes which harbor the hot hydrogen population. The presence of this population increases previous estimates of martian hydrogen escape rate and thereby water escape by a factor of ~2. Observing the D emission at the same time will allow estimation of the D/H ratio and help determine any changes to it during a global dust storm. Instruments onboard the MAVEN spacecraft are capable of detecting the D emission. But the noise levels on the detector support detection only above 100 Rayleighs ($L_s = 220 - 330$). By contrast, HST is capable of detecting emissions as low as 20 Rayleighs. Since, global dust storm events are a rare (recurrence rate ~7-10 Earth-years) at Mars, the current event ($L_s = 190$) presents a good opportunity towards accessing their contribution in aiding atmospheric/water escape from Mars. This proposal supports the HST UV initiative.

OBSERVING DESCRIPTION

This program will obtain ACS SBC images of the martian hydrogen exosphere in the ultraviolet to characterize the effects of a global dust storm on the hot hydrogen population present in the exosphere of Mars. It will use the STIS spectrograph's echelle grating (E140H) capable of resolving the D and H Lyman alpha emissions to obtain the D/H ratio in the upper atmosphere of Mars during the occurrence of a global dust storm. The ACS SBC imager onboard HST will be used to obtain a series of images of Mars with the F115 LP filter, which transmits Lyman alpha, and the F140 LP filter which blocks Lyman alpha for one HST orbit. The scaled difference between the clear and filtered images will reveal the Lyman alpha emission

Proposal 15595 (STScI Edit Number: 31, Created: Tuesday, December 18, 2018 at 8:02:15 AM Eastern Standard Time) - Overview coming from the hydrogen exosphere of Mars. This method produces highly effective results as the martian atmosphere is dominated by hydrogen above an altitude of ~250 km, which scatters solar Lyman alpha photons and is very bright at that wavelength.

For the deuterium Lyman alpha observations we will use the STIS spectrograph with the E140 H echelle grating, which is capable of resolving the H and D Lyman alpha line separated by 0.33 Angstroms. The STIS echelle spectrograph has a high resolution of 0.057 Angstroms using the 0.5 arcsec aperture, which is more than enough to separate the two lines at Mars. We will utilize the TIMETAG configuration and the 52x0.5 aperture for the STIS observation. The long aperture provides a higher count rate for the extended emission region, and has been well demonstrated in observations of Mars, Jupiter and the interplanetary hydrogen.

The program consists of two visits to observe Mars, with each visit comprising of 4 orbits. The observations from the first visit will need to be executed before the end of July 2018. This timeframe will allow the effects of the massive dust storm to propagate to the upper atmosphere and the yearly seasonal effects on the D and H Lyman alpha intensity would not have quite manifested itself on the exosphere of Mars. Therefore, any significant changes in intensity of H and D in the martian exosphere will be due to the dust storm and will be captured during the first visit. Mars will reach an L_S value of 211 deg. on 14th July 2018. The second visit will be executed in late October 2018 when Mars is close to its southern summer solstice position (L_S = 270-280 deg.), where the peak in H and H intensity is. A previous observation of the martian hydrogen exosphere conducted on 19th November 2016 (GO 14752) exists under similar solar activity conditions and the same solar longitude.

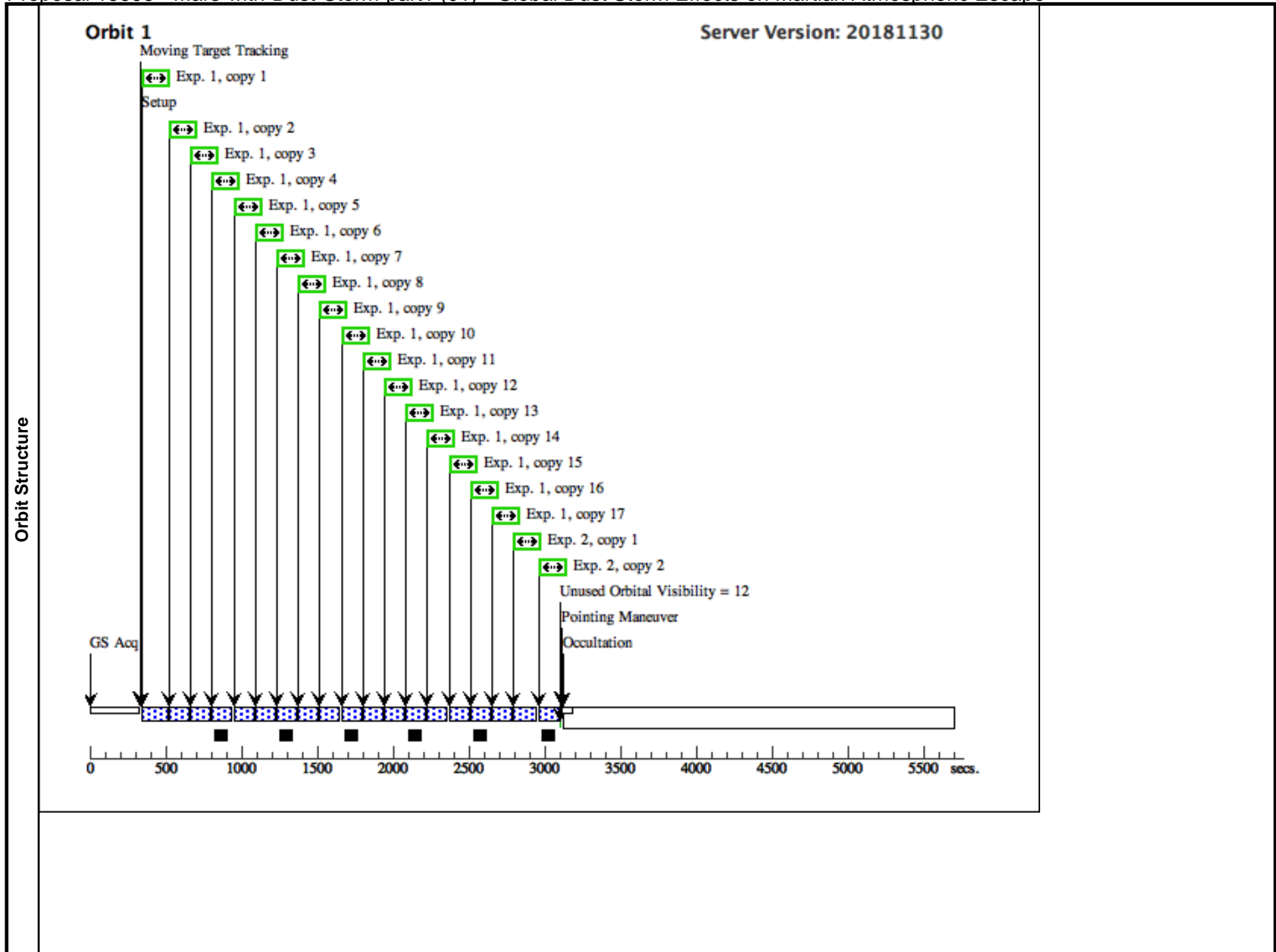
Proposal 15595 - Mars-with-Dust-Storm-part1 (01) - Global Dust Storm Effects on Martian Atmospheric Escape

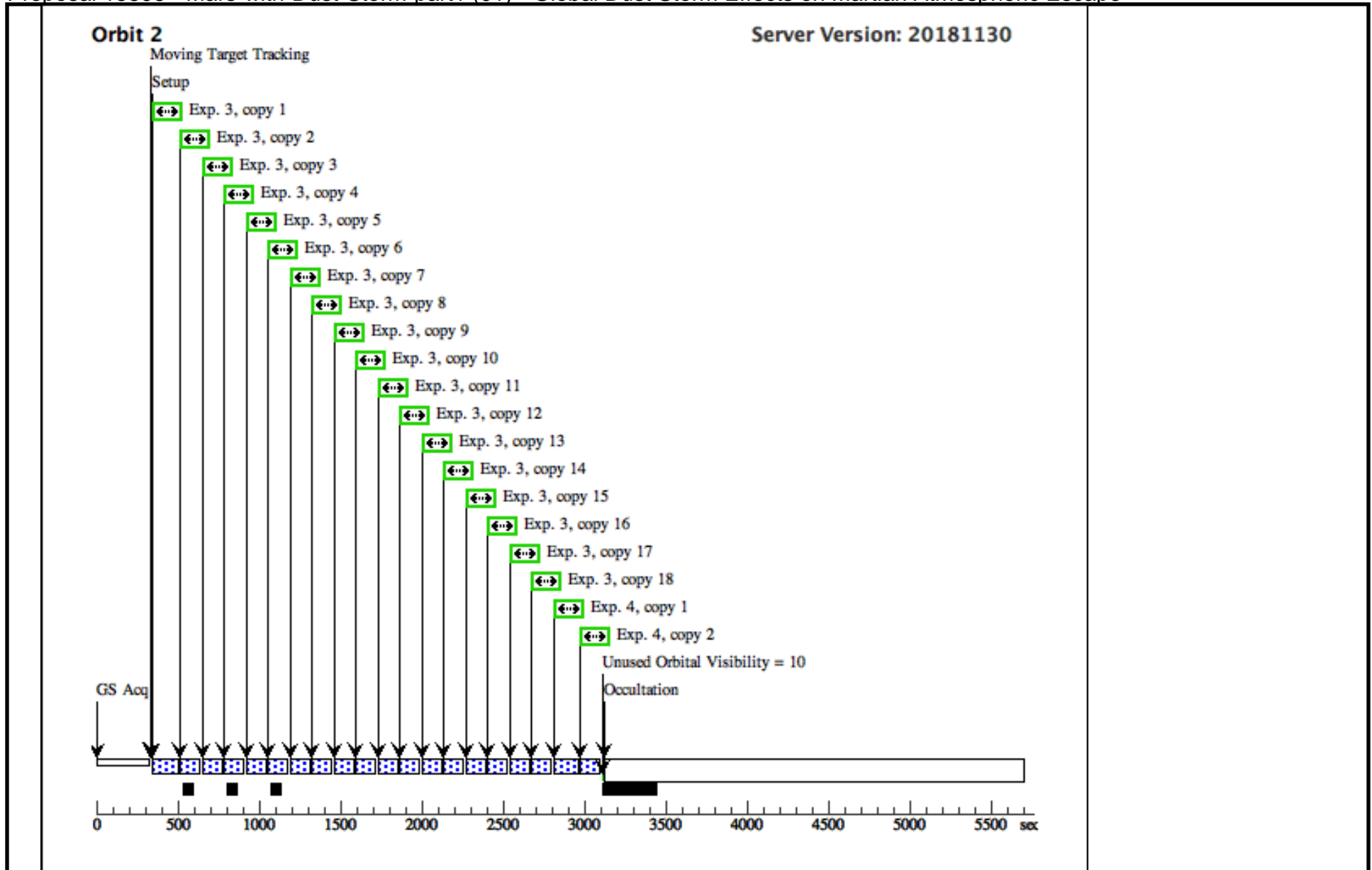
Tue Dec 18 13:02:15 GMT 2018

Visit	<p>Proposal 15595, Mars-with-Dust-Storm-part1 (01), completed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: ACS/SBC</p> <p>Special Requirements: ORIENT 295D TO 303 D; ORIENT 308D TO 325 D; BETWEEN 10-JUL-2018:00:00:00 AND 26-JUL-2018:23:00:00; VISIBILITY INTERVAL 52 M</p> <p><i>Comments: Observations of Mars during global dust storm in summer 2018</i></p>						
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window
(1)		MARS-EXOSPHERE-1	STD=MARS	TYPE=POS_ANGLE,RAD=20,ANG=100,REF=NORTH		NOT OCC OF MARS-EXOSPHERE-1 BY MARS FROM EARTH	EARTH
<p><i>Comments: Description=Exosphere of Mars</i></p> <p><i>Extended=YES</i></p>							
(2)	MARS-EXOSPHERE-1-OFFSET	STD=MARS	TYPE=POS_ANGLE,RAD=52,ANG=100,REF=NORTH		NOT OCC OF MARS-EXOSPHERE-1-OFFSET BY MARS FROM EARTH	EARTH	
<p><i>Comments: Description=Exosphere of Mars</i></p> <p><i>Extended=YES</i></p>							

Proposal 15595 - Mars-with-Dust-Storm-part1 (01) - Global Dust Storm Effects on Martian Atmospheric Escape

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(0)	(1) MARS-EXOSPH ERE-1	ACS/SBC, ACCUM, SBC	F115LP		GS ACQ SCENARI O BASE1B3		100 Secs X 17 (1734 Secs)	
								[==>102.0 Secs (Copy 1)]	
								[==>102.0 Secs (Copy 2)]	
								[==>102.0 Secs (Copy 3)]	
								[1]	
								[==>102.0 Secs (Copy 4)]	
								[==>102.0 Secs (Copy 5)]	
								[==>102.0 Secs (Copy 6)]	
								[==>102.0 Secs (Copy 7)]	
								[==>102.0 Secs (Copy 8)]	
								[==>102.0 Secs (Copy 9)]	
								[==>102.0 Secs (Copy 10)]	
								[==>102.0 Secs (Copy 11)]	
								[==>102.0 Secs (Copy 12)]	
								[==>102.0 Secs (Copy 13)]	
								[==>102.0 Secs (Copy 14)]	
								[==>102.0 Secs (Copy 15)]	
								[==>102.0 Secs (Copy 16)]	
								[==>102.0 Secs (Copy 17)]	
2	(0)	(1) MARS-EXOSPH ERE-1	ACS/SBC, ACCUM, SBC	F140LP				100 Secs X 2 (204 Secs)	
								[==>102.0 Secs (Copy 1)]	
								[==>102.0 Secs (Copy 2)]	
								[1]	
3	(0)	(2) MARS-EXOSPH ERE-1-OFFSET	ACS/SBC, ACCUM, SBC	F115LP		NEW OBSET FULL ACQ; GS ACQ SCENARI O BASE1B3		100 Secs X 18 (1710 Secs)	
								[==>95.0 Secs (Copy 1)]	
								[==>95.0 Secs (Copy 2)]	
								[==>95.0 Secs (Copy 3)]	
								[==>95.0 Secs (Copy 4)]	
								[==>95.0 Secs (Copy 5)]	
								[==>95.0 Secs (Copy 6)]	
								[==>95.0 Secs (Copy 7)]	
								[==>95.0 Secs (Copy 8)]	
								[==>95.0 Secs (Copy 9)]	
								[==>95.0 Secs (Copy 10)]	
								[==>95.0 Secs (Copy 11)]	
								[==>95.0 Secs (Copy 12)]	
								[==>95.0 Secs (Copy 13)]	
								[==>95.0 Secs (Copy 14)]	
								[==>95.0 Secs (Copy 15)]	
								[==>95.0 Secs (Copy 16)]	
								[==>95.0 Secs (Copy 17)]	
								[==>95.0 Secs (Copy 18)]	
								[2]	
4	(0)	(2) MARS-EXOSPH ERE-1-OFFSET	ACS/SBC, ACCUM, SBC	F140LP				100 Secs X 2 (190 Secs)	
								[==>95.0 Secs (Copy 1)]	
								[==>95.0 Secs (Copy 2)]	
								[2]	

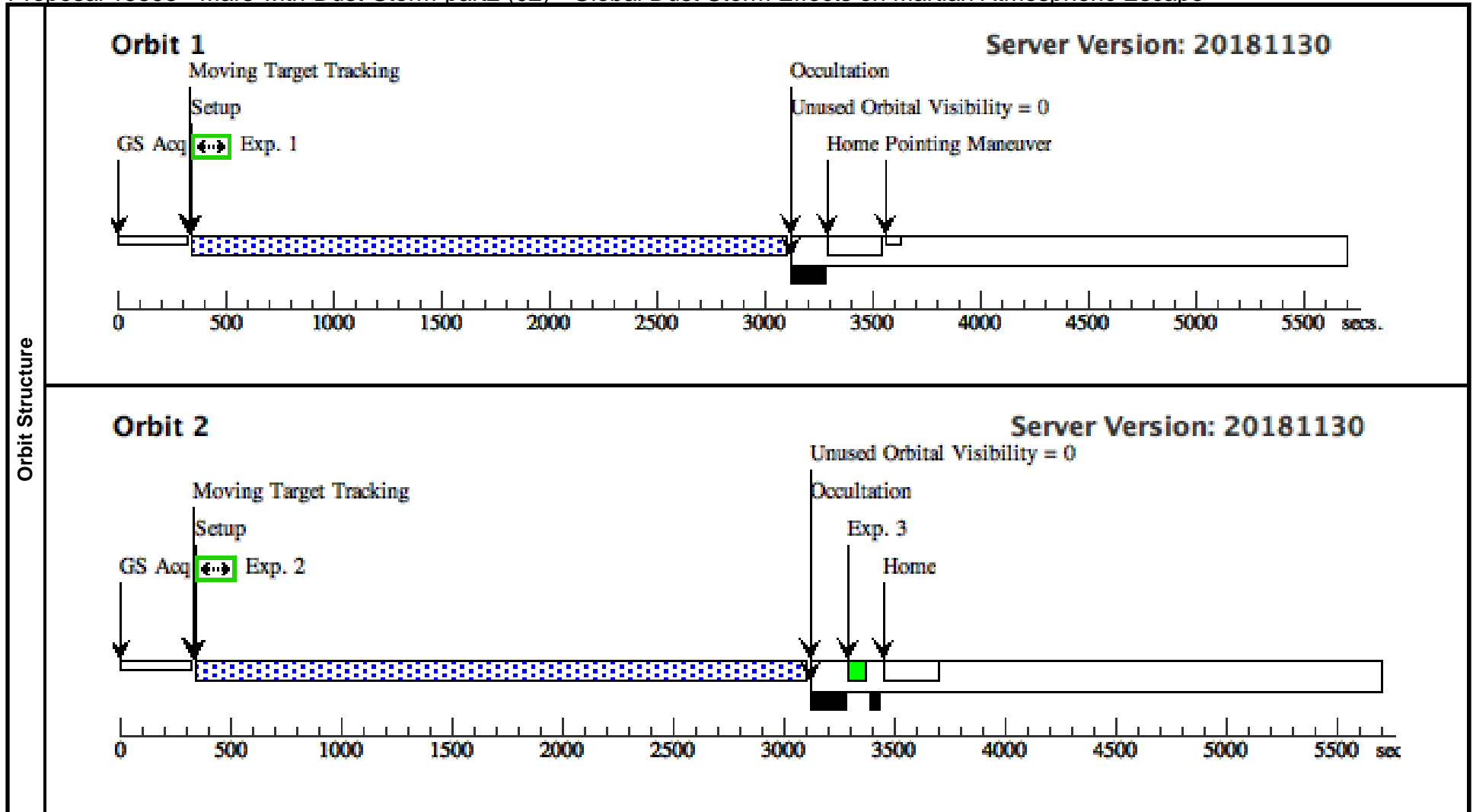




Proposal 15595 - Mars-with-Dust-Storm-part2 (02) - Global Dust Storm Effects on Martian Atmospheric Escape

Tue Dec 18 13:02:15 GMT 2018

Visit	Proposal 15595, Mars-with-Dust-Storm-part2 (02), completed Diagnostic Status: Warning Scientific Instruments: STIS/FUV-MAMA Special Requirements: ORIENT 295D TO 303 D; ORIENT 308D TO 325 D; AFTER 01 BY 2.9 Orbits TO 3.1 D; BETWEEN 10-JUL-2018:00:00:00 AND 26-JUL-2018:00:00:00; VISIBILITY INTERVAL 52 M <i>Comments: Observations of Mars during global dust storm in summer 2018</i>									
	(Mars-with-Dust-Storm-part2 (02)) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronagraphy with STIS or COS. (Mars-with-Dust-Storm-part2 (02)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL									
Diagnosics										
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(3)	MARS-EXOSPHERE-STIS-1	STD=MARS	TYPE=POS_ANGLE,RAD=3,ANG=7 5,REF=NORTH		NOT OCC OF MARS-EXOSPHERE-STIS-1 BY MARS FROM EARTH	EARTH			
<i>Comments: Description=Exosphere of Mars</i>										
<i>Extended=YES</i>										
(4)	SKY-NEAR-MARS-1	STD=MARS	TYPE=POS_ANGLE,RAD=300,ANG=0,REF=NORTH		NOT OCC OF SKY-NEAR-MARS-1 BY MARS FROM EARTH	EARTH				
<i>Comments: Offset from Mars</i>										
<i>Description=Offset to sky near Mars</i>										
<i>Extended=YES</i>										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(0)	(3) MARS-EXOSPHERE-STIS-1	STIS/FUV-MAMA, TIME-TAG, 52X0.5	E140H 1234 A	BUFFER-TIME=13 46; WAVECAL=NO	GS ACQ SCENARI O BASE1B3		2691 Secs (2609 Secs) [=>2609.0 Secs]	[1]
	2	(0)	(4) SKY-NEAR-MARS-1	STIS/FUV-MAMA, TIME-TAG, 52X0.5	E140H 1234 A	BUFFER-TIME=14 01; WAVECAL=NO	NEW OBSET FULL ACQ; GS ACQ SCENARI O BASE1B3		2802 Secs (2609 Secs) [=>2609.0 Secs]	[2]
	3		WAVE	STIS/FUV-MAMA, ACCUM, 6X0.2	E140H 1234 A				[=>]	[2]



Proposal 15595 - Mars-post-Dust-Storm-part1 (03) - Global Dust Storm Effects on Martian Atmospheric Escape

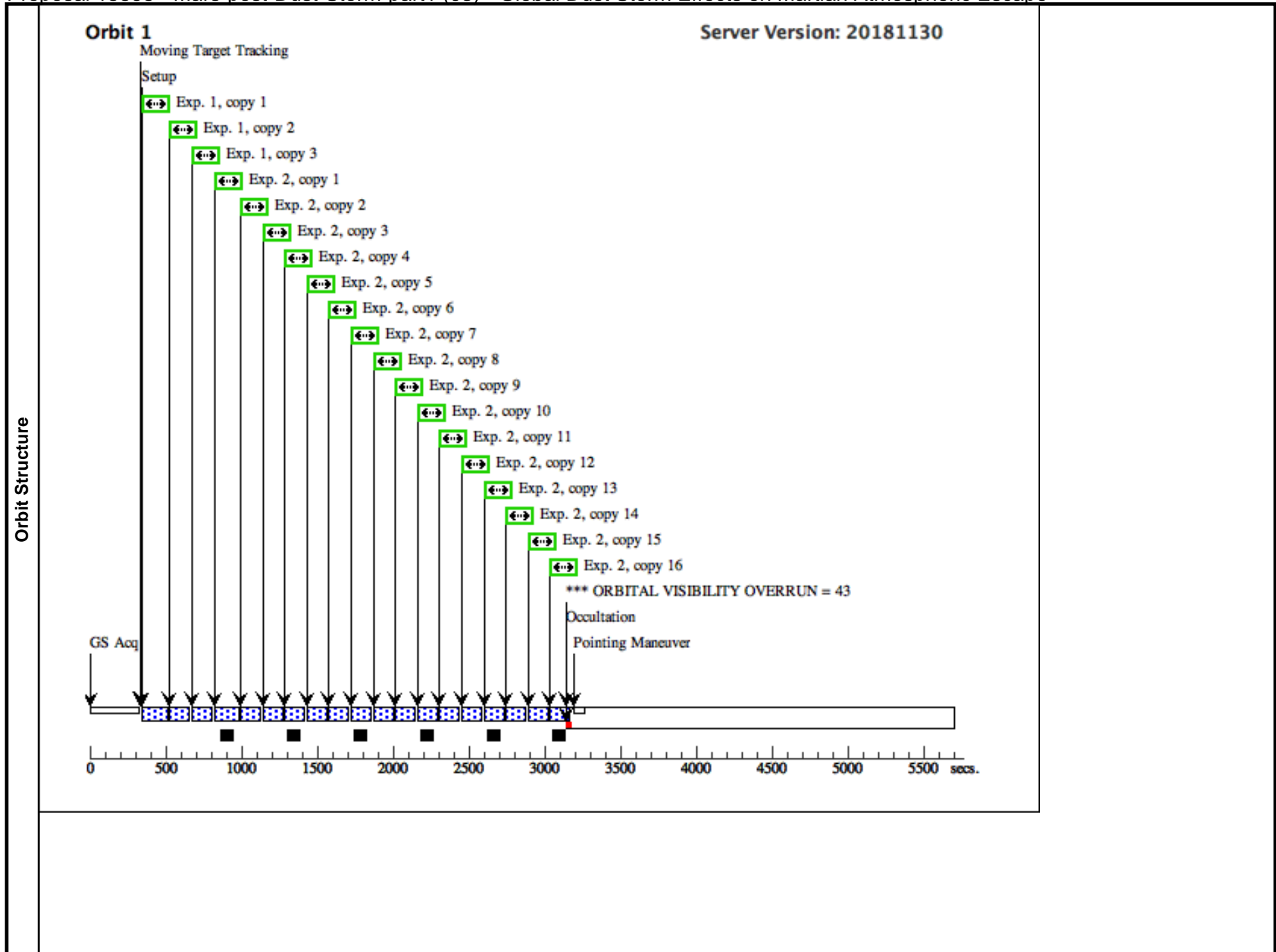
Tue Dec 18 13:02:15 GMT 2018

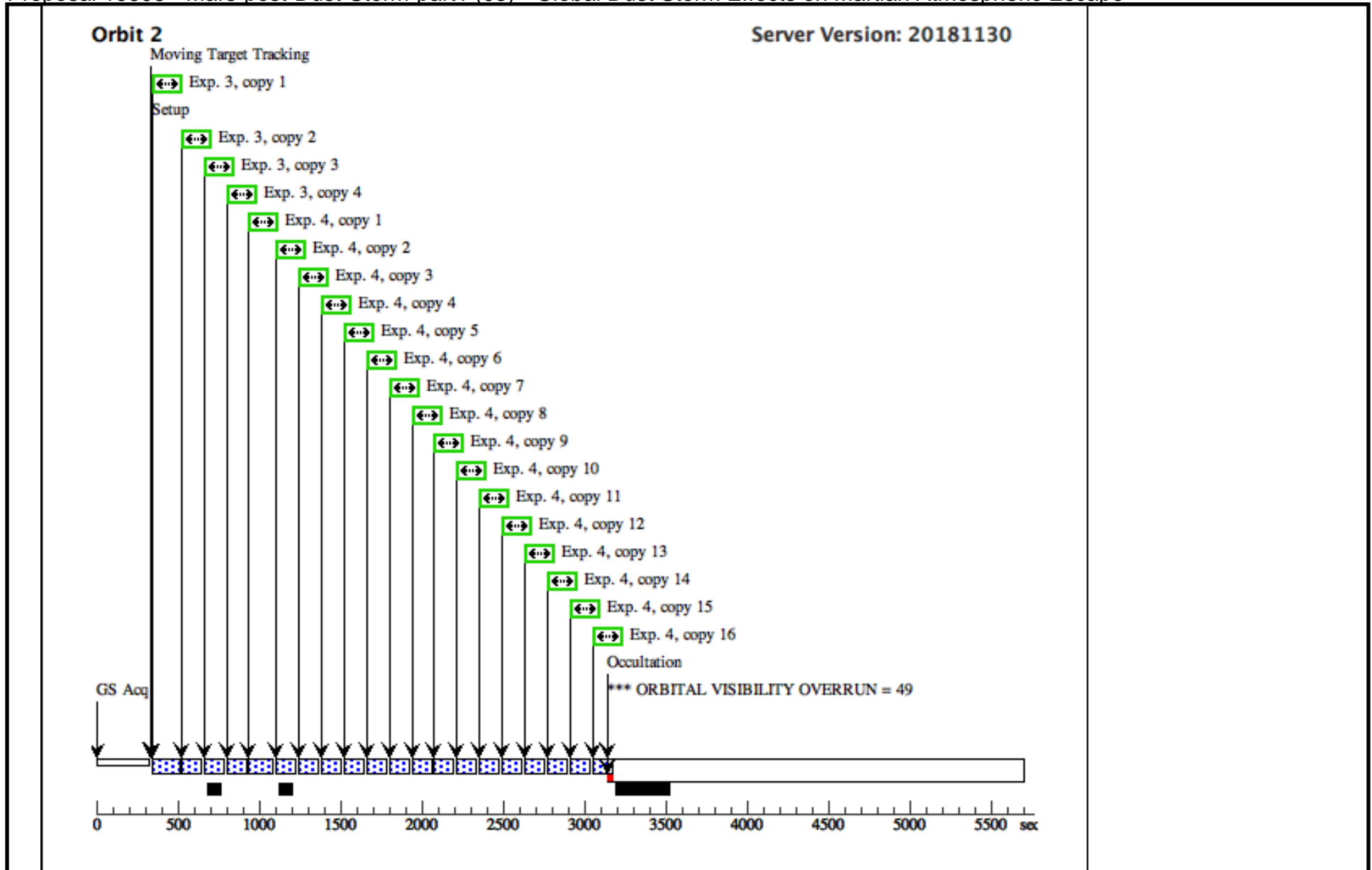
Visit	<p>Proposal 15595, Mars-post-Dust-Storm-part1 (03), failed</p> <p>Diagnostic Status: Warning</p> <p>Scientific Instruments: ACS/SBC</p> <p>Special Requirements: ORIENT 48D TO 55 D; BETWEEN 06-NOV-2018:00:00:00 AND 11-NOV-2018:00:00:00</p> <p><i>Comments: Observations of Mars after global dust storm in summer 2018</i></p>						
	<p>(Mars-post-Dust-Storm-part1 (03)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(Mars-post-Dust-Storm-part1 (03)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p>						
Diagnostics							
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(5)	MARS-EXOSPHERE-2	STD=MARS	TYPE=POS_ANGLE,RAD=18,ANG=280,REF=NORTH		NOT OCC OF MARS-EXOSPHERE-2 BY MARS FROM EARTH	EARTH
	<p><i>Comments: Description=Exosphere of Mars</i></p> <p><i>Extended=YES</i></p>						
	(6)	MARS-EXOSPHERE-2-OFFSET	STD=MARS	TYPE=POS_ANGLE,RAD=50,ANG=280,REF=NORTH		NOT OCC OF MARS-EXOSPHERE-2-OFFSET BY MARS FROM EARTH	EARTH
<p><i>Comments: Description=Exosphere of Mars</i></p> <p><i>Extended=YES</i></p>							

Proposal 15595 - Mars-post-Dust-Storm-part1 (03) - Global Dust Storm Effects on Martian Atmospheric Escape

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(0)	(5) MARS-EXOSPH ERE-2	ACS/SBC, ACCUM, SBC	F140LP		GS ACQ SCENARI O BASE1B3		100 Secs X 3 (318 Secs)	[1]
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								[==>106.0 Secs (Copy 2)]	
								[==>106.0 Secs (Copy 3)]	
2	(0)	(5) MARS-EXOSPH ERE-2	ACS/SBC, ACCUM, SBC	F115LP				100 Secs X 16 (1696 Secs)	[1]
								[==>106.0 Secs (Copy 1)]	
								[==>106.0 Secs (Copy 2)]	
								[==>106.0 Secs (Copy 3)]	
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								[==>106.0 Secs (Copy 11)]	
								[==>106.0 Secs (Copy 12)]	
								[==>106.0 Secs (Copy 13)]	
								[==>106.0 Secs (Copy 14)]	
								[==>106.0 Secs (Copy 15)]	
								[==>106.0 Secs (Copy 16)]	
3	(0)	(6) MARS-EXOSPH ERE-2-OFFSET	ACS/SBC, ACCUM, SBC	F140LP		NEW OBSET FULL ACQ; GS ACQ SCENARI O BASE1B3		100 Secs X 4 (396 Secs)	[2]
								[==>99.0 Secs (Copy 1)]	
								[==>99.0 Secs (Copy 2)]	
								[==>99.0 Secs (Copy 3)]	
4	(0)	(6) MARS-EXOSPH ERE-2-OFFSET	ACS/SBC, ACCUM, SBC	F115LP				100 Secs X 16 (1584 Secs)	[2]
								[==>99.0 Secs (Copy 1)]	
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Exposures

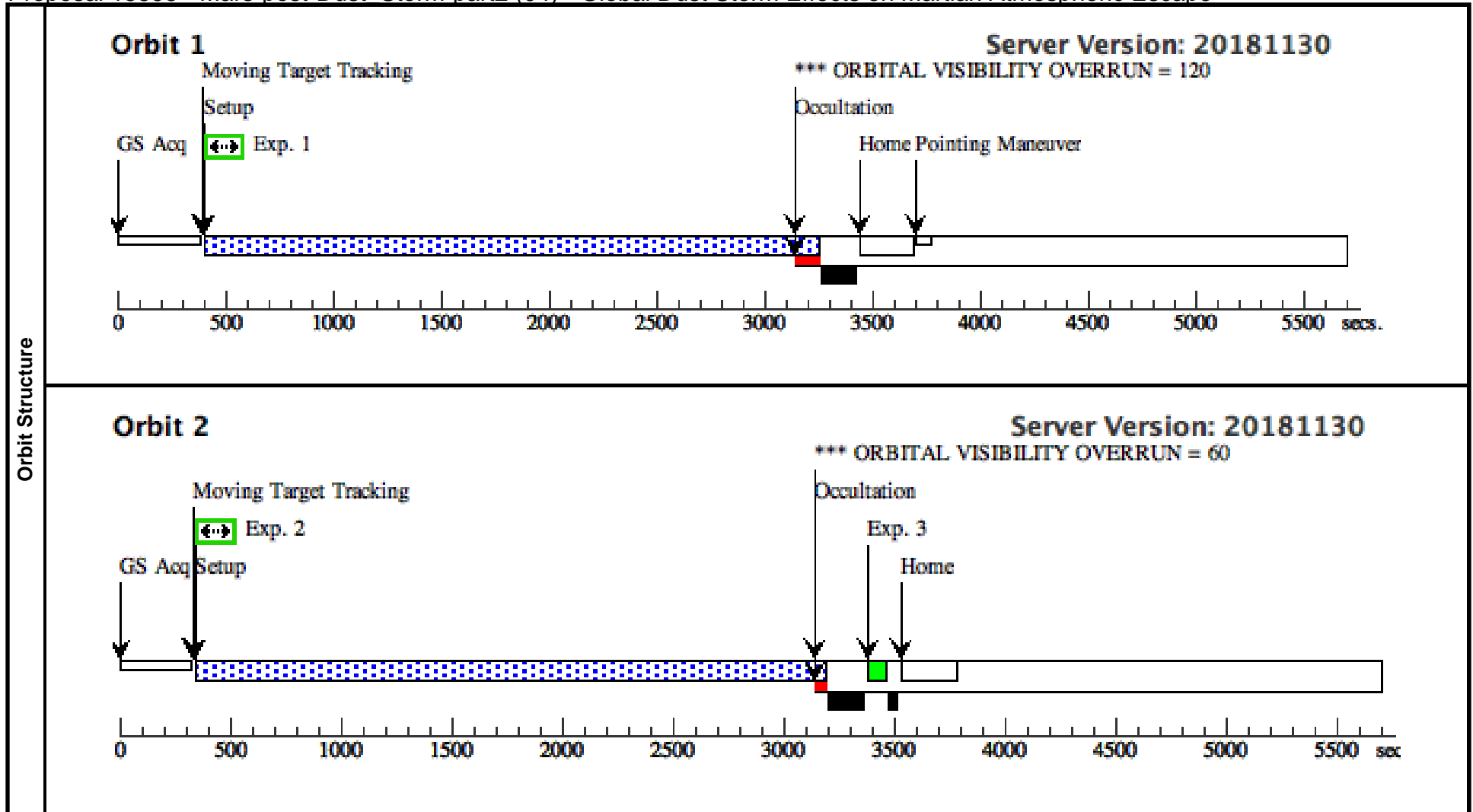




Proposal 15595 - Mars-post-Dust Storm-part2 (04) - Global Dust Storm Effects on Martian Atmospheric Escape

Tue Dec 18 13:02:15 GMT 2018

Visit	Proposal 15595, Mars-post-Dust_Storm-part2 (04), completed Diagnostic Status: Warning Scientific Instruments: STIS/FUV-MAMA Special Requirements: ORIENT 48D TO 55 D; AFTER 03 BY 2.9 Orbits TO 10.1 Orbits; BETWEEN 06-NOV-2018:00:00:00 AND 10-NOV-2018:00:00:00 <i>Comments: Observations of Mars after global dust storm in summer 2018</i>									
	Diagnosics (Mars-post-Dust_Storm-part2 (04)) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronagraphy with STIS or COS. (Mars-post-Dust_Storm-part2 (04)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Mars-post-Dust_Storm-part2 (04)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Mars-post-Dust_Storm-part2 (04)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL									
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(7)	MARS-EXOSPHERE-STIS-2	STD=MARS				EARTH			
<i>Comments: Description=Exosphere of Mars</i> <i>Extended=YES</i>										
(8)	SKY-NEAR-MARS-2	STD=MARS		TYPE=POS_ANGLE,RAD=300,ANG=0,REF=NORTH		NOT OCC OF SKY-NEAR-MARS-2 BY MARS FROM EARTH	EARTH			
<i>Comments: Offset from Mars</i> <i>Description=Offset to sky near Mars</i> <i>Extended=YES</i>										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(0)	(7) MARS-EXOSPHERE-STIS-2	STIS/FUV-MAMA, TIME-TAG, 52X0.5	E140H 1234 A	BUFFER-TIME=13 46; WAVECAL=NO			2691 Secs (2691 Secs) [==>]	[1]
	2	(0)	(8) SKY-NEAR-MARS-2	STIS/FUV-MAMA, TIME-TAG, 52X0.5	E140H 1234 A	BUFFER-TIME=14 01; WAVECAL=NO	NEW OBSET FULL ACQ; GS ACQ SCENARIO BASE1B3		2802 Secs (2691 Secs) [==>2691.0 Secs]	[2]
	3		WAVE	STIS/FUV-MAMA, ACCUM, 6X0.2	E140H 1234 A				[==>]	[2]



Proposal 15595 - Mars-ACS-imaging (53) - Global Dust Storm Effects on Martian Atmospheric Escape

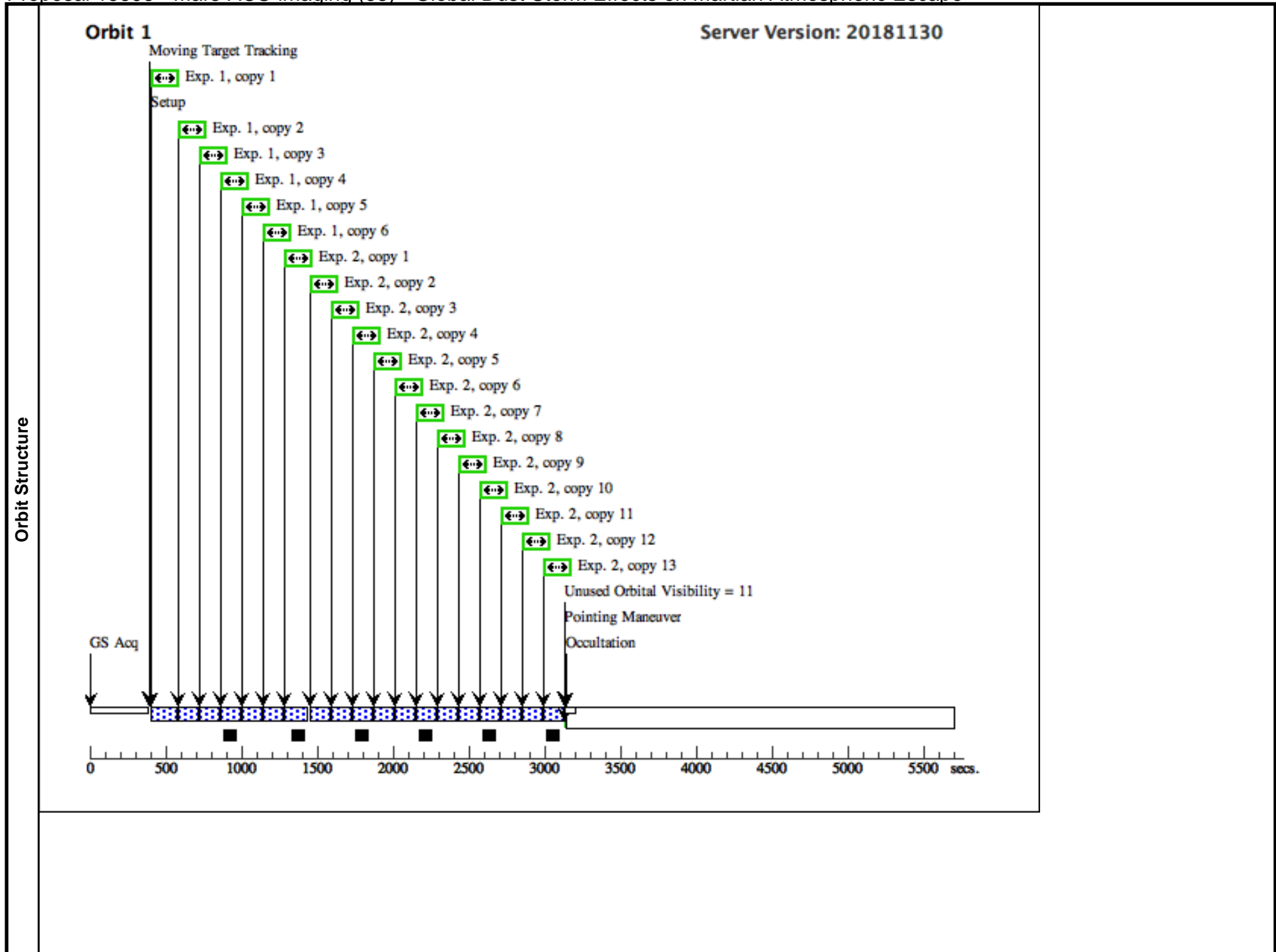
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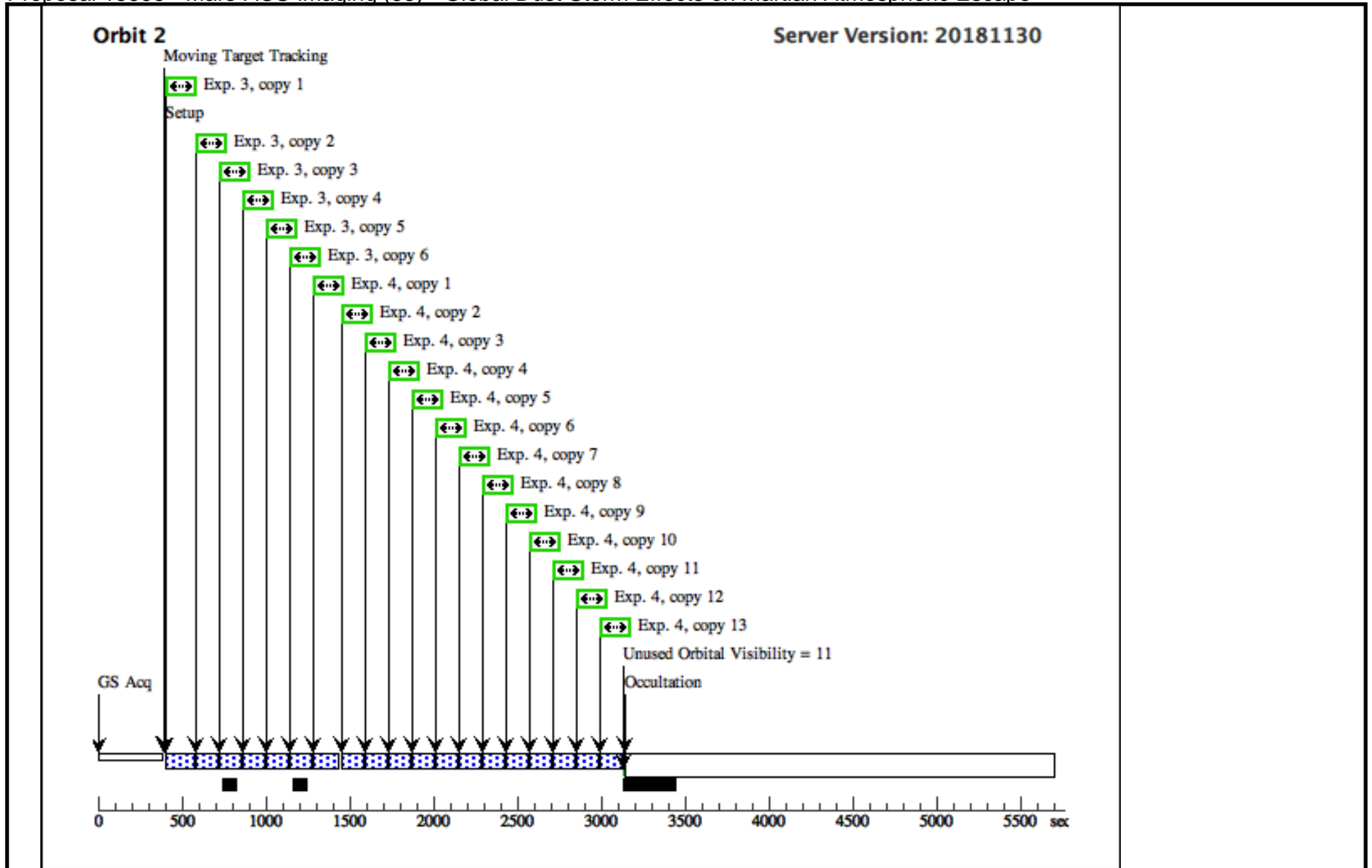
Visit	Proposal 15595, Mars-ACS-imaging (53), failed Diagnostic Status: No Diagnostics Scientific Instruments: ACS/SBC Special Requirements: ORIENT 65D TO 70 D; BETWEEN 07-DEC-2018:00:00:00 AND 09-DEC-2018:00:00:00						
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(9)	MARS-EXOSPHERE-RERUN	STD=MARS	TYPE=POS_ANGLE,RAD=10,ANG=280,REF=NORTH		NOT OCC OF MARS-EXOSPHERE-RERUN BY MARS FROM EARTH	EARTH
	Comments: Description=Mars hydrogen exosphere Extended=YES						
(10)	MARS-EXOSPHERE-OFFSET-RERUN	STD=MARS	TYPE=POS_ANGLE,RAD=50,ANG=280,REF=NORTH		NOT OCC OF MARS-EXOSPHERE-OFFSET-RERUN BY MARS FROM EARTH	EARTH	
Comments: Description=Mars hot hydrogen imaging Extended=YES							

Proposal 15595 - Mars-ACS-imaging (53) - Global Dust Storm Effects on Martian Atmospheric Escape

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(0)	(9) MARS-EXOSPH ERE-RERUN	ACS/SBC, ACCUM, SBC	F140LP				100 Secs X 6 (600 Secs)	[1]
								[==>(Copy 1)]	
								[==>(Copy 2)]	
								[==>(Copy 3)]	
2	(0)	(9) MARS-EXOSPH ERE-RERUN	ACS/SBC, ACCUM, SBC	F115LP				100 Secs X 13 (1300 Secs)	[1]
								[==>(Copy 1)]	
								[==>(Copy 2)]	
								[==>(Copy 3)]	
3	(0)	(10) MARS-EXOSP HERE-OFFSET-RE RUN	ACS/SBC, ACCUM, SBC	F140LP		NEW OBSSET FULL ACQ		100 Secs X 6 (600 Secs)	[2]
								[==>(Copy 1)]	
								[==>(Copy 2)]	
								[==>(Copy 3)]	
4	(0)	(10) MARS-EXOSP HERE-OFFSET-RE RUN	ACS/SBC, ACCUM, SBC	F115LP				100 Secs X 13 (1300 Secs)	[2]
								[==>(Copy 1)]	
								[==>(Copy 2)]	
								[==>(Copy 3)]	

Exposures

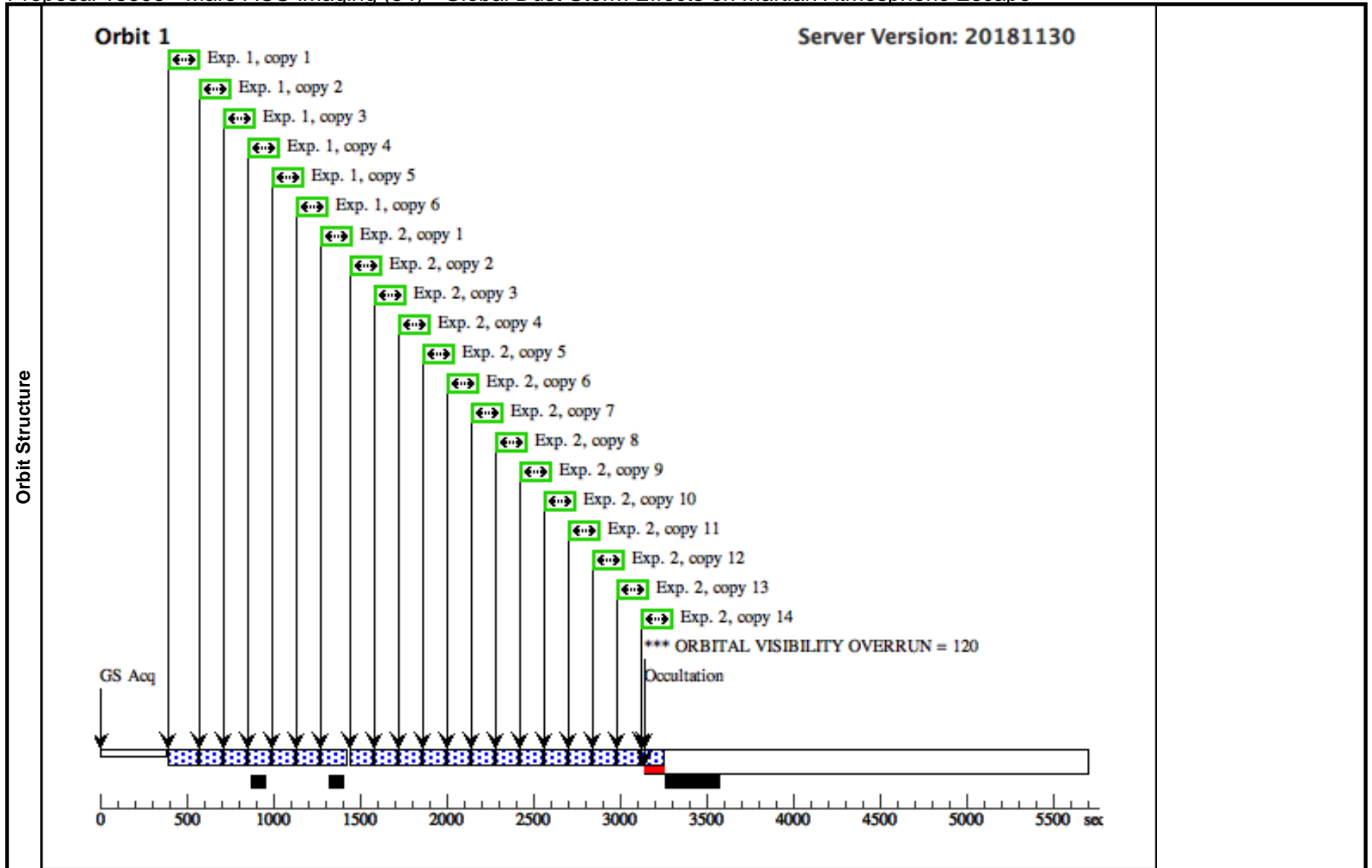




Proposal 15595 - Mars-ACS-imaging (54) - Global Dust Storm Effects on Martian Atmospheric Escape

Tue Dec 18 13:02:16 GMT 2018

Visit	Proposal 15595, Mars-ACS-imaging (54), failed Diagnostic Status: Warning Scientific Instruments: ACS/SBC Special Requirements: NOTRACK; AFTER 53 BY 1.9 Orbits TO 2.1 Orbits									
	Diagnosics (Mars-ACS-imaging (54)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN									
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(11)	SKY-BACKGROUND-RERUN	STD=MARS	TYPE=POS_ANGLE,RAD=300,ANG=0,REF=NORTH		NOT OCC OF SKY-BACKGROUND-RERUN BY MARS FROM EARTH, SEP OF SKY-BACKGROUND-RERUN MARS FROM EARTH GT 10"	EARTH			
<i>Comments: Description=geocorona and IPH background near Mars Extended=YES</i>										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(0)	(11) SKY-BACKGROUND-RERUN	ACS/SBC, ACCUM, SBC	F140LP				100 Secs X 6 (600 Secs)	
									[=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)] [=>(Copy 5)] [=>(Copy 6)]	[1]
2	(0)	(11) SKY-BACKGROUND-RERUN	ACS/SBC, ACCUM, SBC	F115LP					100 Secs X 14 (1400 Secs)	
									[=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)] [=>(Copy 5)] [=>(Copy 6)] [=>(Copy 7)] [=>(Copy 8)] [=>(Copy 9)] [=>(Copy 10)] [=>(Copy 11)] [=>(Copy 12)] [=>(Copy 13)] [=>(Copy 14)]	[1]



Proposal 15595 - Mars-ACS-imaging (63) - Global Dust Storm Effects on Martian Atmospheric Escape

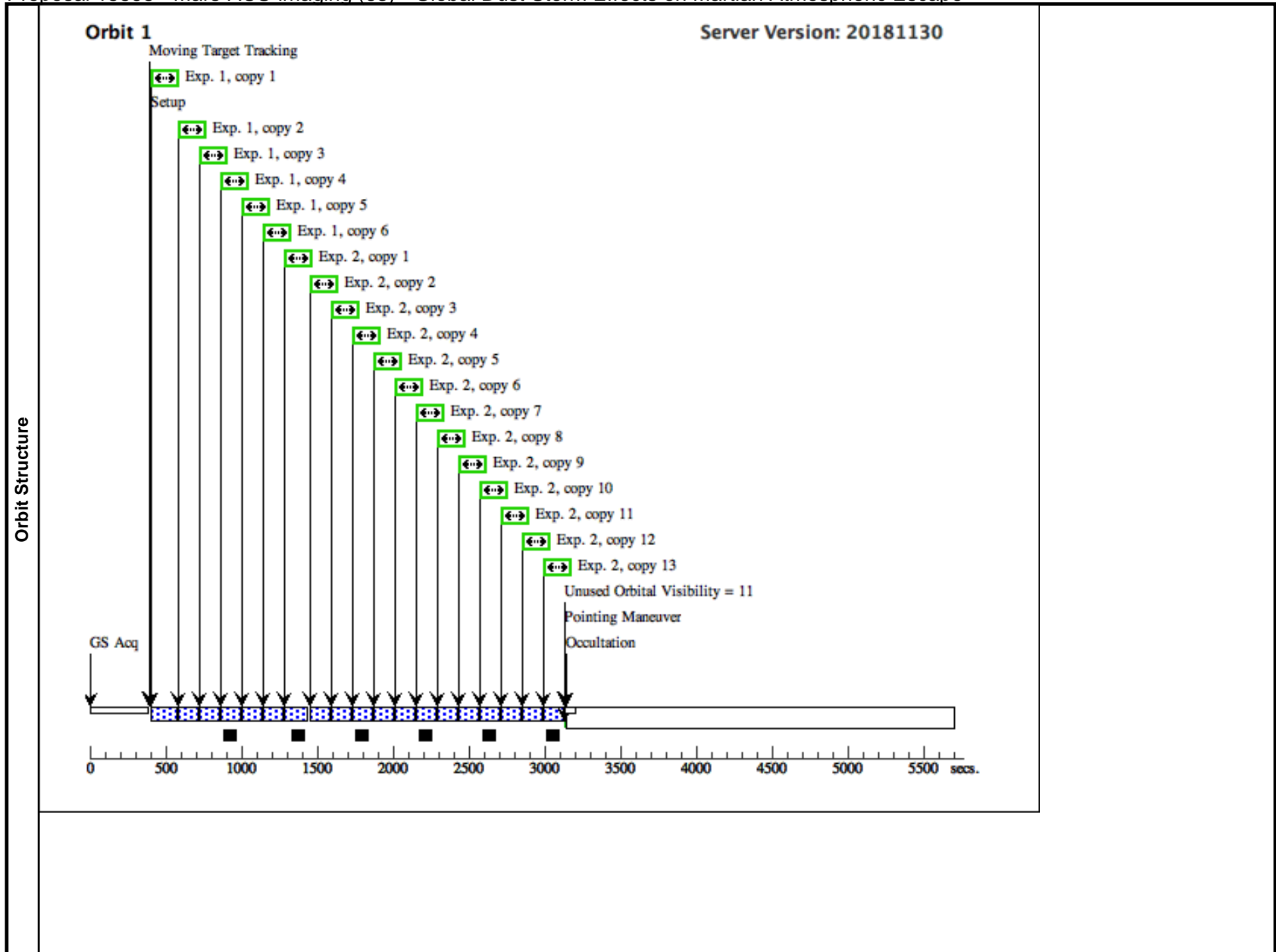
Tue Dec 18 13:02:16 GMT 2018

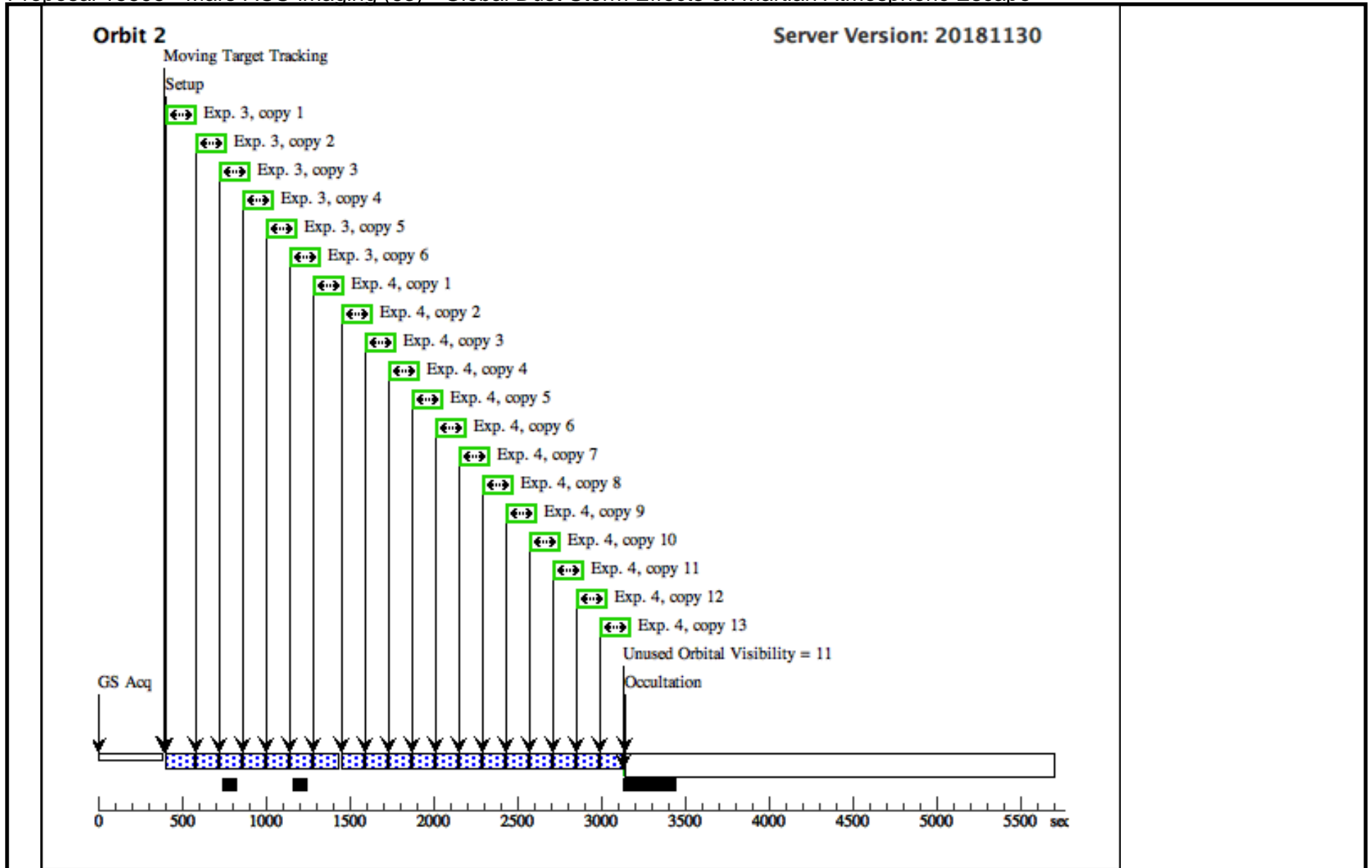
Visit	Proposal 15595, Mars-ACS-imaging (63), implementation Diagnostic Status: No Diagnostics Scientific Instruments: ACS/SBC Special Requirements: ORIENT 65D TO 70 D; BEFORE 11-JAN-2019:00:00:00						
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window
(9)		MARS-EXOSPHERE-RERUN	STD=MARS	TYPE=POS_ANGLE,RAD=10,ANG=280,REF=NORTH		NOT OCC OF MARS-EXOSPHERE-RERUN BY MARS FROM EARTH	EARTH
Comments: Description=Mars hydrogen exosphere Extended=YES							
	(10)	MARS-EXOSPHERE-OFFSET-RERUN	STD=MARS	TYPE=POS_ANGLE,RAD=50,ANG=280,REF=NORTH		NOT OCC OF MARS-EXOSPHERE-OFFSET-RERUN BY MARS FROM EARTH	EARTH
Comments: Description=Mars hot hydrogen imaging Extended=YES							

Proposal 15595 - Mars-ACS-imaging (63) - Global Dust Storm Effects on Martian Atmospheric Escape

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(0)	(9) MARS-EXOSPH ERE-RERUN	ACS/SBC, ACCUM, SBC	F140LP				100 Secs X 6 (600 Secs)	[1]
								[==>(Copy 1)]	
								[==>(Copy 2)]	
								[==>(Copy 3)]	
2	(0)	(9) MARS-EXOSPH ERE-RERUN	ACS/SBC, ACCUM, SBC	F115LP				100 Secs X 13 (1300 Secs)	[1]
								[==>(Copy 1)]	
								[==>(Copy 2)]	
								[==>(Copy 3)]	
3	(0)	(10) MARS-EXOSP HERE-OFFSET-RE RUN	ACS/SBC, ACCUM, SBC	F140LP		NEW OBSSET FULL ACQ		100 Secs X 6 (600 Secs)	[2]
								[==>(Copy 1)]	
								[==>(Copy 2)]	
								[==>(Copy 3)]	
4	(0)	(10) MARS-EXOSP HERE-OFFSET-RE RUN	ACS/SBC, ACCUM, SBC	F115LP				100 Secs X 13 (1300 Secs)	[2]
								[==>(Copy 1)]	
								[==>(Copy 2)]	
								[==>(Copy 3)]	

Exposures





Proposal 15595 - Mars-ACS-imaging (64) - Global Dust Storm Effects on Martian Atmospheric Escape

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Visit	Proposal 15595, Mars-ACS-imaging (64), implementation Diagnostic Status: Warning Scientific Instruments: ACS/SBC Special Requirements: NOTRACK; AFTER 63 BY 1.9 Orbits TO 2.1 Orbits									
	Diagnosics (Mars-ACS-imaging (64)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN									
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(12) 4	SKY-NEAR-MARS-STD=MARS		TYPE=POS_ANGLE,RAD=350,ANG=0,REF=NORTH		NOT OCC OF SKY-NEAR-MARS-4 BY MARS FROM EARTH	EARTH			
Comments: Offset from Mars Description=Offset to sky near Mars Extended=YES										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(0)	(12) SKY-NEAR-MARS-4	ACS/SBC, ACCUM, SBC	F140LP				100 Secs X 6 (600 Secs)	
	[==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)]									[1]
2	(0)	(12) SKY-NEAR-MARS-4	ACS/SBC, ACCUM, SBC	F115LP					100 Secs X 14 (1400 Secs)	
[==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)] [==>(Copy 9)] [==>(Copy 10)] [==>(Copy 11)] [==>(Copy 12)] [==>(Copy 13)] [==>(Copy 14)]									[1]	

