16675 - Observing Jupiter's FUV auroras during the Juno Extended Mission

Cycle: 29, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) JUPITER-AURORA-JUNOEM-1	STIS/FUV-MAMA	1	05-Jul-2023 11:00:21.0	yes
02	(2) JUPITER-AURORA-JUNOEM-2	STIS/FUV-MAMA	1	05-Jul-2023 11:00:21.0	yes
03	(3) JUPITER-AURORA-JUNOEM-3	STIS/FUV-MAMA	1	05-Jul-2023 11:00:22.0	yes
04	(4) JUPITER-AURORA-JUNOEM-4	STIS/FUV-MAMA	1	05-Jul-2023 11:00:23.0	yes
05	(5) JUPITER-AURORA-JUNOEM-5	STIS/FUV-MAMA	1	05-Jul-2023 11:00:23.0	yes
06	(6) JUPITER-AURORA-JUNOEM-6	STIS/FUV-MAMA	1	05-Jul-2023 11:00:24.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
07	(7) JUPITER-AURORA-JUNOEM-7	STIS/FUV-MAMA	1	05-Jul-2023 11:00:24.0	yes
08	(8) JUPITER-AURORA-JUNOEM-8	STIS/FUV-MAMA	1	05-Jul-2023 11:00:25.0	yes
09	(9) JUPITER-AURORA-JUNOEM-9	STIS/FUV-MAMA	1	05-Jul-2023 11:00:26.0	yes
10	(10) JUPITER-AURORA-JUNOEM-10	STIS/FUV-MAMA	1	05-Jul-2023 11:00:26.0	yes
11	(11) JUPITER-AURORA-JUNOEM-11	STIS/FUV-MAMA	1	05-Jul-2023 11:00:27.0	yes
12	(12) JUPITER-AURORA-JUNOEM-12	STIS/FUV-MAMA	1	05-Jul-2023 11:00:27.0	yes
13	(13) JUPITER-AURORA-JUNOEM-13	STIS/FUV-MAMA	1	05-Jul-2023 11:00:28.0	yes
14	(14) JUPITER-AURORA-JUNOEM-14	STIS/FUV-MAMA	1	05-Jul-2023 11:00:29.0	yes
15	(15) JUPITER-AURORA-JUNOEM-15	STIS/FUV-MAMA	1	05-Jul-2023 11:00:30.0	yes
16	(16) JUPITER-AURORA-JUNOEM-16	STIS/FUV-MAMA	1	05-Jul-2023 11:00:30.0	yes
17	(17) JUPITER-AURORA-JUNOEM-17	STIS/FUV-MAMA	1	05-Jul-2023 11:00:31.0	yes
18	(18) JUPITER-AURORA-JUNOEM-18	STIS/FUV-MAMA	1	05-Jul-2023 11:00:31.0	yes
1A	DARK	STIS/FUV-MAMA	1	05-Jul-2023 11:00:32.0	yes

19 Total Orbits Used

ABSTRACT

In September 2021, the highly successful NASA Juno spacecraft will begin its Extended Mission (EM). During the EM, Juno will cross the equatorial region inside of Ganymede's orbit providing an opportunity to obtain HST auroral images simultaneously with high-resolution in situ observations in the crucial inner equatorial region of Jupiter's magnetosphere, where the key dynamics that drive and shape the magnetosphere originate. The STIS/FUV imaging observations proposed here over Cycles 29-31 will answer a large number of outstanding scientific questions, including:

* Do magnetosphere-ionosphere coupling currents drive Jupiter's main auroral emission?
* What radial forces govern the structure of Jupiter's magnetosphere?
* What is the nature of the interaction between Jupiter and its satellites?
* How do Jovian plasma populations relate to low latitude auroral emissions?
* How does magnetospheric wave activity influence Jupiter's magnetosphere?
* What processes give rise to pulsating high-latitude emissions?

This program responds to the UV initiative and is only possible during the Juno EM. These observations cannot be made by Juno UVS and HST is the only observatory capable of making these FUV observations, which will yield high-impact results, and complement and extend the goals of the NASA Juno mission.

OBSERVING DESCRIPTION

The timescale of the observations required to address the science goals is governed by the orbit of Juno in the EM and covers HST Cycles 29-31; hence our proposal is for a Long Term program of observations. The EM begins in July 2021 and is scheduled nominally to last until August 2025. The availability of Jupiter from HST during Cycles 29-31 is 1 Oct 2021 - 25 Dec 2021; 18 May 2022 - 31 Jan 23; 25 Jun 2023 - 7 March 2024; and 2 Aug 2024 - 30 Sept 2024, where the last date is the assumed end of Cycle 31. Our observations will be clustered around the perijoves, when Juno is in the critical regions of the magnetosphere as described above. Orbit requests are 18 (Cycle 29), 12 (Cycle 30) and 10 (Cycle 31). The orbit request is governed as follows: the science lies in the temporal domain, i.e. variations in the auroral morphology are compared with changes in the in situ field and plasma observations. It is critical that such variation is captured in order to correlate the multiple data sets, and to determine the response to dynamical processes such as solar wind compression events and changing mass loading rates. We hence will use multiple observations for each science goal to capture the key variability that reveals the dynamics of the system. The timescales are: there are typically two ~3- day solar wind compressions per solar rotation (25 days), so the duty cycle for "disturbed" conditions is around 1/4. Thus observing 8 epochs will yield ~2 disturbed intervals, the minimum required to establish repeatable effects. Changes typically take place over a few days. We hence will observe for 2-4 orbits per interval to determine the short-timescale dynamics and to cover both north and south auroras in order to capture the important physics along the entire flux tube. The exact numbers for each interval have been determined by examination of the number of favourable viewing windows for each of the science goals during the 2-3-day intervals surrounding each perijove. We note that there are ~5 SAA-free orbits per day, such that it is possible to observe at least once per day, as has been done successfully previously. For the flybys we will observe as close as possible to the events within the limits of the SAA.These observations will be obtained using the STIS/FUV-MAMA instrument. Auroral images will be obtained using the F25SRF2

filter, in order to observe the H2 Lyman and Werner emission whilst removing contamination from the geocoronal Lyman-alpha. We will observe both northern and southern auroras; the priority will be observing whilst Juno is in the critical regions, rather than focusing on one hemisphere. Jupiter will be positioned using POS_ANGLE (i.e. RAD and ANG) such that only the auroral region and nearby disc will be in the 25x25" field of view, and thus <1/4 of the detector is filled with the planet. This limits the count rates to ~20,000 counts/s, well within the limit of 200,000 counts/s. Observations will be taken in ~3000 s time-tagged exposures, from which images integrated over smaller intervals (e.g. 10-100 s) will be extracted. This setup has been successfully used to observe Jupiter's auroras previously. In the event of STIS not being available, these observations will be obtained with the Solar Blind Channel of the Advanced Camera for Surveys, which in practice yields lower signal to noise than STIS owing to its red leak. In the past, Jupiter observations have been successfully obtained in both 2-gyro and 3-gyro mode. In 2-gyro mode we would remove any roll constraints and we would request our orbit during the interval when Jupiter is available.

Visit

Proposal 16675, Visit 01, completed Wed Jul 05 15:00:32 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: ORIENT 40D TO 90 D; BETWEEN 16-OCT-2021:00:00:00 AND 16-OCT-2021:15:00:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: This visit is designed to coincide with the Europa flyby on 16 Oct. If, once the HST orbit is known, there is no SAA-free interval during the BETWEEN window, this visit can be moved to the CML windows later in the day, which coincides with the PJ time. ORIENT would ideally be as close to 60 as possible.

Diagnostics

(Exposure 1 (Visit 01)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 01) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	JUPITER-AURORA-JUNOEM-1	STD=JUPITER	TYPE=POS_ANGLE,RAD=23.5,ANG=350,REF=NORTH		CML OF JUPITER FROM EARTH BETWEEN 115 220, NOT OCC OF JUPITER-AURORA-JUNOEM-1 BY JUPITER FROM EARTH	EARTH

Comments: This target is nominally for imaging Jupiter's northern auroras. Observation criteria are, in order of priority:

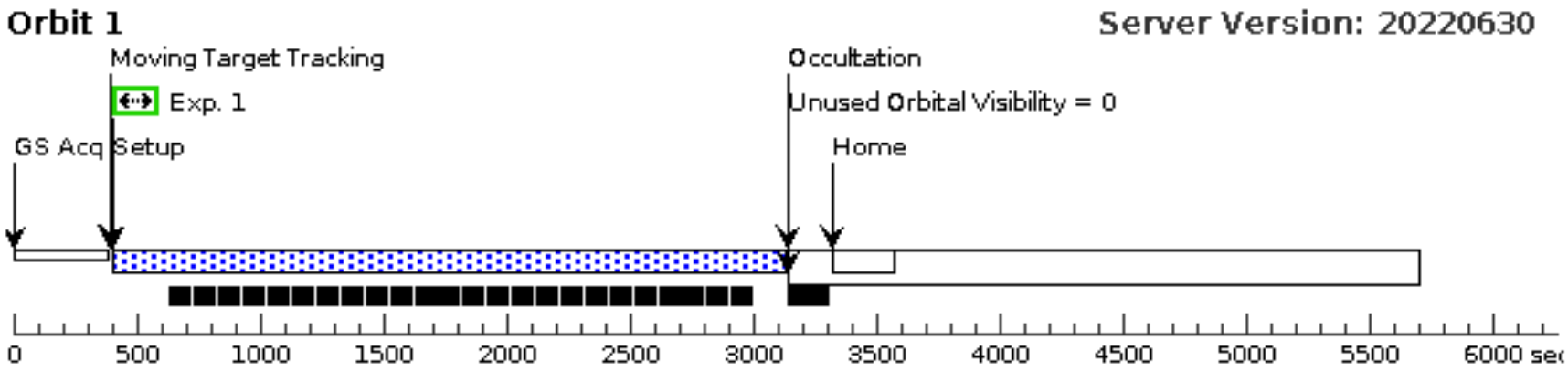
Time window
Avoidance of repeller wire and blotch region

Given the above constraints, it is desirable for ORIENT to be as low as possible within the limited range at this time of year. For this and all other imaging targets here, the values of RAD and ANG that will centre the auroral region in the relevant half of the detector, away from the repeller wire if possible, will depend in principle on ORIENT (although this is specified in the visit) and the CML range of the observations. We will work with the PC to update these once the orbit of HST is known. The values entered here are for the northern hemisphere. If the north is not visible during the SAA free orbits on a given day, we will observe the south or move the visit to a different time window. For the south, the values of ANG will be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) JUPITER-AURORA-JUNOEM-1	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2574 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 16675, Visit 02, completed Wed Jul 05 15:00:32 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: ORIENT 40D TO 90 D; BETWEEN 16-OCT-2021:00:00:00 AND 18-OCT-2021:00:00:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: This visit is to cover either the times near PJ or in the high latitude southern region following.

Diagnostics

(Exposure 1 (Visit 02)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 02) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

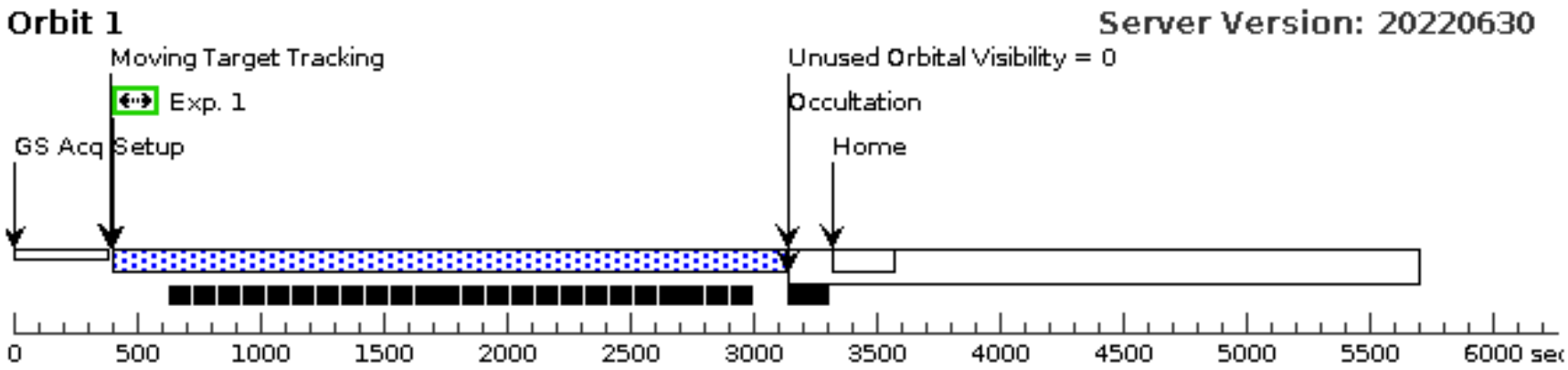
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)	JUPITER-AURORA-JUNOEM-2	STD=JUPITER	TYPE=POS_ANGLE,RAD=23.5,ANG=153,REF=NORTH		CML OF JUPITER FROM EARTH BETWEEN 310 100, NOT OCC OF JUPITER-AURORA-JUNOEM-2 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's northern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) JUPITER-AURORA-JUNOEM-2	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2574 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 03, completed Wed Jul 05 15:00:32 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; ORIENT 225D TO 275 D; BETWEEN 20-MAY-2022:15:15:00 AND 20-MAY-2022:16:15:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: Middle magnetosphere inbound

Diagnostics

(Exposure 1 (Visit 03)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 03) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

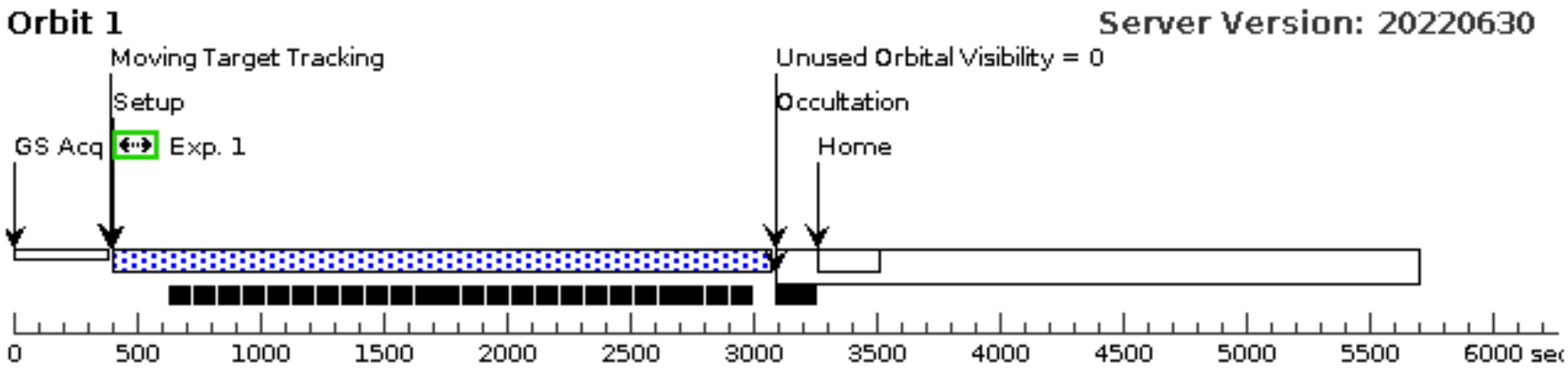
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(3)	JUPITER-AURORA-JUNOEM-3	STD=JUPITER	TYPE=POS_ANGLE,RAD=21.0,ANG=152,REF=NORTH		NOT CML OF JUPITER FROM EARTH BETWEEN 100 310, NOT OCC OF JUPITER-AURORA-JUNOEM-3 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's southern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(3) JUPITER-AURORA-JUNOEM-3	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2523 Secs (2523 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 04, completed Wed Jul 05 15:00:32 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; ORIENT 225D TO 275 D; BETWEEN 21-MAY-2022:11:55:00 AND 21-MAY-2022:12:55:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: This visit is to observe the southern auroras while Juno is inbound in the middle magnetosphere

Diagnostics

(Exposure 1 (Visit 04)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 04) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

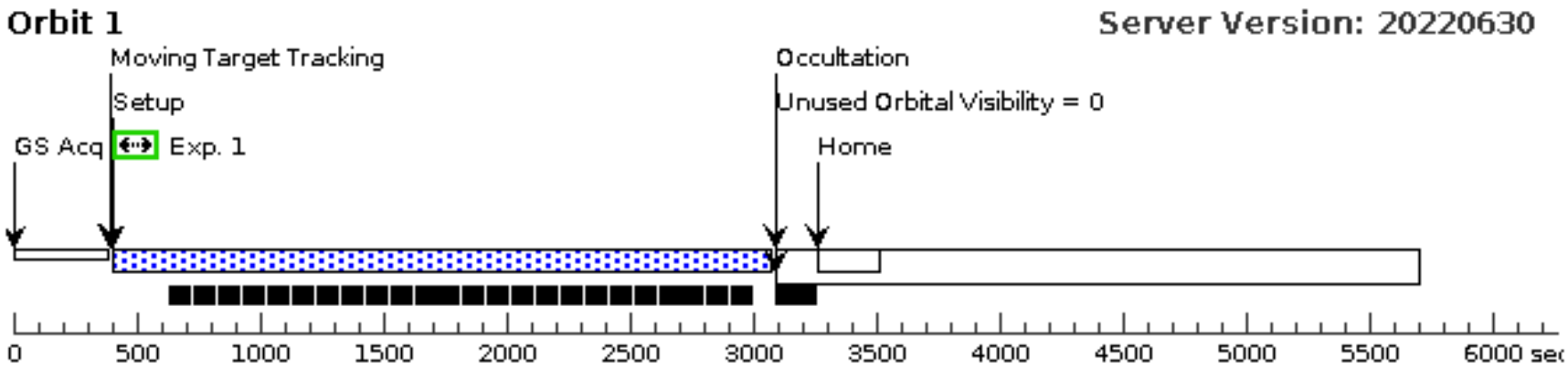
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(4)	JUPITER-AURORA-JUNOEM-4	STD=JUPITER	TYPE=POS_ANGLE,RAD=21.5,ANG=155,REF=NORTH		NOT CML OF JUPITER FROM EARTH BETWEEN 100 310, NOT OCC OF JUPITER-AURORA-JUNOEM-4 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's southern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(4) JUPITER-AURORA-JUNOEM-4	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2523 Secs (2523 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 05, completed Wed Jul 05 15:00:32 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; ORIENT 225D TO 275 D; BETWEEN 21-MAY-2022:15:05:00 AND 21-MAY-2022:16:05:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: Middle magnetosphere inbound

Diagnostics

(Exposure 1 (Visit 05)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 05) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

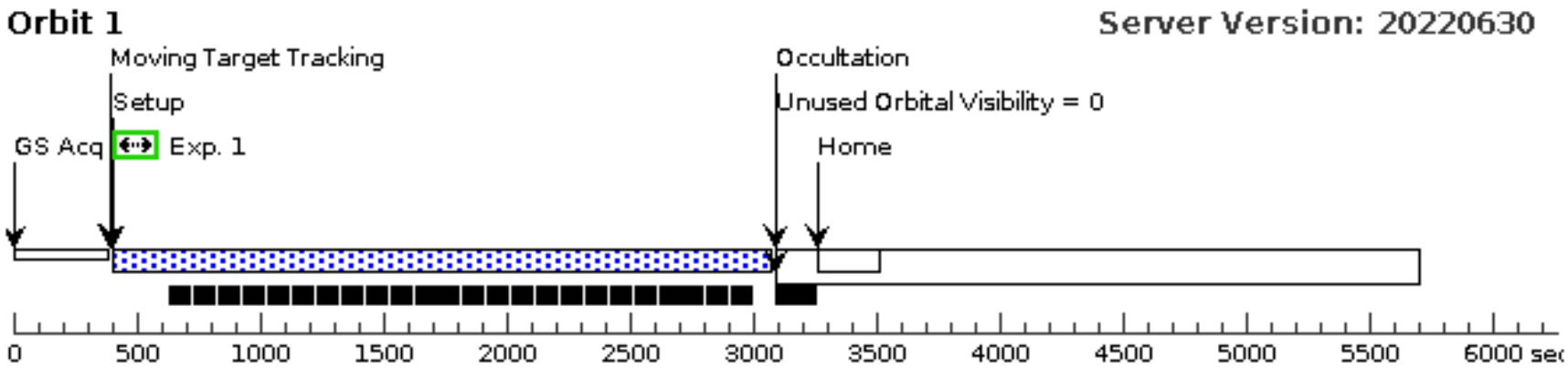
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(5)	JUPITER-AURORA-JUNOEM-5	STD=JUPITER	TYPE=POS_ANGLE,RAD=21.5,ANG=337,REF=NORTH		CML OF JUPITER FROM EARTH BETWEEN 120 220, NOT OCC OF JUPITER-AURORA-JUNOEM-5 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's northern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(5) JUPITER-AURORA-JUNOEM-5	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2523 Secs (2523 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 16675, Visit 06, completed Wed Jul 05 15:00:32 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; ORIENT 225D TO 275 D; BETWEEN 22-MAY-2022:10:10:00 AND 22-MAY-2022:11:10:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: High latitude south

Diagnostics

(Exposure 1 (Visit 06)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 06) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

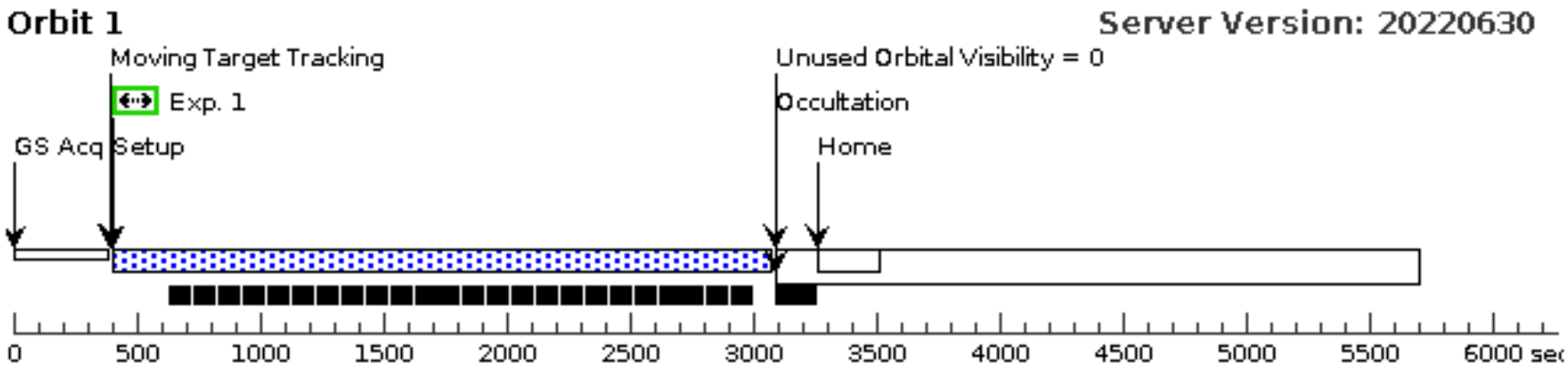
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(6)	JUPITER-AURORA-JUNOEM-6	STD=JUPITER	TYPE=POS_ANGLE,RAD=21,ANG=345,REF=NORTH		CML OF JUPITER FROM EARTH BETWEEN 110 220, NOT OCC OF JUPITER-AURORA-JUNOEM-6 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's northern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(6) JUPITER-AURORA-JUNOEM-6	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2523 Secs (2523 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 07, completed Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; ORIENT 225D TO 275 D; BETWEEN 22-MAY-2022:11:45:00 AND 22-MAY-2022:12:45:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: Middle magnetosphere inbound. ORIENT would ideally be as close to 250 as possible.

Diagnostics

(Exposure 1 (Visit 07)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 07) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

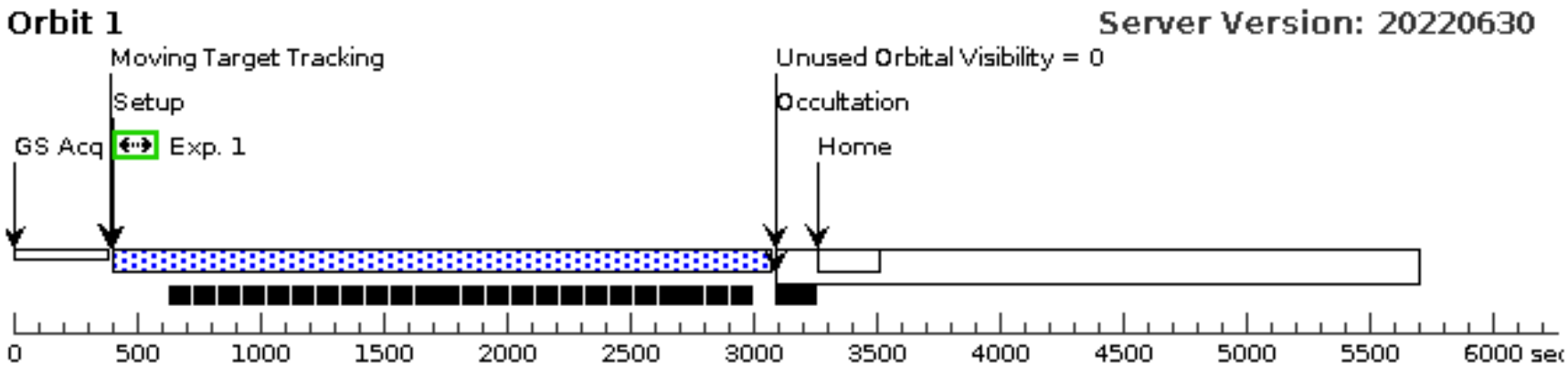
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(7)	JUPITER-AURORA-JUNOEM-7	STD=JUPITER	TYPE=POS_ANGLE,RAD=20,ANG=327,REF=NORTH		CML OF JUPITER FROM EARTH BETWEEN 120 220, NOT OCC OF JUPITER-AURORA-JUNOEM-7 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's northern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(7) JUPITER-AURORA-JUNOEM-7	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2474 Secs (2523 Secs) *[==>2523.0 Secs]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 08, completed Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; ORIENT 225D TO 275 D; BETWEEN 03-JUL-2022:16:25:00 AND 03-JUL-2022:17:30:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: Middle magnetosphere inbound

Diagnostics

(Exposure 1 (Visit 08)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 08) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

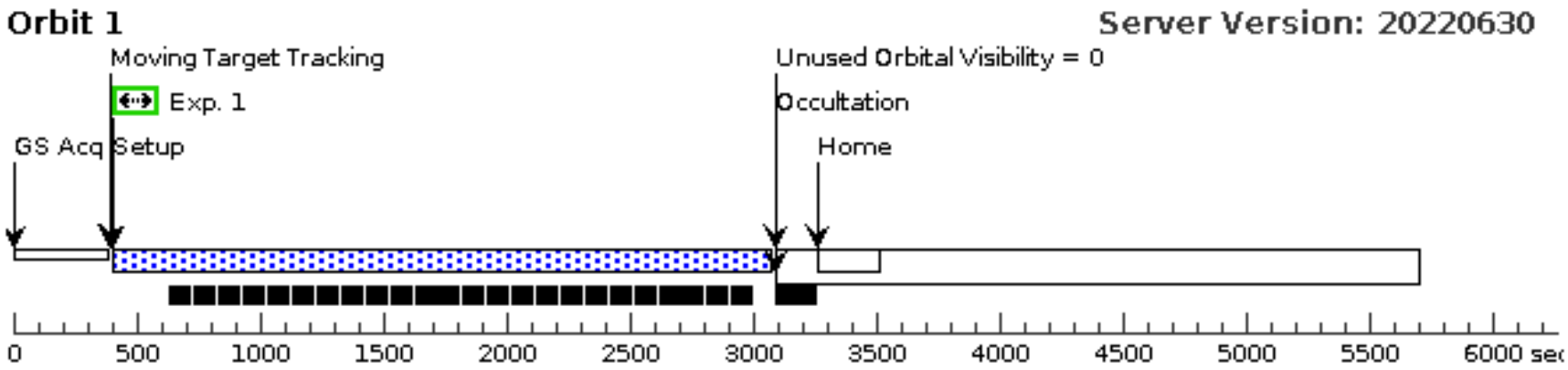
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(8)	JUPITER-AURORA-JUNOEM-8	STD=JUPITER	TYPE=POS_ANGLE,RAD=21,ANG=326,REF=NORTH		CML OF JUPITER FROM EARTH BETWEEN 120 220, NOT OCC OF JUPITER-AURORA-JUNOEM-8 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's northern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(8) JUPITER-AURORA-JUNOEM-8	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2523 Secs) *[==>2523.0 Secs]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 09, completed Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; ORIENT 225D TO 275 D; BETWEEN 04-JUL-2022:17:50:00 AND 04-JUL-2022:18:50:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: Middle magnetosphere inbound

Diagnostics

(Exposure 1 (Visit 09)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 09) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

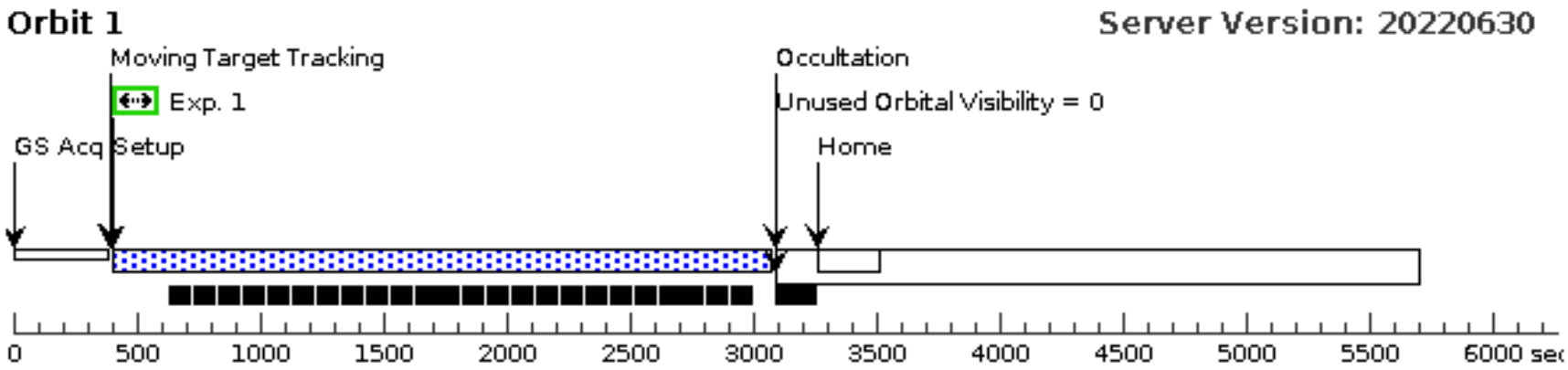
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(9)	JUPITER-AURORA-JUNOEM-9	STD=JUPITER	TYPE=POS_ANGLE,RAD=22,ANG=155,REF=NORTH		NOT CML OF JUPITER FROM EARTH BETWEEN 100 310, NOT OCC OF JUPITER-AURORA-JUNOEM-9 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's southern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(9) JUPITER-AURORA-JUNOEM-9	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2523 Secs) *[==>2523.0 Secs]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 10, completed Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; ORIENT 225D TO 275 D; BETWEEN 04-JUL-2022:21:00:00 AND 04-JUL-2022:22:30:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: Middle magnetosphere inbound

Diagnostics

(Exposure 1 (Visit 10)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 10) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

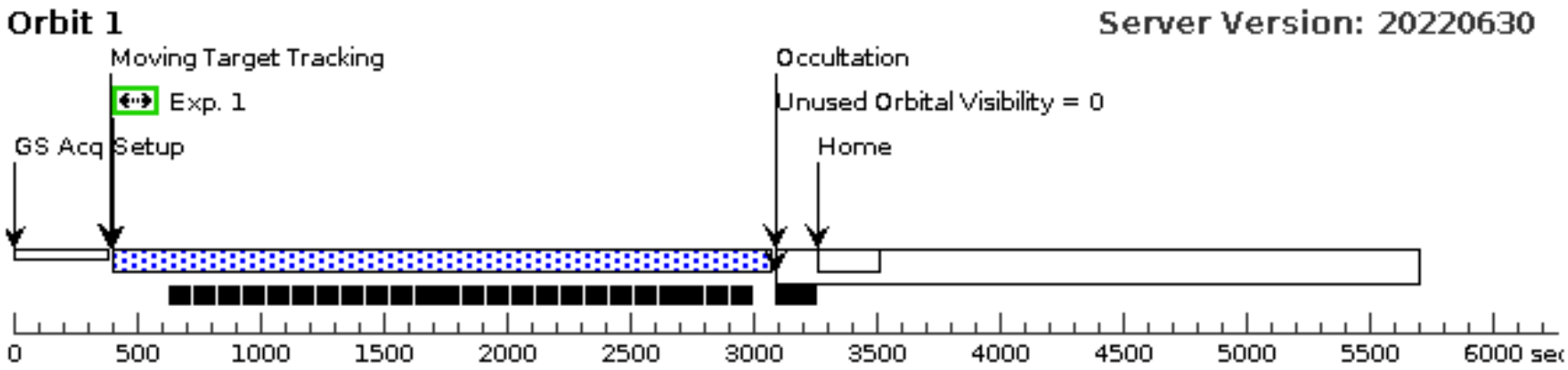
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(10)	JUPITER-AURORA-JUNOEM-10	STD=JUPITER	TYPE=POS_ANGLE,RAD=22,ANG=338,REF=NORTH		CML OF JUPITER FROM EARTH BETWEEN 120 220, NOT OCC OF JUPITER-AURORA-JUNOEM-10 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's northern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(10) JUPITER-AURORA-JUNOEM-10	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2523 Secs) *[==>2523.0 Secs]*	 ***[1]***

Orbit Structure



Visit

Proposal 16675, Visit 11, completed Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; ORIENT 225D TO 275 D; BETWEEN 05-JUL-2022:12:50:00 AND 05-JUL-2022:13:50:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: This visit is to coincide with the Io flyby (south)

Diagnostics

(Exposure 1 (Visit 11)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 11) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

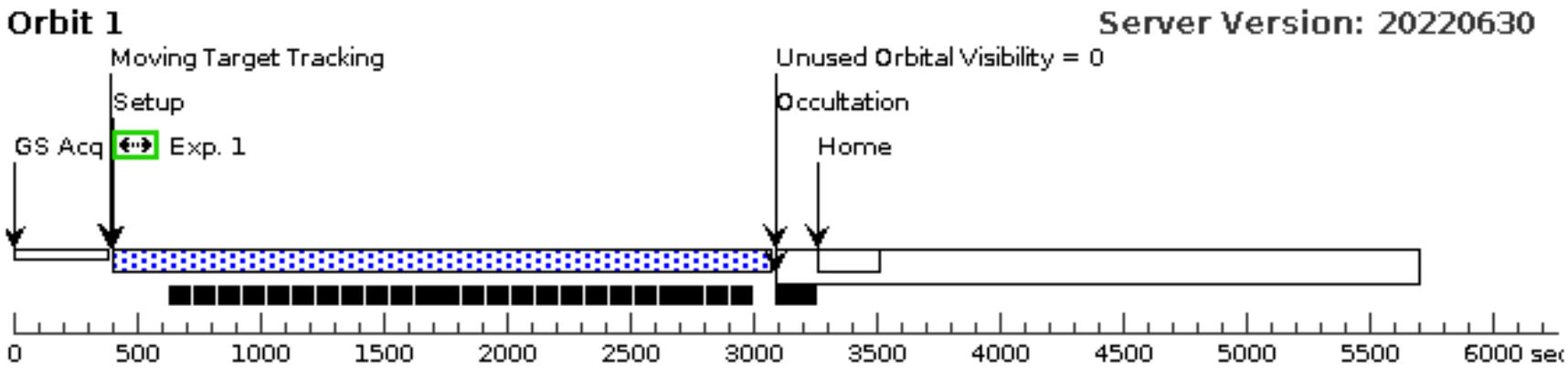
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(11)	JUPITER-AURORA-JUNOEM-11	STD=JUPITER	TYPE=POS_ANGLE,RAD=22,ANG=155,REF=NORTH		NOT CML OF JUPITER FROM EARTH BETWEEN 100 310, NOT OCC OF JUPITER-AURORA-JUNOEM-11 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's southern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the north, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 120-220 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(11) JUPITER-AURORA-JUNOEM-11	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2523 Secs) *[==>2523.0 Secs]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 12, implementation Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; BETWEEN 30-JUL-2023:08:30:00 AND 30-JUL-2023:09:30:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: This visit is to coincide with the Io flyby (north)

Diagnostics

(Exposure 1 (Visit 12)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 12) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

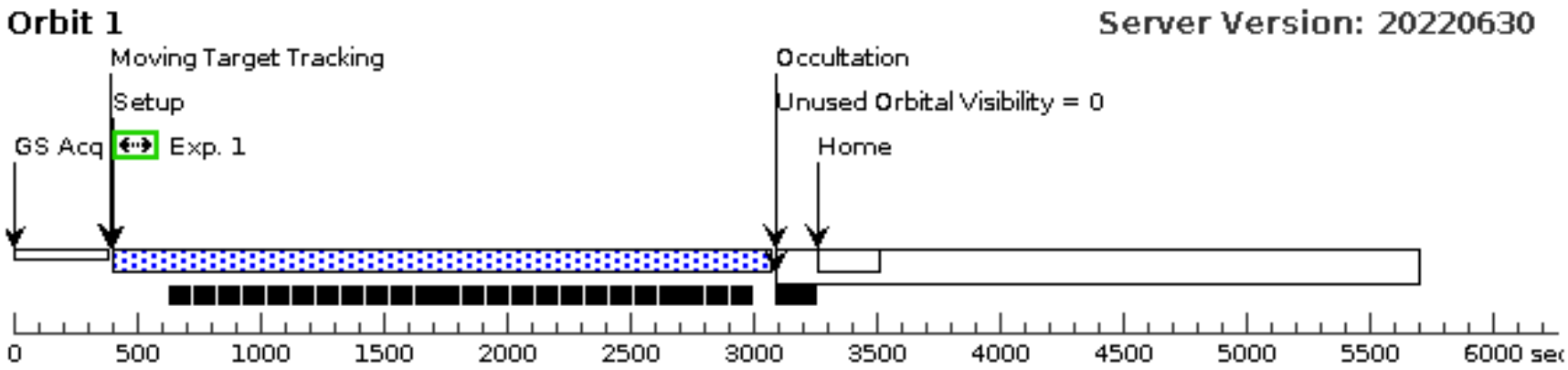
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(12)	JUPITER-AURORA-JUNOEM-12	STD=JUPITER	TYPE=POS_ANGLE,RAD=23,ANG=335,REF=NORTH		CML OF JUPITER FROM EARTH BETWEEN 120 220	EARTH

Comments: This target is for imaging Jupiter's northern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(12) JUPITER-AURORA-JUNOEM-12	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2523 Secs) *[==>2523.0 Secs]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 13, completed Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; ORIENT 225D TO 275 D; BETWEEN 16-AUG-2022:22:30:00 AND 17-AUG-2022:00:00:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: Middle magnetosphere inbound

Diagnostics

(Exposure 1 (Visit 13)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 13) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

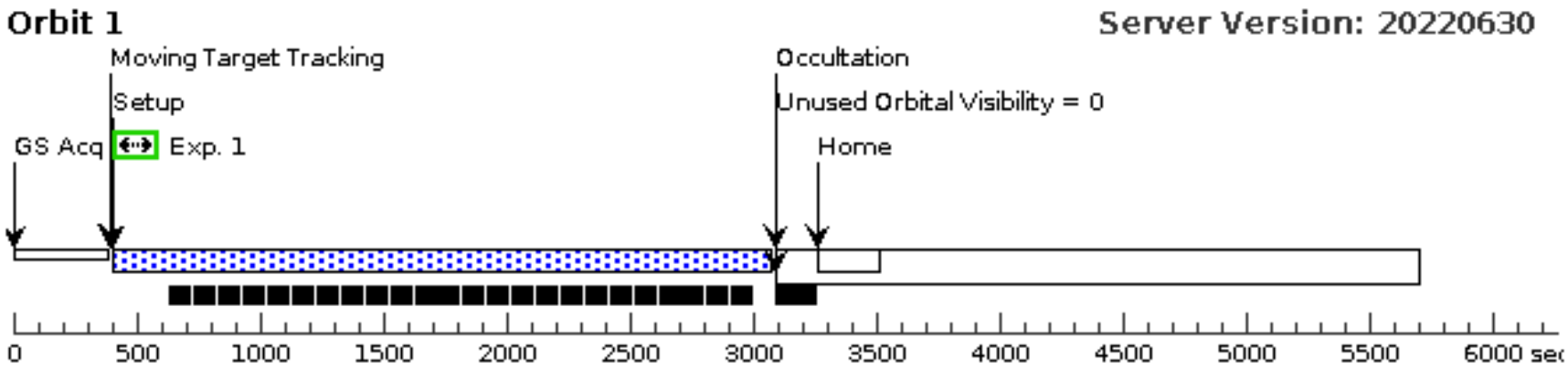
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(13)	JUPITER-AURORA-JUNOEM-13	STD=JUPITER	TYPE=POS_ANGLE,RAD=23,ANG=329,REF=NORTH		CML OF JUPITER FROM EARTH BETWEEN 120 220	EARTH

Comments: This target is for imaging Jupiter's northern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(13) JUPITER-AURORA-JUNOEM-13	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2523 Secs) *[==>2523.0 Secs]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 14, completed Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; ORIENT 225D TO 275 D; BETWEEN 17-AUG-2022:14:20:00 AND 17-AUG-2022:15:30:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: This visit is to cover either the times near PJ or in the high latitude southern region following.

Diagnostics

(Exposure 1 (Visit 14)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 14) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

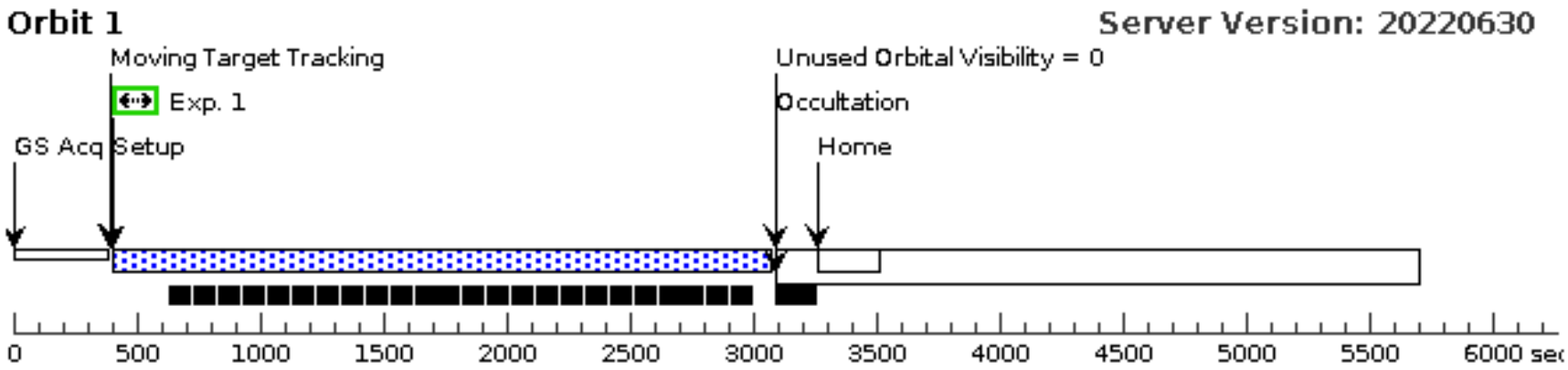
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(14)	JUPITER-AURORA-JUNOEM-14	STD=JUPITER	TYPE=POS_ANGLE,RAD=23,ANG=155,REF=NORTH		NOT CML OF JUPITER FROM EARTH BETWEEN 100 310	EARTH

Comments: This target is for imaging Jupiter's northern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(14) JUPITER-AURORA-JUNOEM-14	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2523 Secs) *[==>2523.0 Secs]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 15, completed Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 40%; ORIENT 225D TO 275 D; BETWEEN 17-AUG-2022:22:10:00 AND 17-AUG-2022:23:10:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: High latitude south

Diagnostics

(Exposure 1 (Visit 15)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 15) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

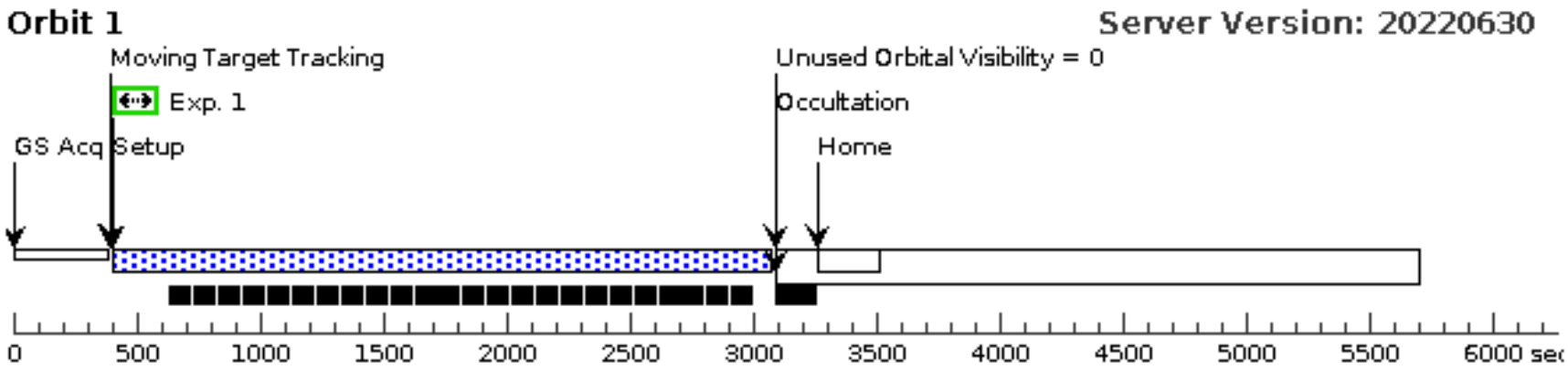
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(15)	JUPITER-AURORA-JUNOEM-15	STD=JUPITER	TYPE=POS_ANGLE,RAD=23,ANG=150,REF=NORTH		NOT CML OF JUPITER FROM EARTH BETWEEN 100 310	EARTH

Comments: This target is for imaging Jupiter's southern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the north, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 120-220 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(15) JUPITER-AURORA-JUNOEM-15	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2523 Secs) *[==>2523.0 Secs]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 16, completed Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 80%; ORIENT 0D TO 70 D; BETWEEN 30-SEP-2022:23:30:00 AND 01-OCT-2022:00:30:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: Middle magnetosphere inbound. ORIENT as close to 60 as possible.

Diagnostics

(Exposure 1 (Visit 16)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 16) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

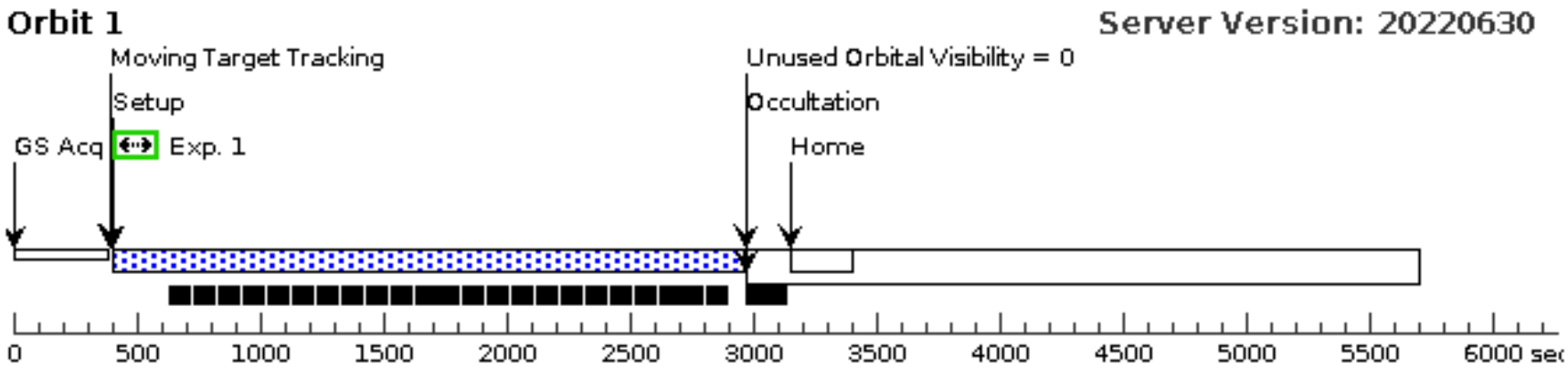
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(16)	JUPITER-AURORA-JUNOEM-16	STD=JUPITER	TYPE=POS_ANGLE,RAD=25,ANG=333,REF=NORTH		CML OF JUPITER FROM EARTH BETWEEN 120 220, NOT OCC OF JUPITER-AURORA-JUNOEM-16 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's northern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(16) JUPITER-AURORA-JUNOEM-16	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2405 Secs) *[==>2405.0 Secs]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 17, completed Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 80%; ORIENT 0D TO 70 D; BETWEEN 01-OCT-2022:18:30:00 AND 01-OCT-2022:19:30:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: This is to coincide with the close Europa flyby on 29 Sept

Diagnostics

(Exposure 1 (Visit 17)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 17) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

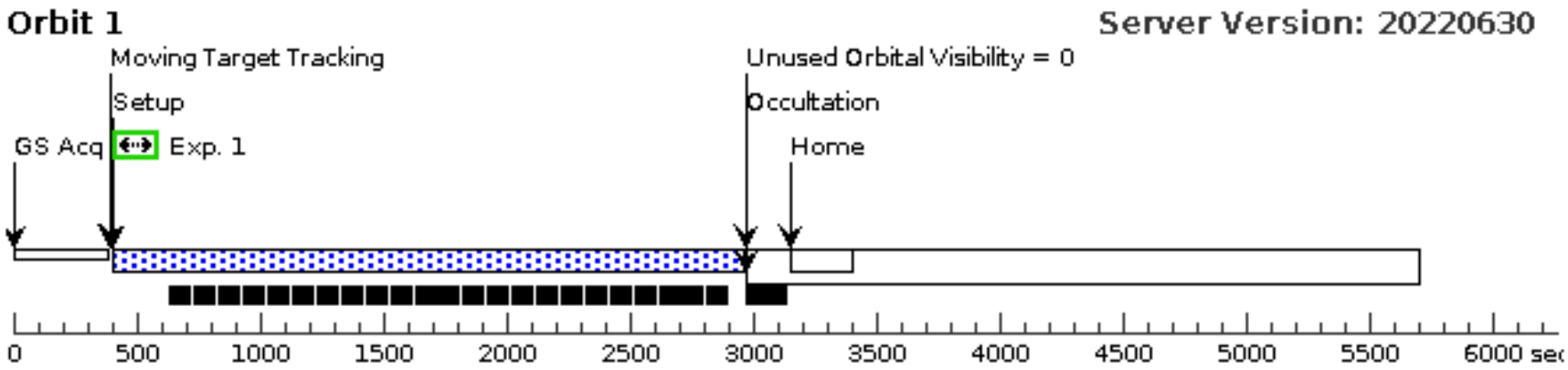
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(17)	JUPITER-AURORA-JUNOEM-17	STD=JUPITER	TYPE=POS_ANGLE,RAD=25,ANG=342,REF=NORTH		CML OF JUPITER FROM EARTH BETWEEN 120 220, NOT OCC OF JUPITER-AURORA-JUNOEM-17 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's northern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(17) JUPITER-AURORA-JUNOEM-17	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2405 Secs) *[==>2405.0 Secs]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Visit 18, completed Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: SCHED 80%; ORIENT 0D TO 70 D; BETWEEN 28-SEP-2022:20:40:00 AND 28-SEP-2022:21:40:00; VISIBILITY INTERVAL NO GYRO BIAS UPDATE ON MOVING TARGET

Comments: This visit is to cover either the times near PJ or in the high latitude southern region following.

Diagnostics

(Exposure 1 (Visit 18)) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Visit 18) Informational (Form): The Visit Planner and Spike may produce different schedulability results.

Solar System Targets

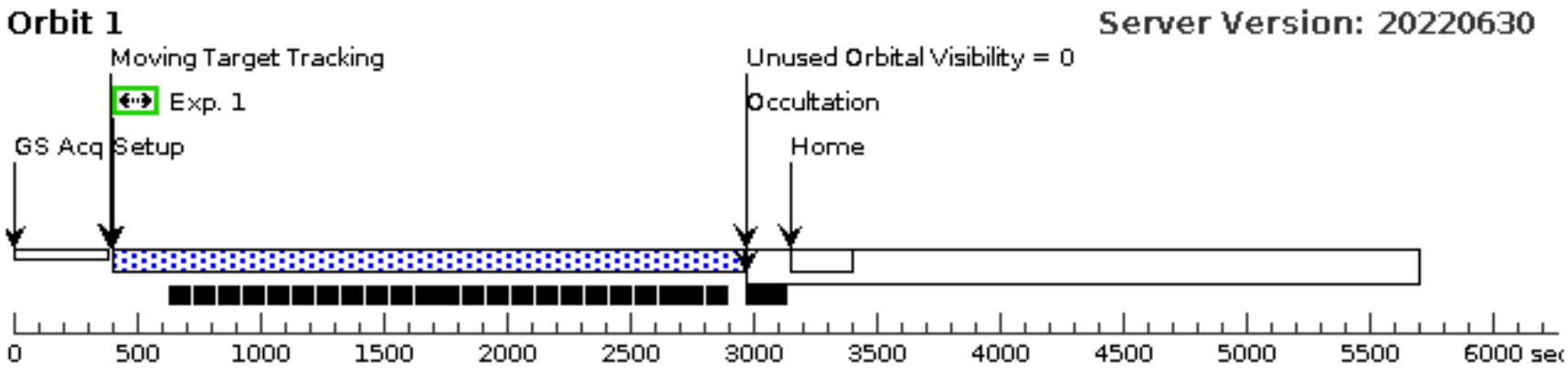
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(18)	JUPITER-AURORA-JUNOEM-18	STD=JUPITER	TYPE=POS_ANGLE,RAD=25,ANG=339,REF=NORTH		CML OF JUPITER FROM EARTH BETWEEN 120 220, NOT OCC OF JUPITER-AURORA-JUNOEM-18 BY JUPITER FROM EARTH	EARTH

Comments: This target is for imaging Jupiter's northern auroras. The values of RAD and ANG are dependent on ORIENT and the date and time of the observations. We will work with our PC to update these once the orbit of HST is known. For the south, the values of ANG would be essentially these plus 180 degrees (with minor adjustements to avoid the repeller wire), and the CML range would be 310-100 deg.
Description=PLANET JUPITER
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(18) JUPITER-AURORA-JUNOEM-18	STIS/FUV-MAMA, TIME-TAG, F25SRF2	MIRROR	BUFFER-TIME=99			2574 Secs (2405 Secs) *[==>2405.0 Secs]*	*[1]*

Orbit Structure



Visit

Proposal 16675, Dark (1A), completed Wed Jul 05 15:00:33 GMT 2023

Diagnostic Status: Error

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: (none)

Comments: This visit is being used to turn on the MAMA for visit 1.

Diagnostics

(Dark (1A.001)) Error (Form): DEF is not a valid selection.

(Dark (1A.001)) Error (Form): Illegal selection: DEF.

(Dark (1A.001)) Error (Form): Target DARK is no longer a valid selection

(Dark (1A.001)) Error (Form): This attribute is not allowed to have this value: Aperture = DEF
It is an Available option and cannot normally be used in a GO proposal.

(Dark (1A.001)) Error (Form): This attribute is not allowed to have this value: Calibration_Target = DARK
It is a Restricted option and can only be used in an engineering proposal.

(Dark (1A.001)) Error (Form): This attribute is not allowed to have this value: Spectral_Element = DEF
It is an Available option and cannot normally be used in a GO proposal.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Dark	DARK	STIS/FUV-MAMA, TIME-TAG, DEF	DEF	BUFFER-TIME=650			1300 Secs (1300 Secs) *[==>]*	*[1]*

Orbit Structure