15848 - Confirming the Europa torus

Cycle: 27, 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	(3) EUROPA-TORUS-C (5) EUROPA-TORUS-E	COS/FUV	2	25-Aug-2021 15:00:29.0	yes
02	(2) EUROPA-TORUS-B (4) EUROPA-TORUS-D	COS/FUV	2	25-Aug-2021 15:00:30.0	yes
03	(1) EUROPA-TORUS-A (3) EUROPA-TORUS-C	COS/FUV	2	25-Aug-2021 15:00:30.0	yes
53	(3) EUROPA-TORUS-C	COS/FUV	1	25-Aug-2021 15:00:31.0	yes
55	(1) EUROPA-TORUS-A	COS/FUV	1	25-Aug-2021 15:00:31.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
04	(3) EUROPA-TORUS-C (5) EUROPA-TORUS-E	COS/FUV	2	25-Aug-2021 15:00:32.0	yes
54	(3) EUROPA-TORUS-C (5) EUROPA-TORUS-E	COS/FUV	2	25-Aug-2021 15:00:32.0	yes

12 Total Orbits Used

ABSTRACT

The proposed observations seek to directly measure for the first time the density of neutrals and plasma particles at the orbit of Jupiter's icy moon Europa. The existence of a neutral torus at Europa is only indirectly inferred by two independent observations. Yet, a Europa torus has never been confirmed observationally and the composition a torus would have is uncertain. UV spectra of the Europa environment taken by the Cassini spacecraft are much debated and lack the sensitivity to be conclusive. The high sensitivity and spectral range of COS uniquely enable us to measure the likely dominant neutral species near Europa's orbit, hydrogen and oxygen, and simultaneously three main Jovian ion species. If the proposed COS observations finally prove the existence of a Europa torus and constrain its constituent abundances, then they will also provide crucial insights into two poorly understood aspects of the system: (1) The mass loss from Europa's atmosphere, possibly including the role of plume activity, and (2), the balance between sustaining a neutral torus vs. generating a plasma torus in a moon orbit. If no emissions are detected at Europa's orbit, then the previous observations related to a Europa torus need to be revised and reinterpreted.

OBSERVING DESCRIPTION

We observe the plasma and gas torus in Europa's orbit around Jupiter with 4 visits of 2 orbits each. The 4 visits should be executed as close in time as possible to avoid changes due to the time-variabilities in the Jupiter system.

Proposal 15848 - Visit 01 - Confirming the Europa torus

Visit	**Proposal 15848, Visit 01, completed** Wed Aug 25 19:00:33 GMT 2021 **Diagnostic Status: Warning** Scientific Instruments: COS/FUV Special Requirements: SCHED 50%; BETWEEN 26-AUG-2020:12:50:00 AND 26-AUG-2020:13:50:00; SEQ 01,02,03,04 WITHIN 19 H *Comments: First visit in a series of 4 visits, to be carried out as close in time as possible*
Diagnostics	(Visit 01) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS. (Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Exposure 1 (Visit 01)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details. (Exposure 2 (Visit 01)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

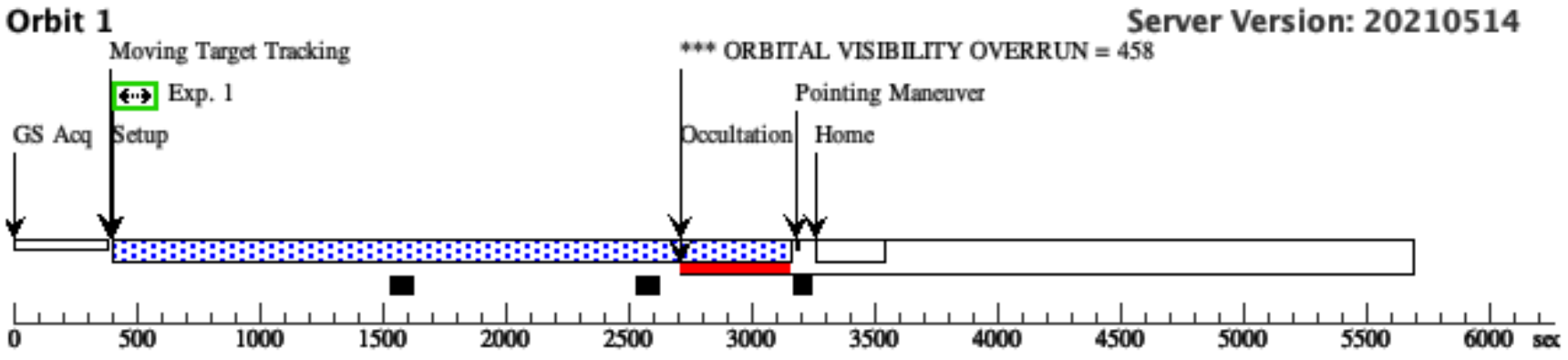
Solar System Targets

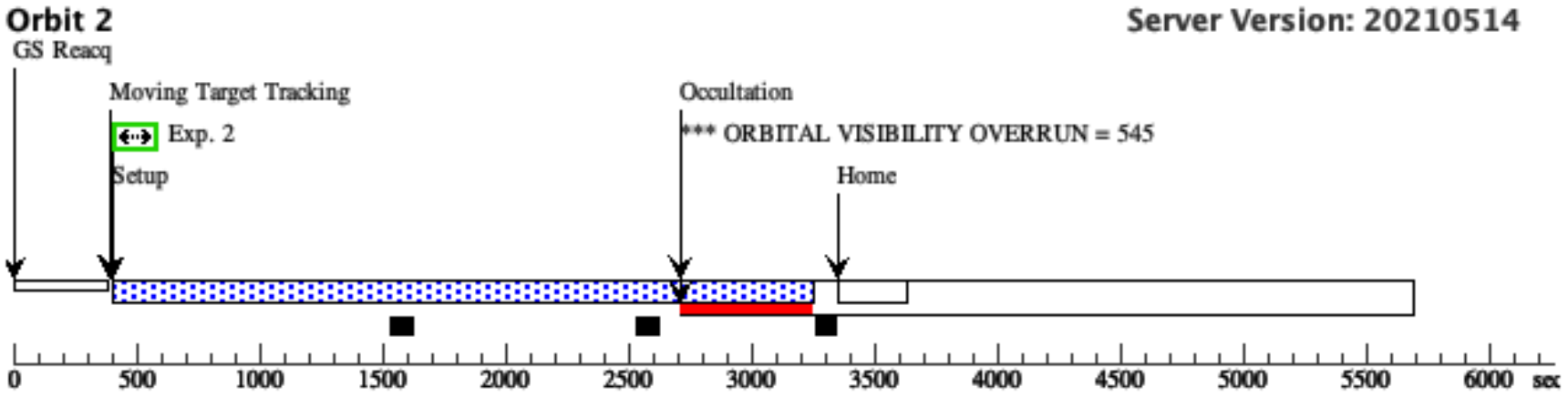
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(3)	EUROPA-TORUS-C	STD=JUPITER	TYPE=TORUS,LONG=90,LAT=0,RAD=6.65e5,POLE_LONG=0,POLE_LAT=90		NOT OCC OF EUROPA-TORUS-C BY JUPITER FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY IO FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY EUROPA FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY GANYMEDE FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY CALLISTO FROM EARTH, SEP OF EUROPA-TORUS-C IO FROM EARTH GT 10", SEP OF EUROPA-TORUS-C EUROPA FROM EARTH GT 10", SEP OF EUROPA-TORUS-C GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-TORUS-C CALLISTO FROM EARTH GT 10", OLG OF EUROPA BETWEEN 250 30	EARTH
Comments: This target aims at the expected peak location of the torus at 9.3 Jovian radii, slighly inward of Europa's orbit (which is at 9.38 R_J) *Description=Plasma and gas torus near Europa's orbit* *Extended=YES*						
(5)	EUROPA-TORUS-E	STD=JUPITER	TYPE=TORUS,LONG=90,LAT=0,RAD=8.94e5,POLE_LONG=0,POLE_LAT=90		NOT OCC OF EUROPA-TORUS-E BY JUPITER FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-E BY IO FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-E BY EUROPA FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-E BY GANYMEDE FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-E BY CALLISTO FROM EARTH, SEP OF EUROPA-TORUS-E IO FROM EARTH GT 10", SEP OF EUROPA-TORUS-E EUROPA FROM EARTH GT 10", SEP OF EUROPA-TORUS-E GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-TORUS-E CALLISTO FROM EARTH GT 10"	EARTH
Comments: This target is for probing the equatorial region outwards from the Europa torus at radial distance 12.5 Jovian radii, used for background *Description=Plasma and gas torus near Europa's orbit* *Extended=YES*						

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.sp.1366889)	(5) EUROPA-TORUS-E	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=1000; SEGMENT=BOTH			2700 Secs (2611 Secs) *[==>2611.0 Secs]*	*[1]*
2	(COS.sp.1366889)	(3) EUROPA-TORUS-C	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=1000; SEGMENT=BOTH			2700 Secs (2699 Secs) *[==>2699.0 Secs]*	*[2]*

Orbit Structure





Proposal 15848 - Visit 02 - Confirming the Europa torus

Visit	**Proposal 15848, Visit 02, completed** Wed Aug 25 19:00:33 GMT 2021 **Diagnostic Status: Warning** Scientific Instruments: COS/FUV Special Requirements: SCHED 50%; BETWEEN 26-AUG-2020:17:40:00 AND 26-AUG-2020:18:40:00 *Comments: First visit in a series of 4 visits, to be carried out as close in time as possible*
Diagnostics	(Visit 02) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS. (Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Exposure 1 (Visit 02)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details. (Exposure 2 (Visit 02)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

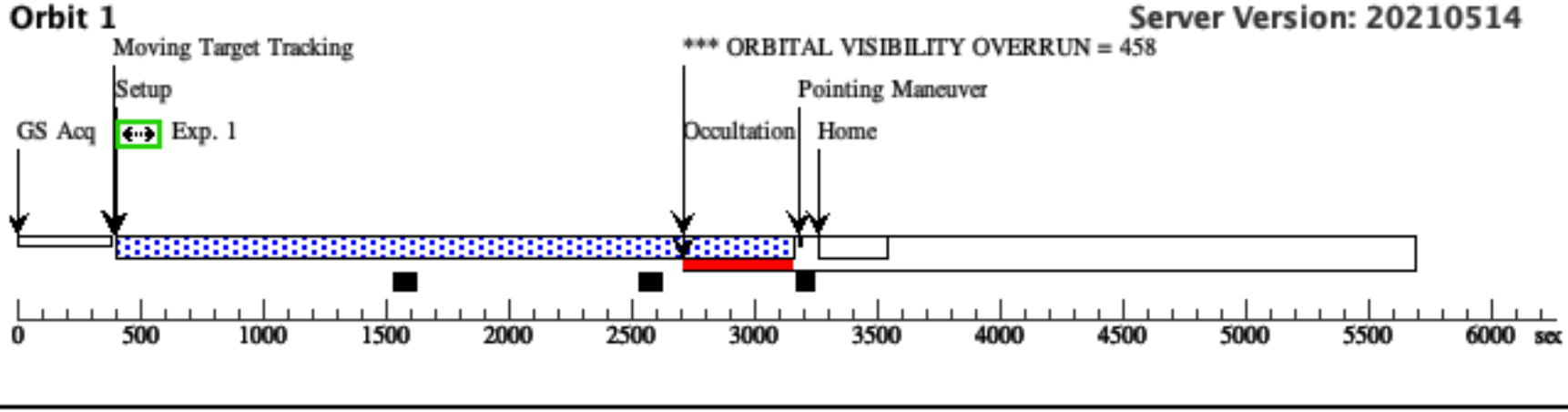
Solar System Targets

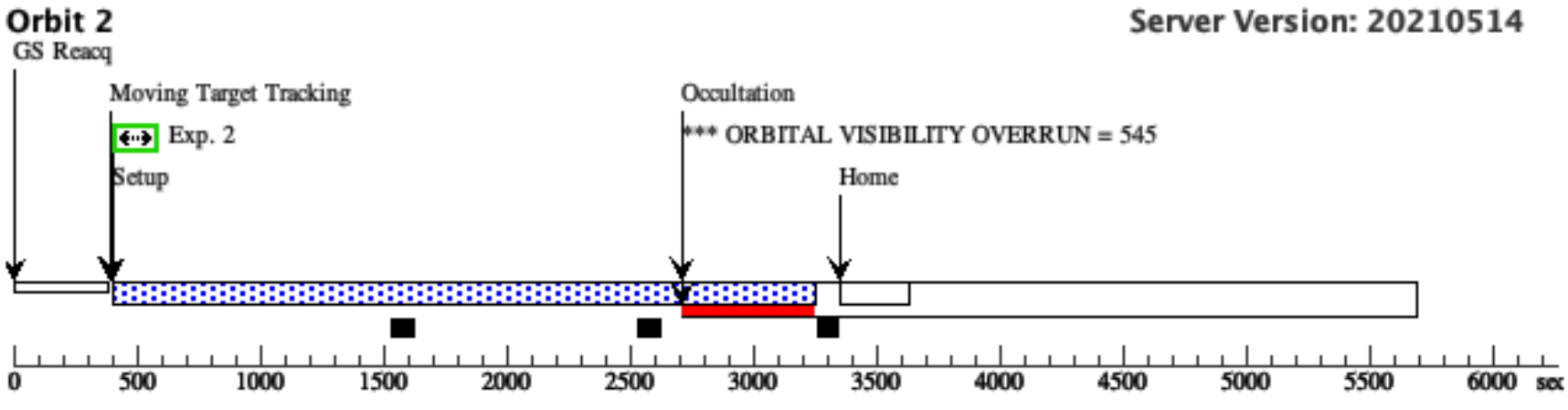
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)	EUROPA-TORUS-B	STD=JUPITER	TYPE=TORUS,LONG=90,LAT=0,RAD=6.29e5,POLE_LONG=0,POLE_LAT=90		NOT OCC OF EUROPA-TORUS-B BY JUPITER FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-B BY IO FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-B BY EUROPA FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-B BY GANYMEDE FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-B BY CALLISTO FROM EARTH, SEP OF EUROPA-TORUS-B IO FROM EARTH GT 10", SEP OF EUROPA-TORUS-B EUROPA FROM EARTH GT 10", SEP OF EUROPA-TORUS-B GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-TORUS-B CALLISTO FROM EARTH GT 10"	EARTH
Comments: This target is for probing the torus region at radius 8.8 Jovian radii, inward of the peak Europa torus. *Description=Plasma and gas torus near Europa's orbit* *Extended=YES*						
(4)	EUROPA-TORUS-D	STD=JUPITER	TYPE=TORUS,LONG=90,LAT=0,RAD=7.01e5,POLE_LONG=0,POLE_LAT=90		NOT OCC OF EUROPA-TORUS-D BY JUPITER FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-D BY IO FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-D BY EUROPA FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-D BY GANYMEDE FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-D BY CALLISTO FROM EARTH, SEP OF EUROPA-TORUS-D IO FROM EARTH GT 10", SEP OF EUROPA-TORUS-D EUROPA FROM EARTH GT 10", SEP OF EUROPA-TORUS-D GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-TORUS-D CALLISTO FROM EARTH GT 10"	EARTH
Comments: This target is for probing the torus region at radius 9.8 Jovian radii, outward of the peak Europa torus *Description=Plasma and gas torus near Europa's orbit* *Extended=YES*						

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.sp.1366889)	(2) EUROPA-TORUS-B	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=1000; SEGMENT=BOTH			2700 Secs (2611 Secs) *[==>2611.0 Secs]*	***[1]***
2	(COS.sp.1366889)	(4) EUROPA-TORUS-D	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=1000; SEGMENT=BOTH			2700 Secs (2699 Secs) *[==>2699.0 Secs]*	***[2]***

Orbit Structure





Proposal 15848 - Visit 03 - Confirming the Europa torus

Visit	**Proposal 15848, Visit 03, failed** Wed Aug 25 19:00:33 GMT 2021 **Diagnostic Status: Warning** Scientific Instruments: COS/FUV Special Requirements: SCHED 50%; BETWEEN 26-AUG-2020:22:20:00 AND 26-AUG-2020:23:20:00 *Comments: First visit in a series of 4 visits, to be carried out as close in time as possible*
Diagnostics	(Visit 03) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS. (Visit 03) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Visit 03) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Exposure 1 (Visit 03)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details. (Exposure 2 (Visit 03)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

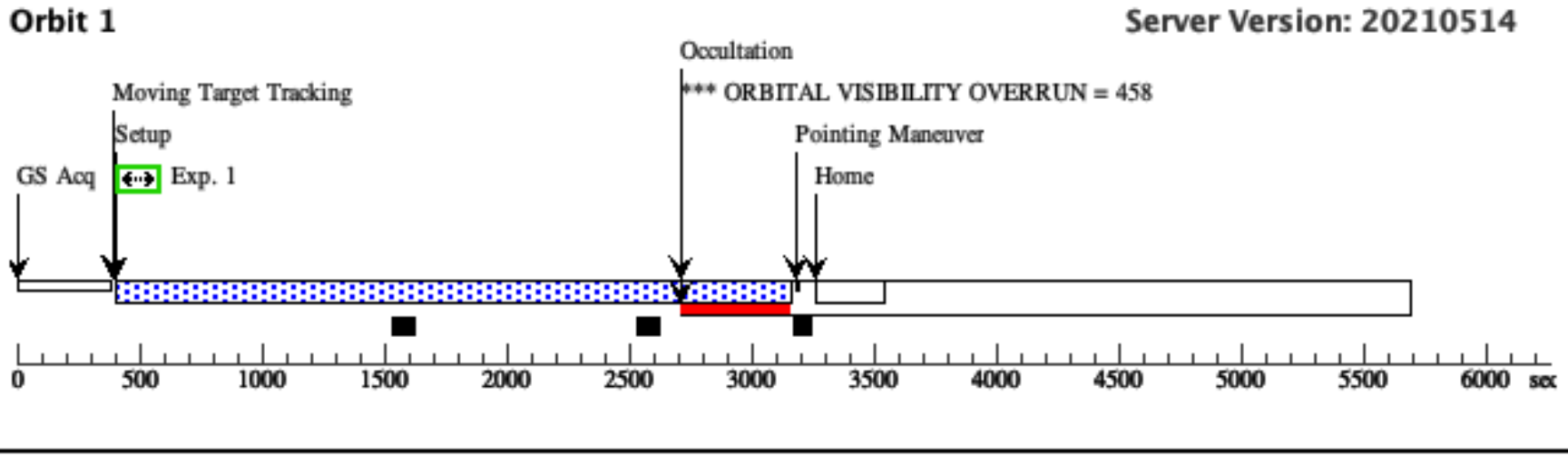
Solar System Targets

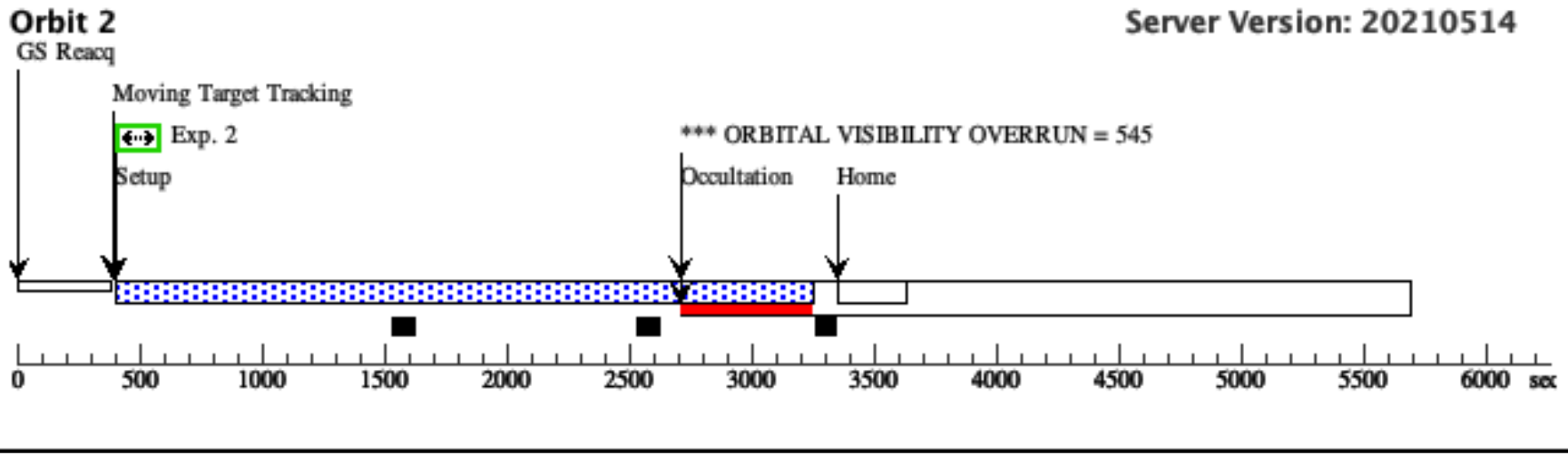
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	EUROPA-TORUS-A	STD=JUPITER	TYPE=TORUS,LONG=90,LAT=0,RAD=5.72e5,POLE_LONG=0,POLE_LAT=90		NOT OCC OF EUROPA-TORUS-A BY JUPITER FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-A BY IO FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-A BY EUROPA FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-A BY GANYMEDE FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-A BY CALLISTO FROM EARTH, SEP OF EUROPA-TORUS-A IO FROM EARTH GT 10", SEP OF EUROPA-TORUS-A EUROPA FROM EARTH GT 10", SEP OF EUROPA-TORUS-A GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-TORUS-A CALLISTO FROM EARTH GT 10"	EARTH
Comments: This target is for the a torus with radius 8.0 Jovian radii, for probing between Io torus and Europa torus *Description=Plasma and gas torus near Europa's orbit* *Extended=YES*						
(3)	EUROPA-TORUS-C	STD=JUPITER	TYPE=TORUS,LONG=90,LAT=0,RAD=6.65e5,POLE_LONG=0,POLE_LAT=90		NOT OCC OF EUROPA-TORUS-C BY JUPITER FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY IO FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY EUROPA FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY GANYMEDE FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY CALLISTO FROM EARTH, SEP OF EUROPA-TORUS-C IO FROM EARTH GT 10", SEP OF EUROPA-TORUS-C EUROPA FROM EARTH GT 10", SEP OF EUROPA-TORUS-C GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-TORUS-C CALLISTO FROM EARTH GT 10", OLG OF EUROPA BETWEEN 250 30	EARTH
Comments: This target aims at the expected peak location of the torus at 9.3 Jovian radii, slighly inward of Europa's orbit (which is at 9.38 R_J) *Description=Plasma and gas torus near Europa's orbit* *Extended=YES*						

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.sp.1366889)	(3) EUROPA-TORUS-C	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=1000; SEGMENT=BOTH			2700 Secs (2611 Secs) *[==>2611.0 Secs]*	*[1]*
2	(COS.sp.1366889)	(1) EUROPA-TORUS-A	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=1000; SEGMENT=BOTH			2700 Secs (2699 Secs) *[==>2699.0 Secs]*	*[2]*

Orbit Structure





Proposal 15848 - Visit 53 - Confirming the Europa torus

Visit

Proposal 15848, Visit 53, implementation Wed Aug 25 19:00:33 GMT 2021

Diagnostic Status: Warning

Scientific Instruments: COS/FUV

Special Requirements: SCHED 50%; BETWEEN 07-SEP-2021:04:30:00 AND 07-SEP-2021:05:40:00

Comments: HOPR repeat of visit 03.

Diagnostics

(Visit 53) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS.

(Exposure 1 (Visit 53)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

Solar System Targets

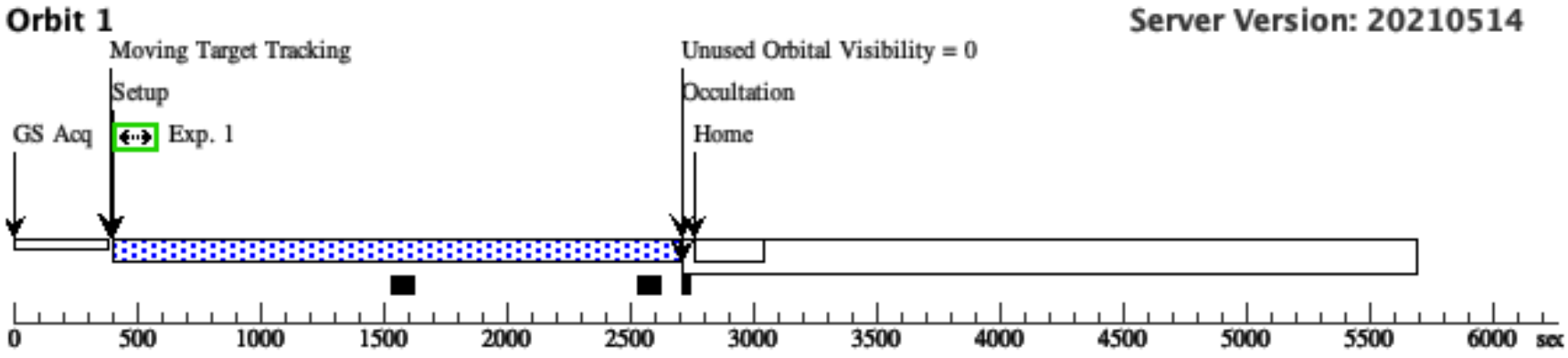
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(3)	EUROPA-TORUS-C	STD=JUPITER	TYPE=TORUS,LONG=90,LAT=0,RAD=6.65e5,POLE_LONG=0,POLE_LAT=90		NOT OCC OF EUROPA-TORUS-C BY JUPITER FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY IO FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY EUROPA FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY GANYMEDE FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY CALLISTO FROM EARTH, SEP OF EUROPA-TORUS-C IO FROM EARTH GT 10", SEP OF EUROPA-TORUS-C EUROPA FROM EARTH GT 10", SEP OF EUROPA-TORUS-C GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-TORUS-C CALLISTO FROM EARTH GT 10", OLG OF EUROPA BETWEEN 250 30	EARTH

Comments: This target aims at the expected peak location of the torus at 9.3 Jovian radii, slighly inward of Europa's orbit (which is at 9.38 R_J)
Description=Plasma and gas torus near Europa's orbit
Extended=YES

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.sp.1366889)	(3) EUROPA-TORUS-C	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=1000; SEGMENT=BOTH			2700 Secs (2153 Secs) *[==>2153.0 Secs]*	*[1]*

Orbit Structure



Visit

Proposal 15848, Visit 55 Wed Aug 25 19:00:33 GMT 2021

Diagnostic Status: Warning

Scientific Instruments: COS/FUV

Special Requirements: SCHED 50%; BETWEEN 07-SEP-2021:06:00:00 AND 07-SEP-2021:07:00:00

Comments: HOPR repeat of visit 03.

Diagnostics

(Visit 55) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS.

(Exposure 1 (Visit 55)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

Solar System Targets

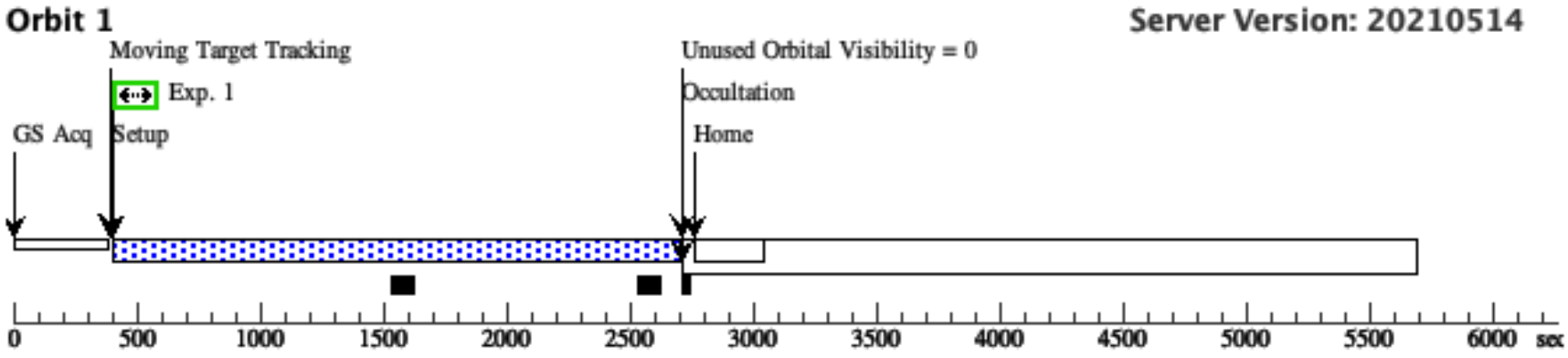
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	EUROPA-TORUS-A	STD=JUPITER	TYPE=TORUS,LONG=90,LAT=0,RAD=5.72e5,POLE_LONG=0,POLE_LAT=90		NOT OCC OF EUROPA-TORUS-A BY JUPITER FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-A BY IO FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-A BY EUROPA FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-A BY GANYMEDE FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-A BY CALLISTO FROM EARTH, SEP OF EUROPA-TORUS-A IO FROM EARTH GT 10", SEP OF EUROPA-TORUS-A EUROPA FROM EARTH GT 10", SEP OF EUROPA-TORUS-A GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-TORUS-A CALLISTO FROM EARTH GT 10"	EARTH

Comments: This target is for the a torus with radius 8.0 Jovian radii, for probing between Io torus and Europa torus
Description=Plasma and gas torus near Europa's orbit
Extended=YES

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.sp.1366889)	(1) EUROPA-TORUS-A	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=1000; SEGMENT=BOTH			2700 Secs (2153 Secs) *[==>2153.0 Secs]*	*[1]*

Orbit Structure



Proposal 15848 - Visit 04 - Confirming the Europa torus

Visit	**Proposal 15848, Visit 04, failed** Wed Aug 25 19:00:33 GMT 2021 **Diagnostic Status: Warning** Scientific Instruments: COS/FUV Special Requirements: SCHED 50%; BETWEEN 27-AUG-2020:03:07:00 AND 27-AUG-2020:04:07:00 *Comments: First visit in a series of 4 visits, to be carried out as close in time as possible*
Diagnostics	(Visit 04) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS. (Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Exposure 1 (Visit 04)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details. (Exposure 2 (Visit 04)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

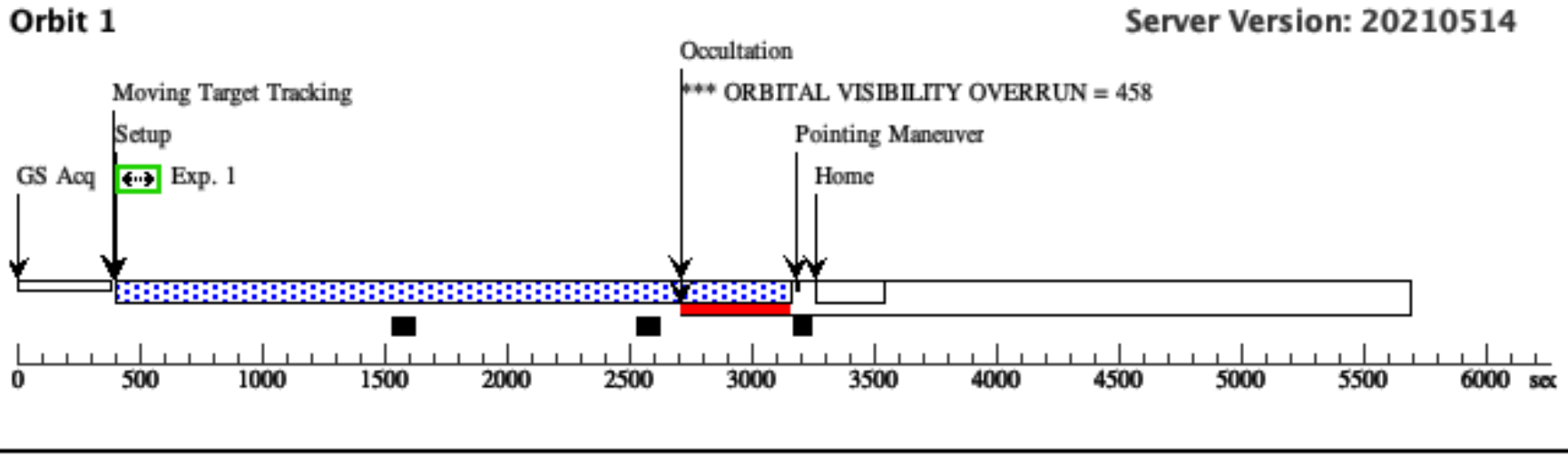
Solar System Targets

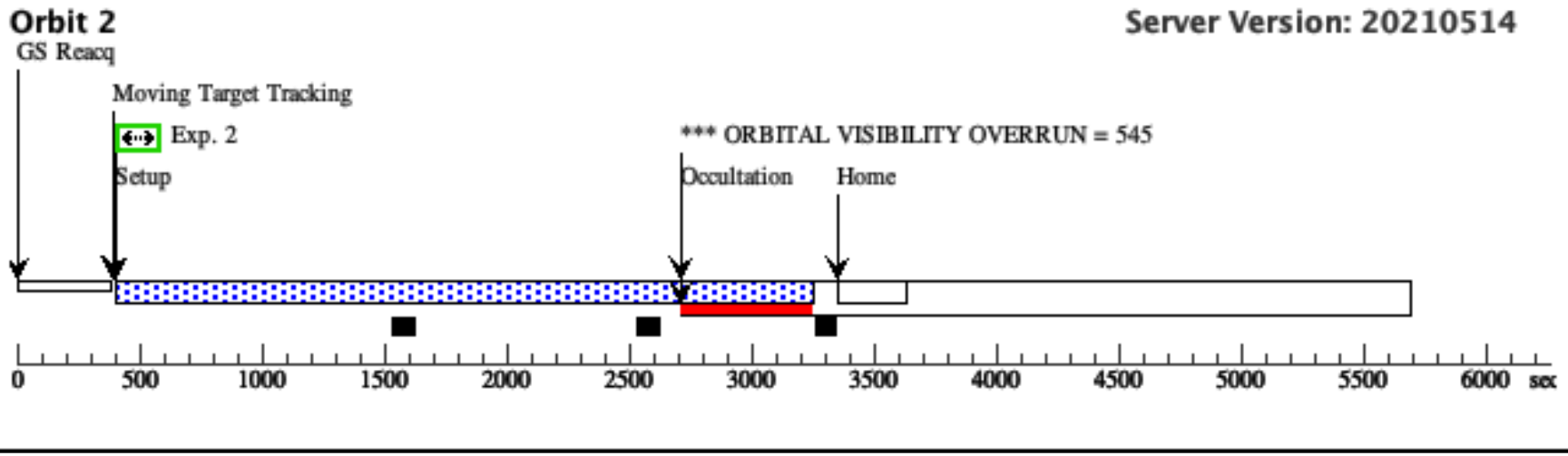
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(3)	EUROPA-TORUS-C	STD=JUPITER	TYPE=TORUS,LONG=90,LAT=0,RAD=6.65e5,POLE_LONG=0,POLE_LAT=90		NOT OCC OF EUROPA-TORUS-C BY JUPITER FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY IO FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY EUROPA FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY GANYMEDE FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY CALLISTO FROM EARTH, SEP OF EUROPA-TORUS-C IO FROM EARTH GT 10", SEP OF EUROPA-TORUS-C EUROPA FROM EARTH GT 10", SEP OF EUROPA-TORUS-C GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-TORUS-C CALLISTO FROM EARTH GT 10", OLG OF EUROPA BETWEEN 250 30	EARTH
Comments: This target aims at the expected peak location of the torus at 9.3 Jovian radii, slighly inward of Europa's orbit (which is at 9.38 R_J) *Description=Plasma and gas torus near Europa's orbit* *Extended=YES*						
(5)	EUROPA-TORUS-E	STD=JUPITER	TYPE=TORUS,LONG=90,LAT=0,RAD=8.94e5,POLE_LONG=0,POLE_LAT=90		NOT OCC OF EUROPA-TORUS-E BY JUPITER FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-E BY IO FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-E BY EUROPA FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-E BY GANYMEDE FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-E BY CALLISTO FROM EARTH, SEP OF EUROPA-TORUS-E IO FROM EARTH GT 10", SEP OF EUROPA-TORUS-E EUROPA FROM EARTH GT 10", SEP OF EUROPA-TORUS-E GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-TORUS-E CALLISTO FROM EARTH GT 10"	EARTH
Comments: This target is for probing the equatorial region outwards from the Europa torus at radial distance 12.5 Jovian radii, used for background *Description=Plasma and gas torus near Europa's orbit* *Extended=YES*						

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.sp.1366889)	(3) EUROPA-TORUS-C	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=1000; SEGMENT=BOTH			2700 Secs (2611 Secs) *[==>2611.0 Secs]*	*[1]*
2	(COS.sp.1366889)	(5) EUROPA-TORUS-E	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=1000; SEGMENT=BOTH			2700 Secs (2699 Secs) *[==>2699.0 Secs]*	*[2]*

Orbit Structure





Visit	**Proposal 15848, Visit 54, scheduling** Wed Aug 25 19:00:33 GMT 2021 **Diagnostic Status: Warning** Scientific Instruments: COS/FUV Special Requirements: SCHED 50%; BETWEEN 07-SEP-2021:07:45:00 AND 07-SEP-2021:08:30:00 *Comments: HOPR repeat of visit 04.*
Diagnostics	(Visit 54) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS. (Exposure 1 (Visit 54)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details. (Exposure 2 (Visit 54)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(3)	EUROPA-TORUS-C	STD=JUPITER	TYPE=TORUS,LONG=90,LAT=0,RAD=6.65e5,POLE_LONG=0,POLE_LAT=90		NOT OCC OF EUROPA-TORUS-C BY JUPITER FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY IO FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY EUROPA FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY GANYMEDE FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-C BY CALLISTO FROM EARTH, SEP OF EUROPA-TORUS-C IO FROM EARTH GT 10", SEP OF EUROPA-TORUS-C EUROPA FROM EARTH GT 10", SEP OF EUROPA-TORUS-C GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-TORUS-C CALLISTO FROM EARTH GT 10", OLG OF EUROPA BETWEEN 250 30	EARTH
Comments: This target aims at the expected peak location of the torus at 9.3 Jovian radii, slighly inward of Europa's orbit (which is at 9.38 R_J) *Description=Plasma and gas torus near Europa's orbit* *Extended=YES*						
(5)	EUROPA-TORUS-E	STD=JUPITER	TYPE=TORUS,LONG=90,LAT=0,RAD=8.94e5,POLE_LONG=0,POLE_LAT=90		NOT OCC OF EUROPA-TORUS-E BY JUPITER FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-E BY IO FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-E BY EUROPA FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-E BY GANYMEDE FROM EARTH, NOT ECL P PARTIAL OF EUROPA-TORUS-E BY CALLISTO FROM EARTH, SEP OF EUROPA-TORUS-E IO FROM EARTH GT 10", SEP OF EUROPA-TORUS-E EUROPA FROM EARTH GT 10", SEP OF EUROPA-TORUS-E GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-TORUS-E CALLISTO FROM EARTH GT 10"	EARTH
Comments: This target is for probing the equatorial region outwards from the Europa torus at radial distance 12.5 Jovian radii, used for background *Description=Plasma and gas torus near Europa's orbit* *Extended=YES*						

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.sp.1366889)	(3) EUROPA-TORUS-C	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=1000; SEGMENT=BOTH			2700 Secs (2153 Secs) *[==>2153.0 Secs]*	*[1]*
2	(COS.sp.1366889)	(5) EUROPA-TORUS-E	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=1000; SEGMENT=BOTH			2700 Secs (2154 Secs) *[==>2154.0 Secs]*	*[2]*

Orbit Structure