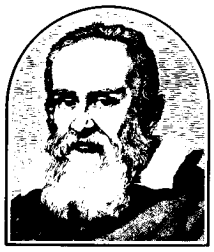
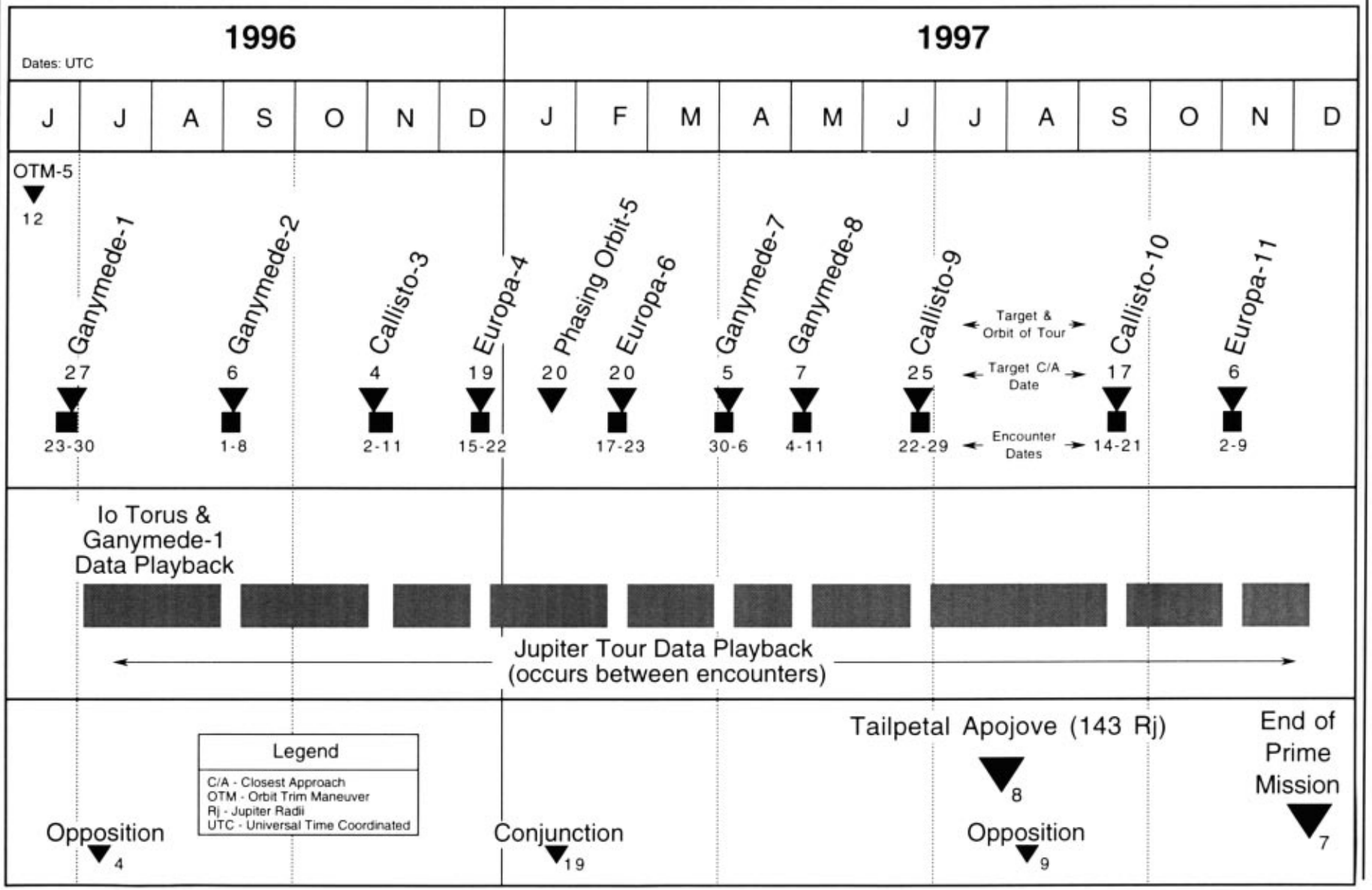
A P P E N D I X

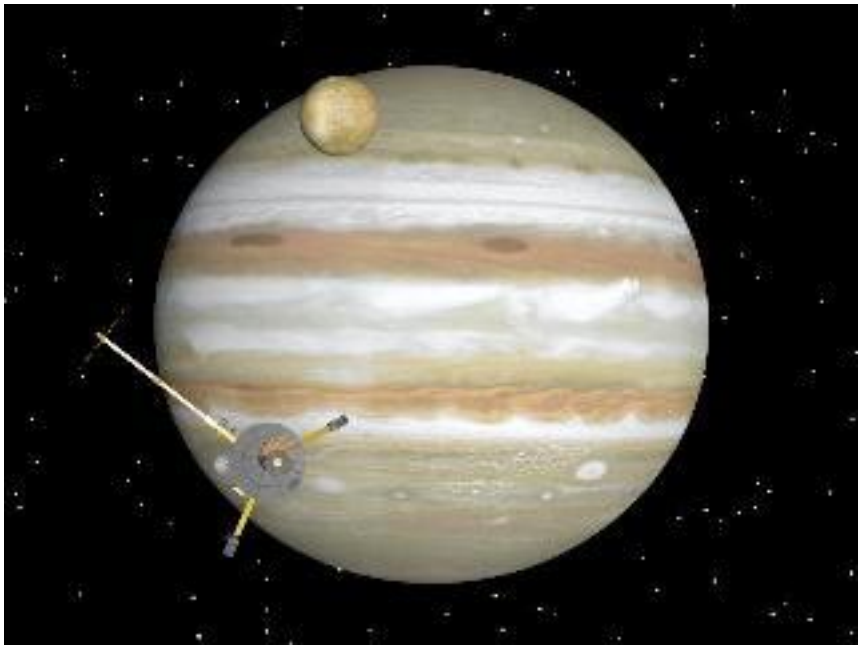


This appendix contains a timeline, Galileo Mission Overview (June 1996–December 1997), and a set of Quick–Look Orbit Facts sheets. The essentials of each orbit are listed. We have provided them as a handy reference while the orbiter's tour progresses in the months to come.

Galileo Mission Overview
(June 1996 - Dec 1997)



Project Galileo Quick-Look Orbit Facts



PROJECT GALILEO QUICK-LOOK ORBIT FACTS

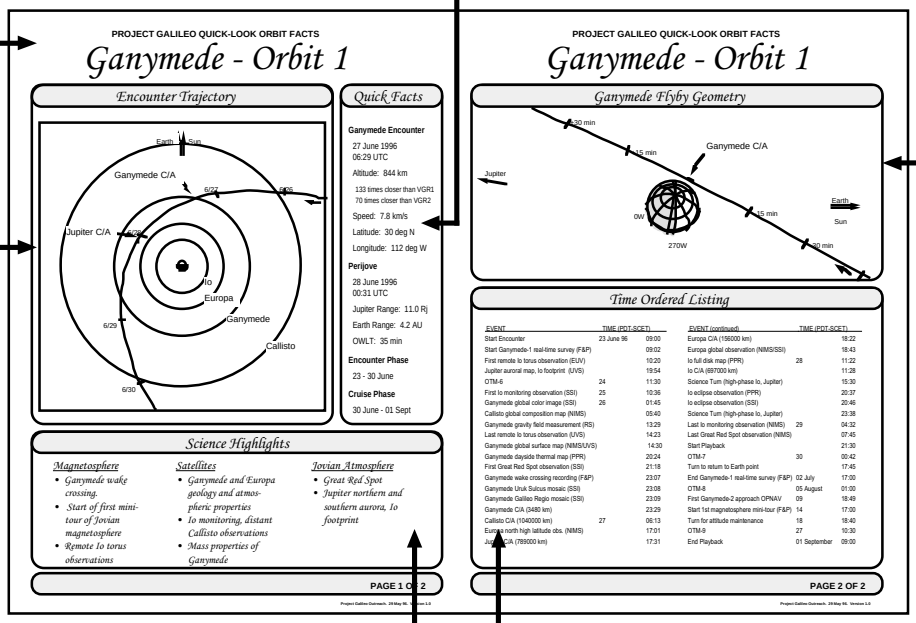
Fact Sheet Guide

Title

Indicates the target satellite and the number of the orbit in the satellite tour. In this example, Ganymede is the target satellite on the first orbit of the orbital tour.

Quick Facts

This section provides a summary listing of the characteristics of the target satellite encounter as well as the Jupiter encounter.



PROJECT GALILEO QUICK-LOOK ORBIT FACTS

Ganymede - Orbit 1

Encounter Trajectory

Quick Facts

Ganymede Encounter

27 June 1996
06:29 UTC

Altitude: 844 km

133 times closer than VGR1
70 times closer than VGR2

Speed: 7.8 km/s

Latitude: 30 deg N

Longitude: 112 deg W

Perijove

28 June 1996
00:31 UTC

Jupiter Range: 11.0 Rj

Earth Range: 4.2 AU

OWLT: 35 min

Encounter Phase

23 - 30 June

Cruise Phase

30 June - 01 Sept

Science Highlights

Magnetosphere
- *Ganymede wake crossing.*
- *Start of first mini-tour of Jovian magnetosphere*
- *Remote Io torus observations*

Satellites
- *Ganymede and Europa geology and atmospheric properties*
- *Io monitoring, distant Callisto observations*
- *Mass properties of Ganymede*

Jovian Atmosphere
- *Great Red Spot*
- *Jupiter northern and southern aurora, Io footprint*

PAGE 1 OF 2

Project Galileo Outreach. 29 May 96. Version 1.0

PROJECT GALILEO QUICK-LOOK ORBIT FACTS

Ganymede - Orbit 1

Ganymede Flyby Geometry

Time Ordered Listing

EVENT	TIME (PDT-SCET)		EVENT (continued)	TIME (PDT-SCET)	
Start Encounter	23 June 96	09:00	Europa C/A (156000 km)		18:22
Start Ganymede-1 real-time survey (F&P)		09:02	Europa global observation (NIMS/SSI)		18:43
First remote Io torus observation (EUV)		10:20	Io full disk map (PPR)	28	11:22
Jupiter auroral map, Io footprint (UVS)		19:54	Io C/A (897000 km)		11:28
OTM-6	24	11:30	Science Turn (high-phase Io, Jupiter)		15:30
First Io monitoring observation (SSI)	25	10:36	Io eclipse observation (PPR)		20:37
Ganymede global color image (SSI)	26	01:45	Io eclipse observation (SSI)		20:46
Callisto global composition map (NIMS)		05:40	Science Turn (high-phase Io, Jupiter)		23:38
Ganymede gravity field measurement (RS)		13:29	Last Io monitoring observation (NIMS)	29	04:32
Last remote Io torus observation (UVS)		14:23	Last Great Red Spot observation (NIMS)		07:45
Ganymede global surface map (NIMS/UVS)		14:30	Start Playback		21:30
Ganymede dayside thermal map (PPR)		20:24	OTM-7	30	00:42
First Great Red Spot observation (SSI)		21:18	Turn to return to Earth point		17:45
Ganymede wake crossing recording (F&P)		23:07	End Ganymede-1 real-time survey (F&P)	02 July	17:00
Ganymede Uruk Sulcus mosaic (SSI)		23:08	OTM-8	05 August	01:00
Ganymede Galileo Regio mosaic (SSI)		23:09	First Ganymede-2 approach OPNAV	09	18:49
Ganymede C/A (3480 km)		23:29	Start 1st magnetosphere mini-tour (F&P)	14	17:00
Callisto C/A (1040000 km)	27	06:13	Turn for attitude maintenance	18	18:40
Europa north high latitude obs. (NIMS)		17:01	OTM-9	27	10:30
Jupiter C/A (769000 km)		17:31	End Playback	01 September	09:00

PAGE 2 OF 2

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Encounter Trajectory

This plot shows the path of the spacecraft as it flies through the Jupiter system. The target satellite and Jupiter closest approach are labeled and indicated by the white circles. The directions to the Sun and the Earth are indicated by the arrows near the top of the plot. These particular plots are also known as North Trajectory Pole View plots because they are views from the north of the plane of the spacecraft's orbit.

Satellite Flyby Geometry

This plot shows the path of the spacecraft as it encounters the target satellite. The target satellite closest approach is labeled and indicated by the white circle. The directions to the Sun, Earth, and Jupiter are indicated by arrows on the plot. Notice that the Sun and Earth arrows point to the right side of the page. The grid on the satellite provides information about the flyby latitude and longitude. These plots use either a North or South Trajectory Pole View.

Science Highlights

This section provides a sampling of some of the key science observations that will be accomplished during this encounter period. The listing is divided amongst the three main areas of science interest: Jovian magnetosphere, satellites (Galilean, minor, Jupiter rings), and Jovian atmosphere.

Time Ordered Listing

This section provides a listing of important mission and engineering events, as well as selected science observations that support the science mentioned in the Science Highlights section. Unless otherwise indicated, only the start of the activity is listed.

NOTE: All times listed are spacecraft event time (SCET). Add one-way light time (OWLT) to get Earth received time.

Project Galileo Outreach. 29 May 96. Version 1.0

Fact Sheet Guide

Acronyms

AU - astronomical units
C/A - closest approach
deg - degrees
EUV - Extreme Ultraviolet Spectrometer
F&P - Fields and Particles instruments
km - kilometers
km/s - kilometers per second
min - minutes
N - North
NIMS - Near-Infrared Mapping Spectrometer
obs - observation
OTM - orbit trim maneuver
OWLT - one-way light time
PDT - Pacific Daylight Time
PST - Pacific Standard Time
PPR - Photopolarimeter Radiometer
Rj - Jupiter radii (71492 km)
RS - Radio Science
SCET - spacecraft event time
SSI - Solid-State Imaging (camera)
UTC - Universal TIme Coordinated
UVS - Ultraviolet Spectrometer
VGR1 - Voyager 1
VGR2 - Voyager 2
W - West

Glossary of Selected Terms

Alfvén wing - electromagnetic waves that are generated when plasma flows past an electrically conducting body such as Jupiter's moon Io.

aurora - a glow from a planet's atmosphere produced by the impact and interaction of charged particles in a planet's magnetosphere with the atmospheric atoms and molecules.

Fields and Particles instruments - complement of instruments designed to provide data on the structure and dynamical variations of the Jovian magnetosphere. This complement is made up of the Dust Detector, Energetic Particles Detector, Heavy Ion Counter, Magnetometer, Plasma and Plasma Wave Subsystems.

magnetosphere - the volume of space in which a planet's magnetic field dominates that of the solar wind.

magnetotail - the portion of a planetary magnetosphere pulled downstream by the solar wind.

mini-tour - continuous survey of Fields and Particles data through at least one complete orbit.

occultation - period of time when the view to one celestial body is blocked by the body of another, e.g. when the spacecraft's view of the Earth or Sun is blocked by Jupiter.

OPNAV - SSI image taken to support optical naviation; image typically consists of the limb of one main

OPNAV (cont) - body (Jupiter or a satellite) and three to four stars.

palimpsest - a roughly circular spot on icy satellites, thought to identify a former impact crater.

phase angle - the angle between the Sun, an object, and an observer. 0 degrees phase means the Sun is behind the observer.

plasma - a highly ionized gas, consisting of almost equal numbers of free electrons and positive ions.

plasma sheet - low energy plasma, largely concentrated within a few planetary radii of the equatorial plane, distributed throughout the magnetosphere throughout which concentrated electric currents flow.

satellites, Galilean - Io, Europa, Ganymede, and Callisto; four largest satellites of Jupiter discovered by Galileo in 1610.

satellite wake - region created in front of the Galilean satellites as the charged particles that corotate with the Jovian magnetosphere sweep past the satellites.

solar conjunction - period of time during which the Sun is in or near the spacecraft-Earth communications path, thus corrupting the communications signals.

torus, Io - donut-shaped cloud of neutral and ionized gases (plasma) along Io's orbit believed to be supplied by the volcanic eruptions on Io.

External Sources:

Dessler, J. Physics of the Jovian Magnetosphere. Cambridge University Press, 1983.
Yeates, C. M., et. al. Galileo: Exploration of Jupiter's System. NASA, 1985.
Kelly Beatty, J. and A. Chaikin. The New Solar System. 3rd edition. Cambridge University Press, 1990.
Space Science Reviews. Volume 60. Kluwer Academic Publishers, 1992.

Disclaimers / Additional Resources

Disclaimer: The information contained in these fact sheets is based on the latest available mission plans as of the publication date. Mission plans are subject to change as they go through the final planning cycle prior to transmission to the spacecraft. These pages will be updated as the mission progresses. Updates will be posted on the Galileo WWW home page (see below).

For additional information contact us at: Galileo Outreach Coordination, Jet Propulsion Laboratory, M/S 264-765, 4800 Oak Grove Drive, Pasadena, CA 91109-8099. Fax: (818) 393-4530, Email: askgalileo@gllsvc.jpl.nasa.gov. Or visit our home page at http://www.jpl.nasa.gov/galileo.

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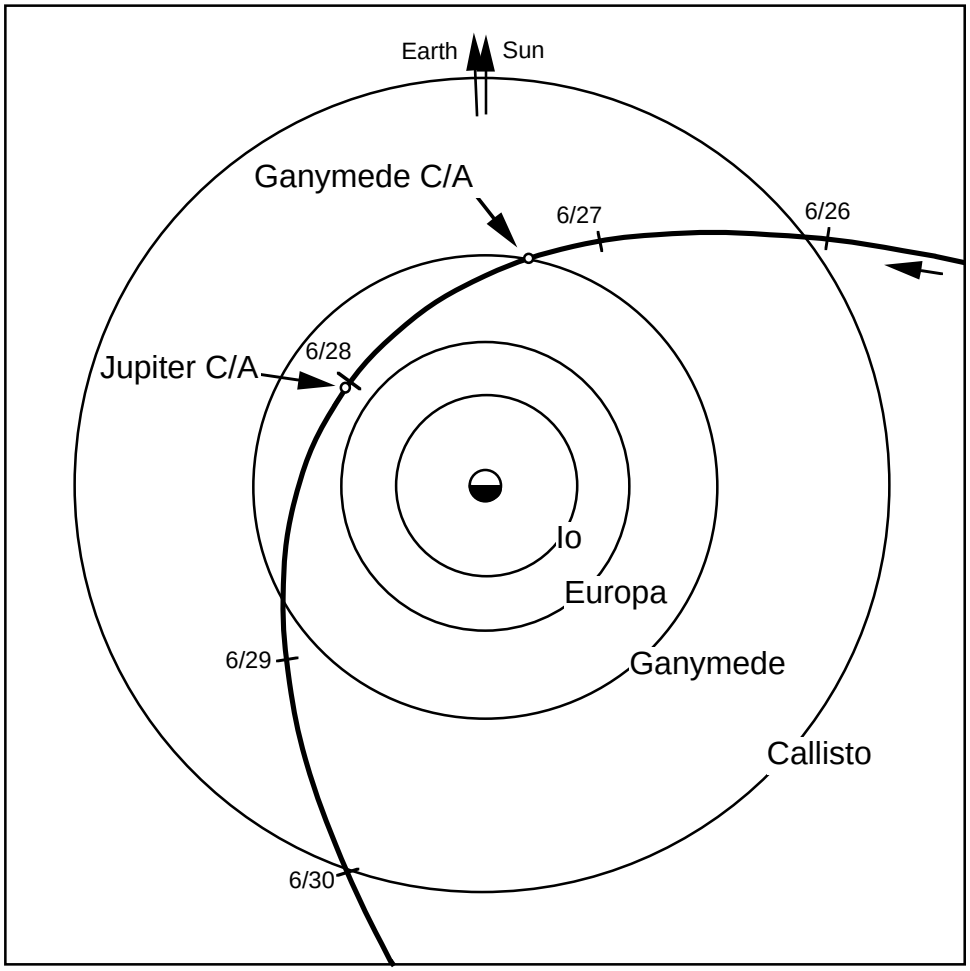
PROJECT GALILEO QUICK-LOOK ORBIT FACTS

Ganymede - Orbit 1

Encounter Trajectory



Quick Facts

Ganymede Encounter

27 June 1996
06:29 UTC

Altitude: 844 km

133 times closer than VGR1
70 times closer than VGR2

Speed: 7.8 km/s

Latitude: 30 deg N

Longitude: 112 deg W

Perijove

28 June 1996
00:31 UTC

Jupiter Range: 11.0 Rj

Earth Range: 4.2 AU

OWLT: 35 min

Encounter Phase

23 - 30 June

Cruise Phase

30 June - 01 Sept

Science Highlights

Magnetosphere

- *Ganymede wake crossing*
- *Start of first mini-tour of Jovian magnetosphere*
- *Remote Io torus observations*
- *Plasma sheet crossing at 25 Rj*

Satellites

- *Ganymede and Europa geology and atmospheric properties*
- *Io monitoring, distant Callisto observations*
- *Mass properties of Ganymede*

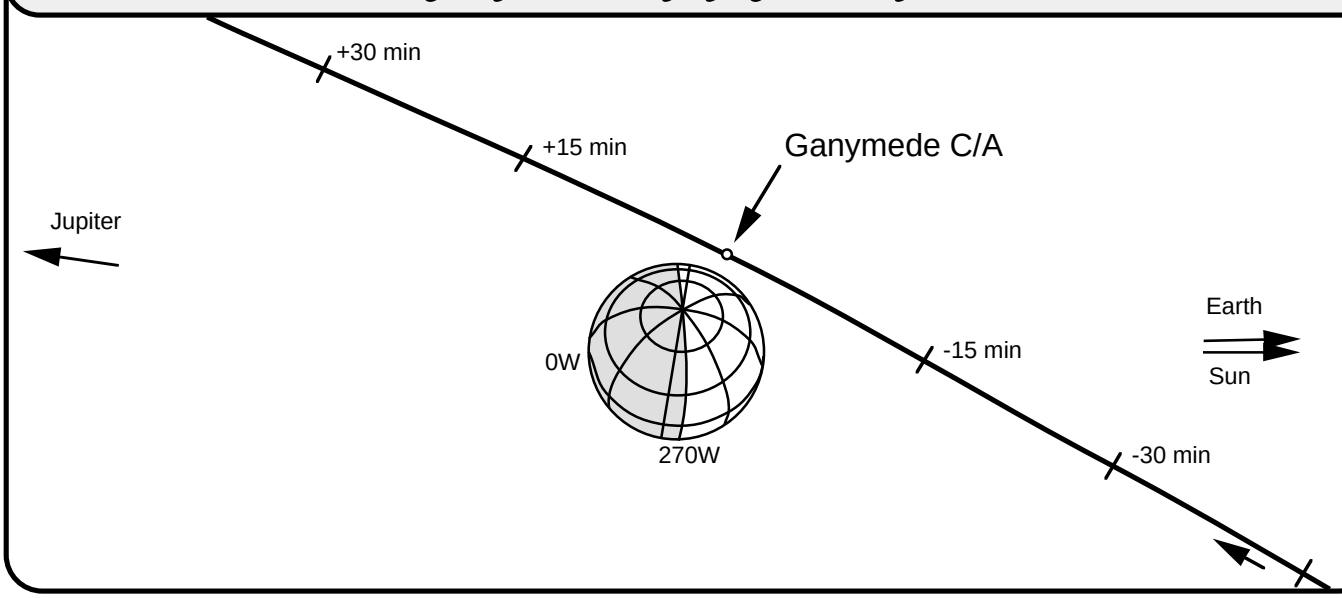
Jovian Atmosphere

- *Great Red Spot*
- *Jupiter northern and southern aurora, Io footprint*

Project Galileo Outreach. 29 May 96. Version 1.0

Ganymede - Orbit 1

Ganymede Flyby Geometry



Time Ordered Listing

EVENT	TIME (PDT-SCET)	
Start Encounter	23 June 96	09:00
Start Ganymede-1 real-time survey (F&P)		09:02
Jupiter auroral map, Io footprint (UVS)		19:54
OTM-6	24	11:30
First Io monitoring observation (SSI)	25	10:36
Ganymede global color image (SSI)	26	01:45
Callisto global composition map (NIMS)		05:40
Ganymede gravity field measurement (RS)		13:29
Last Ganymede-1 Io torus obs. (UVS)		14:23
Ganymede global surface map (NIMS/UVS)		14:30
Ganymede dayside thermal map (PPR)		20:24
First Great Red Spot observation (SSI)		21:18
Ganymede wake crossing recording (F&P)		23:07
Ganymede Uruk Sulcus mosaic (SSI)		23:08
Ganymede Galileo Regio mosaic (SSI)		23:09
Ganymede C/A (3480 km)		23:29
Callisto C/A (1040000 km)	27	06:13
Europa north high latitude obs. (NIMS)		17:01
Jupiter C/A (789000 km)		17:31
Europa C/A (156000 km)		18:22
Europa global observation (NIMS/SSI)		18:43

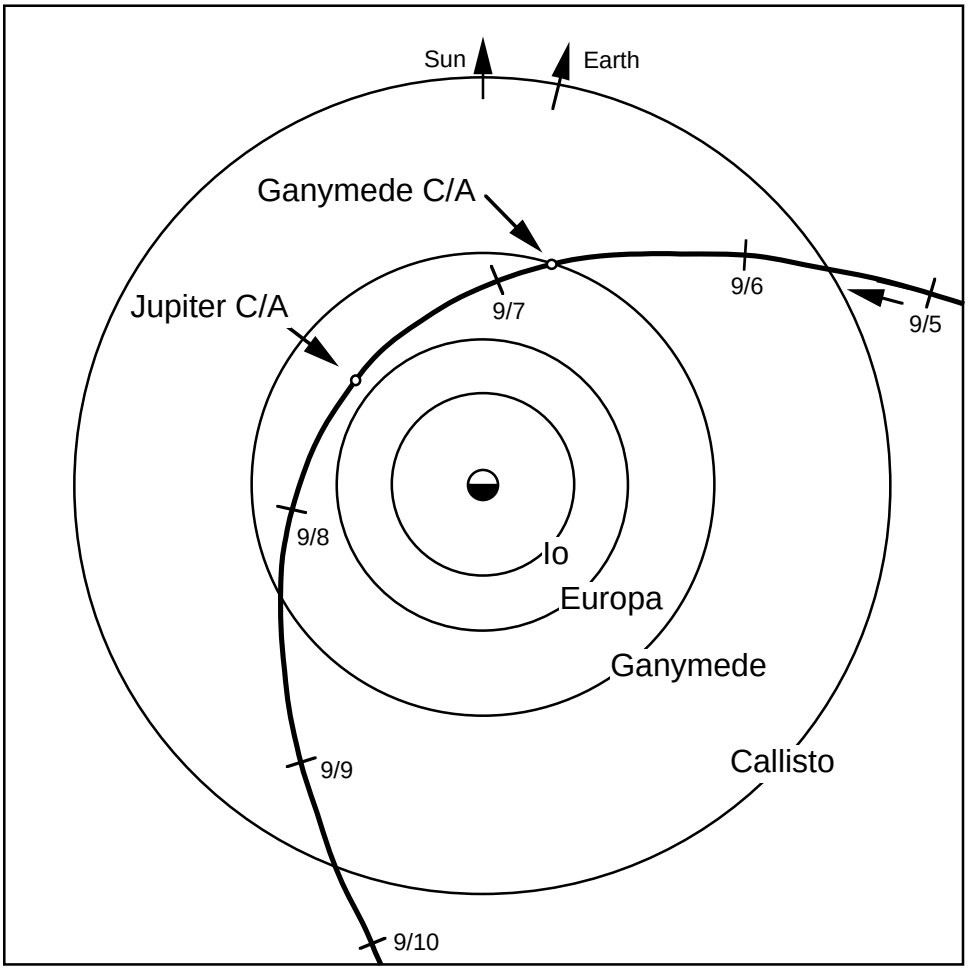
EVENT (continued)	TIME (PDT-SCET)	
Io full disk map (PPR)	28	11:22
Io C/A (697000 km)		11:28
Science Turn (high-phase Io, Jupiter)		15:30
Io eclipse observation (PPR)		20:37
Io eclipse observation (SSI)		20:46
Science Turn (high-phase Io, Jupiter)		23:38
Last Io monitoring observation (NIMS)	29	04:32
Last Great Red Spot observation (NIMS)		07:45
Plasma sheet crossing recording (F&P)		19:00
Start Playback		21:30
OTM-7	30	00:42
Turn to return to Earth point		17:45
End Ganymede-1 real-time survey (F&P)	02 July	17:00
OTM-8	05 August	01:00
First Ganymede-2 approach OPNAV	09	18:49
Start 1st magnetosphere mini-tour (F&P)	14	17:00
Turn for attitude maintenance	18	18:40
First Ganymede-2 Io torus obs. (EUV/UVS)	26	23:36
OTM-9	27	10:30
End Playback	01 September	09:00

Project Galileo Outreach. 29 May 96. Version 1.0

PROJECT GALILEO QUICK-LOOK ORBIT FACTS

Ganymede - Orbit 2

Encounter Trajectory



Quick Facts

Ganymede Encounter

06 September 1996
19:00 UTC

Altitude: 250 km

448 times closer than VGR1
238 times closer than VGR2

Speed: 8.0 km/s

Latitude: 80 deg N

Longitude: 123 deg W

Perijove

07 September 1996
13:37 UTC

Jupiter Range: 10.7 Rj

Earth Range: 4.7 AU

OWLT: 39 min

Encounter Phase

01 - 08 September

Cruise Phase

08 Sept - 02 Nov

Science Highlights

Magnetosphere

- *Ganymede north Alfvén wing crossing*
- *Jovian radio emissions*
- *First mini-tour of Jovian magnetosphere continues*
- *Remote Io torus*
- *Plasma sheet at 40 Rj*

Satellites

- *Unique Ganymede north polar pass*
- *Europa low-phase global images*
- *Callisto, Io monitoring, Amalthea*

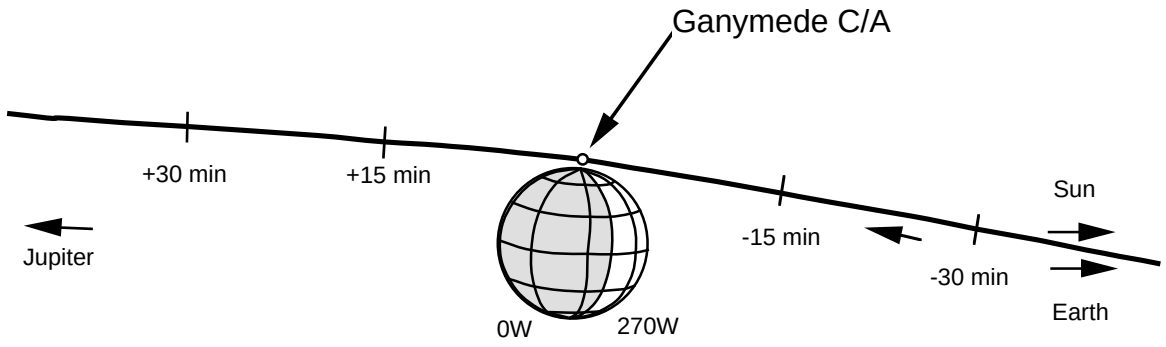
Jovian Atmosphere

- *Stratospheric Circulation*
- *Jupiter southern aurora*
- *Shoemaker-Levy 9 remnant material images*

Project Galileo Outreach. 29 May 96. Version 1.0

Ganymede - Orbit 2

Ganymede Flyby Geometry



Time Ordered Listing

EVENT	TIME (PDT/PST-SCET)	
Start Encounter	01 September 1996	09:00
Jovian radio emission obs. (PWS)		16:08
First Io monitoring observation (SSI)	02	16:14
Last Ganymede-2 Io torus obs. (UVS)		18:20
Last Ganymede-2 approach OPNAV		22:35
Shoemaker-Levy 9 impact zone obs. (SSI)	03	10:10
Shoemaker-Levy 9 impact zone obs. (NIMS)		10:25
Jupiter auroral map (UVS)		16:48
OTM-10	04	11:50
Ganymede gravity field measurement (RS)	06	02:01
Ganymede north pole map (NIMS/UVS)		11:08
Ganymede wake and wing recording (F&P)		11:31
Ganymede Anshar Sulcus (SSI)		11:33
Ganymede palimpsest (SSI)		11:45
Ganymede C/A (2880 km)		12:00
Science Turn (Jupiter stratospheric map)		13:07
Jupiter stratospheric circulation map (UVS)		14:12
Turn to return to Earth point		16:44
Io full disk map (PPR)		21:56
Io C/A (441000 km)		22:25
Amalthea full disk imaging (SSI)	07	01:14

EVENT (continued)	TIME (PDT/PST-SCET)	
Jupiter C/A (762000 km)		06:37
Europa low phase photometry (SSI)		07:39
Europa C/A (673000 km)		10:06
Europa main circular feature (NIMS)		10:07
Europa polarimetry (PPR)		14:50
Last Io monitoring observation (NIMS)		22:21
Callisto low phase photometry (SSI)	08	06:25
Start Playback		09:00
Callisto polarimetry (PPR)		16:31
Callisto C/A (424000 km)	09	03:24
Callisto global coverage (NIMS)		03:25
OTM-11		14:30
Plasma sheet crossing recording (F&P)	11	19:30
Turn for attitude maintenance	23	10:00
OTM-12	08 October	07:00
First Callisto-3 approach OPNAV	09	07:38
First Callisto-3 Io torus obs. (EUV/UVS)	29	10:29*
Last Callisto-3 approach OPNAV	30	15:23
OTM-13	01 November	05:30
End Playback	02	08:00

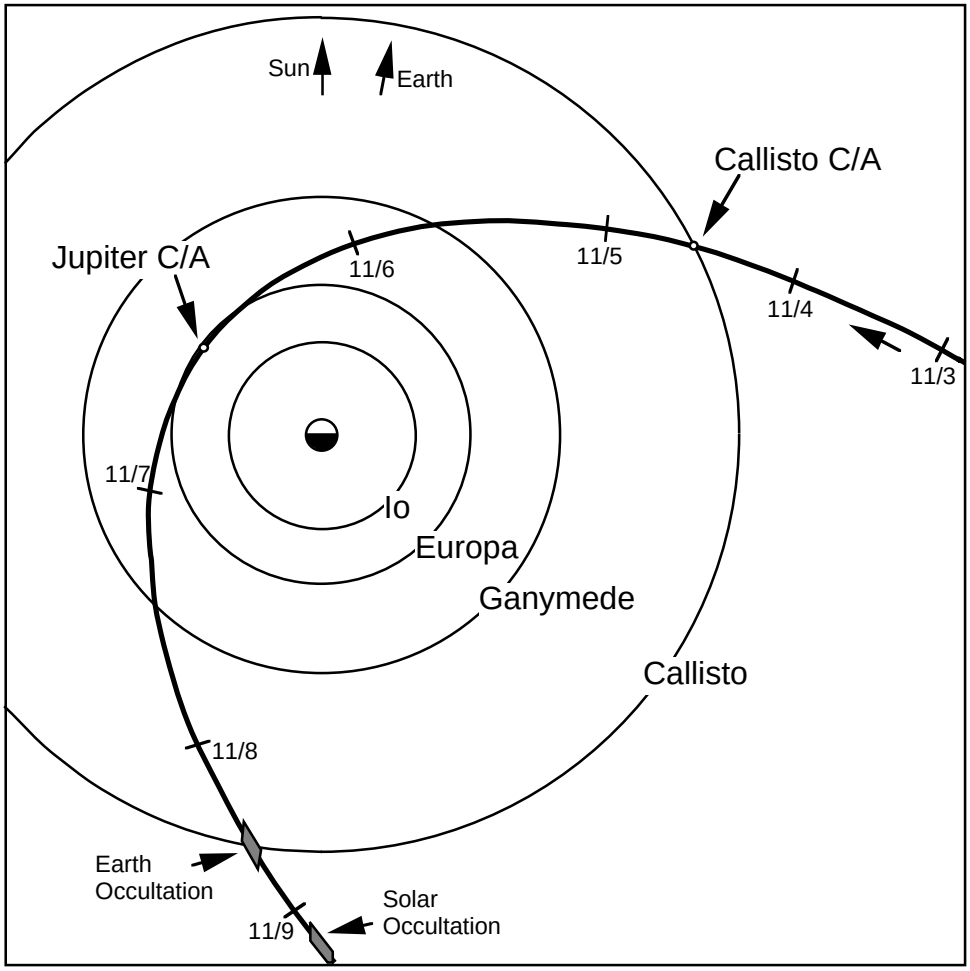
* denotes transition from PDT to PST.

Project Galileo Outreach. 29 May 96. Version 1.0

PROJECT GALILEO QUICK-LOOK ORBIT FACTS

Callisto - Orbit 3

Encounter Trajectory



Quick Facts

Callisto Encounter

04 November 1996
13:30 UTC

Altitude: 1104 km

112 times closer than VGR1
192 times closer than VGR2

Speed: 8.0 km/s

Latitude: 13 deg N

Longitude: 78 deg W

Perijove

06 November 1996
13:27 UTC

Jupiter Range: 9.2 Rj

Earth Range: 5.6 AU

OWLT: 46 min

Encounter Phase

02 - 11 November

Cruise Phase

11 Nov - 15 Dec

Science Highlights

Magnetosphere

- *Completion of first mini-tour of Jovian magneto-sphere*
- *Callisto wake and Alfvén wing crossings*
- *Jupiter aurora*
- *Remote Io torus*

Satellites

- *Callisto Asgard Basin*
- *Europa non-targeted encounter - volcanism obs.*
- *Closest Io approach of Tour*
- *Mass properties of Callisto*

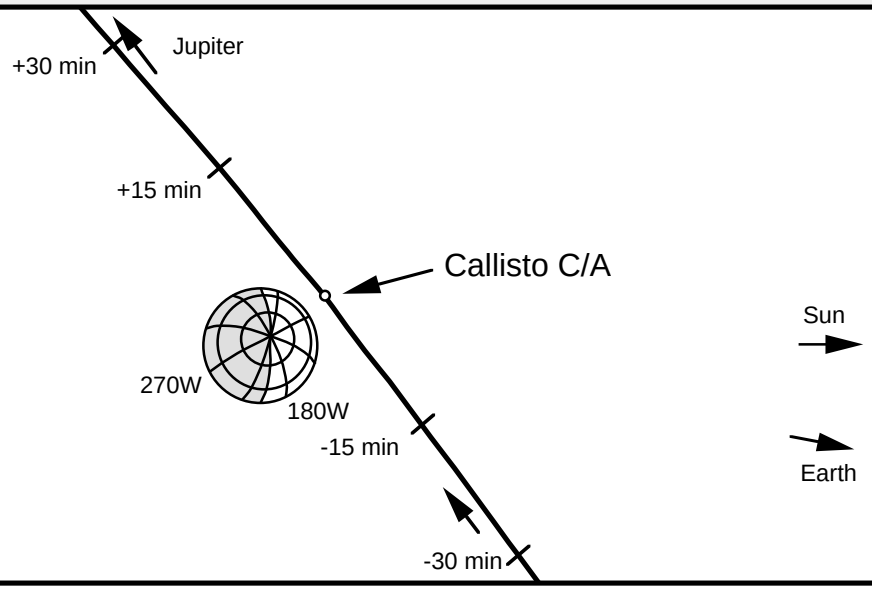
Jovian Atmosphere

- *White oval observations*
- *Jupiter northern aurora*
- *Jupiter atmosphere during Solar occultation*

Project Galileo Outreach. 29 May 96. Version 1.0

Callisto - Orbit 3

Callisto Flyby Geometry



Time Ordered Listing

EVENT	TIME (PST-SCET)	
Start Encounter	02 November 1996	08:00
First Jupiter aurora observation (UVS)		18:14
Callisto Asgard Basin observation (SSI)	03	11:44
Callisto gravity field measurement (RS)		19:30
Callisto wake crossing recording (F&P)	04	05:11
Callisto C/A (3510 km)		05:30
Callisto Valhalla region observation (SSI)		05:35
Callisto dark map observation (PPR)		06:18
Last Callisto-3 Io torus obs. (UVS)		11:43
First white oval observation (NIMS)		18:14
Jupiter aurora recording (F&P)		23:05
First Io monitoring observation (NIMS)	05	20:00
Io topographical map (SSI)		22:07
High spatial and spectral Io obs. (NIMS)	06	03:49
Io C/A (244000 km)		04:05
Jupiter C/A (658000 km)		05:27
Europa C/A (34000 km)		10:43
Europa dark map observation (PPR)		12:27
Europa limb occultation obs. (NIMS)		12:41
Last Io monitoring observation (NIMS)		15:21
Science Turn (high-phase Jupiter)		18:50
Ganymede C/A (1050000 km)		20:49

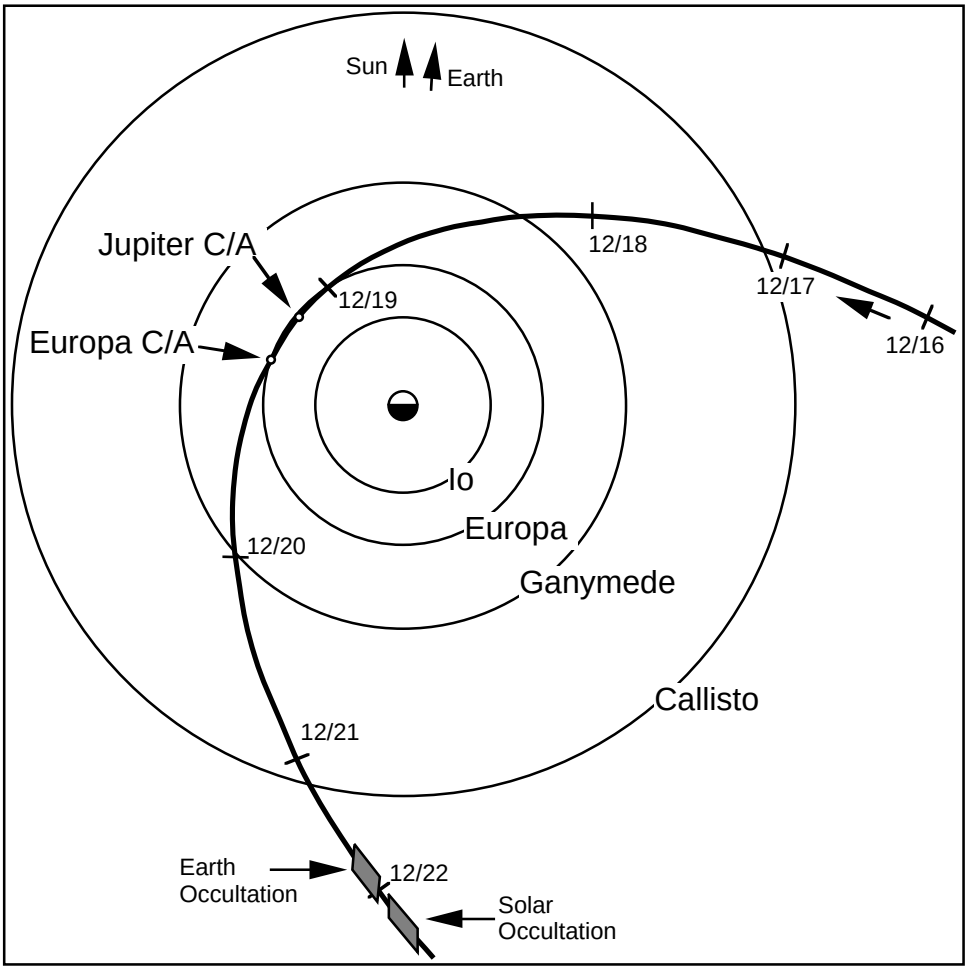
EVENT (continued)	TIME (PST-SCET)	
Last white oval observation (NIMS)	07	09:40
Turn to return to Earth point		12:30
Start Earth occultation by Jupiter	08	02:36
End Earth occultation by Jupiter		09:15
Science Turn (Solar occultation)		15:00
Start Solar occultation by Jupiter		18:18
First Solar occultation observation (UVS)		18:35
Last Jupiter aurora observation (SSI)		21:18
Turn to return to Earth point	09	02:00
End Solar occultation by Jupiter		02:15
Last Solar occultation observation (UVS)		05:10
OTM-14		23:00
Start Playback	10	18:00
End 1st magnetosphere mini-tour (F&P)	11	12:00
Turn for attitude maintenance		12:00
OTM-15	27	11:43
First Europa-4 approach OPNAV	02 December	01:01
First Europa-4 Io torus obs. (EUV/UVS)	10	05:59
Start Europa-4 real-time survey (F&P)	13	13:00
Last Europa-4 approach OPNAV		09:21
End Playback	14	16:00

Project Galileo Outreach. 29 May 96. Version 1.0

PROJECT GALILEO QUICK-LOOK ORBIT FACTS

Europa - Orbit 4

Encounter Trajectory



Quick Facts

Europa Encounter

19 December 1996
06:54 UTC

Altitude: 692 km

1058 times closer than VGR1
295 times closer than VGR2

Speed: 5.7 km/s

Latitude: 0 deg N

Longitude: 37 deg W

Perijove

19 December 1996
03:22 UTC

Jupiter Range: 9.2 Rj

Earth Range: 6.0 AU

OWLT: 50 min

Encounter Phase

15 - 22 December

Cruise Phase

22 Dec 96 - 17 Feb 97

Science Highlights

Magnetosphere

- *Europa wake and north Alfvén wing crossings*
- *North to south plasma sheet crossing*
- *Remote Io torus observations*

Satellites

- *Excellent Europa dayside and nightside coverage*
- *Io partial-eclipse*
- *Jupiter rings*
- *Amalthea, Thebe, Adrastea*

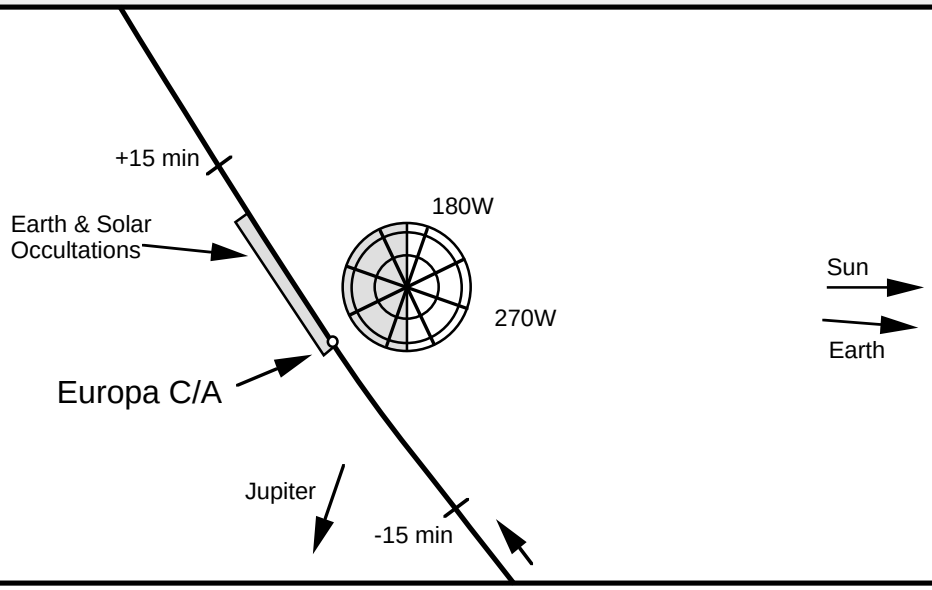
Jovian Atmosphere

- *Northern equatorial belt hot spot observations*
- *Atmospheric profile during Earth occultation*
- *Jupiter northern aurora*

Project Galileo Outreach. 29 May 96. Version 1.0

Europa - Orbit 4

Europa Flyby Geometry



Time Ordered Listing

EVENT	TIME (PST-SCET)	
Start Encounter	14 December 1996	16:00
Last Europa-4 Io torus obs. (UVS)		16:49
OTM-16	15	18:30
Jupiter auroral map (UVS)	16	02:00
Io eclipse ingress observation (NIMS)	17	11:06
Io eclipse thermal observation (SSI)		11:45
Io eclipse egress observation (NIMS)		13:24
First hot spot observation (PPR)		19:20
Amalthea imaging (SSI)		23:09
Thebe imaging (SSI)	18	00:06
Io C/A (321000 km)		13:37
Europa global mosaic (NIMS)		17:17
Europa day/night thermal map (PPR)		17:54
Jupiter C/A (655000 km)		19:22
Adrastea imaging (SSI)		19:26
Europa global map (SSI)		19:35
Europa Double Linea area (NIMS)		22:27
Europa wake crossing recording (F&P)		22:45
Start Solar occultation by Europa		22:54
Start Earth occultation by Europa		
Europa C/A (2260 km)		
End Solar occultation by Europa		23:05
End Earth occultation by Europa		23:06
Ganymede C/A (792000 km)	19	12:13
Science Turn (high-phase Jupiter)		19:05
First high-phase Jupiter observation (SSI)		22:53
Callisto C/A (1490000 km)	20	05:33
Last high-phase Jupiter observation (SSI)		07:27
Jupiter rings observations (NIMS)		08:06

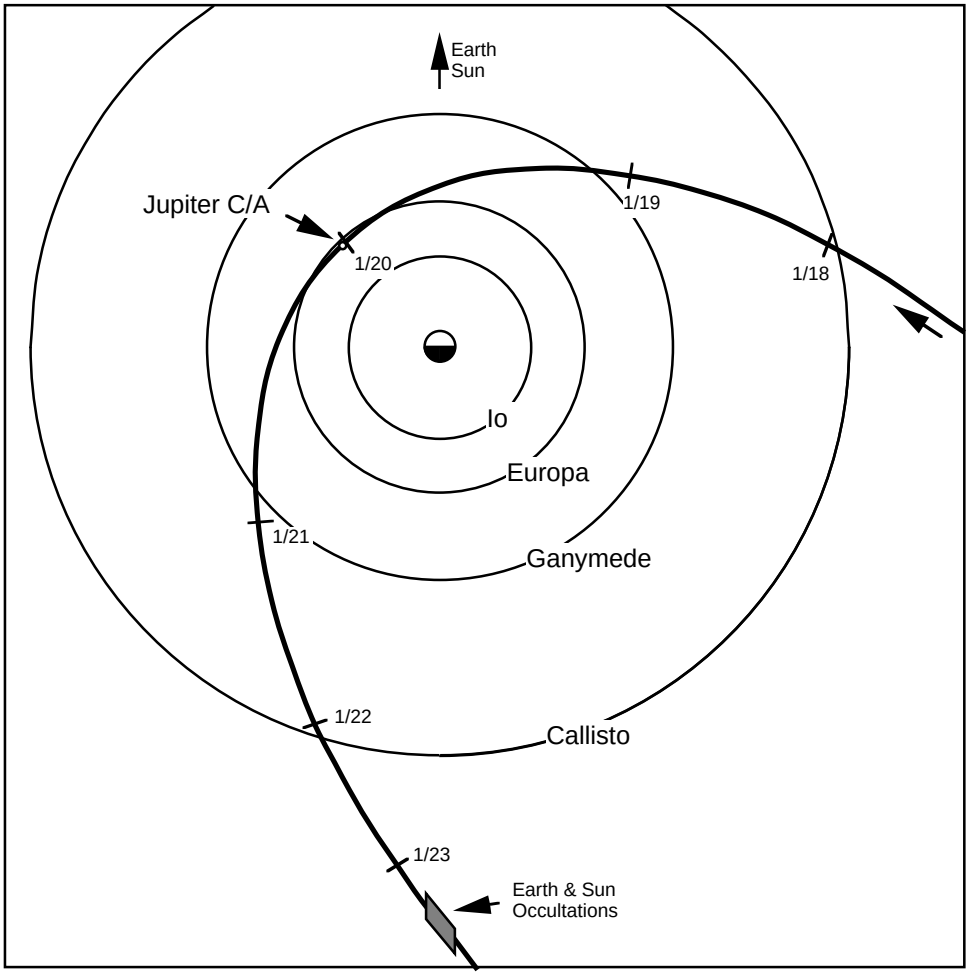
EVENT (continued)	TIME (PST-SCET)	
Last hot spot observation (UVS)		10:06
Turn to return to Earth point		10:50
Atmospheric profile during occultation (RS)	21	08:17
Start Earth occultation by Jupiter		09:44
End Earth occultation by Jupiter		16:37
Plasma sheet crossing recording (F&P)		17:20
Start Solar occultation by Jupiter		19:00
End Solar occultation by Jupiter	22	02:44
Start Playback		03:00
End Europa-4 real-time survey (F&P)		06:49
OTM-17		17:40
Turn for attitude maintenance	26	12:00
OTM-18	04 January 1997	04:30
Turn for attitude maintenance	08	06:15
Start Solar conjunction*	10	14:14
End Solar conjunction	28	07:09
OTM-19	06 February	01:30
First Europa-6 approach OPNAV		20:45
Turn for attitude maintenance	10	10:02
Last Europa-6 approach OPNAV	15	21:35
Start Europa-6 real-time survey (F&P)		01:00
End Playback	16	16:00

* Solar conjunction contains a phasing orbit fly through the Jovian system. Refer to Jupiter - Orbit 5 supplement.

Project Galileo Outreach. 29 May 96. Version 1.0

Jupiter - Orbit 5 - Phasing

Encounter Trajectory



Time Ordered Listing

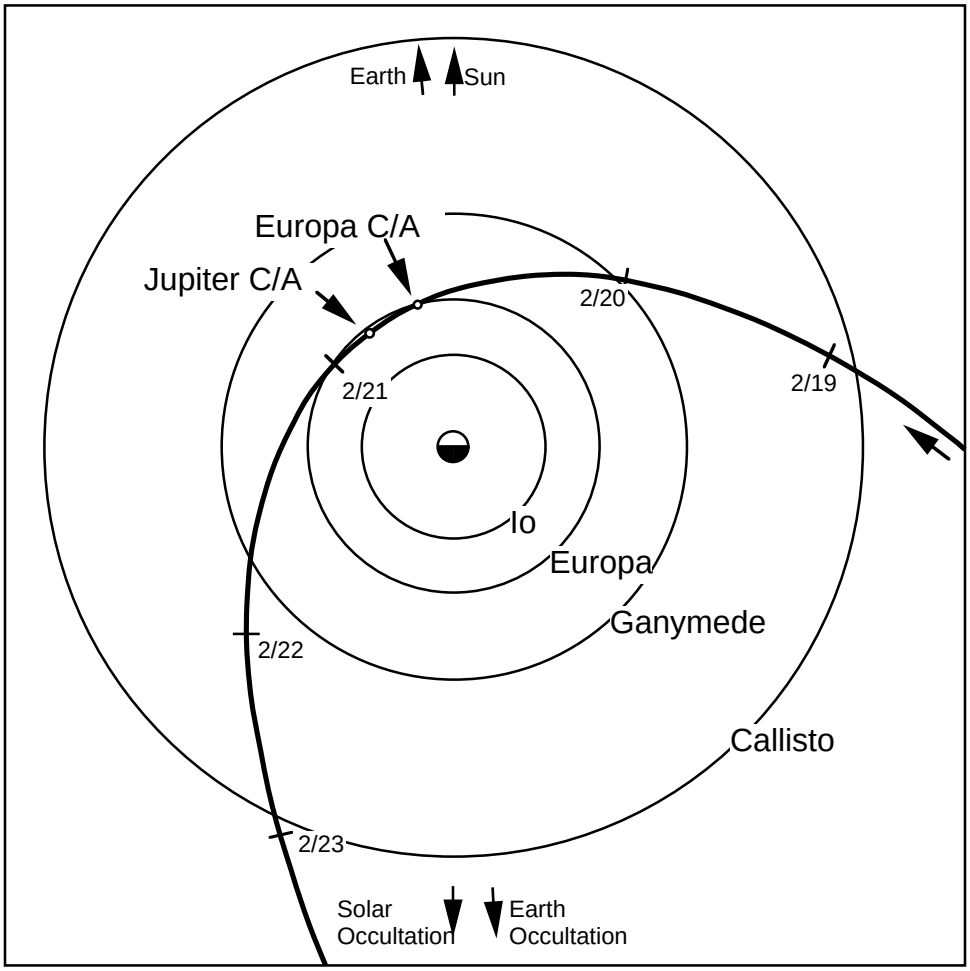
EVENT	TIME (PST-SCET)	
Start Solar conjunction	10 January 1997	14:14
Ganymede C/A (1150000 km)	19	01:36
Jupiter C/A (646000 km)		16:28
Europa C/A (28900 km)		17:12
Callisto C/A (600000 km)	21	12:18
Io C/A (1470000 km)		17:25
Start Solar occultation by Jupiter	23	00:03
Start Earth occultation by Jupiter		01:54
End Solar occultation by Jupiter		08:51
End Earth occultation by Jupiter		10:32
End Solar conjunction	28	07:09

Project Galileo Outreach. 29 May 96. Version 1.0

PROJECT GALILEO QUICK-LOOK ORBIT FACTS

Europa - Orbit 6

Encounter Trajectory



Quick Facts

Europa Encounter

20 February 1997
17:03 UTC

Altitude: 587 km

1247 times closer than VGR1
348 times closer than VGR2

Speed: 5.7 km/s

Latitude: 17 deg S

Longitude: 324 deg W

Perijove

20 February 1997
20:53 UTC

Jupiter Range: 9.1 Rj

Earth Range: 6.0 AU

OWLT: 50 min

Encounter Phase

17 - 23 February

Cruise Phase

23 Feb - 30 Mar

Science Highlights

Magnetosphere

- *Europa south Alfvén wing crossing*
- *Jupiter magnetic equator crossing*

Satellites

- *Europa Argiope Linea and other lineated regions*
- *Io plume monitoring*
- *Jupiter rings*
- *Thebe, Amalthea*

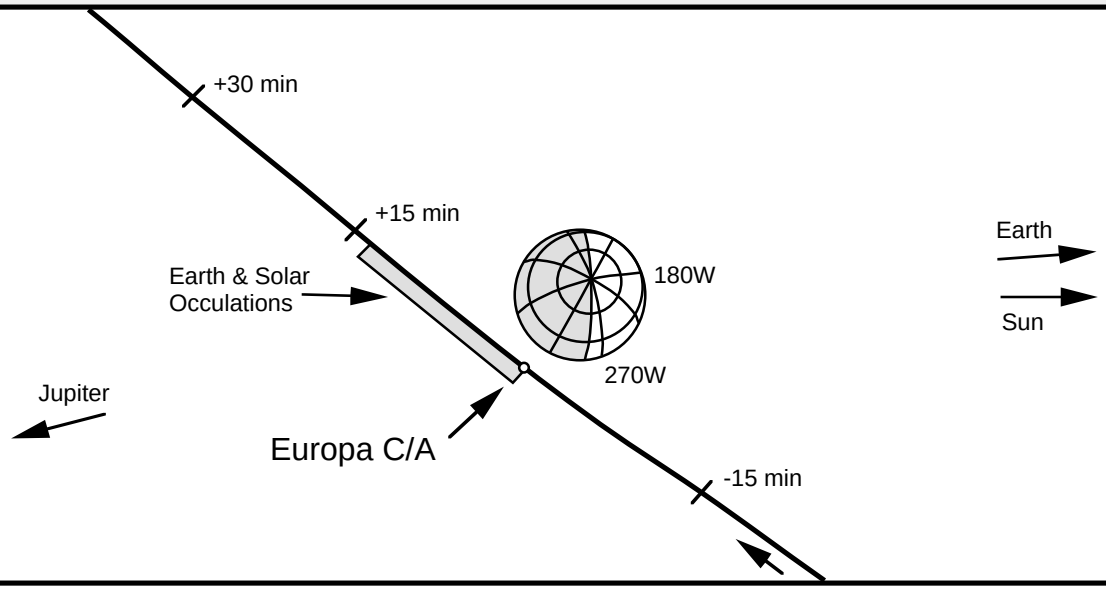
Jovian Atmosphere

- *South equatorial belt - zone boundary*
- *Jupiter northern aurora*

Project Galileo Outreach. 29 May 96. Version 1.0

Europa - Orbit 6

Europa Flyby Geometry



Time Ordered Listing

EVENT	TIME (PST-SCET)	
Start Encounter	16 February 1997	16:00
OTM-20		16:15
First Io monitoring observation (SSI)	17	13:43
Real-time Jupiter aurora obs. (UVS/EUV)	18	00:34
Jupiter auroral map (UVS)		16:55
First belt-zone observation (SSI)		18:31
Thebe imaging (SSI)	19	15:01
Europa Terra Incognito obs. (NIMS)	20	04:03
Io C/A (401000 km)		04:04
Europa Argiope Linea obs. (NIMS)		08:05
Europa Alfvén wing recording (F&P)		08:36
Europa high resolution C/A obs. (PPR)		09:03
Start Earth occultation by Europa		
Europa C/A (2150 km)		
Start Solar occultation by Europa		09:04
End Earth occultation by Europa		09:16
End Solar occultation by Europa		09:17
Jupiter C/A (652000 km)		12:53
Jupiter magnetic equator recording (F&P)		13:06
Amalthea imaging (SSI)		13:55

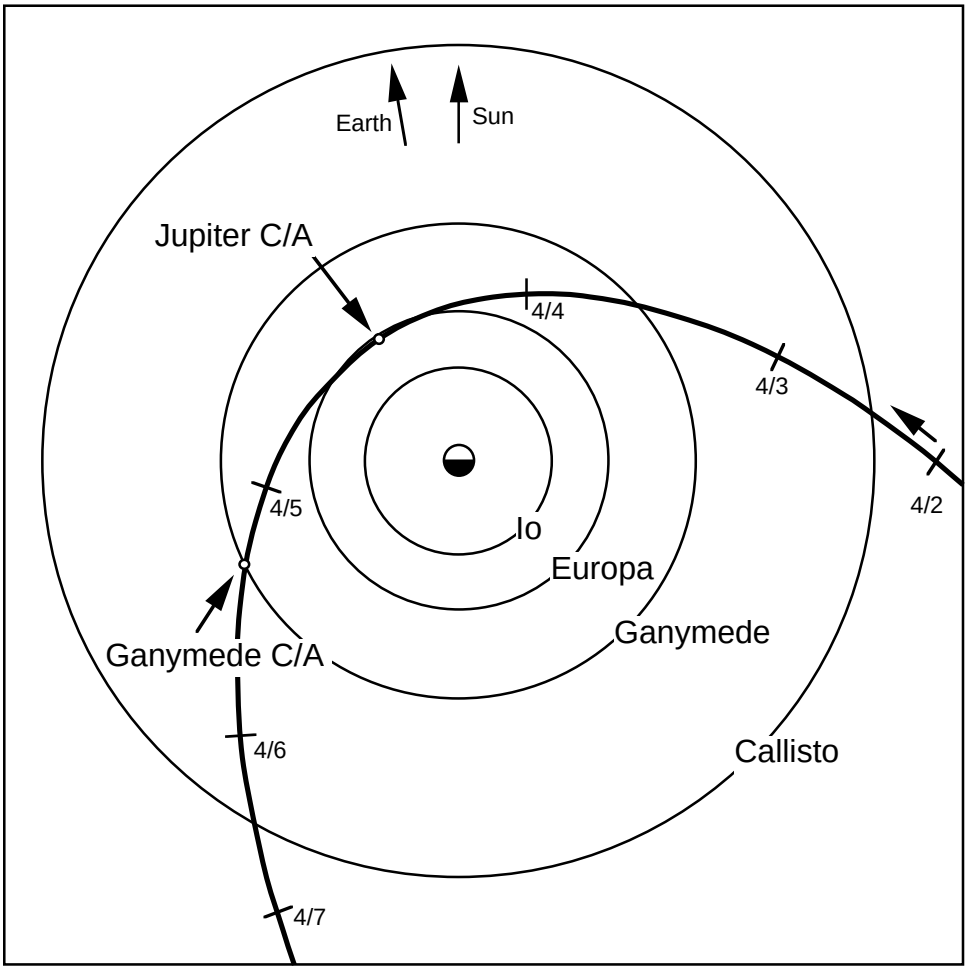
EVENT (continued)	TIME (PST-SCET)	
Europa global color map (SSI)		17:23
Last belt-zone observation (NIMS)	21	02:04
Last Io monitoring observation (SSI)		02:56
Ganymede C/A (318000 km)		08:26
Callisto C/A (279000 km)	22	14:55
Start Playback		17:30
OTM-21	23	20:00
Science Turn (Solar occultation)	25	03:47
Start Solar occultation by Jupiter		05:27
Jupiter rings observation (NIMS)		07:33
Turn to return to Earth point		16:44
End Solar occultation by Jupiter		17:15
End Europa-6 real-time survey (F&P)		19:00
Start Earth occultation by Jupiter	26	11:13
End Earth occultation by Jupiter	27	00:48
OTM-22	13 March	17:15
Turn for attitude maintenance	17	09:10
Start Ganymede-7 real-time survey (F&P)	20	17:59
First Ganymede-7 approach OPNAV	22	15:38
End Playback	30	08:00

Project Galileo Outreach. 29 May 96. Version 1.0

PROJECT GALILEO QUICK-LOOK ORBIT FACTS

Ganymede - Orbit 7

Encounter Trajectory



Quick Facts

Ganymede Encounter

05 April 1997
07:11 UTC

Altitude: 3059 km

37 times closer than VGR1
19 times closer than VGR2

Speed: 8.5 km/s

Latitude: 56 deg N

Longitude: 88 deg W

Perijove

04 April 1997
11:04 UTC

Jupiter Range: 9.1 Rj

Earth Range: 5.5 AU

OWLT: 46 min

Encounter Phase

30 Mar - 06 Apr

Cruise Phase

06 Apr - 04 May

Science Highlights

Magnetosphere

- *Ganymede north Alfvén wing crossing*
- *First dawn-side plasma sheet crossing (46 Rj)*

Satellites

- *Ganymede high-energy impact regions (Kittu, etc.)*
- *Europa non-targeted encounter*
- *Callisto full color global mosaic*

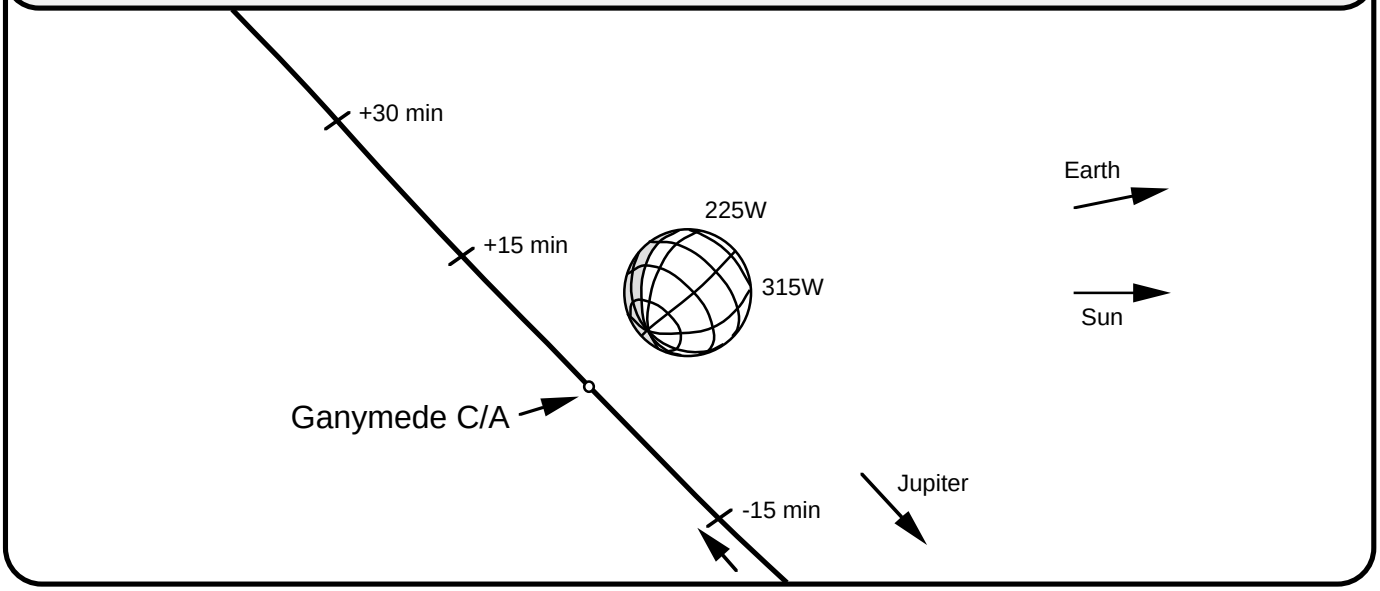
Jovian Atmosphere

- *Visually clear or Brown Barge regions*
- *Jupiter northern aurora*

Project Galileo Outreach. 29 May 96. Version 1.0

Ganymede - Orbit 7

Ganymede Flyby Geometry



Time Ordered Listing

EVENT	TIME (PST/PDT-SCET)	
Start Encounter	30 March 1997	08:00
Dawn-side plasma sheet recording (F&P)		10:50
Last Ganymede-7 approach OPNAV	31	18:13
OTM-23		20:40
Callisto polarimetry (PPR)	01 April	18:50
Real-time Jupiter aurora (UVS/EUV)	02	03:40
First Brown Barge observation (UVS)		07:30
Callisto global color image (SSI)		08:39
Jupiter auroral map (UVS)		08:50
Callisto C/A (636000 km)		08:52
Callisto global coverage (NIMS)		10:45
First Io monitoring observation (NIMS)		21:15
Europa full disk image (SSI)	03	09:44
Io C/A (531000 km)		13:11
Europa dayside global thermal map (PPR)		18:32
Europa Tyre Macula region (NIMS)		21:49
Europa C/A (24600 km)		22:00
Jupiter C/A (652000 km)	04	03:04
Last Io monitoring observation (SSI)		16:15
Ganymede Nicholson Regio (SSI)		22:29

EVENT	TIME (PST/PDT-SCET)	
Ganymede Kittu region (SSI)		22:40
Ganymede Alfvén wing recording (F&P)		22:56
Ganymede polarimetry (PPR)		23:04
Ganymede C/A (5690 km)		23:11
Ganymede global surface map (NIMS)	05	06:22
Last Brown Barge observation (NIMS)	06	08:56*
Start Playback		09:00
OTM-24	07	22:15
End Ganymede-7 real-time survey (F&P)	14	13:00
Turn for attitude maintenance	18	11:00
OTM-25	21	03:00
First Ganymede-8 approach OPNAV	01 May	16:54
Start Ganymede-8 real-time survey (F&P)	02	15:30
Last Ganymede-8 approach OPNAV		21:25
End Playback	04	09:00

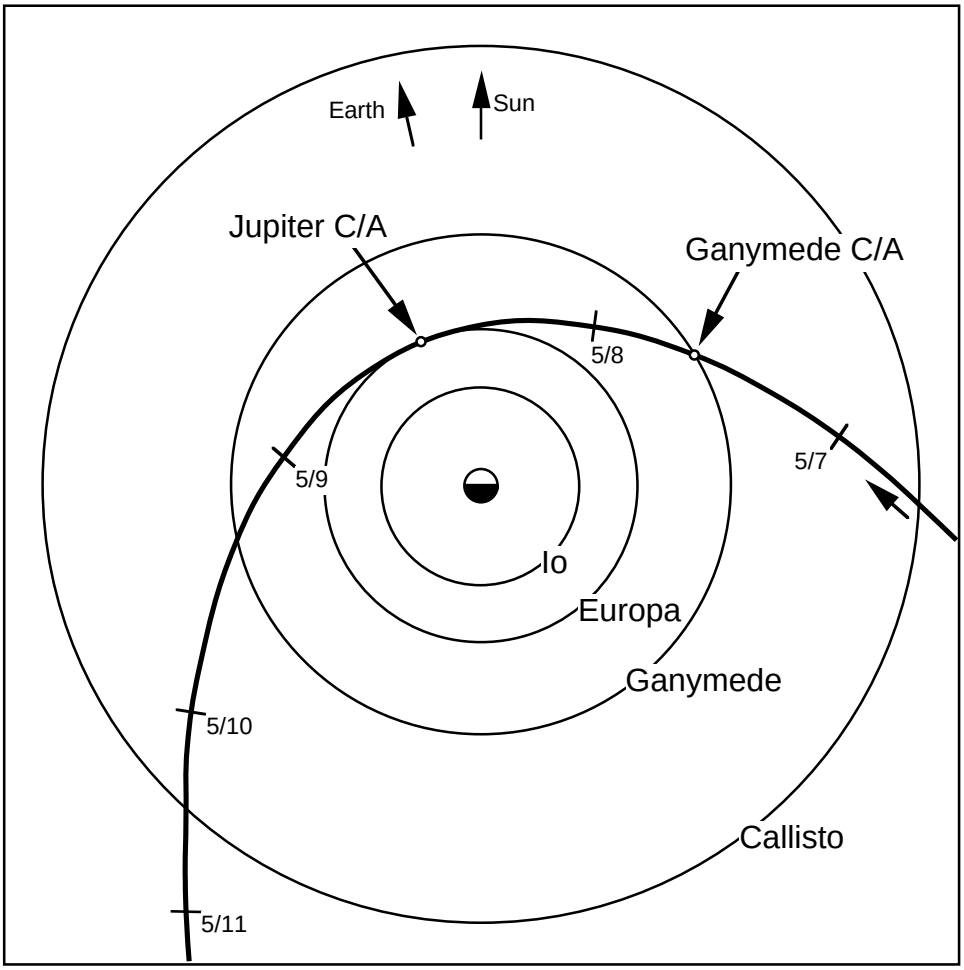
*denotes transition from PST to PDT.

Project Galileo Outreach. 29 May 96. Version 1.0

PROJECT GALILEO QUICK-LOOK ORBIT FACTS

Ganymede - Orbit 8

Encounter Trajectory



Quick Facts

Ganymede Encounter

07 May 1997
15:57 UTC

Altitude: 1585 km

71 times closer than VGR1
38 times closer than VGR2

Speed: 8.6 km/s

Latitude: 29 deg N

Longitude: 274 deg W

Perijove

08 May 1997
11:42 UTC

Jupiter Range: 9.3 Rj

Earth Range: 5.0 AU

OWLT: 42 min

Encounter Phase

04 - 11 May

Cruise Phase

11 May - 22 June

Science Highlights

Magnetosphere

- *Start of second mini-tour of Jovian magnetosphere*
- *Ganymede upstream wake crossing*
- *Plasma sheet / Jupiter aurora at 20 Rj*

Satellites

- *Ganymede surface morphology: Osiris, Tiamat Sulcus, etc*
- *Callisto non-targeted encounter. South Pole*
- *Metis, Elara*

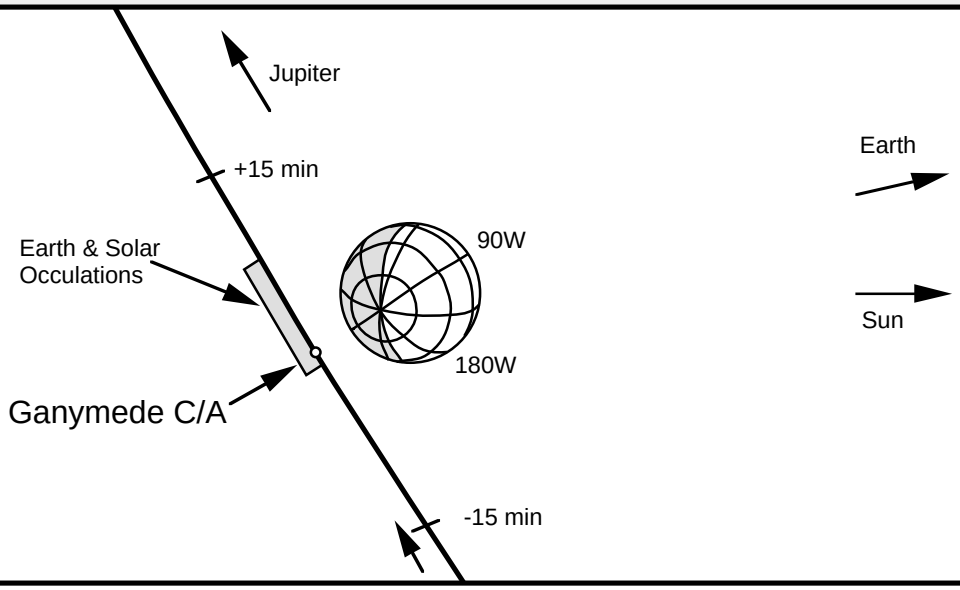
Jovian Atmosphere

- *South polar haze zone*
- *Jupiter northern and southern aurora, Io footprint*

Project Galileo Outreach. 29 May 96. Version 1.0

Ganymede - Orbit 8

Ganymede Flyby Geometry



Time Ordered Listing

EVENT	TIME (PDT-SCET)	
Start Encounter	04 May 1997	09:00
OTM-26		09:30
Elara observing (UVS)		17:00
Science Turn (Io plume monitoring)	05	03:10
First Io monitoring observation (SSI)	06	02:33
Callisto south pole obs. (NIMS/UVS)		04:13
Callisto south pole imaging (SSI)		05:08
Callisto C/A (35900 km)		05:11
Callisto polarimetry/thermal obs. (PPR)		05:56
Plasma sheet / aurora recording (F&P)		15:30
Jupiter auroral asymmetry map (UVS/NIMS)		16:37
Jupiter auroral variability map (UVS)		18:10
Io C/A (956000 km)	07	00:31
First south polar haze zone obs. (UVS)		04:17
Ganymede Orisis observing (NIMS)		06:18
Ganymede dayside thermal obs. (PPR)		06:38
Ganymede Tiamat Sulcus (SSI)		07:35
Ganymede C/A recording (F&P)		08:38
Start Earth occultation by Ganymede		08:56
Start Solar occultation by Ganymede		08:57
Ganymede C/A (4120 km)		

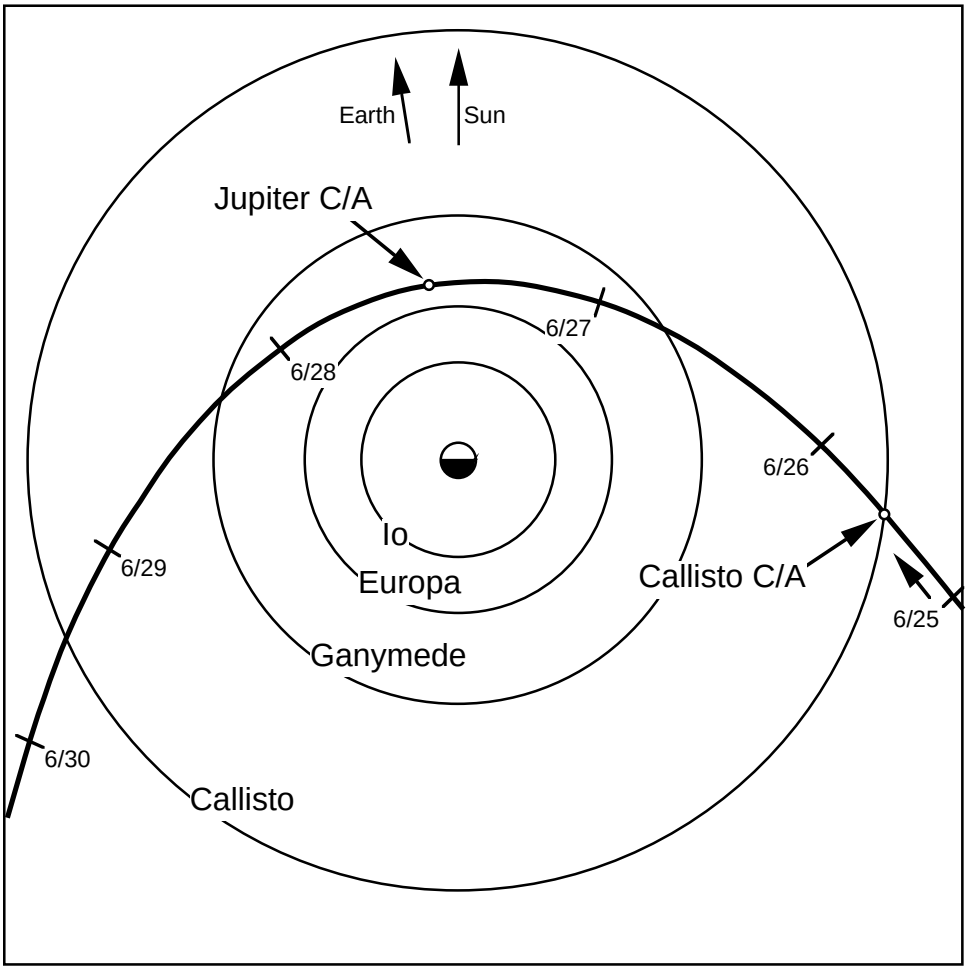
EVENT (continued)	TIME (PDT-SCET)	
End Earth occultation by Ganymede		09:03
End Solar occultation by Ganymede		09:05
Turn to return to Earth point		12:04
Last Io monitoring observation (NIMS)		15:58
Europa C/A (1290000 km)	08	02:49
Jupiter C/A (663000 km)		04:42
Metis imaging (SSI)		09:34
Last south polar haze zone obs. (NIMS)	10	16:18
OTM-27		19:00
Start Playback	11	09:00
End Ganymede-8 real-time survey (F&P)	13	07:00
Start Earth occultation observing (RS)	24	22:04
Start Earth occultation by Jupiter	25	02:36
End Earth occultation by Jupiter		20:52
End Earth occultation observing (RS)	26	01:25
Start 2nd magnetosphere mini-tour (F&P)	02 June	09:00
OTM-28		20:00
First Callisto-9 approach OPNAV	17	22:30
Last Callisto-9 approach OPNAV	20	18:45
End Playback	22	09:00

Project Galileo Outreach. 29 May 96. Version 1.0

PROJECT GALILEO QUICK-LOOK ORBIT FACTS

Callisto - Orbit 9

Encounter Trajectory



Quick Facts

Callisto Encounter

25 June 1997
13:47 UTC

Altitude: 416 km

298 times closer than VGR1
511 times closer than VGR2

Speed: 8.2 km/s

Latitude: 2 deg N

Longitude: 259 deg W

Perijove

27 June 1997
11:52 UTC

Jupiter Range: 10.8 Rj

Earth Range: 4.3 AU

OWLT: 36 min

Encounter Phase

22 - 29 June

Cruise Phase

29 June - 14 Sept

Science Highlights

Magnetosphere

- *Unique deep magnetotail passage (143 Rj - during cruise phase).*
- *Second mini-tour of Jovian magnetosphere*
- *Jupiter aurora*

Satellites

- *Callisto Valhalla multi-ringed structure*
- *Ganymede non-targeted encounter*
- *Metis, Adrastea, Amalthea, Thebe*

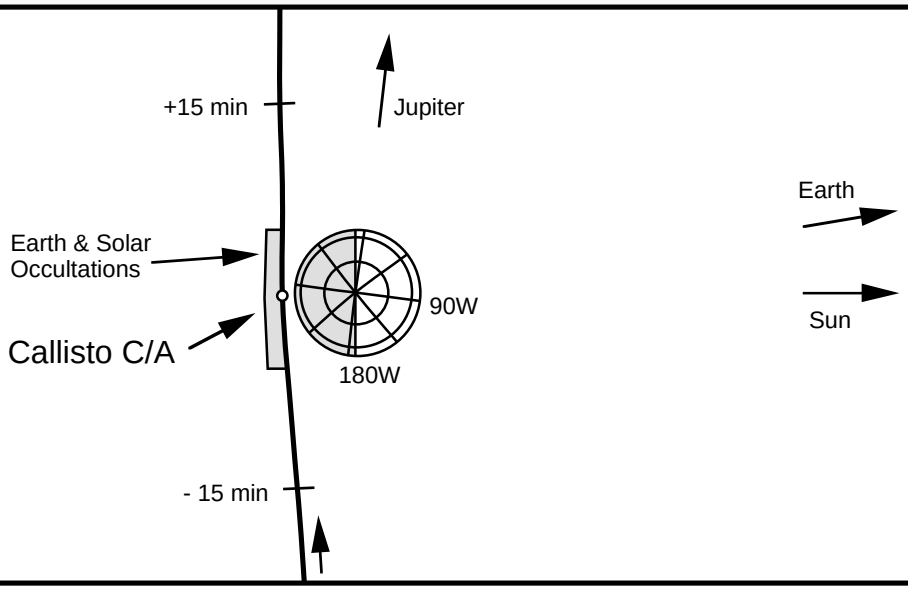
Jovian Atmosphere

- *Great Red Spot*
- *Equatorial plume head*
- *Jupiter northern and southern aurora, Io footprint*
- *High solar phase angle*

Project Galileo Outreach. 29 May 96. Version 1.0

Callisto - Orbit 9

Callisto Flyby Geometry



Time Ordered Listing

EVENT	TIME (PDT-SCET)	
Start Encounter	22 June 1997	09:00
OTM-29		23:18
Science Turn (Callisto encounter)	24	23:04
Callisto dark map (PPR)	25	04:42
Callisto C/A recording (F&P)		06:26
Start Earth occultation by Callisto		06:39
Start Solar occultation by Callisto		06:40
Callisto C/A (2820 km)		06:47
End Earth occultation by Callisto		06:56
End Solar occultation by Callisto		06:58
Callisto Skuld crater obs. (NIMS/UVS)		07:26
Callisto Valhalla regional obs. (SSI)		08:11
Turn to return to Earth point		12:04
First Great Red Spot observation (SSI)		18:26
First plume head observation (SSI)		22:57
First Jupiter auroral observation (UVS)		23:27
Thebe imaging (SSI)		23:56
Adrastea imaging (SSI)	26	06:11
Ganymede C/A (82600 km)		10:19
Ganymede Perrine/Galileo Regio (SSI)		10:46
Ganymede polarimetry (PPR)		11:38
Ganymede global mosaic (NIMS)		14:53
Amalthea imaging (SSI)		16:35
Europa C/A (1200000 km)	27	03:09
First Io monitoring observation (NIMS)		03:33
Metis imaging (SSI)		04:25
Jupiter C/A (770000 km)		04:52
Io C/A (607000 km)		19:31
Jupiter aurora recording (F&P)	28	06:50
Last Jupiter auroral observation (UVS)		07:01

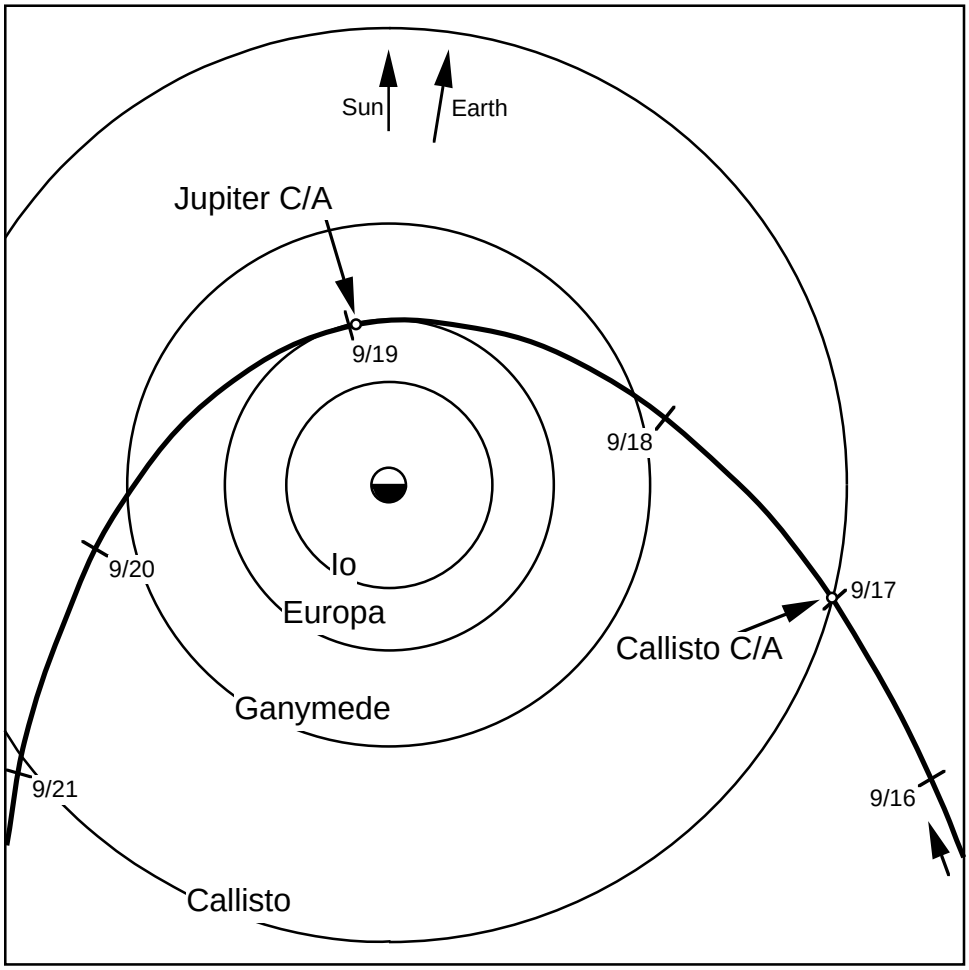
EVENT (continued)	TIME (PDT-SCET)	
Last Great Red Spot observation (NIMS)		08:59
Last Io monitoring observation (NIMS)		13:27
Last plume head observation (NIMS)		14:12
Start Playback	29	09:00
OTM-30	10 July	11:00
Science Turn (instrument calibration)	14	00:27
Turn to return to Earth point		05:41
Dusk magnetotail obs. @ 130 Rj (F&P)	23	07:19
Start Solar occultation by Jupiter	29	04:54
End Solar occultation by Jupiter	30	11:40
Start Earth occultation by Jupiter	01 August	03:26
End Earth occultation by Jupiter	02	04:42
First apojove magnetotail obs. (F&P)	07	04:06
Second apojove magnetotail obs. (F&P)		06:36
OTM-31	08	10:45
Turn for attitude maintenance	09	09:00
Dawn magnetotail obs. @ 130 Rj (F&P)	23	07:07
Science Turn (high-phase Jupiter)	02 September	19:45
Jupiter high solar phase obs. (SSI)		22:56
Turn to return to Earth point		23:31
First Callisto-10 approach OPNAV	09	22:13
Science Turn (high-phase Jupiter)	10	04:25
Jupiter high solar phase obs. (SSI)		07:26
Turn to return to Earth point		08:01
Last Callisto-10 approach OPNAV	12	13:25
End Playback	13	17:00

Project Galileo Outreach. 29 May 96. Version 1.0

PROJECT GALILEO QUICK-LOOK ORBIT FACTS

Callisto - Orbit 10

Encounter Trajectory



Quick Facts

Callisto Encounter

17 September 1997
00:21 UTC

Altitude: 524 km

237 times closer than VGR1
406 times closer than VGR2

Speed: 8.2 km/s

Latitude: 5 deg N

Longitude: 79 deg W

Perijove

18 September 1997
23:13 UTC

Jupiter Range: 9.2 Rj

Earth Range: 4.3 AU

OWLT: 36 min

Encounter Phase

14 - 20 September

Cruise Phase

20 Sept - 02 Nov

Science Highlights

Magnetosphere

- *Completion of second mini-tour of Jovian magnetosphere*
- *Jupiter magnetic equator crossing*

Satellites

- *Callisto global and bright limb observations*
- *Io aurora and Jupiter rings during solar occultation*
- *Europa volcanism survey*
- *Amalthea, Thebe, Adrastea, Metis, Himalia*

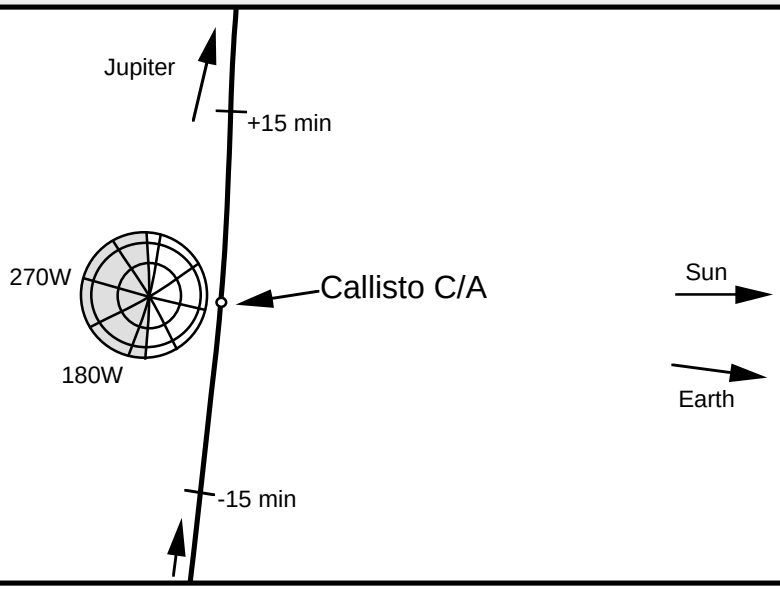
Jovian Atmosphere

- *North polar haze region*
- *Jupiter northern and southern aurora*
- *Jupiter aurora and lightning during solar occultation*

Project Galileo Outreach. 29 May 96. Version 1.0

Callisto - Orbit 10

Callisto Flyby Geometry



Time Ordered Listing

EVENT	TIME (PDT/PST-SCET)	
Start Encounter	13 September 1997	17:00
OTM-32		19:00
Himalia observation (UVS)	16	04:59
Callisto gravity field measurement (RS)		07:22
Callisto C/A recording (F&P)		16:52
Callisto Asgard transect (SSI)		16:56
Callisto C/A (2930 km)		17:21
Callisto bright limb obs. (NIMS/UVS)		17:23
First Jupiter aurora observation (UVS)	17	07:12
First north polar haze region obs. (UVS)		09:01
First Io monitoring observation (NIMS)		14:34
Amalthea observing (NIMS)	18	08:09
Ganymede C/A (1690000 km)		10:58
Jupiter magnetic equator recording (F&P)		15:36
Jupiter C/A (656000 km)		16:13
Adrastea/Metis observations (NIMS)		17:15
Io C/A (319000 km)		21:43
Europa C/A (621000 km)		22:23
Thebe imaging (SSI)	19	00:16
Science Turn (high-phase Jupiter)		00:47
Last Io monitoring observation (NIMS)		17:41

EVENT (continued)	TIME (PDT/PST-SCET)	
Last Jupiter aurora observation (NIMS)		21:14
Start Playback	20	07:30
Turn to return to Earth point		07:45
Last north polar haze region obs. (NIMS)		11:08
OTM-33		14:30
Start Earth occultation by Jupiter	29	02:51
End Earth occultation by Jupiter	30	03:19
Start Solar occultation by Jupiter	05 October	06:00
Science Turn (Solar occultation)		07:43
Europa volcanism observation (SSI)		11:04
Jupiter lightning/aurora obs. (SSI)		11:09
Io aurora/Jupiter rings obs. (SSI)		12:48
Turn to return to Earth point		18:50
End Solar occultation by Jupiter		23:59
OTM-34	18	09:00
End 2nd magnetosphere mini-tour (F&P)	25	15:00
First Europa-11 approach OPNAV	28	18:15*
Start Europa-11 real-time survey (F&P)	01 November	14:00
Last Europa-11 approach OPNAV	02	03:45
End Playback		08:00

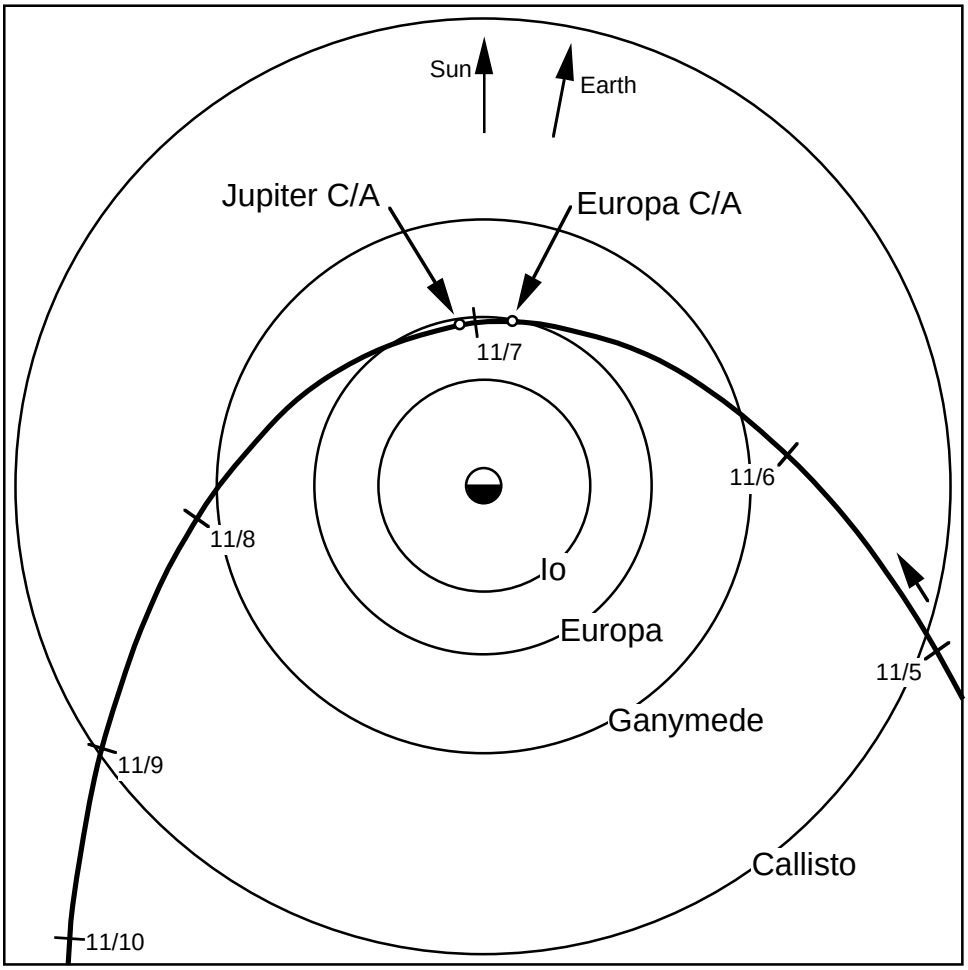
*denotes transition from PDT to PST.

Project Galileo Outreach. 29 May 96. Version 1.0

PROJECT GALILEO QUICK-LOOK ORBIT FACTS

Europa - Orbit 11

Encounter Trajectory



Quick Facts

Europa Encounter

06 November 1997
21:46 UTC

Altitude: 1125 km

651 times closer than VGR1
181 times closer than VGR2

Speed: 5.5 km/s

Latitude: 66 deg N

Longitude: 144 deg W

Perijove

07 November 1997
00:57 UTC

Jupiter Range: 9.1 Rj

Earth Range: 5.0 AU

OWLT: 41 min

Encounter Phase

02 - 09 November

Cruise Phase

09 Nov - 07 Dec

Science Highlights

Magnetosphere

- *Europa Alfvén wing crossing*
- *Last real-time survey of Jovian magnetosphere*

Satellites

- *First close range Europa observations with Ultra-violet Spectrometer*
- *Mass properties of Europa*

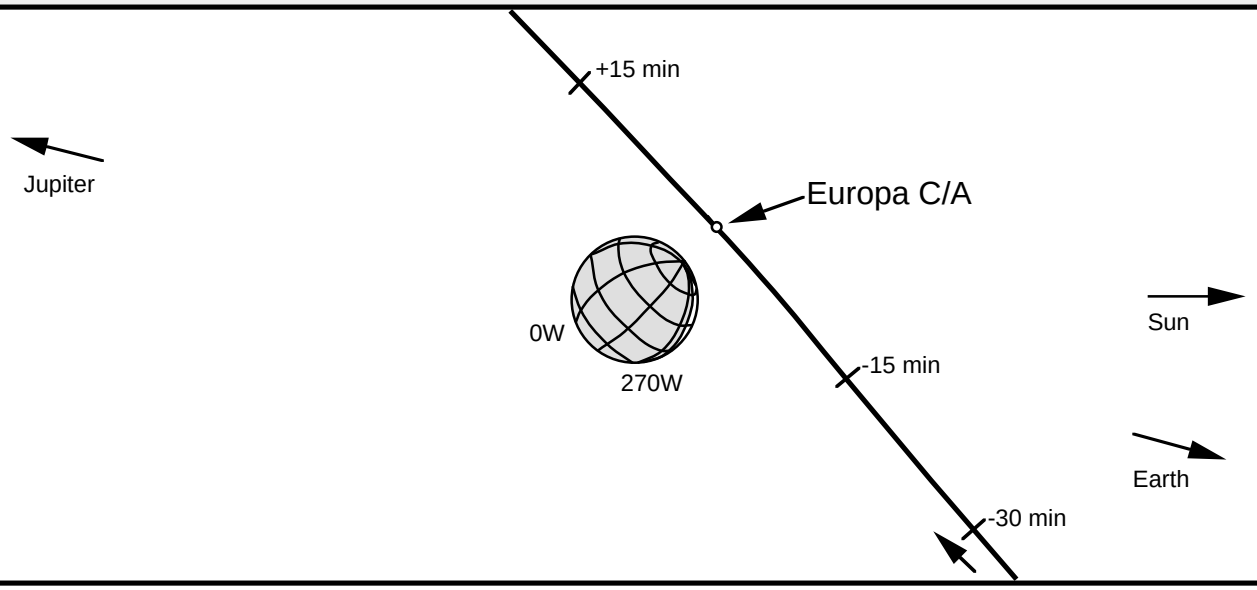
Jovian Atmosphere

- *Global equatorial hydrogen map*
- *Jupiter aurora*

Project Galileo Outreach. 29 May 96. Version 1.0

Europa - Orbit 11

Europa Flyby Geometry



Time Ordered Listing

EVENT	TIME (PST-SCET)	
Start Encounter	02 November 1997	08:00
OTM-35	03	13:46
Callisto C/A (682000 km)	04	23:35
Europa C/A (2690 km)	06	13:46
Jupiter C/A (652000 km)		16:57
Ganymede C/A (1560000 km)	07	02:10
Io C/A (780000 km)		15:23
Start Playback	09	08:00
End Playback	07 December 1997	08:00
End of Galileo Prime Mission	07 December 1997	08:00

* Science details of the Europa - 11 encounter and cruise have not been determined at this time.

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