Chapter 3 - Orbit Geometries

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Introduction to Chapter 3

This chapter contains diagrams of various aspects of geometry for the E4 Orbit.

The figure on page 3 is a North Trajectory Pole View of the E4 Orbit from apoapsis to apoapsis.

The figure on page 4 is a North Trajectory Pole View of the E4 Orbit from +/- 5 days of Europa closest approach.

The figure on page 5 is a North Trajectory Pole View of the E4 Orbit from +/- 1 day of Europa closest approach.

The figure on page 6 shows the spacecraft's groundtrack on Europa at Europa closest approach.

The figure on page 7 shows the spacecraft's groundtrack on Jupiter at Jupiter closest approach.

The figure on page 8 is a North Trajectory Pole View of the E4 Orbit from +/- 1 hour of Europa closest approach.

The figure on page 9 shows spacecraft altitude with respect to Europa (km).

The figure on page 10 shows the cone angle of Europa (Earth - S/C - Europa, deg).

The figure on page 11 shows the Sun-Europa-S/C Angle (deg).

The figure on page 12 shows spacecraft range to Jupiter's center of mass (Rj).

The figure on page 13 shows the cone angle of Jupiter (Earth - S/C - Jupiter, deg).

The figure on page 14 shows the Sun-Jupiter-S/C Angle (deg).

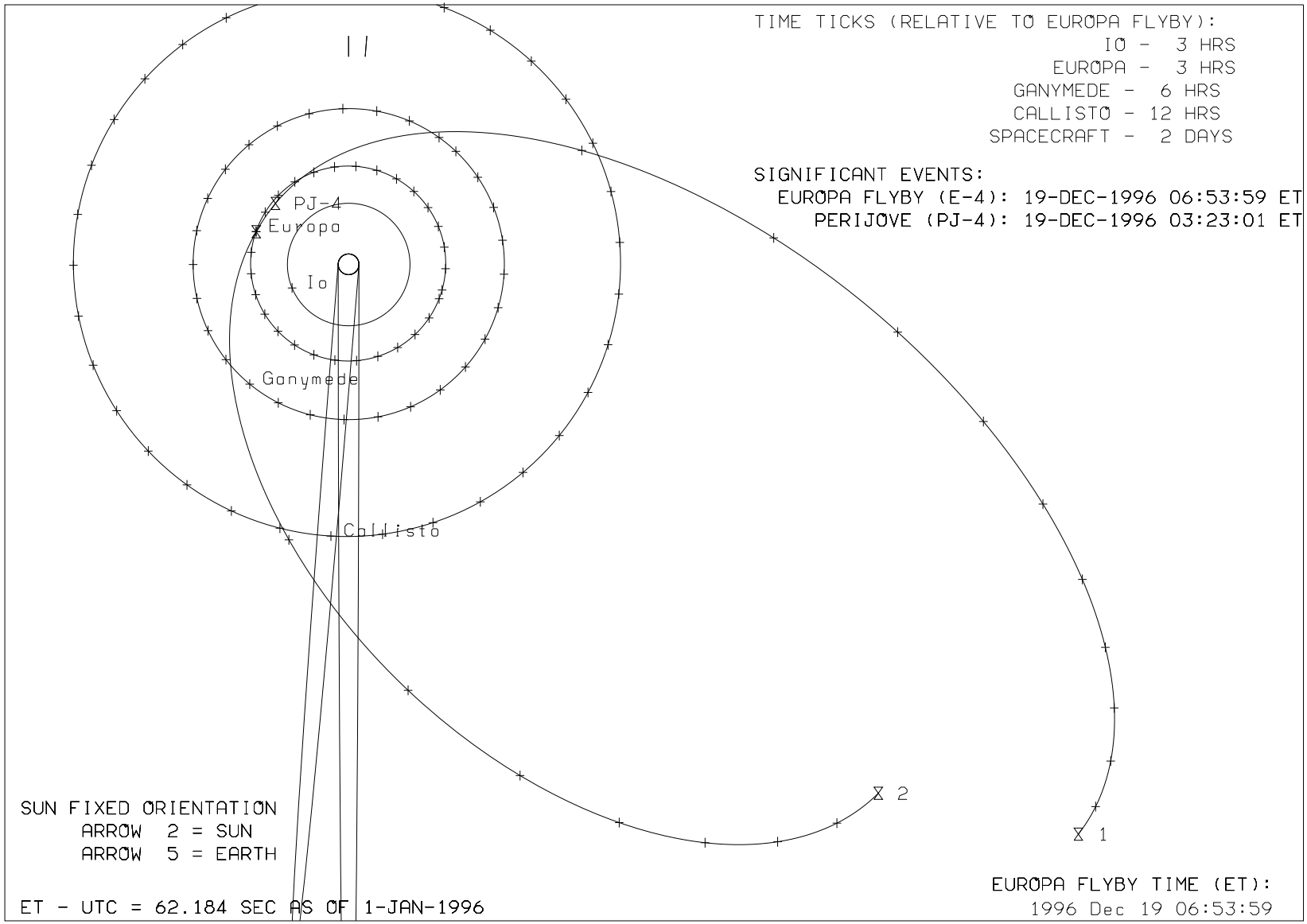
The figure on page 15 is a North Trajectory Pole View of the J5 phasing Orbit from apoapsis to apoapsis.

The figure on page 16 is a North Trajectory Pole View of the J5 phasing Orbit from +/- 5 days of Europa closest approach.

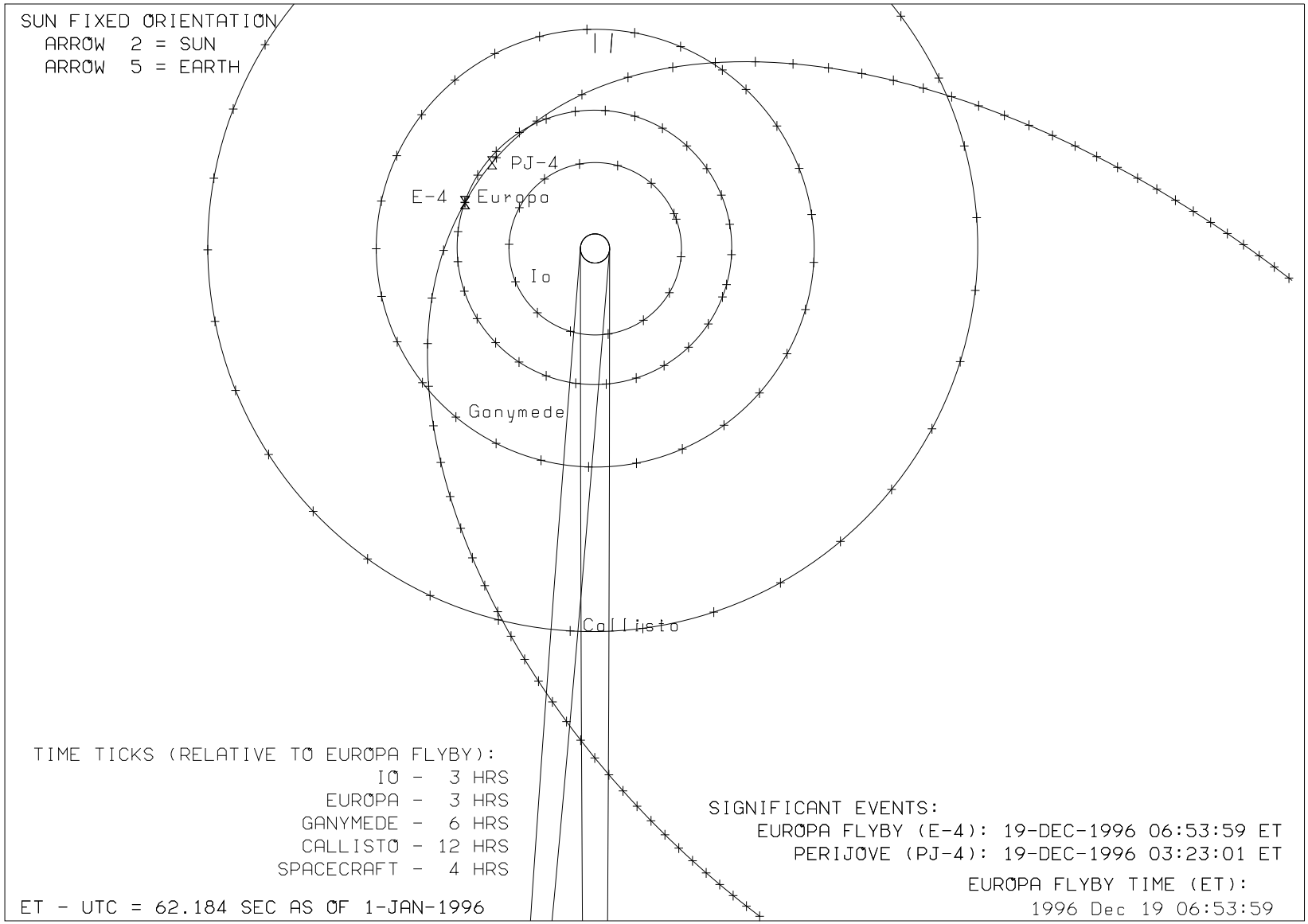
The figure on page 17 is a North Trajectory Pole View of the J5 phasing Orbit from +/- 1 day of Europa closest approach.

The figure on page 18 shows the spacecraft's groundtrack on Jupiter at Jupiter closest approach (J5).

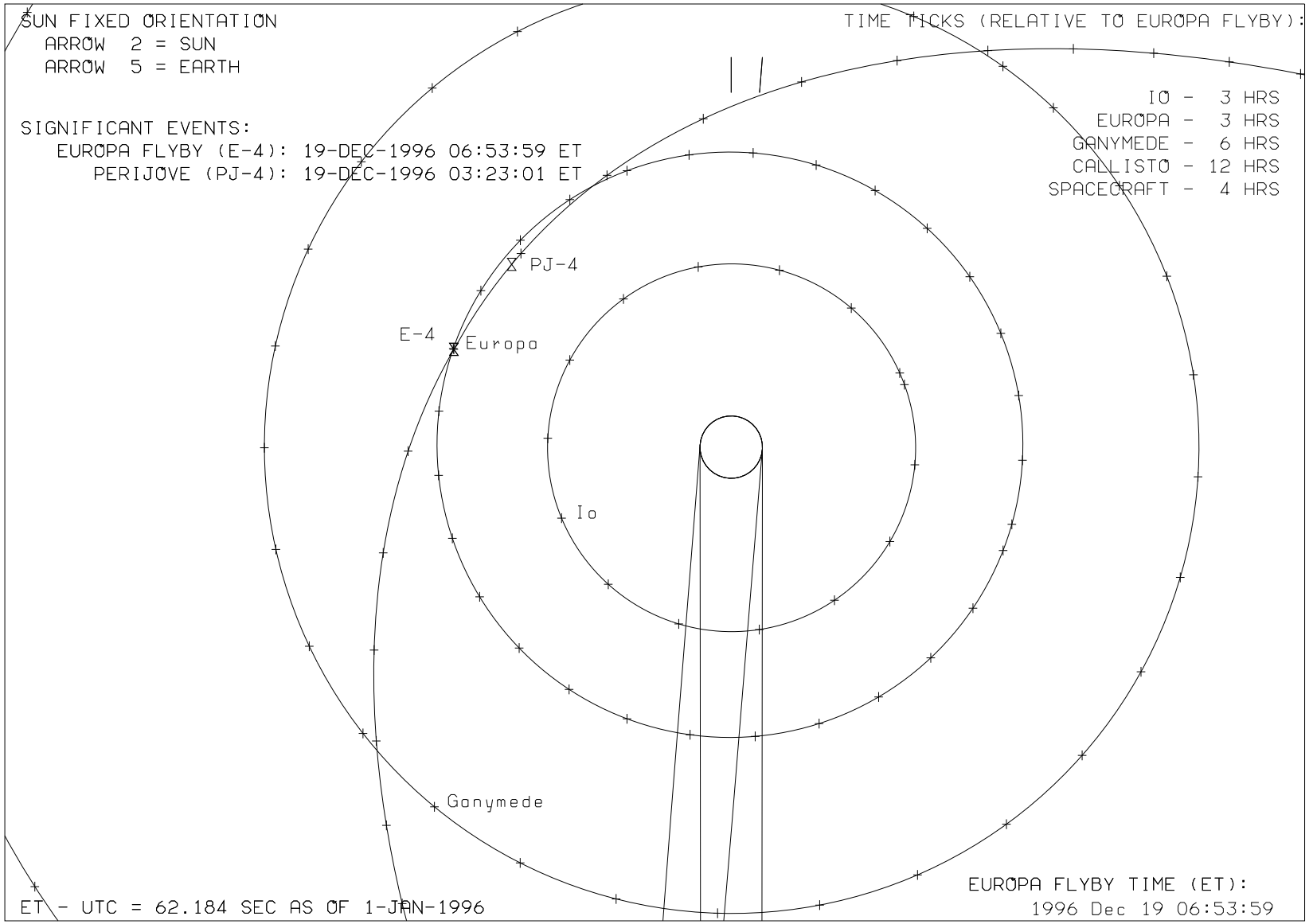
Jupiter 4: North Trajectory Pole View (E-4 Apo to Apo)



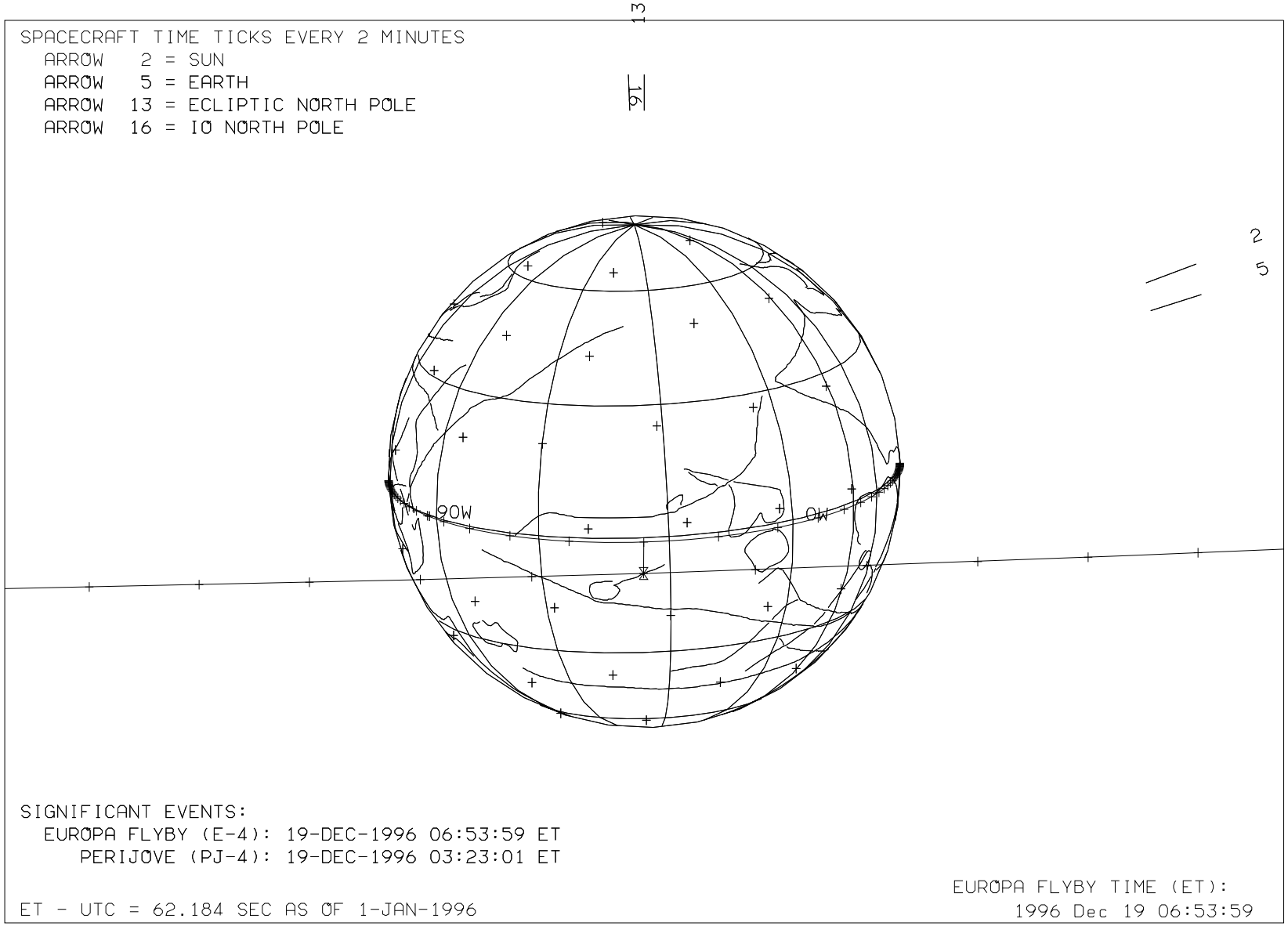
Jupiter 4: North Trajectory Pole View (E-4 +/- 5 days)



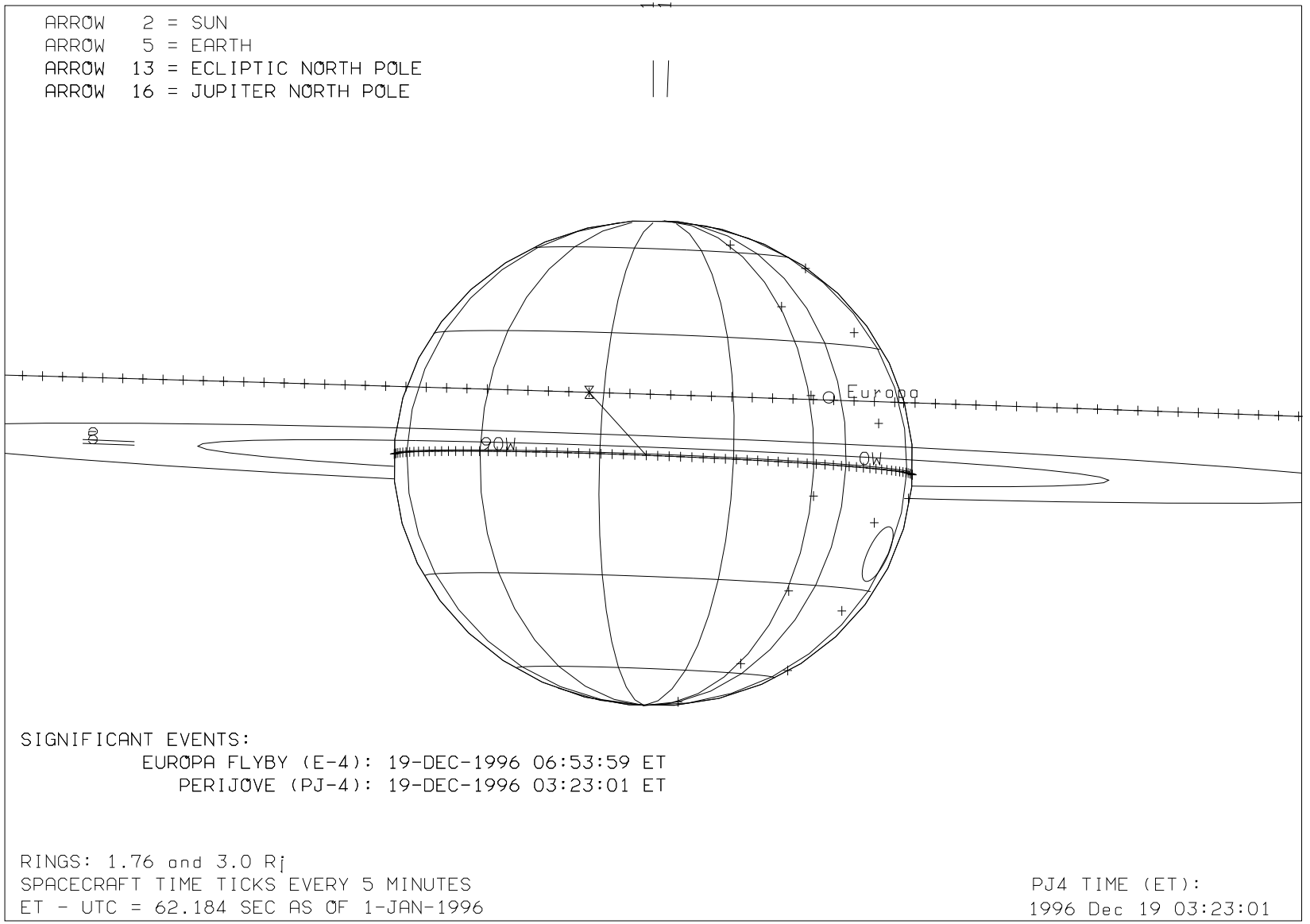
Jupiter 4: North Trajectory Pole View (E-4 +/- 1 day)



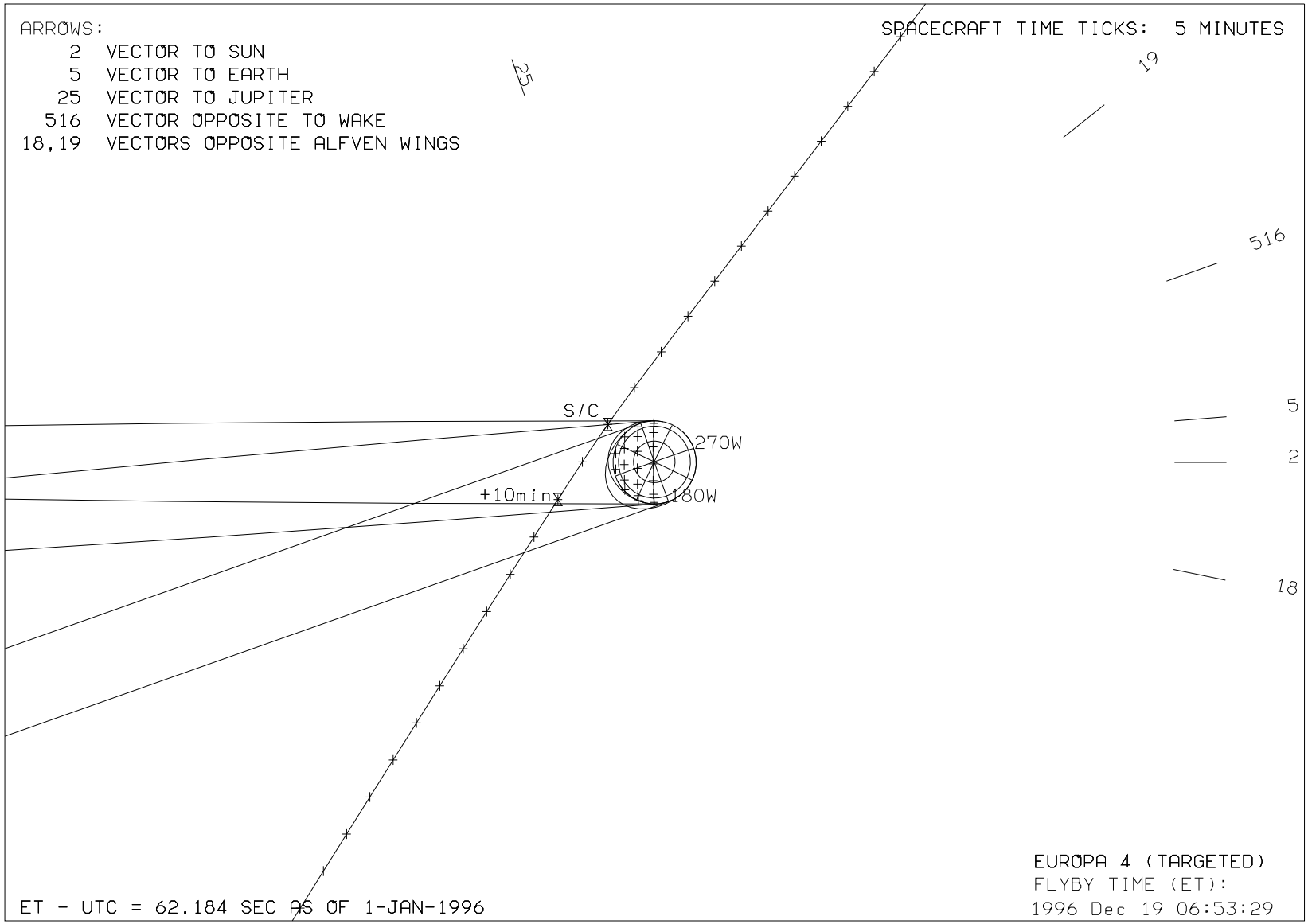
EUROPA 4: GROUNDTRACK AT CLOSEST APPROACH

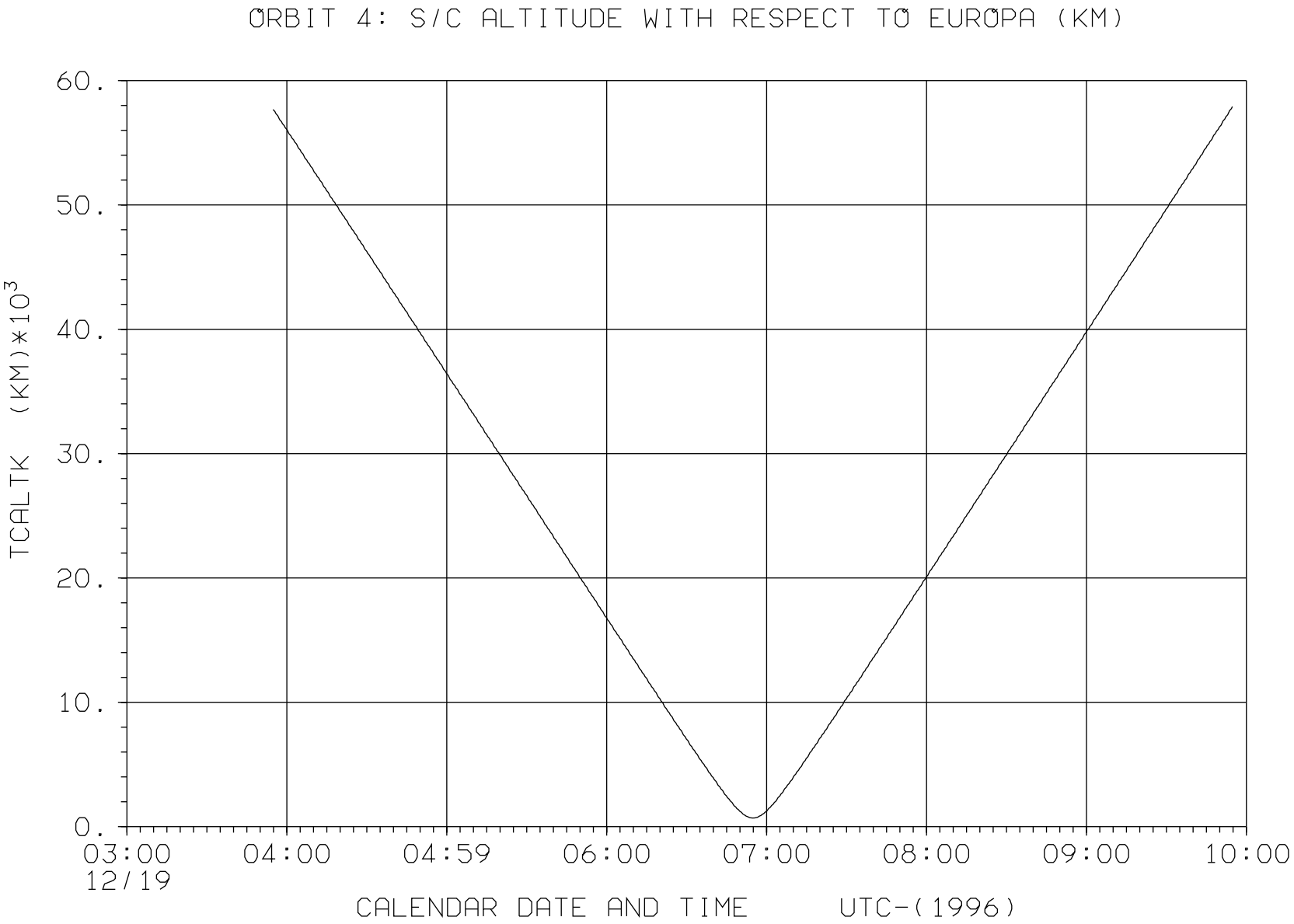


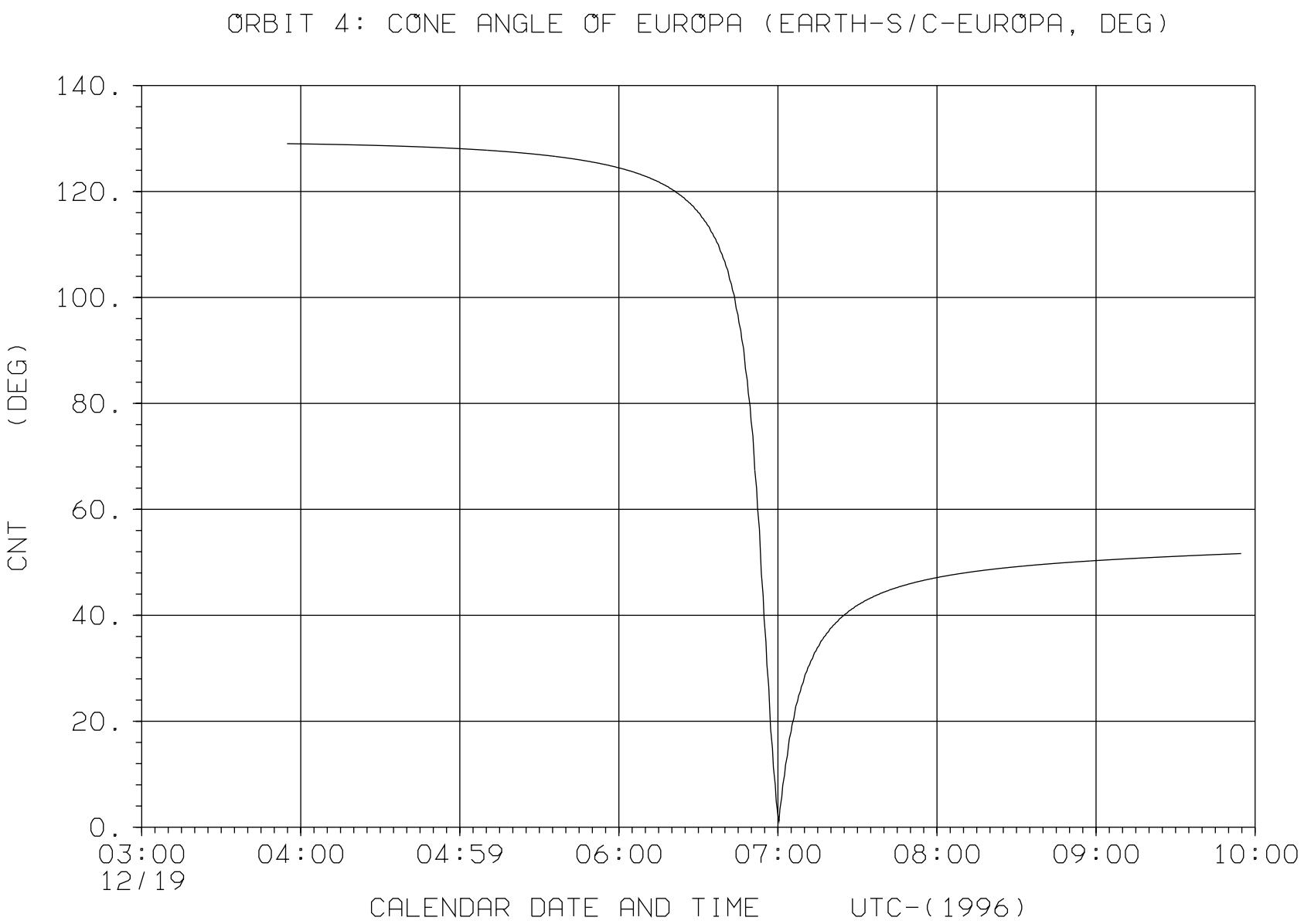
JUPITER 4: GROUNDTRACK AT CLOSEST APPROACH

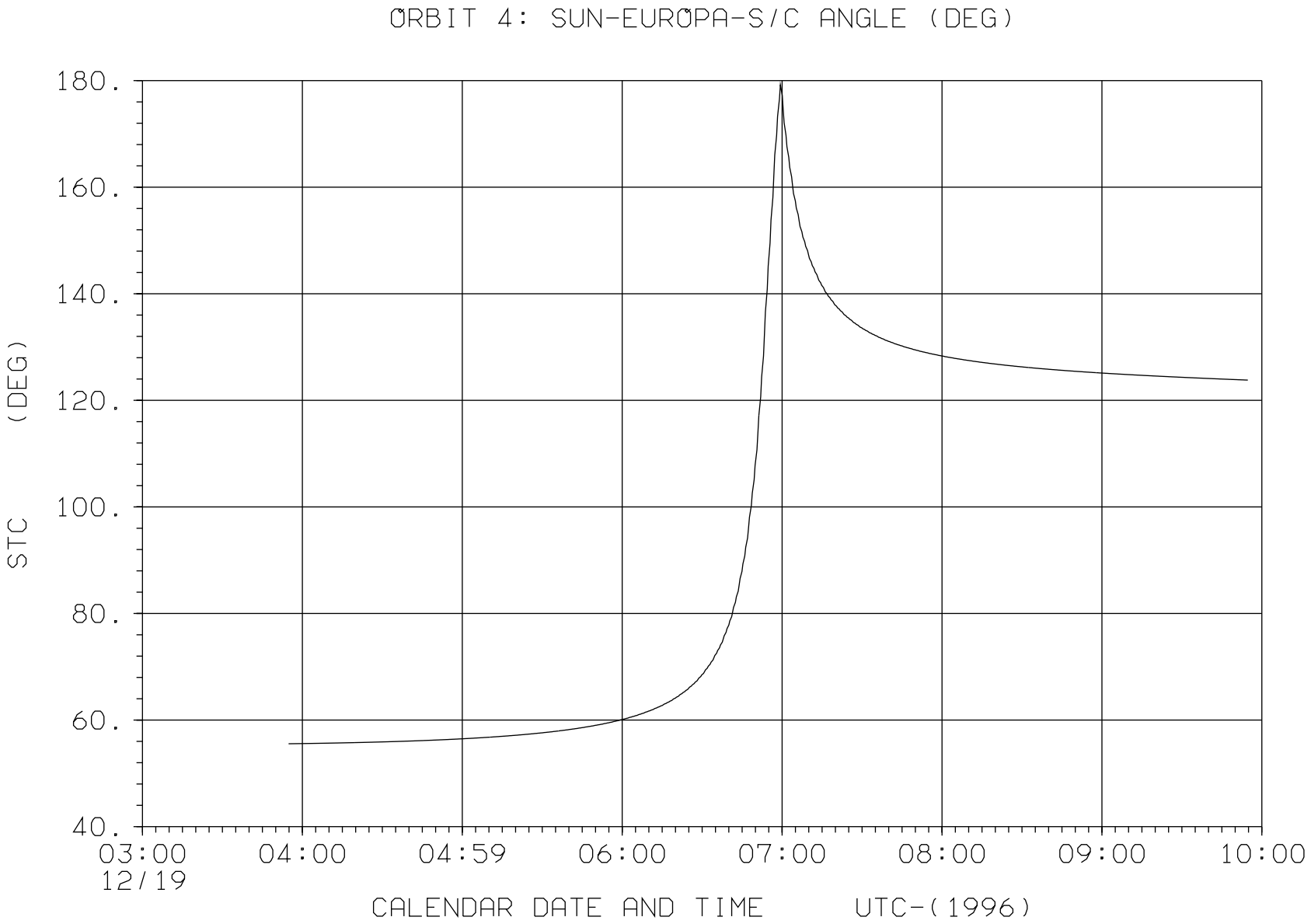


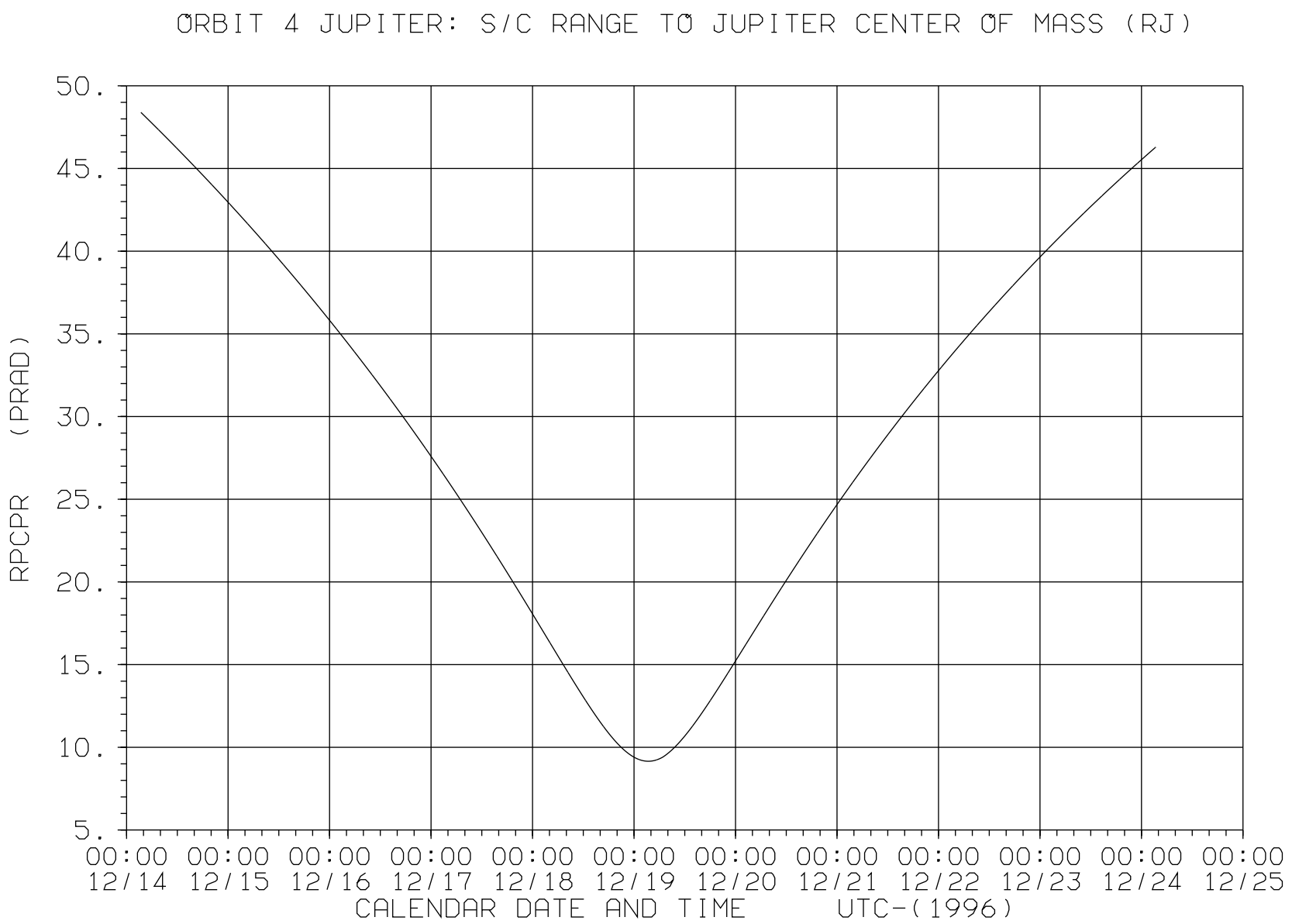
EUROPA 4: CLOSEST APPROACH (NORTH TRAJECTORY POLE VIEW)

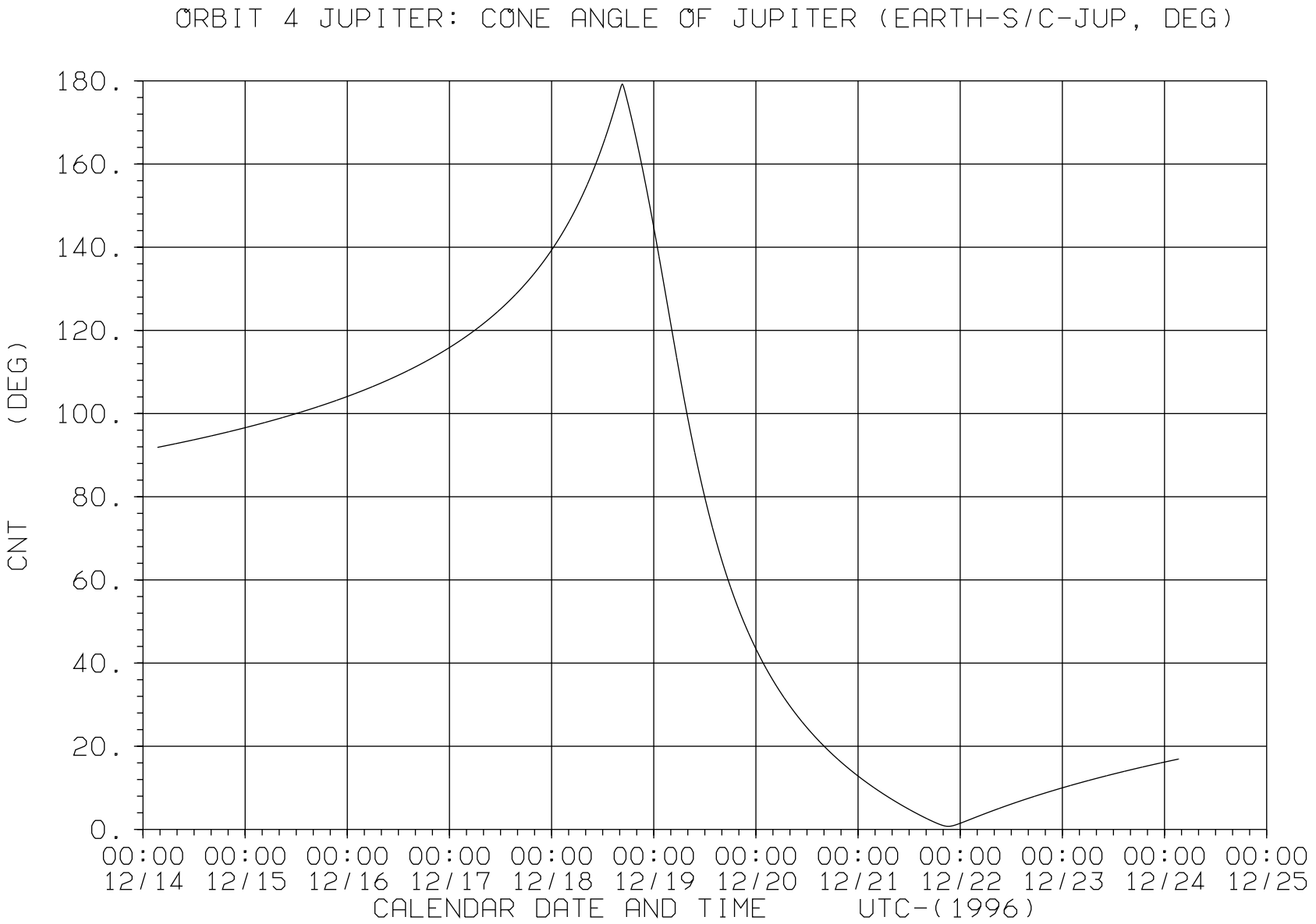


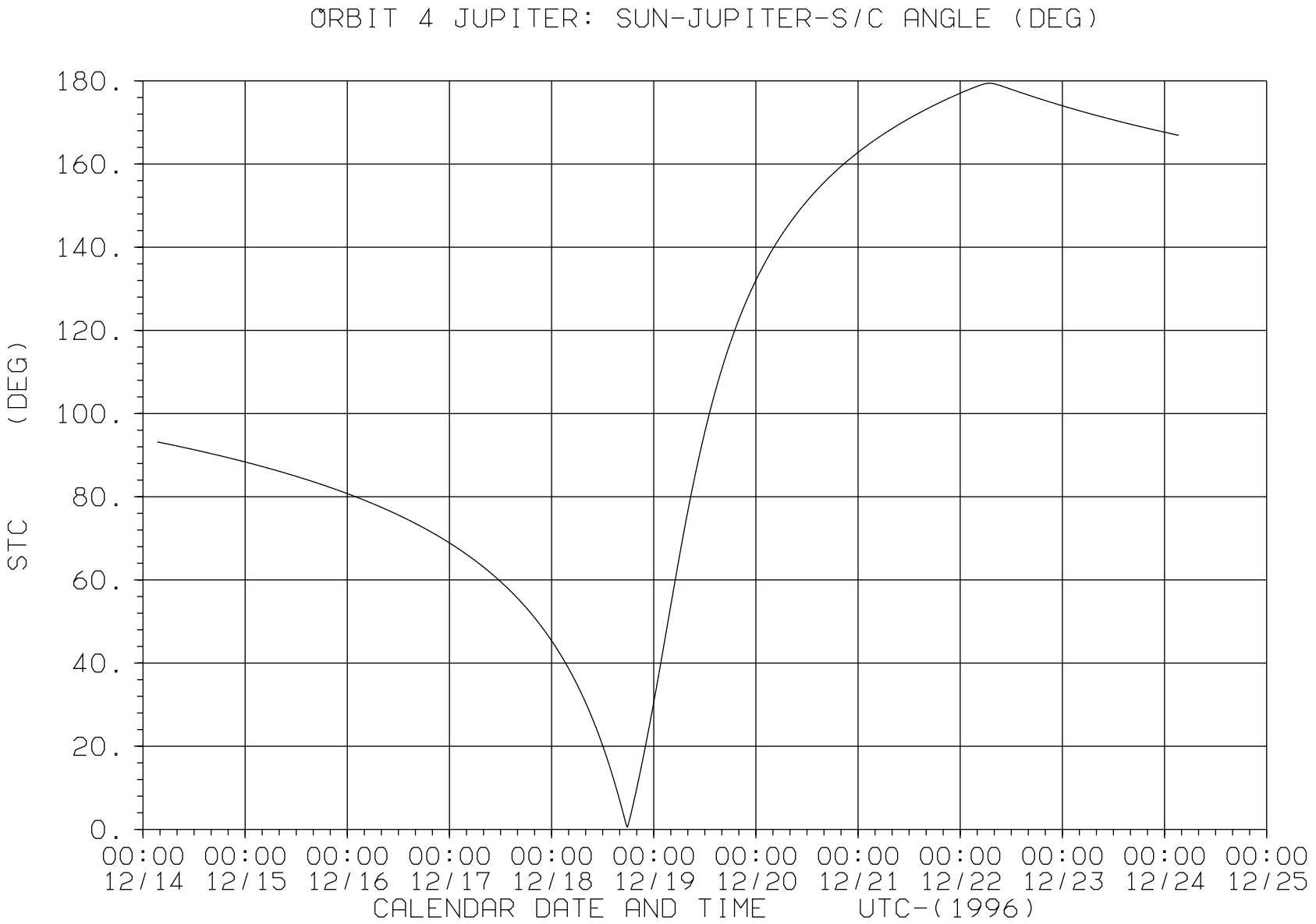

ORBIT 4: S/C ALTITUDE WITH RESPECT TO EUROPA (KM)
TCALTK (KM)*10^3
60.
50.
40.
30.
20.
10.
0.
03:00
12/19
04:00
04:59
06:00
07:00
08:00
09:00
10:00
CALENDAR DATE AND TIME UTC-(1996)


ORBIT 4: CONE ANGLE OF EUROPA (EARTH-S/C-EUROPA, DEG)
CNT (DEG)
140.
120.
100.
80.
60.
40.
20.
0.
03:00
12/19
04:00
04:59
06:00
07:00
08:00
09:00
10:00
CALENDAR DATE AND TIME UTC-(1996)

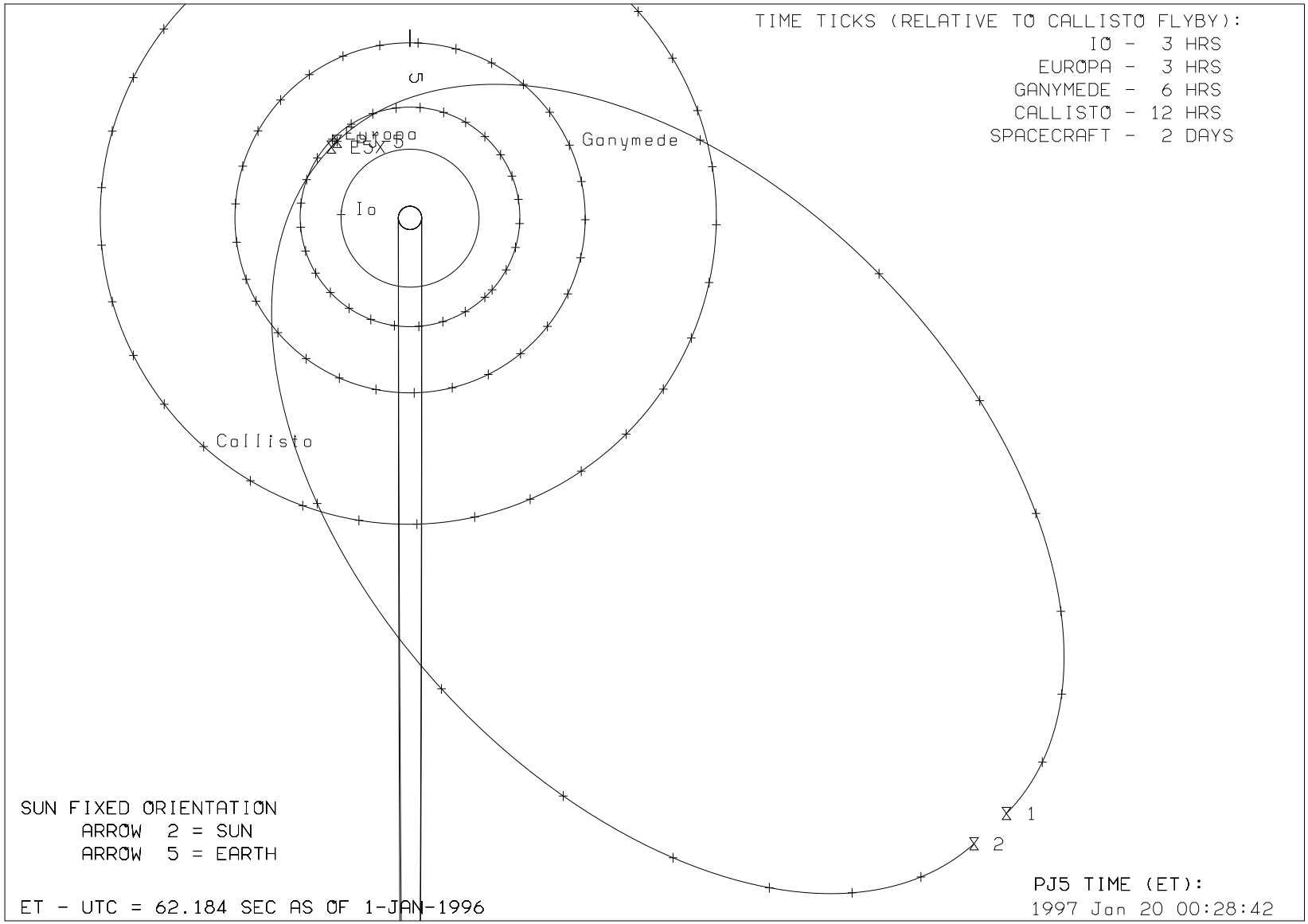

ORBIT 4: SUN-EUROPA-S/C ANGLE (DEG)
STC (DEG)
180.
160.
140.
120.
100.
80.
60.
40.
03:00
12/19
04:00
04:59
06:00
07:00
08:00
09:00
10:00
CALENDAR DATE AND TIME UTC-(1996)


ORBIT 4 JUPITER: S/C RANGE TO JUPITER CENTER OF MASS (RJ)
RPCPR (PRAD)
50.
45.
40.
35.
30.
25.
20.
15.
10.
5.
00:00 12/14
00:00 12/15
00:00 12/16
00:00 12/17
00:00 12/18
00:00 12/19
00:00 12/20
00:00 12/21
00:00 12/22
00:00 12/23
00:00 12/24
00:00 12/25
CALENDAR DATE AND TIME UTC-(1996)

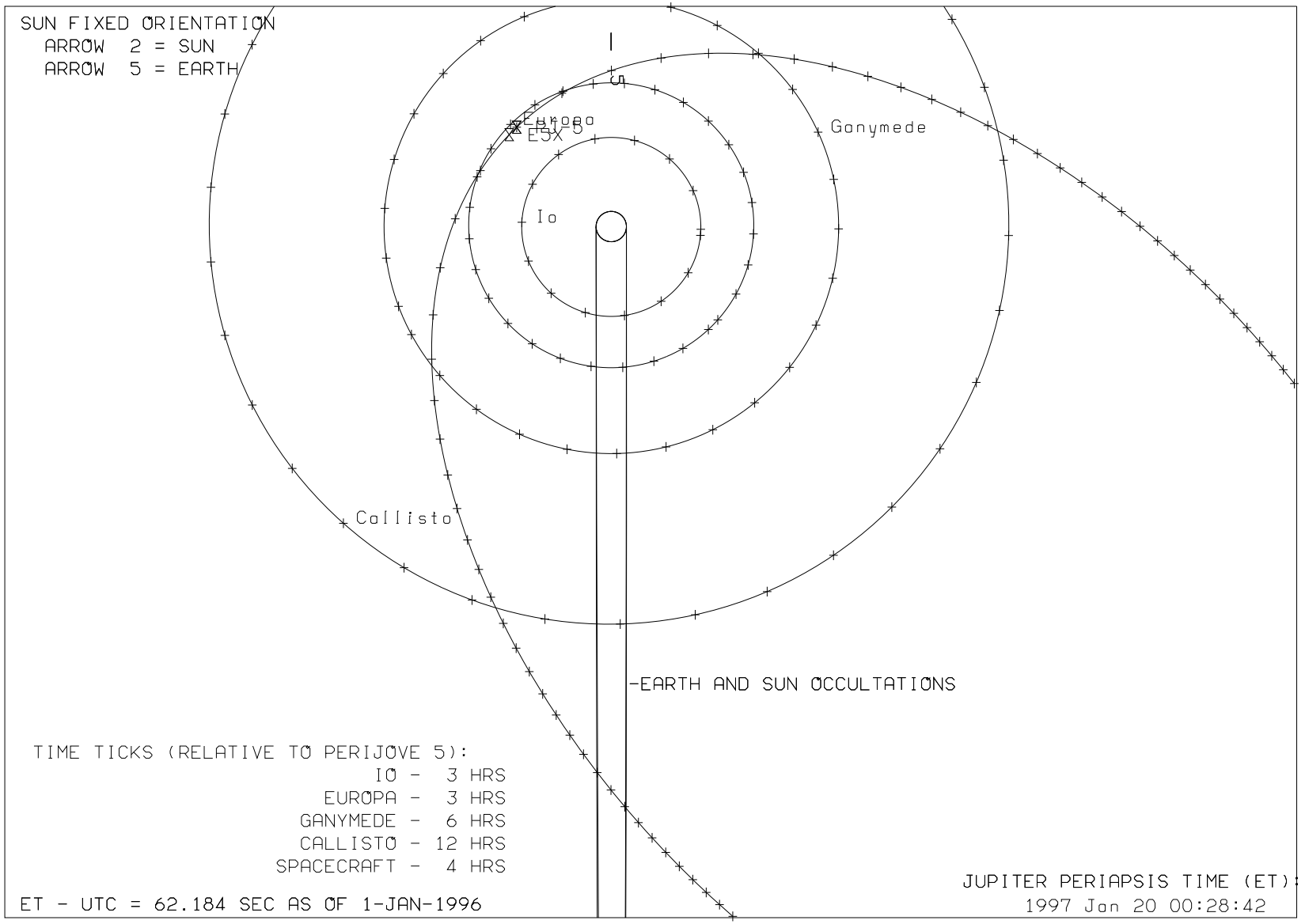

ORBIT 4 JUPITER: CONE ANGLE OF JUPITER (EARTH-S/C-JUP, DEG)
CNT (DEG)
180.
160.
140.
120.
100.
80.
60.
40.
20.
0.
00:00 12/14
00:00 12/15
00:00 12/16
00:00 12/17
00:00 12/18
00:00 12/19
00:00 12/20
00:00 12/21
00:00 12/22
00:00 12/23
00:00 12/24
00:00 12/25
CALENDAR DATE AND TIME UTC-(1996)


ORBIT 4 JUPITER: SUN-JUPITER-S/C ANGLE (DEG)
STC (DEG)
180.
160.
140.
120.
100.
80.
60.
40.
20.
0.
00:00 12/14
00:00 12/15
00:00 12/16
00:00 12/17
00:00 12/18
00:00 12/19
00:00 12/20
00:00 12/21
00:00 12/22
00:00 12/23
00:00 12/24
00:00 12/25
CALENDAR DATE AND TIME UTC-(1996)

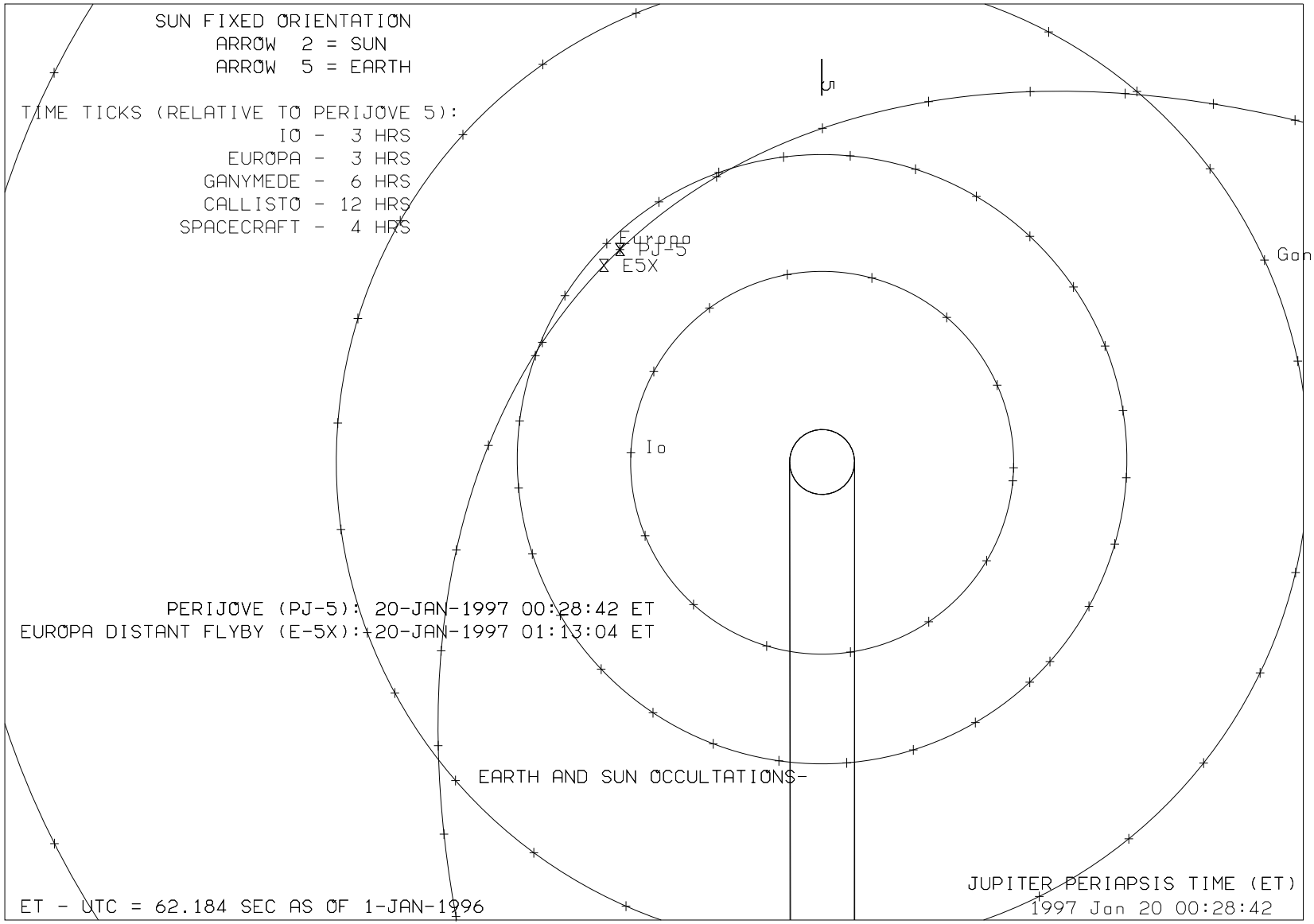
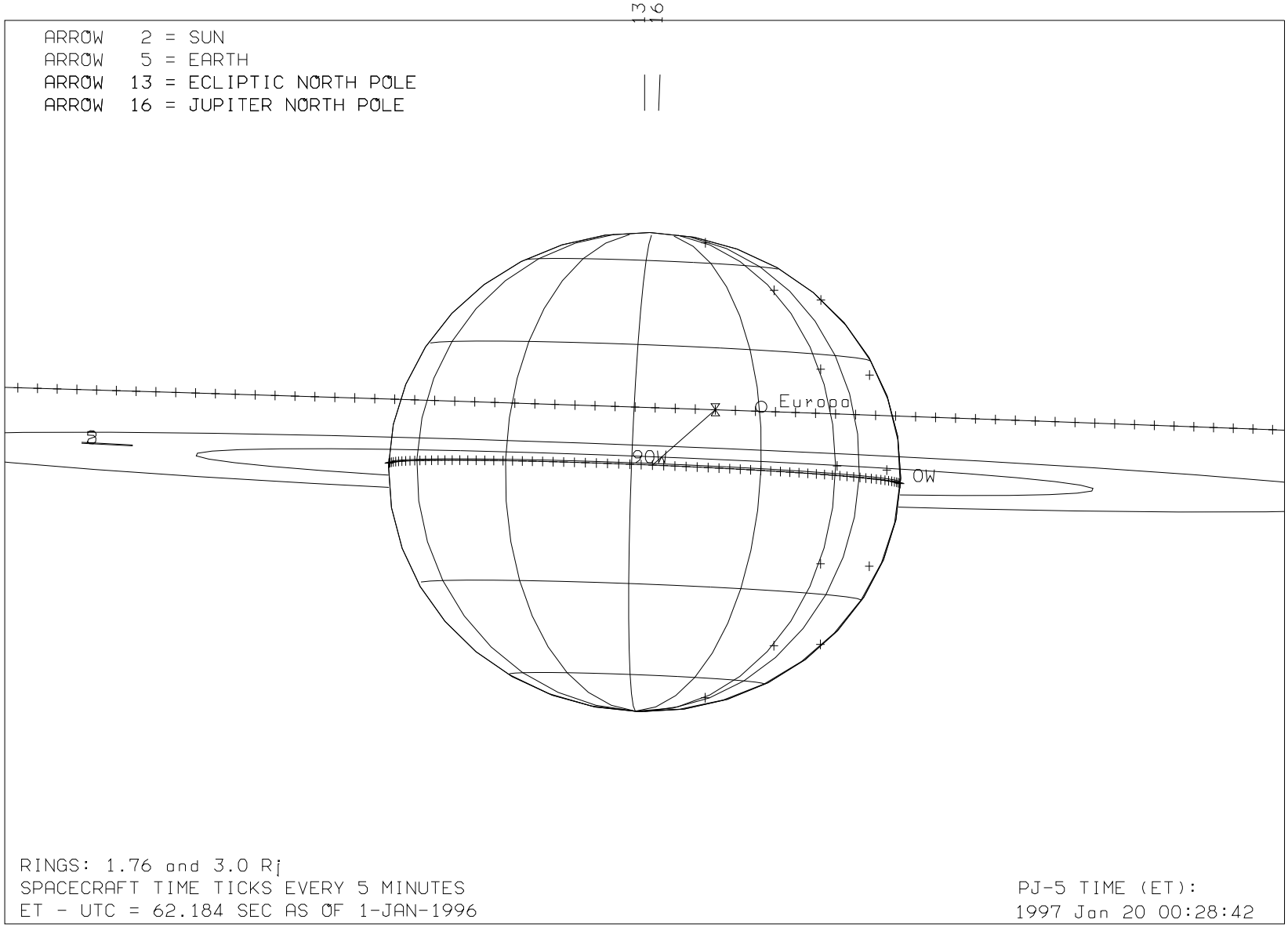
Jupiter 5: North Trajectory Pole View (J-5 Apo to Apo)



Jupiter 5: North Trajectory Pole View (J-5 +/- 5 days)



Jupiter 5: North Trajectory Pole View (J-5 +/- 1 day)



JUPITER 5: GROUNDTRACK AT CLOSEST APPROACH