

```

; S980326A.BSP LOG FILE
;
; Created 1998-03-26/10:35:49.00.
;
; BEGIN NIOSPK COMMANDS

LEAPSECONDS_FILE    = /usr/nav/traj/naif/mk97111A.tls
SPK_FILE            = S980326A.BSP
SPK_LOG_FILE        = S980326A-TOUR.log
INCLUDE_TEXT_FILE   = tour-comments.text
SOURCE_NIO_FILE     = orbiter/pfile_orbiter-od126.nio
BODIES              = -77
BEGIN_TIME          = CAL-ET 1995 JUL 01 00:00:00.000
END_TIME            = CAL-ET 1995 NOV 20 23:59:59.998
SOURCE_NIO_FILE     = plneph/eph-OD126.nio
BODIES              = 3 5 10 301 399
BEGIN_TIME          = CAL-ET 1995 JUL 01 00:00:00.000
END_TIME            = CAL-ET 1995 NOV 20 23:59:59.998
SOURCE_NIO_FILE     = sateph/sateph-jup076.nio
BODIES              = 501 502 503 504 599
BEGIN_TIME          = CAL-ET 1995 SEP 02 00:00:00.000
END_TIME            = CAL-ET 1995 NOV 20 00:00:00.000
SOURCE_NIO_FILE     = sateph/sateph-jup068.nio
BODIES              = 506 507 508 509 510 511 512 513
BEGIN_TIME          = CAL-ET 1995 SEP 02 00:00:00.000
END_TIME            = CAL-ET 1998 JAN 01 00:01:03.183
SOURCE_NIO_FILE     = sateph/sateph-jup120.nio
BODIES              = 505 514 515 516
BEGIN_TIME          = CAL-ET 1996 SEP 04 00:00:00.000
END_TIME            = CAL-ET 1998 JAN 01 00:01:03.183
SOURCE_NIO_FILE     = orbiter/dpfil-s960729a-od127.nio
BODIES              = -77
BEGIN_TIME          = CAL-ET 1995 NOV 20 23:59:59.998
END_TIME            = CAL-ET 1995 DEC 12 00:00:00.000
SOURCE_NIO_FILE     = plneph/eph-OD120.nio
BODIES              = 3 5 10 301 399
BEGIN_TIME          = CAL-ET 1995 NOV 20 23:59:59.998
END_TIME            = CAL-ET 1995 DEC 12 00:00:00.000
SOURCE_NIO_FILE     = sateph/sateph.OD127.nio
BODIES              = 501 502 503 504 599
BEGIN_TIME          = CAL-ET 1995 NOV 20 23:59:59.998
END_TIME            = CAL-ET 1995 DEC 12 00:00:00.000
SOURCE_NIO_FILE     = orbiter/dpfil-960623-od118-otm6-twk-mvf.nio
BODIES              = -77
BEGIN_TIME          = CAL-ET 1995 DEC 12 00:00:00.000
END_TIME            = CAL-ET 1996 JUN 17 17:00:00.000
SOURCE_NIO_FILE     = plneph/eph-OD105.nio
BODIES              = 3 5 10 301 399
BEGIN_TIME          = CAL-ET 1995 DEC 12 00:00:00.000
END_TIME            = CAL-ET 1996 JUN 17 17:00:00.000
SOURCE_NIO_FILE     = sateph/sateph.96174.nio
BODIES              = 501 502 503 504 599
BEGIN_TIME          = CAL-ET 1995 DEC 12 00:00:00.000
END_TIME            = CAL-ET 1996 JUN 17 17:00:00.000
SOURCE_NIO_FILE     = orbiter/dpfil-960730-otm8-mvf.nio
BODIES              = -77
BEGIN_TIME          = CAL-ET 1996 JUN 17 17:00:00.000
END_TIME            = CAL-ET 1996 AUG 21 00:00:00.000
SOURCE_NIO_FILE     = plneph/eph-OD120.nio
BODIES              = 3 5 10 301 399
BEGIN_TIME          = CAL-ET 1996 JUN 17 17:00:00.000
END_TIME            = CAL-ET 1996 AUG 21 00:00:00.000
SOURCE_NIO_FILE     = sateph/sateph.OD128.nio
BODIES              = 501 502 503 504 599
BEGIN_TIME          = CAL-ET 1996 JUN 17 17:00:00.000
END_TIME            = CAL-ET 1996 AUG 21 00:00:00.000
SOURCE_NIO_FILE     = orbiter/dpfil-960912-od136-postotm11.nio
BODIES              = -77
BEGIN_TIME          = CAL-ET 1996 AUG 21 00:00:00.000
END_TIME            = CAL-ET 1996 SEP 01 12:00:00.000
SOURCE_NIO_FILE     = sateph/sateph.OD136.nio
BODIES              = 501 502 503 504 599
BEGIN_TIME          = CAL-ET 1996 AUG 21 00:00:00.000
END_TIME            = CAL-ET 1996 SEP 01 12:00:00.000
SOURCE_NIO_FILE     = plneph/eph.OD133.nio
BODIES              = 3 5 10 301 399
BEGIN_TIME          = CAL-ET 1996 AUG 21 00:00:00.000
END_TIME            = CAL-ET 1996 SEP 01 12:00:00.000
SOURCE_NIO_FILE     = orbiter/dpfil-961103-od140-c3-enc.nio
BODIES              = -77
BEGIN_TIME          = CAL-ET 1996 SEP 01 12:00:00.000
END_TIME            = CAL-ET 1996 OCT 20 00:00:00.000
SOURCE_NIO_FILE     = plneph/eph.OD138.nio

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BODIES = 3 5 10 301 399
BEGIN_TIME = CAL-ET 1996 SEP 01 12:00:00.000
END_TIME = CAL-ET 1996 OCT 20 00:00:00.000
SOURCE_NIO_FILE = sateph/sateph.OD140.nio
BODIES = 501 502 503 504 599
BEGIN_TIME = CAL-ET 1996 SEP 01 12:00:00.000
END_TIME = CAL-ET 1996 OCT 20 00:00:00.000
SOURCE_NIO_FILE = orbiter/dpfil-961121-od145-otm15.nio
BODIES = -77
BEGIN_TIME = CAL-ET 1996 OCT 20 00:00:00.000
END_TIME = CAL-ET 1996 DEC 02 13:00:00.000
SOURCE_NIO_FILE = plneph/eph.OD138.nio
BODIES = 3 5 10 301 399
BEGIN_TIME = CAL-ET 1996 OCT 20 00:00:00.000
END_TIME = CAL-ET 1996 DEC 02 13:00:00.000
SOURCE_NIO_FILE = sateph/sateph.OD145.nio
BODIES = 501 502 503 504 599
BEGIN_TIME = CAL-ET 1996 OCT 20 00:00:00.000
END_TIME = CAL-ET 1996 DEC 02 13:00:00.000
SOURCE_NIO_FILE = orbiter/dpfil-970219-od157-e6-enc.nio
BODIES = -77
BEGIN_TIME = CAL-ET 1996 DEC 02 13:00:00.000
END_TIME = CAL-ET 1997 FEB 07 00:00:00.000
SOURCE_NIO_FILE = plneph/eph-961127.nio
BODIES = 3 5 10 301 399
BEGIN_TIME = CAL-ET 1996 DEC 02 13:00:00.000
END_TIME = CAL-ET 1997 FEB 07 00:00:00.000
SOURCE_NIO_FILE = sateph/sateph.OD157.nio
BODIES = 501 502 503 504 599
BEGIN_TIME = CAL-ET 1996 DEC 02 13:00:00.000
END_TIME = CAL-ET 1997 FEB 07 00:00:00.000
SOURCE_NIO_FILE = orbiter/dpfil-970404-od166-g7-enc.nio
BODIES = -77
BEGIN_TIME = CAL-ET 1997 FEB 07 00:00:00.000
END_TIME = CAL-ET 1997 MAR 17 10:01:02.186
SOURCE_NIO_FILE = sateph/sateph.OD166.nio
BODIES = 501 502 503 504 599
BEGIN_TIME = CAL-ET 1997 FEB 07 00:00:00.000
END_TIME = CAL-ET 1997 MAR 17 10:01:02.186
SOURCE_NIO_FILE = plneph/eph.OD166.nio
BODIES = 3 5 10 301 399
BEGIN_TIME = CAL-ET 1997 FEB 07 00:00:00.000
END_TIME = CAL-ET 1997 JUN 22 00:01:02.184
SOURCE_NIO_FILE = orbiter/dpfil-970502-od170-no-otm26.nio
BODIES = -77
BEGIN_TIME = CAL-ET 1997 MAR 17 10:01:02.186
END_TIME = CAL-ET 1997 MAY 02 00:01:02.185
SOURCE_NIO_FILE = sateph/sateph.OD170.nio
BODIES = 501 502 503 504 599
BEGIN_TIME = CAL-ET 1997 MAR 17 10:01:02.186
END_TIME = CAL-ET 1997 MAY 02 00:01:02.185
SOURCE_NIO_FILE = orbiter/dpfil-970624-od178-c9-enc.nio
BODIES = -77
BEGIN_TIME = CAL-ET 1997 MAY 02 00:01:02.185
END_TIME = CAL-ET 1997 JUN 22 00:01:02.184
SOURCE_NIO_FILE = sateph/sateph.OD178.nio
BODIES = 501 502 503 504 599
BEGIN_TIME = CAL-ET 1997 MAY 02 00:01:02.185
END_TIME = CAL-ET 1997 JUN 22 00:01:02.184
SOURCE_NIO_FILE = orbiter/dpfil-970911-od185-c10-enc.nio
BODIES = -77
BEGIN_TIME = CAL-ET 1997 JUN 22 00:01:02.184
END_TIME = CAL-ET 1997 AUG 22 21:00:00.000
SOURCE_NIO_FILE = sateph/sateph.OD185.nio
BODIES = 501 502 503 504 599
BEGIN_TIME = CAL-ET 1997 JUN 22 00:01:02.184
END_TIME = CAL-ET 1997 AUG 22 21:00:00.000
SOURCE_NIO_FILE = plneph/eph.OD185.nio
BODIES = 3 5 10 301 399
BEGIN_TIME = CAL-ET 1997 JUN 22 00:01:02.184
END_TIME = CAL-ET 1997 AUG 22 21:00:00.000
SOURCE_NIO_FILE = orbiter/dpfil-971016-tour.nio
BODIES = -77
BEGIN_TIME = CAL-ET 1997 AUG 22 21:00:00.000
END_TIME = CAL-ET 1997 OCT 21 00:00:00.000
SOURCE_NIO_FILE = sateph/sateph.OD188.nio
BODIES = 501 502 503 504 599
BEGIN_TIME = CAL-ET 1997 AUG 22 21:00:00.000
END_TIME = CAL-ET 1997 OCT 21 00:00:00.000
SOURCE_NIO_FILE = plneph/eph.OD185.nio
BODIES = 3 5 10 301 399
BEGIN_TIME = CAL-ET 1997 AUG 22 21:00:00.000
END_TIME = CAL-ET 1997 OCT 21 00:00:00.000
SOURCE_NIO_FILE = orbiter/dpfil-971215-od196-e12-enc.nio
BODIES = -77
```

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BEGIN_TIME      = CAL-ET 1997 OCT 21 00:00:00.000
END_TIME        = CAL-ET 1997 NOV 27 14:50:00.000
SOURCE_NIO_FILE = sateph/sateph.OD196.nio
BODIES          = 501 502 503 504 599
BEGIN_TIME      = CAL-ET 1997 OCT 21 00:00:00.000
END_TIME        = CAL-ET 1997 NOV 27 14:50:00.000
SOURCE_NIO_FILE = plneph/eph.OD185.nio
BODIES          = 3 5 10 301 399
BEGIN_TIME      = CAL-ET 1997 OCT 21 00:00:00.000
END_TIME        = CAL-ET 1997 NOV 27 14:50:00.000
SOURCE_NIO_FILE = orbiter/dpfil-980127-tour.nio
BODIES          = -77
BEGIN_TIME      = CAL-ET 1997 NOV 27 14:50:00.000
END_TIME        = CAL-ET 1998 JAN 01 00:01:03.183
SOURCE_NIO_FILE = sateph/sateph.OD201.nio
BODIES          = 501 502 503 504 599
BEGIN_TIME      = CAL-ET 1997 NOV 27 14:50:00.000
END_TIME        = CAL-ET 1998 JAN 01 00:01:03.183
SOURCE_NIO_FILE = plneph/eph.OD185.nio
BODIES          = 3 5 10 301 399
BEGIN_TIME      = CAL-ET 1997 NOV 27 14:50:00.000
END_TIME        = CAL-ET 1998 JAN 01 00:01:03.183

```

; END NIOSPK COMMANDS

#### GENERAL COMMENTS:

#### KEY TO FILE SEGMENTS:

01-JUL-1995 to 20-NOV-1995 Reconstruction, Initial orbiter trajectory, OD126  
 21-NOV-1995 to 12-DEC-1995 Reconstruction, Io flyby and JOI, OD127  
 12-DEC-1995 to 17-JUN-1996 Reconstruction, Post JOI to pre-Ganymede 1, OD118  
 17-JUN-1996 to 21-AUG-1996 Reconstruction, Ganymede 1, OD128  
 21-AUG-1996 to 01-SEP-1996 Reconstruction, Pre-Ganymede 2, OD136  
 01-SEP-1996 to 20-OCT-1996 Reconstruction, Ganymede 2, OD140  
 20-OCT-1996 to 02-DEC-1996 Reconstruction, Callisto 3, OD145  
 02-DEC-1996 to 07-FEB-1997 Reconstruction, Europa 4, OD157  
 07-FEB-1997 to 17-MAR-1997 Reconstruction, Europa 6, OD166  
 17-MAR-1997 to 02-MAY-1997 Reconstruction, Ganymede 7, OD170  
 02-MAY-1997 to 22-JUN-1997 Reconstruction, Ganymede 8, OD178  
 22-JUN-1997 to 22-AUG-1997 Reconstruction, Callisto 9, OD185  
 22-AUG-1997 to 21-OCT-1997 Reconstruction, Callisto 10, OD188  
 21-OCT-1997 to 10-DEC-1997 Reconstruction, Europa 11, OD196  
 10-DEC-1997 to 01-JAN-1998 Reconstruction, Europa 12, OD201

This file is a compilation of reconstructed trajectory segments for the nominal satellite tour. This file begins 1-JULY-1995 (DOY 95-182) and ends on 1-JAN-1998 (DOY 98-001). Reconstruction and predicts for the GEM tour will now be provided separately and updated twice per orbit.

The reconstructed segments for the interplanetary trajectory can be found in S970312A.BSP. The final reconstruction for the probe trajectory is provided in SP kernel S960730A.BSP.

The orbiter (body ID -77) ephemeris and associated planetary, Galilean satellite (bodies 501, 502, 503, 504), inner minor satellites (bodies 505, 514, 515, 516), and outer minor satellites (bodies 506, 507, 508, 509, 510, 511, 512, 513) ephemerides are included. The satellite ephemeris file for the inner minor satellites (previously JUP059) has been replaced by JUP120 (which starts 4-SEP-1996, since no observations of these satellites were made prior to this time). Satellite ephemeris file JUP068 was used for the outer minor satellites.

Each segment listed has information under the following headings:

```

COMMENTS
TRAJECTORY BASIS/OD SOLUTION
TIME SPAN
SIGNIFICANT EVENTS
INPUT FILES

```

ET is used to denote ephemeris time; it differs from UTC (universal time coordinated) in which spacecraft events are usually given by the following:

```

ET minus UTC = 61.184 sec (as of Jul. 1, 1994)
              = 62.184 sec (as of Jan. 1, 1996)
              = 63.184 sec (as of Jul. 1, 1997)

```

SCLK is spacecraft clock string.

Questions should be directed to:

Joan Pojman (818 354-0264, Joan.Pojman@jpl.nasa.gov) or to  
 Jennie Johannesen (818 354-3352, Jennie.Johannesen@jpl.nasa.gov)

#### ----- INITIAL ORBITER TRAJECTORY:

#### COMMENTS:

The file begins 01-JUL-1995, twelve days before probe release.

At this time the spacecraft trajectory is sun-centered. It becomes Jupiter-centered 13-SEP-1995 22:59:07.73 ET.

## TRAJECTORY BASIS/OD SOLUTION:

OD-126 - the same solution that the final probe reconstruction.

## TIME SPAN:

BEGIN: 01-JUL-1995 00:00:00.000 ET DOY: 95-182  
30-JUN-1995 23:58:58.816 UTC DOY: 95-181  
1/02981671:81:3:4 SCLK  
END: 21-NOV-1995 00:00:00.000 ET DOY: 95-325  
20-NOV-1995 23:58:58.816 UTC DOY: 95-324  
1/03185329:15:1:7 SCLK

## SIGNIFICANT EVENTS:

Probe/orbiter separation: 13-JUL-1995 05:29:59.333 UTC  
400 N wake-up burn: 24-JUL-1995 07:00:00.066 UTC  
ODM (Orbit Deflection Mnvr. or TCM-25): 27-JUL-1995 07:00:00.500 UTC  
TCM-26: 29-AUG-1995 18:00:00

## INPUT FILES:

GIN: /usr/nav/eph/gin-0894.nio  
Planetary Ephemeris: /usr/nav/od/deliveries/OD126/eph-OD126.nio  
Satellite Ephemeris: /usr/nav/od/deliveries/OD126/sateph-OD124.nio  
Stoic: /usr/nav/od/stoic/ld960703.pt960913  
P-file: /usr/nav/od/deliveries/OD126/pfile\_orbiter.nio

-----  
IO FLYBY AND JUPITER ORBIT INSERTION (JOI) TRAJECTORY:

## COMMENTS:

This portion is identical to file S960729A.BPS and differs from previous solution (S960402A, OD-108) largely in that it uses a new Jupiter ephemeris, EPH-OD120, which incorporates a 374 km change in the position of Jupiter. The satellite ephemeris, SATEPH-GLL127, was also new and consistent with the satellite ephemeris generated at Ganymede 1 flyby.  
ET minus UTC is 61.184 seconds for 1995.

## TRAJECTORY BASIS/OD SOLUTION: OD-127

## TIME SPAN:

BEGIN: 21-NOV-1995 00:00:00.000 ET DOY: 95-325  
20-NOV-1995 23:58:58.816 UTC DOY: 95-324  
1/03185329:15:1:7 SCLK  
END: 12-DEC-1995 00:00:00.000 ET DOY: 95-346  
11-DEC-1995 23:58:58.816 UTC DOY: 95-345  
1/03215236:79:9:2 SCLK

## SIGNIFICANT EVENTS:

Europa closest approach:  
7-DEC-1995 13:09:53.2416 ET (13:08:52.0583 UTC, 1/03208897:18:4:1 SCLK)  
Orbiter altitude = 32,994.48 km  
Orbiter latitude = -64.15 deg (Europa centered  
Europa True Equator of Date)

## Io closest approach:

7-DEC-1995 17:46:59.5558 ET (17:45:58.3725 UTC, 1/03209171:23:9:0 SCLK)  
Orbiter altitude = 897.33 km  
Orbiter latitude = -9.55 deg (Io centered  
Io True Equator of Date)

## Jupiter Periapsis:

7-DEC-1995 21:54:44.7828 ET (21:53:43.5996 UTC, 1/03209416:26:7:5 SCLK)  
Range to Jupiter: 286030.08 km (4.00087 Rj)

## JOI Start:

8-DEC-1995 00:28:27.1332 ET (00:27:25.9492 UTC, 1/03209568:28:2:7 SCLK)

## INPUT FILES:

GIN: /usr/nav/eph/gin-0894.nio  
Planetary Ephemeris: /usr/nav/od/deliveries/OD120/od120.eph  
Satellite Ephemeris: /usr/nav/od/deliveries/OD127/sateph.OD127.nio  
Stoic: /usr/nav/od/stoic/ld960718.pt960928  
P-file: /usr/nav/od/deliveries/OD127/pfile.nio

-----  
POST JOI TRAJECTORY TO PRE-GANYMEDE 1:

COMMENTS: ET minus UTC is 61.184 seconds for 1995 and 62.184 seconds for 1996.

## TRAJECTORY BASIS/OD SOLUTION: OD-118

## TIME SPAN:

BEGIN: 12-DEC-1995 00:00:00.000 ET DOY: 95-346  
11-DEC-1995 23:58:58.816 UTC DOY: 95-345

1/03215236:79:9:2 SCLK  
END: 17-JUN-1996 17:00:00.000 ET DOY: 96-169  
17-JUN-1996 16:58:57.816 UTC DOY: 96-168  
1/03483990:81:5:7 SCLK

## SIGNIFICANT EVENTS:

PJR (Perijove Raise Maneuver): 14-MAR-1996 19:16:02.415 ET  
14-MAR-1996 19:15:00.231 UTC  
1/03348828:59:3:5 SCLK

## INPUT FILES:

GIN: /usr/nav/eph/gin-0894.nio  
Planetary Ephemeris: /usr/nav/od/deliveries/OD105/eph-OD105.nio  
Satellite Ephemeris: /usr/nav/od/deliveries/OD118/sateph.96174.nio  
Stoic: /usr/nav/od/stoic/ld960619.pt960830  
P-file: /usr/nav/traj/pfiles/dpfil-960623-od118-otm6-twk-mvf.nio

-----  
GANYMEDE 1 RECONSTRUCTION:

## COMMENTS:

This portion is based on OD-128 (see S960728A.BSP).  
ET minus UTC is 62.184 seconds.

TRAJECTORY BASIS/OD SOLUTION: OD-128

## TIME SPAN:

BEGIN: 17-JUN-1996 17:00:00.000 ET DOY: 96-169  
17-JUN-1996 16:58:57.816 UTC DOY: 96-168  
1/03209925:80:6:1 SCLK  
END: 21-AUG-1996 00:00:00.000 ET DOY: 96-234  
20-AUG-1996 23:58:57.816 UTC DOY: 96-233  
1/03575553:53:9:1 SCLK

## SIGNIFICANT EVENTS:

Ganymede 1 closest approach:  
27-June-1996 06:30:08.859 ET (06:29:06.685 UTC, 1/03599468:44:4:0 SCLK)  
Altitude: 835.022 km  
Latitude: 30.394 deg (Ganymede-centered Ganymede True Equator of Date)

Jupiter Periapsis:  
28-Jun-1996 00:32:28.015 ET (00:31:25.831 UTC, 1/03498680:14:4:6 SCLK)  
Range to Jupiter: 788608.46 km (11.0307 Rj)

## INPUT FILES:

Planetary eph file: /usr/nav/od/deliveries/OD120/eph-OD120.nio  
Satellite eph file: /usr/nav/od/deliveries/OD128/sateph.OD128.nio  
Epoch file: /usr/nav/od/deliveries/OD128/epoch  
GIN file: /usr/nav/eph/gin-0894.nio  
STOIC file: /usr/nav/od/stoic/ld960718.pt960928  
P-file: /usr/nav/traj/pfiles/dpfil-960730-otm8-mvf.nio

-----  
PRE-GANYMEDE 2 RECONSTRUCTION

COMMENTS: Final reconstruction for Pre-Ganymede 2 flyby.

TRAJECTORY BASIS/OD SOLUTION: OD-136

## TIME SPAN:

BEGIN: 21-AUG-1996 00:00:00.000 ET DOY: 96-234  
20-AUG-1996 23:58:57.816 UTC DOY: 96-233  
1/03575553:53:9:1 SCLK  
END: 01-SEP-1996 12:00:00.000 ET DOY: 96-245  
01-SEP-1996 11:58:57.817 UTC DOY: 96-245  
1/03591931:56:8:5 SCLK

SIGNIFICANT EVENTS: OTM-9 on 27-AUG-1996

## INPUT FILES:

Planetary eph file: /usr/nav/od/deliveries/OD133/eph.OD133.nio  
Satellite eph file: /usr/nav/od/deliveries/OD136/sateph.OD136.nio  
Epoch file: /usr/nav/od/deliveries/OD136/epoch  
GIN file: /usr/nav/eph/gin-0894.nio  
STOIC file: /usr/nav/od/stoic/ld960905.pt961116  
P-file: /usr/nav/traj/pfiles/dpfil-960912-od136-postotm11.nio

-----  
GANYMEDE 2 RECONSTRUCTION

COMMENTS: For period of orbit 2 from 01-Sep-1996 to 20-Oct-1996.  
Note: This portion was previously based on OD-137 in  
S961004A.BSP.

TRAJECTORY BASIS/OD SOLUTION: OD-140

TIME SPAN:

BEGIN: 01-SEP-1996 12:00:00.000 ET DOY: 96-245  
01-SEP-1996 11:58:57.817 UTC DOY: 96-245  
1/03591931:56:8:5 SCLK  
END: 20-OCT-1996 00:00:00.000 ET DOY: 96-294  
19-OCT-1996 23:58:57.818 UTC DOY: 96-293  
1/03661004:17:8:7 SCLK

SIGNIFICANT EVENTS:

Ganymede 2 closest approach:

6-SEP-1996 19:00:36.05 ET (18:59:33.87 UTC, 1/03599468:44:3:7 SCLK)  
Altitude: 261.42 km  
Latitude: 79.29 deg (Ganymede-centered, Ganymede True Equator of Date)

Jupiter Periapsis:

7-SEP-1996 13:38:55.96 ET (13:37:53.77 UTC, 1/03600574:48:3:0 SCLK)

INPUT FILES:

Planetary eph file: /usr/nav/od/deliveries/OD138/eph.OD138.nio  
Satellite eph file: /usr/nav/od/deliveries/OD140/sateph.OD140.nio  
Epoch file: /usr/nav/od/deliveries/OD140/epoch  
GIN file: /usr/nav/eph/gin-0894.nio  
STOIC file: /usr/nav/od/stoic/ld961031.pt970111  
P-file: /usr/nav/traj/pfiles/dpfil-961103-od140-c3-enc.nio

-----  
CALLISTO 3 RECONSTRUCTION

COMMENTS: Reconstruction for Callisto 3 encounter.

TRAJECTORY BASIS/OD SOLUTION: OD-145

TIME SPAN:

BEGIN: 20-OCT-1996 00:00:00.000 ET DOY: 96-294  
19-OCT-1996 23:58:57.818 UTC DOY: 96-293  
1/03661004:17:8:7 SCLK  
END: 02-DEC-1996 13:00:00.000 ET DOY: 96-337  
02-DEC-1996 12:58:57.817 UTC DOY: 97-337  
1/03723015:20:4:7 SCLK

SIGNIFICANT EVENTS:

Callisto 3 closest approach:

4-NOV-1996 13:35:29.87 ET (13:34:27.69 UTC, 1/03683173:34:9:6 SCLK)  
Altitude: 1135.9 km  
Latitude: 13.19 deg (Callisto-centered, Callisto True Equator of Date)

Jupiter Periapsis:

6-NOV-1996 13:32:08.98 ET (13:31:06.79 UTC, 1/03686018:38:8:1 SCLK)

INPUT FILES:

Planetary eph file: /usr/nav/od/deliveries/OD138/eph.OD138.nio  
Satellite eph file: /usr/nav/od/deliveries/OD145/sateph.OD145.nio  
Epoch file: /usr/nav/od/deliveries/OD145/epoch  
GIN file: /usr/nav/eph/gin-0894.nio  
STOIC file: /usr/nav/od/stoic/ld961114.pt970125  
P-file: /usr/nav/traj/pfiles/dpfil-961121-od145-otm15.nio

-----  
EUROPA 4 RECONSTRUCTION

COMMENTS: Final reconstruction for Europa 4 encounter.

TRAJECTORY BASIS/OD SOLUTION: OD-157

TIME SPAN:

BEGIN: 02-DEC-1996 13:00:00.000 ET DOY: 96-337  
02-DEC-1996 12:58:57.817 UTC DOY: 96-337  
1/03723015:20:4:7 SCLK  
END: 07-FEB-1997 00:00:00.000 ET DOY: 97-038  
06-FEB-1997 23:58:57.816 UTC DOY: 97-037  
1/03817663:57:7:6 SCLK

SIGNIFICANT EVENTS:

Europa 4 closest approach:

19-DEC-1996 06:53:59.95 ET (06:52:57.77 UTC, 1/03746864:22:7:2 SCLK)  
Altitude: 692.1 km  
Latitude: -1.65 deg (Europa-centered, Europa True Equator of Date)

Jupiter 4 Periapsis:

19-DEC-1996 03:23:00.36 ET (03:21:58.17 UTC, 1/03746655:52:3:2 SCLK)

Europa 5 nontargeted encounter on phasing orbit closest approach:

20-JAN-1997 01:09:39.27 ET (01:08:37.09 UTC, 1/03792097:31:2:4 SCLK)  
Altitude: 26668 km

Latitude: -0.82 deg (Europa-centered, Europa True Equator of Date)

Jupiter 5 Periapsis:

20-JAN-1997 00:27:58.77 ET (00:26:56.58 UTC, 1/03792056:11:4:7 SCLK)

INPUT FILES:

Planetary eph file: /usr/nav/od/inputs/eph-961127.nio  
Satellite eph file: /usr/nav/od/deliveries/OD157/sateph.OD157.nio  
Epoch file: /usr/nav/od/deliveries/OD157/epoch  
GIN file: /usr/nav/eph/gin-0894.nio  
STOIC file: /usr/nav/od/stoic/ld970215.pt970428  
P-file: /usr/nav/traj/pfiles/dpfil-970219-od157-e6-enc.nio

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RECONSTRUCTION FOR EUROPA 6

COMMENTS: Reconstruction for Europa 6

TRAJECTORY BASIS/OD SOLUTION: OD-166

TIME SPAN:

BEGIN: 07-FEB-1997 00:00:00.000 ET DOY: 97-038  
06-FEB-1997 23:58:57.816 UTC DOY: 97-037  
1/03817663:57:7:6 SCLK  
END: 17-MAR-1997 10:01:02.186 ET DOY: 97-076  
17-MAR-1997 10:00:00.000 UTC DOY: 97-076  
1/03872376:70:9:1 SCLK

SIGNIFICANT EVENTS:

Europa 6 closest approach:

20-FEB-1997 17:07:12.42 ET (17:06:10.24 UTC, 1/03837193:77:3:2 SCLK)

Altitude: 586.3 km

Latitude: -17.02 deg (Europa centered, Europa. True Equator of Date)

Jupiter Periapsis:

20-FEB-1997 20:55:17.03 ET (20:54:14.85 UTC, 1/03837419:38:2:4 SCLK)

INPUT FILES:

Planetary eph file: /usr/nav/od/deliveries/OD166/eph.OD166.nio  
Satellite eph file: /usr/nav/od/deliveries/OD166/sateph.OD166.nio  
Epoch file: /usr/nav/od/deliveries/OD166/epoch  
GIN file: /usr/nav/eph/gin-0894.nio  
STOIC file: /usr/nav/od/stoic/ld970328.pt970608  
P-file: /usr/nav/traj/ref-traj/dpfil-970404-od166-g7-enc.nio

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FINAL RECONSTRUCTION FOR GANYMEDE 7

COMMENTS: Final reconstruction for Ganymede 7

TRAJECTORY BASIS/OD SOLUTION: OD-170

TIME SPAN:

BEGIN: 17-MAR-1997 10:01:02.186 ET DOY: 97-076  
17-MAR-1997 10:00:00.000 UTC DOY: 97-076  
1/03872376:70:9:1 SCLK  
END: 02-MAY-1997 00:01:02.186 ET DOY: 97-122  
02-MAY-1997 00:00:00.000 UTC DOY: 97-122  
1/03937295:45:3:5 SCLK

SIGNIFICANT EVENTS:

Ganymede 7 closest approach:

5-APR-1997 07:11:00.30 ET (07:09:58.11 UTC, 1/03899267:88:5:5 SCLK)

Altitude: 3101.9 km

Latitude: 55.80 deg (Ganymede centered, Ganymede True Equator of Date)

Europa Flyby:

4-APR-1997 05:59:49.74 ET (05:58:47.56 UTC, 1/03897773:36:6:3 SCLK)

Jupiter Periapsis:

4-APR-1997 11:04:40.14 ET (11:03:37.95 UTC, 1/03898074:81:2:4 SCLK)

INPUT FILES:

Planetary eph file: /usr/nav/od/deliveries/OD166/eph.OD166.nio  
Satellite eph file: /usr/nav/od/deliveries/OD170/sateph.OD170.nio  
Epoch file: /usr/nav/od/deliveries/OD170/epoch  
GIN file: /usr/nav/eph/gin-0894.nio  
STOIC file: /usr/nav/od/stoic/ld970428.pt970709  
P-file: /usr/nav/traj/pfiles/dpfil-970502-od170-no-otm26.nio

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RECONSTRUCTION FOR GANYMEDE 8

COMMENTS: Reconstruction for Ganymede 8

TRAJECTORY BASIS/OD SOLUTION: OD-178

## TIME SPAN:

BEGIN: 02-MAY-1997 00:01:02.186 ET DOY: 97-122  
02-MAY-1997 00:00:00.000 UTC DOY: 97-122  
1/03937295:45:3:5 SCLK  
END: 22-JUN-1997 00:01:02.186 ET DOY: 97-173  
22-JUN-1997 00:00:00.000 UTC DOY: 97-173  
1/04009928:46:3:0 SCLK

## SIGNIFICANT EVENTS:

## Ganymede 8 closest approach:

7-MAY-1997 15:57:11.73 ET (15:56:09.55 UTC, 1/03945362:03:1:2 SCLK)  
Altitude: 1603.2 km  
Latitude: 28.27 deg (Ganymede centered, Ganymede True Equator of Date)

## Jupiter Periapsis:

8-MAY-1997 11:42:48.56 ET (11:41:46.37 UTC, 1/03946534:56:4:2 SCLK)

## INPUT FILES:

Planetary eph file: /usr/nav/od/deliveries/OD166/eph.OD166.nio  
Satellite eph file: /usr/nav/od/deliveries/OD178/sateph.OD178.nio  
Epoch file: /usr/nav/od/deliveries/OD178/epoch  
GIN file: /usr/nav/eph/gin-0894.nio  
STOIC file: /usr/nav/od/stoic/ld970622.pt970902  
P-file: /usr/nav/traj/pfiles/dpfil-970624-od178-c9-enc.nio

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RECONSTRUCTION FOR CALLISTO 9

COMMENTS: Reconstruction for Callisto 9

TRAJECTORY BASIS/OD SOLUTION: OD-185

## TIME SPAN:

BEGIN: 22-JUN-1997 00:01:02.186 ET DOY: 97-173  
22-JUN-1997 00:00:00.000 UTC DOY: 97-173  
1/04009928:46:3:0 SCLK  
END: 22-AUG-1997 00:00:00.000 ET DOY: 97-234  
22-AUG-1997 20:58:56.818 UTC DOY: 97-234  
1/04096802:23:7:4 SCLK

## SIGNIFICANT EVENTS:

## Callisto 9 closest approach:

25-JUN-1997 13:48:52.14 ET (13:47:49.95 UTC, 1/04015019:70:5:1 SCLK)  
Altitude: 418.1 km  
Latitude: 1.96 deg (Callisto centered, Callisto True Equator of Date)

## Ganymede 9A flyby:

26-JUN-1997 17:20:36.50 ET (17:19:34.31 UTC, 1/04016653:33:1:3 SCLK)  
Altitude: 79740.8 km  
Latitude: -2.5 deg (Ganymede centered, Ganymede True Equator of Date)

## Jupiter Periapsis:

27-JUN-1997 11:53:24.51 ET (11:52:22.33 UTC, 1/04017753:85:2:2 SCLK)

## INPUT FILES:

Planetary eph file: /usr/nav/od/deliveries/OD185/eph.OD185.nio  
Satellite eph file: /usr/nav/od/deliveries/OD185/sateph.OD185.nio  
Epoch file: /usr/nav/od/deliveries/OD185/epoch  
GIN file: /usr/nav/eph/gin-0894.nio  
STOIC file: /usr/nav/od/stoic/ld970821.pt971101  
P-file: /usr/nav/traj/pfiles/dpfil-970911-od185-c10-enc.nio

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RECONSTRUCTION FOR CALLISTO 10

COMMENTS: Final reconstruction for Callisto 10 encounter.

TRAJECTORY BASIS/OD SOLUTION: OD-188

## TIME SPAN:

BEGIN: 22-AUG-1997 21:00:00.000 ET DOY: 97-234  
22-AUG-1997 20:58:56.817 UTC DOY: 97-234  
1/04098048:37:8:1 SCLK  
END: 21-OCT-1997 00:00:00.000 ET DOY: 97-294  
20-OCT-1997 23:58:56.818 UTC DOY: 97-293  
1/04182252:78:3:7 SCLK

## SIGNIFICANT EVENTS:

## Callisto 10 closest approach:

17-SEP-1997 00:19:57.98 ET (00:18:54.80 UTC, 1/04133850:54:7:2 SCLK)

## Jupiter Periapsis:

18-SEP-1997 23:11:02.81 ET (23:09:59.63 UTC, 1/04133850:54:7:2 SCLK)



## INPUT FILES:

Planetary eph file: /usr/nav/od/deliveries/OD185/eph.OD185.nio  
Satellite eph file: /usr/nav/od/deliveries/OD188/sateph.OD188.nio  
Epoch file: /usr/nav/od/deliveries/OD188/epoch  
GIN file: /usr/nav/eph/gin-0894.nio  
STOIC file: /usr/nav/od/stoic/ld971009.pt971220  
P-file: /usr/nav/traj/pfiles/dpfil-971016-tour.nio

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RECONSTRUCTION FOR EUROPA 11

COMMENTS: Reconstruction for Europa 11 encounter.

TRAJECTORY BASIS/OD SOLUTION: OD-196

## TIME SPAN:

BEGIN: 21-OCT-1997 00:00:00.000 ET DOY: 97-294  
20-OCT-1997 23:58:56.818 UTC DOY: 97-293  
1/04182252:78:3:7 SCLK  
END: 27-NOV-1997 14:50:00.000 ET DOY: 97-331  
27-NOV-1997 14:48:56.817 UTC DOY: 97-331  
1/04235827:56:3:0 SCLK

## SIGNIFICANT EVENTS:

Europa 11 closest approach:

6-NOV-1997 20:32:47.39 ET (20:31:44.21 UTC, 1/04206258:84:7:6 SCLK)

Jupiter Periapsis:

7-NOV-1997 00:43:03.69 ET (00:42:00.51 UTC, 1/04206506:41:2:3 SCLK)

## INPUT FILES:

Planetary eph file: /usr/nav/od/deliveries/OD185/eph.OD185.nio  
Satellite eph file: /usr/nav/od/deliveries/OD196/sateph.OD196.nio  
Epoch file: /usr/nav/od/deliveries/OD196/epoch  
GIN file: /usr/nav/eph/gin-0894.nio  
STOIC file: /usr/nav/od/stoic/ld971211.pt980221  
P-file: /usr/nav/traj/pfiles/dpfil-971215-od196-e12-enc.nio

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RECONSTRUCTION FOR EUROPA 12

COMMENTS: Reconstruction for Europa 12 encounter.

TRAJECTORY BASIS/OD SOLUTION: OD-201

## TIME SPAN:

BEGIN: 27-NOV-1997 14:50:00.000 ET DOY: 97-331  
27-NOV-1997 14:48:56.817 UTC DOY: 97-331  
1/04235827:56:3:0 SCLK  
END: 01-JAN-1998 00:01:03.184 ET DOY: 98-001  
01-JAN-1998 00:00:00.000 UTC DOY: 98-001  
1/04284794:56:7:3 SCLK

## SIGNIFICANT EVENTS:

Europa 12 closest approach:

16-DEC-1997 12:04:23.06 ET (12:03:19.87 UTC, 1/04262723:16:3:3 SCLK)

Jupiter Periapsis:

16-DEC-1997 06:35:56.58 ET (06:34:53.40 UTC, 1/04262398:31:6:1 SCLK)

## INPUT FILES:

Planetary eph file: /usr/nav/od/deliveries/OD185/eph.OD185.nio  
Satellite eph file: /usr/nav/od/deliveries/OD201/sateph.OD201.nio  
Epoch file: /usr/nav/od/deliveries/OD201/epoch  
GIN file: /usr/nav/eph/gin-0894.nio  
STOIC file: /usr/nav/od/stoic/ld980122.pt980404  
P-file: /usr/nav/traj/ref-traj/dpfil-980127-tour.nio