```
; S030916A.BSP LOG FILE
;
; Created 2003-09-16/13:50:40.00.
;
; BEGIN NIOSPK COMMANDS

LEAPSECONDS_FILE    = /usr/nav/traj/naif/mk98259a.tls
SPK_FILE            = S030916A.BSP
  SPK_LOG_FILE      = S030916A-GMM.log
  INCLUDE_TEXT_FILE = gmm-comments.txt
  SOURCE_NIO_FILE   = sateph/sateph-jup120ext-172.nio
    BODIES          = 514 515 516
    BEGIN_TIME      = CAL-ET 2000 FEB 01 00:00:00.000
    END_TIME        = CAL-ET 2003 SEP 22 04:34:38.009
  SOURCE_NIO_FILE   = sateph/sateph-jup120ext-172.nio
    BODIES          = 505
    BEGIN_TIME      = CAL-ET 2000 FEB 01 00:00:00.000
    END_TIME        = CAL-ET 2001 JUL 30 12:00:00.000
  SOURCE_NIO_FILE   = sateph/sateph-jup120ext-172.nio
    BODIES          = 506 507 508 509 510 511 512 513
    BEGIN_TIME      = CAL-ET 2000 FEB 01 00:00:00.000
    END_TIME        = CAL-ET 2003 SEP 22 04:34:38.009
  SOURCE_NIO_FILE   = orbiter/dpfil-000221-od281-i27-enc.nio
    BODIES          = -77
    BEGIN_TIME      = CAL-ET 2000 FEB 01 00:00:00.000
    END_TIME        = CAL-ET 2000 FEB 06 12:01:04.184
  SOURCE_NIO_FILE   = sateph/sateph.OD281.nio
    BODIES          = 501 502 503 504 599
    BEGIN_TIME      = CAL-ET 2000 FEB 01 00:00:00.000
    END_TIME        = CAL-ET 2000 FEB 06 12:01:04.184
  SOURCE_NIO_FILE   = plneph/eph.OD261.nio
    BODIES          = 3 5 10 301 399
    BEGIN_TIME      = CAL-ET 2000 FEB 01 00:00:00.000
    END_TIME        = CAL-ET 2000 FEB 06 12:01:04.184
  SOURCE_NIO_FILE   = orbiter/dpfil-000519-od287-g28-enc.nio
    BODIES          = -77
    BEGIN_TIME      = CAL-ET 2000 FEB 06 12:01:04.184
    END_TIME        = CAL-ET 2000 MAY 18 12:01:04.185
  SOURCE_NIO_FILE   = sateph/sateph.OD287.nio
    BODIES          = 501 502 503 504 599
    BEGIN_TIME      = CAL-ET 2000 FEB 06 12:01:04.184
    END_TIME        = CAL-ET 2000 MAY 18 12:01:04.185
  SOURCE_NIO_FILE   = plneph/eph.OD261.nio
    BODIES          = 3 5 10 301 399
    BEGIN_TIME      = CAL-ET 2000 FEB 06 12:01:04.184
    END_TIME        = CAL-ET 2000 MAY 18 12:01:04.185
  SOURCE_NIO_FILE   = orbiter/dpfil-001227-od296-g29-enc.nio
    BODIES          = -77
    BEGIN_TIME      = CAL-ET 2000 MAY 18 12:01:04.185
    END_TIME        = CAL-ET 2000 NOV 01 12:01:04.182
  SOURCE_NIO_FILE   = sateph/sateph.OD296.nio
    BODIES          = 501 502 503 504 599
    BEGIN_TIME      = CAL-ET 2000 MAY 18 12:01:04.185
    END_TIME        = CAL-ET 2000 NOV 01 12:01:04.182
  SOURCE_NIO_FILE   = plneph/eph.OD261.nio
    BODIES          = 3 5 10 301 399
    BEGIN_TIME      = CAL-ET 2000 MAY 18 12:01:04.185
    END_TIME        = CAL-ET 2000 NOV 01 12:01:04.182
  SOURCE_NIO_FILE   = orbiter/dpfil-010524-od303-c30-enc.nio
    BODIES          = -77
    BEGIN_TIME      = CAL-ET 2000 NOV 01 12:01:04.182
    END_TIME        = CAL-ET 2001 MAY 01 12:01:04.185
  SOURCE_NIO_FILE   = sateph/sateph.OD303.nio
    BODIES          = 501 502 503 504 599
    BEGIN_TIME      = CAL-ET 2000 NOV 01 12:01:04.182
    END_TIME        = CAL-ET 2001 MAY 01 12:01:04.185
  SOURCE_NIO_FILE   = plneph/eph.OD261.nio
    BODIES          = 3 5 10 301 399
    BEGIN_TIME      = CAL-ET 2000 NOV 01 12:01:04.182
    END_TIME        = CAL-ET 2001 MAY 01 12:01:04.185
  SOURCE_NIO_FILE   = orbiter/dpfil-010804-od308-i31-enc.nio
    BODIES          = -77
    BEGIN_TIME      = CAL-ET 2001 MAY 01 12:01:04.185
    END_TIME        = CAL-ET 2001 JUL 30 12:00:00.000
  SOURCE_NIO_FILE   = sateph/sateph.OD308.nio
    BODIES          = 501 502 503 504 599
    BEGIN_TIME      = CAL-ET 2001 MAY 01 12:01:04.185
    END_TIME        = CAL-ET 2001 JUL 30 12:00:00.000
  SOURCE_NIO_FILE   = plneph/eph.OD261.nio
    BODIES          = 3 5 10 301 399
    BEGIN_TIME      = CAL-ET 2001 MAY 01 12:01:04.185
    END_TIME        = CAL-ET 2001 JUL 30 12:00:00.000
  SOURCE_NIO_FILE   = orbiter/dpfil-011015-od315-i32-enc.nio
```

```
      BODIES          = -77
      BEGIN_TIME      = CAL-ET 2001 JUL 30 12:00:00.000
      END_TIME        = CAL-ET 2001 OCT 10 12:00:00.000
    SOURCE_NIO_FILE   = sateph/sateph.OD315.nio
      BODIES          = 505
      BEGIN_TIME      = CAL-ET 2001 JUL 30 12:00:00.000
      END_TIME        = CAL-ET 2001 OCT 10 12:00:00.000
    SOURCE_NIO_FILE   = sateph/sateph.OD315.nio
      BODIES          = 501 502 503 504 599
      BEGIN_TIME      = CAL-ET 2001 JUL 30 12:00:00.000
      END_TIME        = CAL-ET 2001 OCT 10 12:00:00.000
    SOURCE_NIO_FILE   = plneph/eph-jup197.nio
      BODIES          = 3 5 10 301 399
      BEGIN_TIME      = CAL-ET 2001 JUL 30 12:00:00.000
      END_TIME        = CAL-ET 2001 OCT 10 12:00:00.000
    SOURCE_NIO_FILE   = orbiter/dpfil-020116-od321-i33-enc.nio
      BODIES          = -77
      BEGIN_TIME      = CAL-ET 2001 OCT 10 12:00:00.000
      END_TIME        = CAL-ET 2002 JAN 03 12:00:00.000
    SOURCE_NIO_FILE   = sateph/sateph.OD321.nio
      BODIES          = 505
      BEGIN_TIME      = CAL-ET 2001 OCT 10 12:00:00.000
      END_TIME        = CAL-ET 2002 JAN 03 12:00:00.000
    SOURCE_NIO_FILE   = sateph/sateph.OD321.nio
      BODIES          = 501 502 503 504 599
      BEGIN_TIME      = CAL-ET 2001 OCT 10 12:00:00.000
      END_TIME        = CAL-ET 2002 JAN 03 12:00:00.000
    SOURCE_NIO_FILE   = plneph/eph-jup197.nio
      BODIES          = 3 5 10 301 399
      BEGIN_TIME      = CAL-ET 2001 OCT 10 12:00:00.000
      END_TIME        = CAL-ET 2002 JAN 03 12:00:00.000
    SOURCE_NIO_FILE   = orbiter/dpfil-020916-od327-otm108.nio
      BODIES          = -77
      BEGIN_TIME      = CAL-ET 2002 JAN 03 12:00:00.000
      END_TIME        = CAL-ET 2002 SEP 11 12:00:00.000
    SOURCE_NIO_FILE   = sateph/sateph.OD327.nio
      BODIES          = 501 502 503 504 505 599
      BEGIN_TIME      = CAL-ET 2002 JAN 03 12:00:00.000
      END_TIME        = CAL-ET 2002 SEP 11 12:00:00.000
    SOURCE_NIO_FILE   = plneph/eph-jup197.nio
      BODIES          = 3 5 10 301 399
      BEGIN_TIME      = CAL-ET 2002 JAN 03 12:00:00.000
      END_TIME        = CAL-ET 2002 SEP 11 12:00:00.000
    SOURCE_NIO_FILE   = orbiter/dpfil-021104-od329-a34-enc.nio
      BODIES          = -77
      BEGIN_TIME      = CAL-ET 2002 SEP 11 12:00:00.000
      END_TIME        = CAL-ET 2002 SEP 21 12:00:00.000
    SOURCE_NIO_FILE   = sateph/sateph.OD329.nio
      BODIES          = 501 502 503 504 505 599
      BEGIN_TIME      = CAL-ET 2002 SEP 11 12:00:00.000
      END_TIME        = CAL-ET 2002 SEP 21 12:00:00.000
    SOURCE_NIO_FILE   = plneph/eph-jup197.nio
      BODIES          = 3 5 10 301 399
      BEGIN_TIME      = CAL-ET 2002 SEP 11 12:00:00.000
      END_TIME        = CAL-ET 2002 SEP 21 12:00:00.000
    SOURCE_NIO_FILE   = orbiter/dpfil-030129-od331-j35.nio
      BODIES          = -77
      BEGIN_TIME      = CAL-ET 2002 SEP 21 12:00:00.000
      END_TIME        = CAL-ET 2003 JAN 28 01:00:00.000
    SOURCE_NIO_FILE   = sateph/sateph.OD331.nio
      BODIES          = 501 502 503 504 505 599
      BEGIN_TIME      = CAL-ET 2002 SEP 21 12:00:00.000
      END_TIME        = CAL-ET 2003 JAN 28 01:00:00.000
    SOURCE_NIO_FILE   = plneph/eph-jup197.nio
      BODIES          = 3 5 10 301 399
      BEGIN_TIME      = CAL-ET 2002 SEP 21 12:00:00.000
      END_TIME        = CAL-ET 2003 JAN 28 01:00:00.000
    SOURCE_NIO_FILE   = orbiter/dpfil-030916-od333-j35.nio
      BODIES          = -77
      BEGIN_TIME      = CAL-ET 2003 JAN 28 01:00:00.000
      END_TIME        = CAL-ET 2003 SEP 30 12:00:00.000
    SOURCE_NIO_FILE   = sateph/sateph.OD333.nio
      BODIES          = 501 502 503 504 505 599
      BEGIN_TIME      = CAL-ET 2003 JAN 28 01:00:00.000
      END_TIME        = CAL-ET 2003 SEP 30 12:00:00.000
    SOURCE_NIO_FILE   = plneph/eph-jup197.nio
      BODIES          = 3 5 10 301 399
      BEGIN_TIME      = CAL-ET 2003 JAN 28 01:00:00.000
      END_TIME        = CAL-ET 2003 SEP 30 12:00:00.000

  ; END NIOSPK COMMANDS

                            GENERAL COMMENTS:

  KEY TO FILE SEGMENTS:
```

```
01-FEB-2000 to 06-FEB-2000 Initial Epoch for GEM Millennium Mission, OD281
06-FEB-2000 to 18-MAY-2000 Reconstruction for I27, OD287
18-MAY-2000 to 01-NOV-2000 Reconstruction for G28, OD296
01-NOV-2000 to 01-MAY-2001 Reconstruction for G29, OD303
01-MAY-2001 to 30-JUL-2001 Reconstruction for C30, OD308
30-JUL-2001 to 10-OCT-2001 Reconstruction for I31, OD315
10-OCT-2001 to 03-JAN-2002 Reconstruction for I32, OD321
03-JAN-2002 to 11-SEP-2002 Reconstruction for I33, OD327
11-SEP-2002 to 21-SEP-2002 Reconstruction for beginning of orbit 34, OD329
21-SEP-2002 to 28-JAN-2003 Reconstruction for A34, OD331
28-JAN-2003 to 13-SEP-2003 Reconstruction for beginning of orbit 35, OD333
13-SEP-2003 to 30-SEP-2003 Predict reference trajectory T-030916
                            to Jupiter impact, OD333

This file is a compilation of reconstructed trajectory segments and an
updated predicted trajectory for the Galileo Millennium Mission (GMM).
This file begins 1-FEB-2000 (DOY 00-032) and continues to the 30-SEP-2003.

The file for the primary tour is S980326B.BSP.  It is compiled of
reconstructed data only and ends on 1-JAN-1998 (DOY 98-001).  Also,
the reconstructed file for the GEM mission is S000131A.BSP (1-DEC-1997
to 1-FEB-2000).

A similar file covering reconstructed segments for the interplanetary
trajectory can be found in a S970311A.BSP.  The final reconstruction
for the probe trajectory is provided separately in S960730A.BSP.

This file coincides with the Jupiter Planning Sequence and Command
cycle as represented in the GMM IMOP and includes the final
reconstruction for the trajectory for the encounter, Amalthea 34.

The minor Jovian satellites are included for the Post-GMM Mission until
September 2003 (EOM).
Bodies included in this file and radii for Jupiter and the Jovian
satellites are:


     Name                  Body Number      Radius (km)

     Orbiter               -77
     Earth                 399               6378.14
     Earth barycenter        3
     Moon                  301               1737.40
     Sun barycenter         10
     Jupiter               599              71492.0
     Jupiter barycenter      5
     Io                    501               1821.3
     Europa                502               1565.0
     Ganymede              503               2634.0
     Callisto              504               2403.0
     Amalthea              505                 86.2
     Himalia               506                 85.0
     Elara                 507                 40.0
     Pasiphae              508                 18.0
     Sinope                509                 14.0
     Lysithea              510                 12.0
     Carme                 511                 15.0
     Ananke                512                 10.0
     Leda                  513                  5.0
     Thebe                 514                 50.0
     Adrastea              515                 10.0
     Metis                 516                 20.0

NOTE:  The radii values were taken from the Report of the IAU/IAG/COSPAR
       Working Group on Cartographic Coordinates and Rotational Elements
       of the Planets and Satellites:  1994.
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 = 64.184 sec (as of Jan. 1, 1999)
  SCLK is spacecraft clock string.

Questions should be directed to:
  Joan Pojman (818 354-0264, Joan.Pojman@jpl.nasa.gov)
------------------------------------------------------------------------------
                     INITIAL EPOCH FOR GEM MILLENNIUM MISSION

COMMENTS:  Initial epoch for SPK file for GMM and Post-GMM
```

```
           ET minus UTC is 64.184 seconds as of January 1, 1999.

 TRAJECTORY BASIS/OD SOLUTION:  OD-281

 TIME SPAN:
                 BEGIN: 01-FEB-2000 00:00:00.000 ET   DOY:  00-032
                        31-JAN-2000 23:58:55.815 UTC  DOY:  00-031
                        1/05368592:01:2:0       SCLK
                   END: 06-FEB-2000 12:01:04.185 ET   DOY:  00-037
                        06-FEB-2000 12:00:00.000 UTC  DOY:  00-037
                        1/05376426:03:9:0       SCLK

 SIGNIFICANT EVENTS:

 INPUT FILES:
  Planetary eph file: /usr/nav/od/deliveries/OD261/eph.OD261.nio
  Satellite eph file: /usr/nav/od/deliveries/OD281/sateph.OD281.nio
  Epoch file:         /usr/nav/od/deliveries/OD281/epoch
  GIN file            /usr/nav/eph/gin-0198.v205.nio
  STOIC file          /usr/nav/od/stoic/ld991228.pt0000309
  P-file              /usr/nav/traj/pfiles/dpfil-000221-od281-i27-enc.nio

 ------------------------------------------------------------------------------
                        RECONSTRUCTION FOR IO 27
 COMMENTS:  Reconstruction for Io 27
           ET minus UTC is 64.184 seconds as of January 1, 1999.

 TRAJECTORY BASIS/OD SOLUTION:  OD-287

 TIME SPAN:
                 BEGIN: 06-FEB-2000 12:01:04.185 ET   DOY:  00-037
                        06-FEB-2000 12:00:00.000 UTV  DOY:  00-037
                        1/05376426:03:9:0       SCLK
                   END: 18-MAY-2000 12:01:04.186 ET   DOY:  00-139
                        18-MAY-2000 12:00:00.000 UTC  DOY:  00-139
                        1/05521692:04:5:2       SCLK
 SIGNIFICANT EVENTS:

   Io 27 closest approach:
     22-FEB-2000 13:47:45.62 ET (13:46:41.44 UTC, 1/05399318:35:3:0 SCLK)
     Altitude:    197.959 km +/- 0.010 km
     Latitude:     18.535 deg. +/- 0.001 deg.
                        (Io-centered, Io True Equator of Date)
   Jupiter Periapsis:
     22-FEB-2000 12:31:31.08 ET (12:30:26.89 UTC, 1/05399242:89:4:7 SCLK)
     Range to Jupiter from S/C:  418503.75 km (5.85385 Rj)

 INPUT FILES:
  Planetary eph file: /usr/nav/od/deliveries/OD261/eph.OD261.nio
  Satellite eph file: /usr/nav/od/deliveries/OD287/sateph.OD287.nio
  Epoch file:         /usr/nav/od/deliveries/OD287/epoch
  GIN file            /usr/nav/eph/gin-0198.v205.nio
  STOIC file          /usr/nav/od/stoic/ld991228.pt0000309
  P-file              /usr/nav/traj/pfiles/dpfil-000519-od287-g28-enc.nio

 ------------------------------------------------------------------------------
                       RECONSTRUCTION FOR GANYMEDE 28


 COMMENTS:  Reconstruction for Ganymede 28
           ET minus UTC is 64.184 seconds as of January 1, 1999.

 TRAJECTORY BASIS/OD SOLUTION:  OD-296

 TIME SPAN:
                 BEGIN: 18-MAY-2000 12:01:04.186 ET   DOY:  00-139
                        18-MAY-2000 12:00:00.000 UTC  DOY:  00-139
                        1/05521692:04:5:2       SCLK
                   END: 01-NOV-2000 12:01:04.183 ET   DOY:  00-306
                        01-NOV-2000 12:00:00.000 UTC  DOY:  00-306
                        1/05759529:49:3:0       SCLK
 SIGNIFICANT EVENTS:

    Ganymede 28 closest approach:
      20-MAY-2000 10:11:13.85 ET (10:10:09.66 UTC, 1/05524431:70:1:5
      Altitude:    808.733 +/- 0.048 km
      Latitude:    -18.958 +/- 0.002 deg.
                          (Ganymede-centered, Ganymede True Equator of Date)

    Jupiter Periapsis:
      21-MAY-2000 04:53:22.75 ET (04:52:18.56 UTC, 1/05525541:53:5:5 SCLK)
      Range to Jupiter from S/C:  477384.36 km (6.67745 Rj)

 INPUT FILES:
  Planetary eph file: /usr/nav/od/deliveries/OD261/eph.OD261.nio
```

```
 Satellite eph file: /usr/nav/od/deliveries/OD296/sateph.OD296.nio
 Epoch file:         /usr/nav/od/deliveries/OD296/epoch
 GIN file            /usr/nav/eph/gin-0198.v205.nio
 STOIC file          /usr/nav/od/stoic/ld001221.pt010303
 P-file              /usr/nav/traj/pfiles/dpfil-001227-od296-g29-enc.nio

-------------------------------------------------------------------------------
                     RECONSTRUCTION FOR GANYMEDE 29

COMMENTS:  Reconstruction for Ganymede 29
           ET minus UTC is 64.184 seconds as of January 1, 1999.

TRAJECTORY BASIS/OD SOLUTION:  OD-303

TIME SPAN:
                BEGIN: 01-NOV-2000 12:01:04.183 ET   DOY:  00-306
                       01-NOV-2000 12:00:00.000 UTC  DOY:  00-306
                       1/05759529:49:3:0       SCLK
                  END: 01-MAY-2001 12:01:04.186 ET   DOY:  01-121
                       01-MAY-2001 12:00:00.000 UTC  DOY:  01-121
                       1/06017305:46:0:5       SCLK
SIGNIFICANT EVENTS:

  Ganymede 29 closest approach:
    28-DEC-2000 08:26:30.85 ET (08:25:26.66 UTC, 1/05840495:37:3:0
    Altitude:    2337.47 +/- 0.042 km
    Latitude:      62.205 +/- 0.002 deg.
                         (Ganymede-centered, Ganymede True Equator of Date)

  Jupiter Periapsis:
    29-DEC-2000 03:27:35.37 ET (03:26:31.18 UTC, 1/05841623:86:1:3 SCLK)
    Range to Jupiter from S/C:  535434.81 km (7.48944 Rj)

INPUT FILES:
 Planetary eph file: /usr/nav/od/deliveries/OD261/eph.OD261.nio
 Satellite eph file: /usr/nav/od/deliveries/OD303/sateph.OD303.nio
 Epoch file:         /usr/nav/od/deliveries/OD303/epoch
 GIN file            /usr/nav/eph/gin-0198.v205.nio
 STOIC file          /usr/nav/od/stoic/ld010522.pt010802
 P-file              /usr/nav/traj/pfiles/dpfil-010524-od303-c30-enc.nio

-------------------------------------------------------------------------------
                         RECONSTRUCTION FOR CALLISTO 30

COMMENTS:  Reconstruction for Callisto 30
           ET minus UTC is 64.184 seconds as of January 1, 1999.

TRAJECTORY BASIS/OD SOLUTION:  OD-308

TIME SPAN:
                BEGIN: 01-MAY-2001 12:01:04.186 ET   DOY:  01-121
                       01-MAY-2001 12:00:00.000 UTC  DOY:  01-121
                       1/06017305:46:0:5       SCLK
                  END: 30-JUL-2001 12:00:00.000 ET   DOY:  01-211
                       30-JUL-2001 11:58:55.817 UTC  DOY:  01-211
                       1/06145480:31:1:2       SCLK
SIGNIFICANT EVENTS:

  Callisto 30 closest approach:
    25-MAY-2001 11:25:01.93 ET (11:23:57.75 UTC, 1/06051450:09:3:6 SCLK)
    Altitude:     137.90 +/- 0.01 km
    Latitude:      13.65 +/- 0.0006 deg.
                         (Callisto-centered, Callisto True Equator of Date)

  Jupiter Periapsis:
    23-MAY-2001 17:33:54.96 ET (17:32:50.78 UTC, 1/06048966:52:8:0 SCLK)
    Range to Jupiter from S/C:  520354.34 km (7.27850 Rj)

INPUT FILES:
 Planetary eph file: /usr/nav/od/deliveries/OD261/eph.OD261.nio
 Satellite eph file: /usr/nav/od/deliveries/OD308/sateph.OD308.nio
 Epoch file:         /usr/nav/od/deliveries/OD308/epoch
 GIN file            /usr/nav/eph/gin-0198.v205.nio
 STOIC file          /usr/nav/od/stoic/ld010803.pt011014
 P-file              /usr/nav/traj/ref-traj/dpfil-010810-od310-tour.nio

-------------------------------------------------------------------------------
                       RECONSTRUCTION FOR IO 31

COMMENTS:  Reconstruction for Io 31
           ET minus UTC is 64.184 seconds as of January 1, 1999.

TRAJECTORY BASIS/OD SOLUTION:  OD-315

TIME SPAN:
```

```
                BEGIN: 30-JUL-2001 12:00:00.000 ET   DOY:  01-211
                       30-JUL-2001 11:58:55.817 UTC  DOY:  01-211
                       1/06145480:31:1:2       SCLK
                  END: 10-OCT-2001 12:00:00.000 ET   DOY:  01-283
                       10-OCT-2001 11:58:55.818 UTC  DOY:  01-283
                       1/06248021:05:2:0       SCLK
 SIGNIFICANT EVENTS:

   Io 31 closest approach:
     06-AUG-2001 05:00:24.59 ET (04:59:20.41 UTC, 1/06155034:54:4:7 SCLK)
     Altitude:     193.434 +/- 0.108 km
     Latitude:      77.492 +/- 0.004 deg.
                          (Io-centered, Io True Equator of Date)

   Jupiter Periapsis:
     06-AUG-2001 04:53:15.26 ET (04:52:11.07 UTC, 1/06155027:47:4:7 SCLK)
     Range to Jupiter from S/C:  423897.71 km (5.92930 Rj)

 INPUT FILES:
  Planetary eph file: /usr/nav/eph/eph-jup197.nio
  Satellite eph file: /usr/nav/od/deliveries/OD315/sateph.OD315.nio
  Epoch file:         /usr/nav/od/deliveries/OD315/epoch
  GIN file            /usr/nav/eph/gin-0198.v205.nio
  STOIC file          /usr/nav/od/stoic/ld011012.pt011223
  P-file              /usr/nav/traj/ref-traj/dpfil-011015-od315-i32-enc.nio

 ------------------------------------------------------------------------------
                      RECONSTRUCTION FOR IO-32

 COMMENTS:  Reconstruction for Io 32
            ET minus UTC is 64.184 seconds as of January 1, 1999.

 TRAJECTORY BASIS/OD SOLUTION:  OD-321

 TIME SPAN:
                BEGIN: 10-OCT-2001 12:00:00.000 ET   DOY:  01-283
                       10-OCT-2001 11:58:55.818 UTC  DOY:  01-283
                       1/06248021:05:2:0       SCLK
                  END: 03-JAN-2002 12:00:00.000 ET   DOY:  02-003
                       03-JAN-2002 11:58:55.816 UTC  DOY:  02-003
                       1/06369076:06:2:0       SCLK
 SIGNIFICANT EVENTS:

   Io 32 closest approach:
     16-OCT-2001 01:24:24.76 ET (01:23:20.58 UTC, 1/06255937:46:7:3 SCLK)
     Altitude:     184.402 +/- 0.030 km
     Latitude:     -78.538 +/- 0.001 deg.
                          (Io-centered, Io True Equator of Date)

   Jupiter Periapsis:
     15-OCT-2001 23:57:03.24 ET (23:55:59.06  UTC, 1/06255851:10:4:4 SCLK)
     Range to Jupiter from S/C:  413439.64 km (5.78302 Rj)

 INPUT FILES:
  Planetary eph file: /usr/nav/eph/eph-jup197.nio
  Satellite eph file: /usr/nav/od/deliveries/OD321/sateph.OD321.nio
  Epoch file:         /usr/nav/od/deliveries/OD321/epoch
  GIN file            /usr/nav/eph/gin-0198.v205.nio
  STOIC file          /usr/nav/od/stoic/ld020115.pt020328
  P-file              /usr/nav/traj/ref-traj/dpfil-020116-od321-i33-enc.nio

 ------------------------------------------------------------------------------
                      RECONSTRUCTION FOR IO-33

 COMMENTS:  Reconstruction for Io 33
            ET minus UTC is 64.184 seconds as of January 1, 1999.

 TRAJECTORY BASIS/OD SOLUTION:  OD-327

 TIME SPAN:
                BEGIN: 03-JAN-2002 12:00:00.000 ET   DOY:  02-003
                       03-JAN-2002 11:58:55.816 UTC  DOY:  02-003
                       1/06369076:06:2:0       SCLK
                  END: 11-SEP-2002 12:00:00.000 ET   DOY:  02-254
                       11-SEP-2002 11:58:55.817 UTC  DOY:  02-254
                       1/06726544:35:9:0       SCLK
 SIGNIFICANT EVENTS:

   Io 33 closest approach:
     17-JAN-2002 14:09:32.30 ET (14:08:28.11 UTC, 1/06389142:59:6:3 SCLK)
     Altitude:     101.510 +/- 0.021 km
     Latitude:     -43.5355 +/- 0.0005 deg.
                          (Io-centered, Io True Equator of Date)

   Jupiter Periapsis:
```

```
     17-JAN-2002 16:23:37.18 ET (16:22:32.99 UTC, 1/06389275:23:9:6 SCLK)
     Range to Jupiter from S/C:  396311.76 km (5.54344 Rj)

 INPUT FILES:
  Planetary eph file: /usr/nav/eph/eph-jup197.nio
  Satellite eph file: /usr/nav/od/deliveries/OD327/sateph.OD327.nio
  Epoch file:         /usr/nav/od/deliveries/OD327/epoch
  GIN file            /usr/nav/eph/gin-0198.v205.nio
  STOIC file          /usr/nav/od/stoic/ld020910.pt021121
  P-file              /usr/nav/traj/ref-traj/dpfil-020916-od327-otm108.nio

 ------------------------------------------------------------------------------
                     RECONSTRUCTION FOR BEGINNING OF ORBIT 34

 COMMENTS:  Reconstruction for beginning of Amalthea 34 orbit
            ET minus UTC is assumed to be 64.184 seconds as of January 1, 1999.

 TRAJECTORY BASIS/OD SOLUTION:  OD-329

 TIME SPAN:
                 BEGIN: 11-SEP-2002 12:00:00.000 ET   DOY:  02-254
                        11-SEP-2002 11:58:55.818 UTC  DOY:  02-254
                        1/06726544:35:9:0       SCLK
                   END: 21-SEP-2002 12:00:00.000 ET   DOY:  02-264
                        21-SEP-2002 11:58:55.818 UTC  DOY:  02-264
                        1/06740786:14:6:0       SCLK

 SIGNIFICANT EVENTS:

 INPUT FILES:
  Planetary eph file: /usr/nav/nav/eph/eph-jup197.nio
  Satellite eph file: /usr/nav/od/deliveries/OD329/sateph.OD329.nio
  Epoch file:         /usr/nav/od/deliveries/OD326/epoch
  GIN file            /usr/nav/od/deliveries/OD329/gin.nio
  STOIC file          /usr/nav/od/stoic/ld021101.pt030112
  P-file              /usr/nav/traj/ref-traj/dpfil-021104-od329-a34-enc.nio

 ------------------------------------------------------------------------------
                     RECONSTRUCTION FOR AMALTHEA 34

 COMMENTS:  Reconstruction for Amalthea 34.  The GM for Amalthea has changed significantly.
            The new GM value used is 0.146 +/- 0.013 km**3/s**2 (old value was 0.5 km**3/s**2).
            ET minus UTC is 64.184 seconds as of January 1, 1999.

 TRAJECTORY BASIS/OD SOLUTION:  OD-331

 TIME SPAN:
                 BEGIN: 21-SEP-2002 12:00:00.000 ET   DOY:  02-264
                        21-SEP-2002 11:58:55.818 UTC  DOY:  02-264
                        1/06740786:14:6:0       SCLK
                   END: 28-JAN-2003 01:00:00.000 ET   DOY:  03-028
                        28-JAN-2003 00:58:55.815 UTC  DOY:  03-028
                        1/06923852:14:7:2       SCLK        *** Using new SCLK file, mk03112.tsc ***

 SIGNIFICANT EVENTS:

   Amalthea Closest Approach:
     05-NOV-2002 06:19:45.05 ET (05-NOV-2002 06:18:40.87 UTC, 1/06804537:54:3:3 SCLK)
     Altitude:     163.0  +/- 11.7 km
     Latitude:     -47.7 +/- 2.8 degrees (STED)
                          (Amalthea-centered, Amalthea True Equator of Date)

   Io (Non-targeted) Distant Flyby:
     05-NOV-2002 02:57:53.35 ET (05-NOV-2002 02:56:49.17 UTC, 1/06804337:86:7:6 SCLK)
     Altitude:     45379.149 +/- 2.512 km
     Latitude:        -6.294 +/- 0.028 deg
                          (Io-centered, Io True Equator of Date)

   Jupiter Periapsis:
     05-NOV-2002 07:24:38.47 ET (05-NOV-2002 07:23:34.29 UTC, 1/06804601:70:4:6 SCLK)
     Range to Jupiter from S/C:  141976.74 km (1.98591 Rj)

 INPUT FILES:
  Planetary eph file: /usr/nav/eph/eph-jup197.nio
  Satellite eph file: /usr/nav/od/deliveries/OD331/sateph.OD331.nio
  Epoch file:         /usr/nav/od/deliveries/OD331/epoch
  GIN file            /usr/nav/od/deliveries/OD331/gin.nio
  STOIC file          /usr/nav/od/stoic/ld030128.pt030410
  P-file              /usr/nav/traj/pfiles/dpfil-030129-od331-j35.nio

 ------------------------------------------------------------------------------
                     RECONSTRUCTION FOR BEGINNING OF ORBIT 35

 COMMENTS:  Reconstruction for beginning of orbit 35.
```

```
 TRAJECTORY BASIS/OD SOLUTION:  OD-333

 TIME SPAN:
                BEGIN: 28-JAN-2003 01:00:00.000 ET   DOY:  03-028
                       28-JAN-2003 00:58:55.815 UTC  DOY:  03-028
                       1/06923852:14:7:2       SCLK   *** Using new SCLK file, mk03112.tsc ***
                  END: 13-SEP-2003 14:00:00.000 ET   DOY:  03-256
                       13-SEP-2003 13:58:55.818 UTC  DOY:  03-256
                       1/07249335:71:4:1       SCLK        *** Using new SCLK file, mk03112.tsc ***

 SIGNIFICANT EVENTS:

 Jupiter Apoapsis     14-APR-2003 15:44:54 UTC

 INPUT FILES:
  Planetary eph file: /usr/nav/eph/eph-jup197.nio
  Satellite eph file: /usr/nav/od/deliveries/OD333/sateph.OD333.nio
  Epoch file:         /usr/nav/od/deliveries/OD333/epoch
  GIN file            /usr/nav/od/deliveries/OD333/gin.nio
  STOIC file          /usr/nav/od/stoic/ld030912.pt031123
  P-file              /usr/nav/traj/pfiles/dpfil-030916-od333-j35.nio

 ------------------------------------------------------------------------------
                            PREDICT FOR TOUR-030916

 COMMENTS:  Predict reference tour past Jupiter impact to 30-SEP-2003.
            ET minus UTC is assumed to be 64.184 seconds for the predict tour.

 TRAJECTORY BASIS/OD SOLUTION:  OD-333

 TIME SPAN:
                BEGIN: 13-SEP-2003 14:00:00.000 ET   DOY:  03-256
                       13-SEP-2003 13:58:55.818 UTC  DOY:  03-256
                       1/07249335:71:4:1       SCLK        *** Using new SCLK file, mk03112.tsc ***
                  END: 30-SEP-2003 12:00:00.000 ET   DOY:  03-273
                       30-SEP-2003 11:58:55.818 UTC  DOY:  03-273
                       1/07273428:09:1:2       SCLK

 SIGNIFICANT EVENTS:

 The difference between ET (ephemeris time) and SCET in UTC time is
 64.184 seconds as of January 1, 1999.

 Jupiter Entry Site   21-SEP-2003 18:56:59.88 UTC



 INPUT FILES:
  Planetary eph file: /usr/nav/nav/eph/eph-jup197.nio
  Satellite eph file: /usr/nav/od/deliveries/OD333/sateph.OD333.nio
  Epoch file:         /usr/nav/od/deliveries/OD333/epoch
  GIN file            /usr/nav/od/deliveries/OD333/gin.nio
  STOIC file          /usr/nav/od/stoic/ld030912.pt031123
  P-file              /usr/nav/traj/ref-traj/dpfil-030916-od333-j35.nio

 ------------------------------------------------------------------------------
```