



# INTEGRAL

## Forecasted DSN Support

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# INTEGRAL Mission Support

- Mission Parameters
  - Launch: 17 October 2002 from Baikonur, Kazakhstan
    - Launch Period: 17 Oct – 25 Nov 2002
  - Highly Elliptical Orbit ~72 Hour Orbital Period
  - Full Ground Station Coverage Above 40,000 km
  - 5 Year Design Life
    - ~18 Day Launch and Early Orbit Phase (LEOP)
    - Launch to L + 2 Months Commissioning Phase (CP)
    - 2 Year Prime Mission (follows CP)
    - 3 Year Extended Mission



# INTEGRAL Mission Support

- Tracking Requirements
  - DSN Requested to Provide Supplemental Coverage
    - Average Maximum of 16 Hrs. / 72-hour Orbit for Mission Duration
    - Nominal Three Handovers With Redu per Orbit
      - Up to Four Handovers With Redu During Eclipse Season
      - Villafranca May Substitute for Redu
  - Requested Support Only from Goldstone Complex
    - DSS 16 Primary Support (26 meter antenna)
    - DSS 24 Backup Support (34 meter antenna)
  - References
    - Present PSLA (15 December 1999)
    - CReMA Issue 6.1 (September 2001)
    - View Period File: December 2001



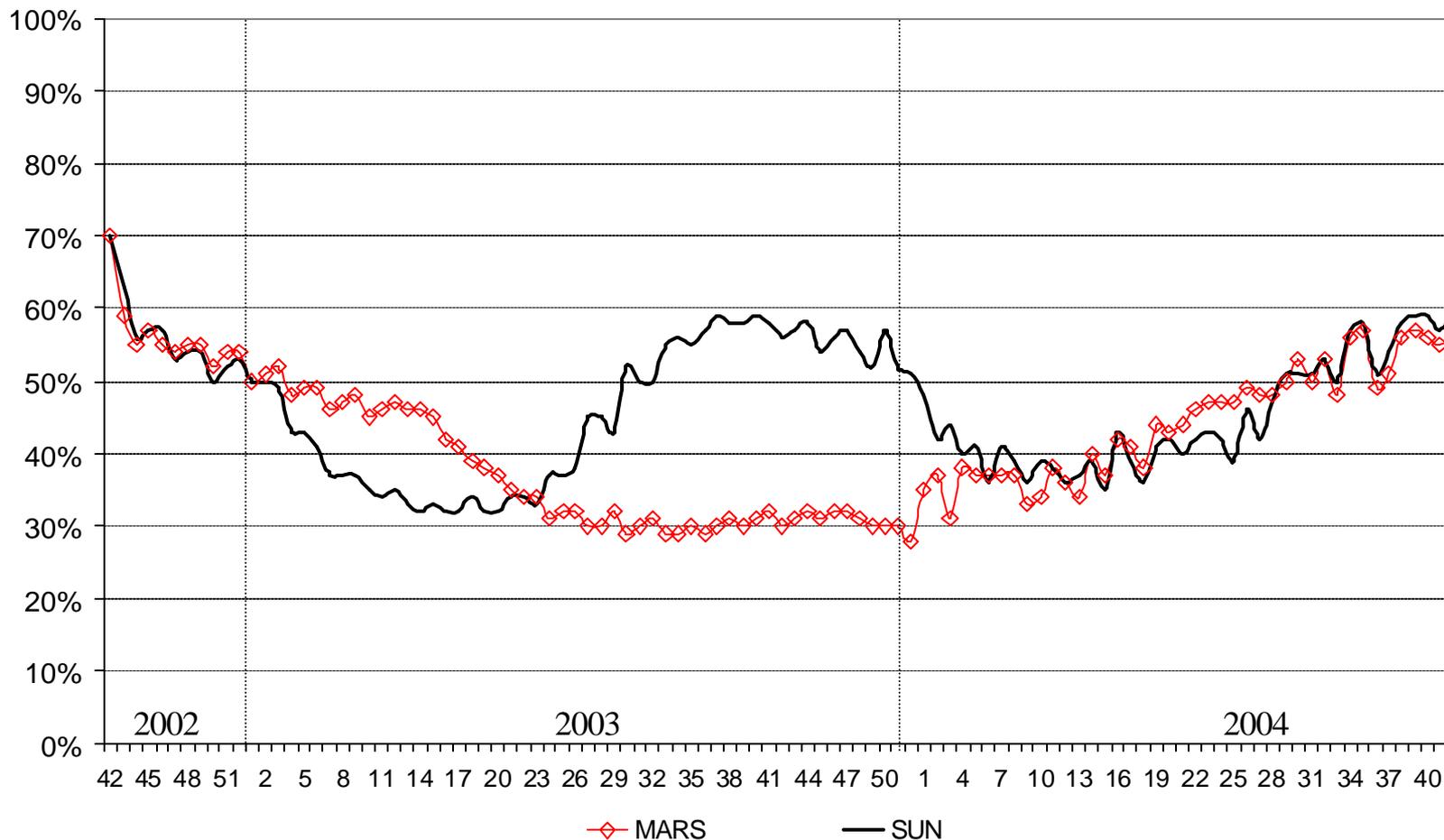
# INTEGRAL Mission Support

- Preliminary DSN Loading Study 2002-2004:
  - Viewperiod File: 17 October 2002 – 31 December 2004
  - Potential Periods of Contention:
    - Downtime of DSS-24 Shifted Three Weeks
      - From 1 October - 22 November 2002
      - To 21 October - 12 December 2002
        - » NSP - Network Simplification Program Task
    - Current Launch Plans Affecting 26m Support:
 

TDRS-J	9 November 2002
GOES-N & O	25 February 2004, April 2005
    - Mars Overload
      - Launch Phase June-July 2003
      - Approach Phase November 2003 - February 2004



# Integral Viewperiod Overlap (Mars & Sun) at Goldstone Complex (17 October 2002 – 17 October 2004)





# INTEGRAL Mission Support

- Analysis and Summary
  - Present Loading Shows Greater Than 90% Supportable
  - Chart Summarizes Potential Contention With:
    - Collateral Impact from Mars Support on 26m
      - No Excess Capacity on 34m and 70m Subnets
      - Pushes Some 34m Users to 26m Subnet
    - L1 Missions and DSS Maintenance
      - L1 Missions: ACE, Genesis, SOHO, WIND
      - DSS 16 Maintenance – Monday
      - DSS 24 Maintenance – Wednesday
  - Caveats
    - Used Full Integral Goldstone Viewperiod



# INTEGRAL Mission Support

- Comments/Questions/Requests
  - Future Trajectory File Receipt:
    - Problem Receiving SPK File in November via email
    - Implemented SPK.JPL.NASA.GOV Portal in February
      - » The purpose of SPK.JPL.NASA.GOV is to provide a platform for the delivery of trajectory files to the Jet Propulsion Laboratory Resource Allocation Team.
      - » The purpose of this website on SPK.JPL.NASA.GOV is to provide the documentation necessary to enable users to interact with SPK.
      - » Tested by JPL Multi-Mission Navigation.
  - Mid-Range Allocation (Two Months to Two Years)
    - New Mid-Range View Period Generation Procedure
      - » 814-003 Requires VP With Station Masks From Extrapolated Spacecraft Trajectory Files
    - Request Both Redu and Goldstone Planning Schedule Throughout the Mission Life