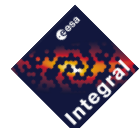# Integral

R. Southworth ESA/ESOC

Integral Operations Co-ordination Meeting (25/3/2011)

MOC and Spacecraft Status

MOC and Spacecraft Status

- FCT

- Satellite Health and Consumables

- Anomalies

- PLM status and Anomalies (extra presentation)

- MOC status

- MOC External Interfaces

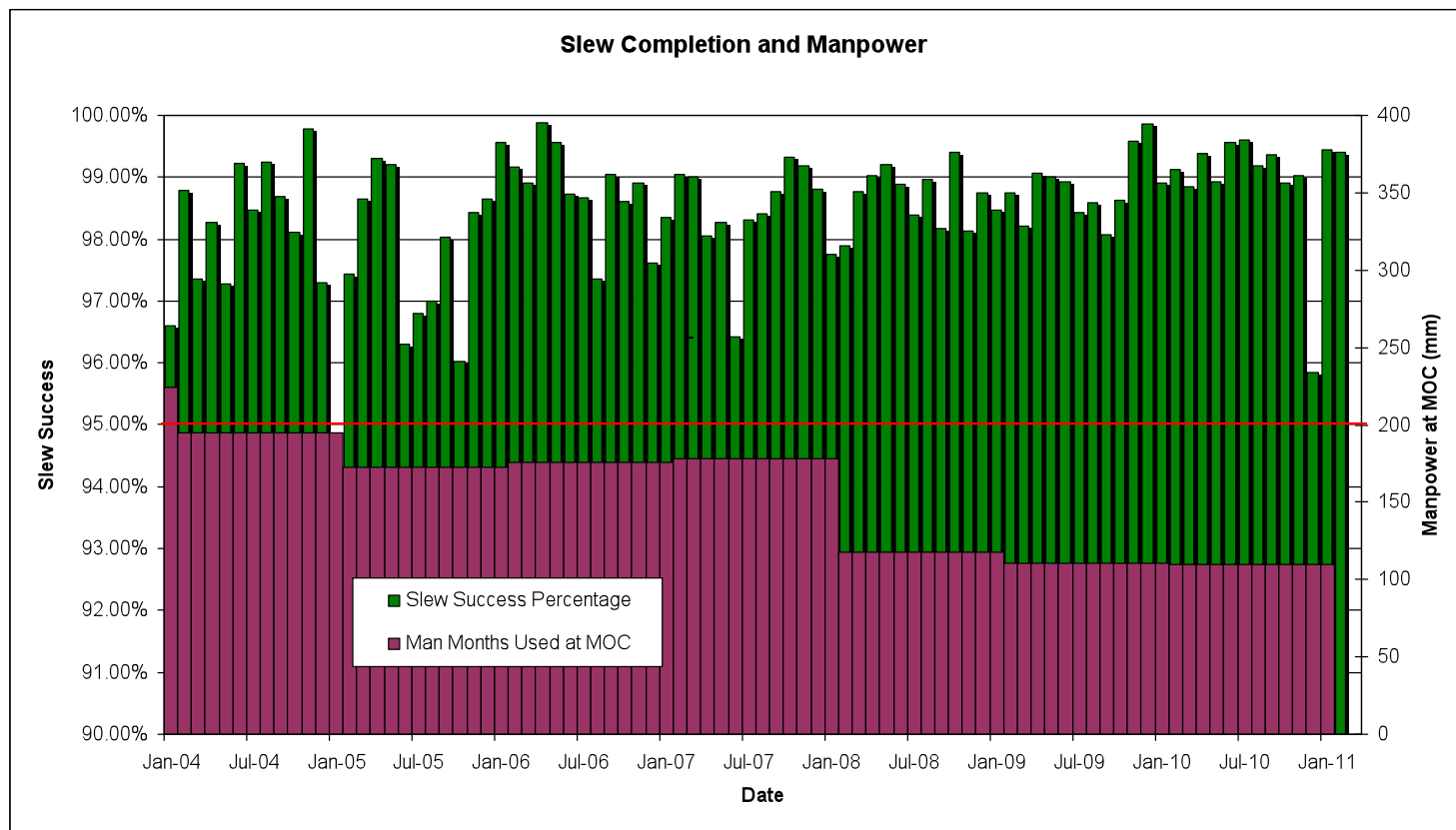- MOC Tools

- MCS Evolution

- Mission Performance

Integral FCT Status

- ## Spacecraft Operations Manager
  - Richard Southworth
  - ESOC ext 3827 (Richard.southworth@esa.int)
  - System and SVM Issues+ overall responsibility

- ## Flight Control Team
  - Carmen Lozano (AOCS, *IBIS, Mission planning, OBDH*)
  - Mike Walker (Mission Planning, JEM-X, OMC, IREM)
  - Jutta Huebner will replace Salma Fahmy from 20/4/2011.
  - *Frederic Schmidt* (SPI, *EPS, OBDH, RFS*)
  - Stefano De Padova (MCS, Database, SPACONs)

Operations Performance

- Slews Completed and Manpower Used
  - Slew execution is the most complex operation and requires the entire Ground Segment to be working end to end in both directions

Slew Completion and Manpower

Satellite Health and Consumables

- No Significant new Platform Anomalies

- Number of registered (on ground) STR blemish pixels increased from 5 to 8

- Results of calibrations indicate continuous slow evolution

- Transmitters now switched off every perigee to comply with ITU regulations

- No effects of proton belts passage observed except on arrays
  - Arrays to be dealt with under orbital evolution

- Batteries appear healthy – reconditioning #5 in spring 2011.

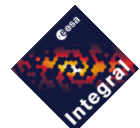# Satellite Health and Consumables II

- **Fuel Consumption**
  - About 122kg remaining, usage is about 0.6kg / month
  - Recent Increase (More and larger Biases – ToOs)

MOC Status

- **DCA renovated**
  - Shared with XMM and Gaia

- **IBIS SVDF installed in ESOC.**

- **Ground Stations interface is stable no major changes foreseen:**
  - Prime: REDU
  - Back up: VIL2, Maspalomas, Weilheim
  - Use of DSN discontinued as of December 2010

MOC External Interfaces

- Interface to ISOC is stable – no changes foreseen, no significant problems.

  - Regular video conferences

- Interface to PIs is good:

  - Regular Contact

  - PI workstations hosted in ESOC

MOC External Interfaces II

- Interface to ISDC is stable – no changes foreseen, no significant problems.
  - Occasional interruptions in nrt
  - Occasional delays in supplying CDs
    - Can we transfer data as a file?, as is done for ISOC already. Current (configurable) delay is 14 days.
    - Average over last year, including start up and initial problems 18.75 days.
  - Communications Upgrade to ISDC (Lines + Routers)

MOC Tools

- **Following MOC tools are available:**
  - TDRS: Web based access to all Housekeeping Telemetry since launch
    - Account needed – contact me
  - Integral / XMM MOC website
    - http://xmm.esoc.esa.int/
  - MUST
    - Quick Look Access to close to real time Telemetry
    - Web access ??
  - Reporting Tool
    - Feedback re. Reports content / Layout
  - Digilog (only within ESA)
    - Realtime tracking of SPACON operations log
    - http://131.176.57.138/DigiLogR3-2/www/LoginPage.php

MCS Evolution

- Solaris servers EoSL in 2012

- Solaris clients EoSL in 2011

- Solaris 8 OS, E0SL in 2012

- Sun Equipment is very expensive

  - 3 disks @ 150G for 5K!

- SPARC clients can no longer be procured

- Proposal is to move to a LINUX based system:

  - Porting of Current MCS Software

  - S2K 3.1 was designed to run under both LINUX and solaris

  - Issues with Mission specific components

  - Possible minor changes in interfaces (FTS)

  - Activities to start late 2011, with migration end 2012.

PI Workstations at MOC

- Following PI Workstations are located at MOC:
  - 2 * SPI, fully functional
  - 2 * IBIS, 1 fully functional
    - 1 awaiting security plan approval by ESACERT
  - 1 * JEM-X
    - Awaiting Security plan approval by ESACERT
  - 1 * OMC
  - 1 * IREM
    - Awaiting Security plan approval by ESACERT
- Effort in maintaining PI workstations is increasing, mostly due to stringent ESA security requirements

Time Correlation

- **Current Status:**
  - All revolutions up to revolution 1009 regenerated and sent to ISDC
  - From revolution 1010 onwards TCO in NRT is aligned with delays in regenerated TCO (REV_3)
  - SRON confirmed REV_3 NRT timing at last CRAB

- **Tool to regenerate TCO is still available and can be used in case of timing problems.**