ODCWG Convenor's Report

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17\textsuperscript{th} Meeting of
ISO/ TC20/ SC14/ ODCWG

23 - 25 May 2011
DIN, Berlin, Germany
Main objectives of ODCWG meeting

• Review ODCWG Programme of Work
• Discuss future of ODCWG
• Joint sessions with WGs 1, 3, 4 & 6 to review debris-related projects and NWIPs of mutual interest
• Discuss important technical issues such as:
  – Demonstrating compliance with the LEO disposal 25-year rule (e.g. probabilistic approach; methods such as STELA)
  – LEO graveyarding: altitudes, delta-V, and long-term collision risks
  – Determination of “Probability of propellant” term in “Probability of successful disposal”
  – Conjunction Data Message: level of detail
Summary of debris mitigation projects

IS:
23339: Estimating Mass of Remaining Usable Propellant
24113: Space Debris Mitigation Requirements
26872: Disposal of Satellites Operating at Geo Altitude
27875: Re-entry Risk Management
27852: Orbit Lifetime Estimation

DIS:
11227: Test Procedure for HVI Ejecta
11233: Orbit Determination and Estimation
14200: Process-based Implementation of M/OD Models

CD:
14222: Earth Atmosphere Density above 120 km
16126: Survivability against M/OD Impacts
16127: Prevention of Break-up of Unmanned Spacecraft
16164: Disposal of Satellites Operating in LEO

WD:
16158: Avoiding Collisions
16699: Disposal of Orbital Launch Stages
CCSDS 508.0: Conjunction Data Message

NWIP:
N????: Design & Operation Manual for S/C in OD Environment
Schedule for debris mitigation projects (as of 16.05.2011)
Status of debris mitigation projects (1)

24113: Space Debris Mitigation Requirements

• Published in July 2010, but with editorial errors
• ISO put document through a 2-month minor revision FDIS to correct the errors. FDIS completed in April 2011, and new version published in May 2011
• PL currently collecting comments for Member Body Review in 2013

23339: Estimating the Mass of Remaining Usable Propellant

• Published in November 2010
Status of debris mitigation projects (2)

26872: Disposal of Satellites Operating at Geosynchronous Altitude
• Published in September 2010

27852: Orbit Lifetime Estimation
• DIS phase ended on 14 May 2010 with 100% approval and comments. DIS report of voting submitted to ISO CS on 8 September 2010.
• Publication expected by 30 April 2011
27875: Re-entry Risk Management for Unmanned Spacecraft and Orbital Stages

- Published in February 2010

11227: Test Procedure to Evaluate HVI Ejecta

- The document completed CD/V on 19 January 2011. There were 11 'yes' votes, 2 'abstentions', and 1 vote 'not cast'
- Comments were supplied by France, Japan and UK
- The PL was scheduled to supply DIS text to ISO by 30 April 2011
11233: Orbit Determination & Estimation

- The document completed CD/V on 28 February 2011. There were 9 'yes' votes, 1 'no' vote, 1 'abstention', and 3 votes 'not cast'
- Comments were supplied by Japan and UK
- The PL was scheduled to supply DIS text to ISO by 30 April 2011

14222: Earth Atmosphere Density above 120 km

- CD/V ballot was initiated on 3 March 2011 and is due to close on 3 June 2011
14200: Process-based Implementation of M/OD Models
• The CD/C phase appears to have been bypassed by mistake
• The document completed CD/V on 20 November 2010. There were 7 'yes' votes, 1 'no' vote, 4 'abstentions', and 2 votes 'not cast'
• Comments were supplied by China, France, Germany, Russia & UK
• The PL now has to supply DIS text to ISO by 31 May 2011

16126: Survivability of unmanned spacecraft against M/OD impacts
• CD/C version was distributed on 8 December 2010. Comments were received by 21 March 2011 and are currently being dispositioned
• The CD/V ballot is due to start on 15 June 2011
Status of debris mitigation projects (6)

16127: End of Life Passivation of Unmanned Spacecraft
• CD/C version was distributed on 8 December 2010. Comments were received by 21 March 2011 and are currently being dispositioned
• The CD/V ballot is due to start on 15 June 2011

16158: Avoiding Collisions with Orbiting Objects
• Project registered in SC14 Work Programme on 2 November 2009
• At Fall 2009 meeting, possible WD content was debated and no clear consensus emerged. At May 2010 meeting there was agreement that it would be difficult to produce a document with worthwhile content, and so a recommendation was made to the SC14 secretariat to delete 16158
Status of debris mitigation projects (7)

16164: Disposal of Satellites Operating in or Crossing Low Earth Orbit
• CD registration was due on 21 October 2010
• The latest version of the document was submitted to the SC14 secretariat on 10 May 2011 for initiation of the CD/C phase
• The document is ~6 months behind schedule, and so may be at risk of cancellation

16699: Disposal of Orbital Launch Stages
• NWIP put to the vote on 11 May 2010 and closed on 11 August 2010. Positive vote circulated on 18 August 2010
• The first WD version was produced on 18 March 2011
Status of debris mitigation projects (8)

CCSDS 508.0: Conjunction Data Message
• Issue 3 of White Book published in April 2011 (CCSDS 508.0-W-3)

NWIP: Design & Operation Manual for Spacecraft in Orbital Debris Environment
• Awaiting Proposal, Outline and Form 4
Future of ODCWG (1)

• ODCWG was set up as an ad hoc group to oversee and coordinate the development of debris standards in other WGs
• Half of the debris standards are at IS or DIS, and the remainder are becoming mature
• Now would seem to be an appropriate time to review the future of the ODCWG and ask if there is sufficient need for it to continue
Future of ODCWG (2)

• In answer to this question, it is the view of the Convenor and Assistant Convenor that:
  – There are not many more new debris standards that need to be developed
  – Effort should gradually shift towards improving those standards that have been published, e.g.:
    • Identify ways to consolidate the standards into a smaller set
    • Monitor industry's implementation of the standards (e.g. difficulties / suggestions) and provide feedback at meetings
    • Consider any new outputs from IADC (e.g. guidelines)
    • Start drafting and reviewing amendments well before the Member Body Review phases
Future of ODCWG (3)

• Therefore, the Convenor and Assistant Convenor believe that:
  – There is sufficient need for ODCWG to continue for the foreseeable future
  – ODCWG should discuss how to achieve the shift in effort needed to improve the published standards

• Organization:
  – Confirmation of who will be Convenor and Deputy Convenor going forward

• Membership:
  – It is proposed that Project Leaders of debris standards should become active members of ODCWG and be expected to attend ODCWG meetings