WORKING GROUP 1 REPORT

Beijing, China
25 May 2007

Convenor: Keiichiro EISHIMA, Japan
FALL MEETING REPORT
(significant issues for plenary)

■ Location: Paris, CNES, FRANCE
■ Total experts: 19
  (France 2, Italy 1, Israel 1, Japan 5, Russia 1, UK 1, USA 6, ECSS 2)

■ No Significant issues

  ● WG-1 could discuss with participants from ESCC to make good understanding each other for similar activities.
PARTICIPATION

■ Members – total experts: #23
  ● France — 4
  ● China — 6
  ● Brazil — 1
  ● Germany — 1
  ● Japan — 5
  ● Russia — 1
  ● UK — 1
  ● US — 4

■ Liaison Organizations: 0
DECISIONS

(projects moving to next stages, new projects proposed, etc.)

- **IS 11**;
  14953: Structural design loads levels, published; 5.2006
  14622: Structural design induced loads, published; 5.2006
  14302: Electromagnetic compatibility requirements, published; 12.2002
  14621-1: EEE Parts management, published; 11.2003
  14621-2: EEE Parts control program, published; 7.2003
  14623: Structural design-Pressure vessels, published; 12.2003
  14954: Mathematical Models, published; 1.2005
  15387: Space Solar cells, published; 6.2005
  21347: Fracture & damage control, published; 5.2005
  23038: Electron and proton irradiation test methods; 9.2006
  16454: Stress Analysis Requirements; 1.2007

- **FDIS 1**;
  22010: Mass properties
DECISIONS

(projects moving to next stages, new projects proposed, etc.)

■ DIS 3;
  21648: Flywheel Module Design and Test
  24637: EMI testing report
  24638: Pressure components

■ CD 1;
  26871: Pyrotechnic

■ WD 2;
  10786: Structural Components and Assemblies
  10785: Bellows

■ NWI 8;
  Solar Panel Qualification, Solar Cell Qualification, Measurement methods for multi-junction space solar cells, ESD test method, Electrical and Electronics, microelectronics/qualification of hybrid chips, Battery, Passivation
DECISIONS (ECSS related)
(projects moving to next stages, new projects proposed, etc.)

1. Systems Engineering
   - E-10 Part 7A: Product data exchange
   - E-10 Part 9: Engineering DB
   - E-10 Part 12: Reference coordinate systems
   - E-10 Part 13: System modeling & simulation
   - E-10 Part 14: Engineering analytical mathematical models
   - E-10-01: Engineering design model data exchange

- An additional potential new project for WG1 is “Electrical Power Balance”
DECISIONS (ECSS related)
.projects moving to next stages, new projects proposed, etc.)

ii. EEE and Mechanical Part
- Q-60-05: Hybrid μcircuits
In addition, WG1 must begin re-certification of ISO 14621 – parts 1 and 2

iii. Electrical and Electronic
- E-20-01A: Multipaction design and test

An additional potential new project area for WG1 is battery qualification

iv. Mechanical
- E-30Part 1A: Thermal
- E-30Part 3A: Mechanisms
- E-30Part 5.1A: Propulsion
DECISIONS (ECSS related)
(projects moving to next stages, new projects proposed, etc.)

v. Software
   □ No topics

vi. Communications
   □ No topics

□ vii. Control
□ No topics

Where the member of present WG1 is not an expert in the listed areas, each country should have the documents reviewed by other national experts in each country.
DECISIONS (Applications related)
(projects moving to next stages, new projects proposed, etc.)

- Tele-Education
- Tele-Medicine
- Disaster Management
- Traffic Management
- Earth Observation (Ecosystem, Energy, Food etc.)
- Deep Space
- Manned Space
- Others

Standardization Opportunities in Earth Observations:

Satellite installed sensor calibration/data validation, which would pull together other work being done by CEOS/WGCV. Current calibrations are done on a mission by mission basis only. A letter will be drafted and sent to CEOS offering to assist in standardization of practices such as for sensor calibration/validation.

To consider with the International Charter for Disaster Management.

There are activities in the ITU for the Disaster relief & early warning.
DECISIONS (Orbital Debris related)
(projects moving to next stages, new projects proposed, etc.)

- Orbital Debris Mitigation – Design and Operation
- Survivability under M/OD impact
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<tr>
<th>ID</th>
<th>Title</th>
<th>WG</th>
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<td>WD24113</td>
<td>Orbital Debris – Routes to compliance and management for debris mitigation</td>
<td>WG3</td>
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<td>WD27875</td>
<td>Re-entry safety control for unmanned spacecraft and launch vehicle orbit stage</td>
<td>WG3 / ODCWG</td>
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<td>WD26872</td>
<td>Disposal of satellite operating at geosynchronous altitude</td>
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<td>WD23339</td>
<td>Unmanned spacecraft residual propellant mass estimation</td>
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<td>NWIP4-1</td>
<td>Process-based implementation of meteoroid and debris environment models</td>
<td>WG4</td>
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<td>NWIP1-1</td>
<td>Orbital Debris Mitigation – Design and Operation</td>
<td>WG1</td>
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<td>1. Satellite passivation after mission</td>
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<td>- Propulsion systems</td>
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<td>- Non-propulsion systems</td>
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<td>2. Launcher passivation</td>
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<td>3. Collision avoidance</td>
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<td>4. Satellite disposal on orbit ** WD26872</td>
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<td>5. Satellite (disposal by) re-entry ** WD27875</td>
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<td>6. Stage spacecraft separation devices</td>
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<td>7. Deployment &amp; retention devices</td>
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<td>N486</td>
<td>Test procedure to evaluate spacecraft material ejecta upon hypervelocity impact</td>
<td>WG6 / ODCWG</td>
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<td>NWIP1-2</td>
<td>Survivability under M/OD impact for debris mitigation</td>
<td>WG1</td>
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<td>1. Survivability definition under M/OD impact</td>
<td>TS?</td>
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<td>2. M/OD protection (toughness) - design and test</td>
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PROPOSED RESOLUTIONS FOR PLENARY

☞ 21648 (flywheels) was deleted at the ISO Central Secretariat, but will be re-instated.

☞ 26871 Pyro can be issued for a second CD/C but a DIS is required by June 2, 2008. If necessary, a Plenary resolution can be issued asking that the date for DIS distribution be extended.

☞ It was agreed to change the mission statement of WG-1 from “design and development” to “design and verification.”

☞ WG1 will formally request approval at the Next Plenary Session to extend the WG1 mission to include Applications of Space Systems.
There were many countries which were not responded to NWIP Voting.

All countries are required to inform one of “Yes, No, Abstain”

Each countries experts are not attended to the dedicated projects in the face to face meeting. (at least 5 experts)
PROPOSED SOLUTIONS

■ NWIP Voting:
   HoD and National Standard Body will be required to monitor the event using the AIAA web site http://aiaa.kavi.com for supporting SC14.

■ The attending expert lack:
   The project leader will be required to confirm the experts participants before the meeting. In case of the lack, the project leader will communicate through e-mail and telephone before the meeting. And, teleconference tool may be prepared at the meeting room, if necessary.
NEXT MEETING

- **Date:** 7 to 9, Nov, 2007
- **Location:** Brazil

- WG1 will request to perform Teleconference for splinter meeting.
- The splinter meeting will be 3 area.
  1. Mechanical
  2. Electrical

In case of few participants, convenor may rearrange.
In this case, next year fall meeting will be held in Brazil.