

National efforts for Implementing Space Debris Mitigation Guidelines

-A system to help support sustainable access to space

2011 Beijing Space Sustainability Conference

13/14 October 2011

Richard J Tremayne-Smith

OoS

The Outer Space Treaties

- The Outer Space Treaty – 1967
- The Rescue and Return Agreement – 1968
- The Convention on International Liability – 1972
- The Registration Convention – 1975(6)
- The Moon Agreement – 1979(-)

The Principles

- Declaration of Legal Principles – 1963
- Principles on Direct Broadcasting – 1982
- The Remote Sensing Principles – 1986
- Principles Relevant to NPS in Outer Space 1992
- Declaration on International Benefits - 1996

and the Resolutions

- International Cooperation – 1961
- Application of the Concept of Launching State – 2004
- Enhancing Registration Practices – 2007
- ***Resolution 62/217, “International cooperation in the peaceful uses of outer space”, the General Assembly endorses the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space and agrees that the voluntary guidelines for the mitigation of space debris reflect the existing practices as developed by a number of national and international organizations, and invites Member States to implement those guidelines through relevant national mechanisms***
- -----

Implementation Nationally

- In the UK the UN space treaty requirements are implemented in the UK OS Act of 1986
- The UK Space Agency (UKSA) has the role of managing the Act on behalf of the Secretary of State
- Specialist organisations (Technical, Accountancy and Insurance) support the UKSA in its role

The UK Process

Where the UK is the Launching State or a UK national is deemed to have procured a launch licensing procedures apply.

Details for applicants can be found at:

<http://www.bis.gov.uk/assets/bispartners/ukspaceagency/docs/osa/revised-guidance-for-applicants-jul-11-sw.pdf>

And more general information at:

<http://www.bis.gov.uk/ukspaceagency/what-we-do/space-and-the-growth-agenda/uk-capabilities-for-overseas-markets/the-outer-space-act-1986>

Space Debris Mitigation

- Prevent contamination of outer space and adverse changes in the environment of the Earth;
- and dispose of the licensed space object appropriately at the end of the licensed activity and inform UK Space Agency of the disposal and termination of the activity;
- For each license application, a risk assessment will be performed

Recommendations and Standards 1

Space Debris

- IADC (Inter-Agency Space Debris Coordination Group)
- European (ESA, CNES, DLR, UKSA)
- UN COPUOS
- ISO
- ITU
- ECSS (European Coordinated Space Standards)

See:

<http://www.bis.gov.uk/assets/bispartners/ukspaceagency/docs/osa/dtbofstnds2010.pdf>

Recommendations and Standards 2

Space Debris

- The recommendations are relatively fixed, changes are possible and indeed welcome but evolution is slow. They are space agency and country driven. 10 years
- The various standards are growing in number and scope and their development involves industry. However, the scope is generally that of the recommendations.

The way forward

- To invoke the recommendations implementable standards are required, to gain full benefit the standards need to be international standards.
- Design must take account of the space environment.
- Operations must be aware of the special nature of the near space environment

Supporting information 1

- More detailed handbooks/procedures such as those from ESA, NASA etc; provide details and experience for designers and operators.
- A copy of the Exec. Summary of the ESA handbook is at:

http://www.esa.int/gsp/completed/execsum00_N06.pdf

- NASA Procedural Requirements for Limiting Orbital Debris (w/ Change 1 - 5/14/09) at:

http://orbitaldebris.jsc.nasa.gov/library/NPR_8715_006A.pdf

Supporting information 2

- The European Debris Mitigation Code of Conduct also has a part 2 on implementation.
- The IADC have produced a detailed Protection Manual to assist space object protection against orbital debris and micro-meteoroids.
- The IADC have also produced a manual in support of the debris mitigation guidelines.

Controlling Access to Space

- implementing the Mitigation Guidelines
or keeping space open for business

- Access and use need to be managed in order to retain the benefits derived from near Earth space.
- The key is in national licensing regimes that implement the mitigation guidelines and have more general provisions aimed at the long term sustainability of the near Earth space environment.

What Next?

- Everything we have spoken about and some more.
- Remediation/disposal
- Avoiding debris (and other space objects) and removing mass from orbit.
- Continue reporting current practices to the UN COPUOS
- Agree new and improved practices IADC - UN

References 1

- Treaties and Principles

<http://www.oosa.unvienna.org/oosa/SpaceLaw/treaties.html>

- IADC Protection Manual background

http://articles.adsabs.harvard.edu/cgi-bin/nph-article_query?bibcode=2005ESASP.587...39S&db_key=AST&page_in_d=6&data_type=GIF&type=SCREEN_VIEW&classic=YES

- Space debris - models and risk analysis by H Klinkrad, ESA

<http://www.springer.com/astronomy/space+exploration/book/978-3-540-25448-5>

References 2

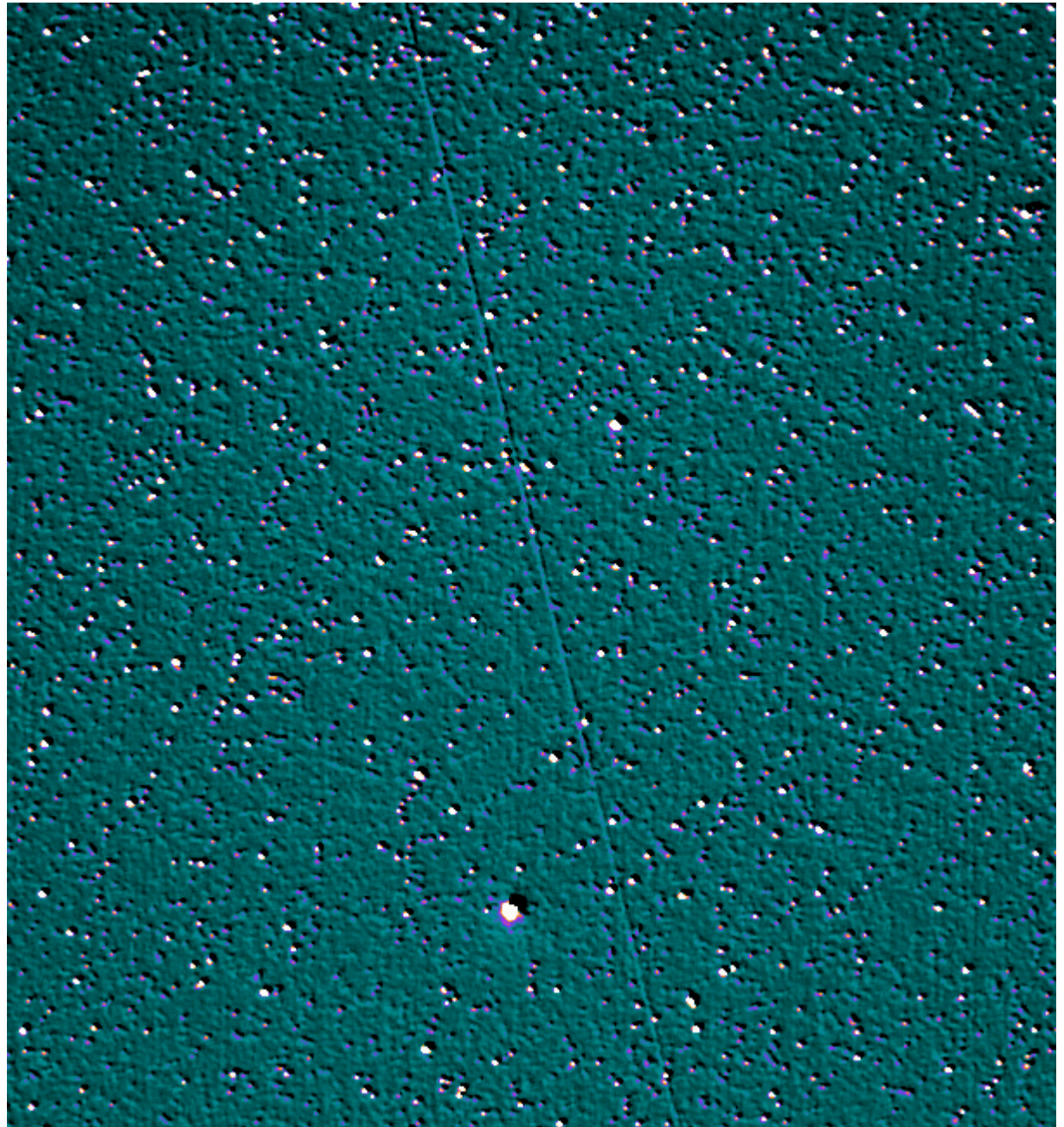
- <http://www.spacesecurity.org/publications.htm>
- <http://www.brill.nl/national-space-legislation-europe>
- http://ashgate.com/default.aspx?page=637&catalogTitle=1&title_id=10289&edition_id=13622

(Contracting for Space – European practice)

All above 3 titles published in September 2011.

Prospero
(X3)
September
2011

40 years
28 October
2011



Questions

- How did we let the situation get so bad?
- What can we do about it?
- Is it too late?
- Who needs to get involved?