

**Legal Events/Issues Affecting
Outer Space Security 2011-2012**

Space Debris Reentry Events 2011

- 2011 saw three significant orbital space debris reentry events that could have implicated the strict liability standard of the Liability Convention of 1972.
- The strict liability standard of the Liability Convention was applied once by the Canadian government in 1979 when debris from the RORSAT Cosmos 954 crashed in Canadian territory. The Canadian government did recover compensation from the Soviet Union; however, the success of the Liability Convention in this case is debatable.

Space Debris Reentry Events 2011

- Upper Atmospheric Research Satellite (UARS) September 12/15, 1991 – September 23/24, 2011
 - Launching State: United States
- Roentgen satellite (ROSAT) June 1, 1990 - October 23/24, 2011
 - Launching State: Germany, United States, United Kingdom?
- Fobos-Grunt: November 8, 2011 – January 15, 2012
 - Launching State: Russian Federation/Republic of Kazakhstan/PRC?

Potential Collisions With Space Debris 2011

2011 also saw numerous potential orbital conjunctions between the ISS and orbital space debris that could have implicated the fault liability standard of the Liability Convention of 1972.



Potential Orbital Collisions 2011

Sampling of potential collision incidents in 2011 for the International Space Station

Date of Maneuver/Close Approach	Object Avoided	Action Taken
2-April-2011	Fragmentation debris from Russian Cosmos 2251	Collision Avoidance Maneuver
28-June-2011	Debris apparently from Proton ullage motor breakup	Crew retreated to Soyuz; insufficient time for maneuver
11-July-2011	Fragmentation debris from Cosmos 375 (ASAT)	Maneuver not deemed necessary.
29-September-2011	Russian Tsyklon rocket body debris	Collision Avoidance Maneuver

Information taken in part from NASA Orbital Debris Quarterly

Legal Consequences of Orbital Collisions

- Cosmos 2251/Iridium 33 Collision in 2009 set the stage for the first application of the fault-liability standard, but no claim was made because of lack of evidence about what happened since incident was in an SSA blind-spot.
- Many questions surround the application of the fault-liability standard, including how fault is apportioned.
- Question: Where would liability lie if a collision occurs between the ISS and a piece of space debris?

Dispute Resolution

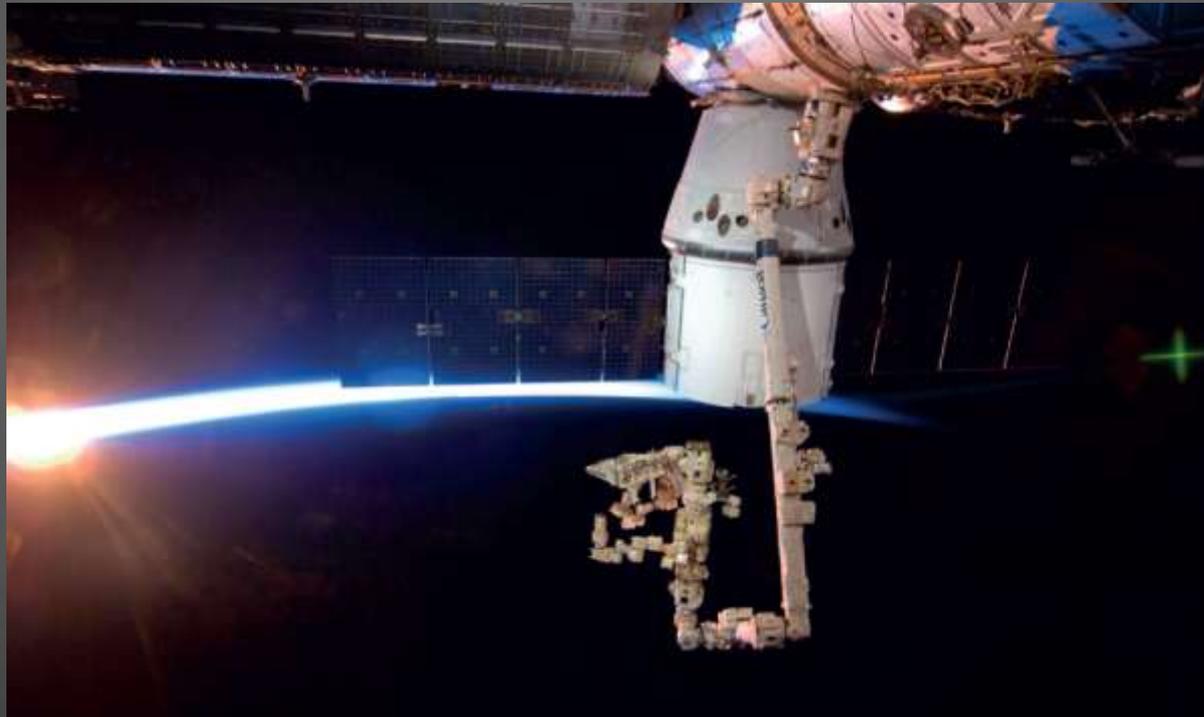
- On December 6, 2011, the Permanent Court of Arbitration adopted the Optional Rules for Arbitration of Disputes Relating to Outer Space Activities.
 - First legal dispute resolution mechanism specific to outer space since the Claims Commission in the Liability Convention of 1972.
 - Intended for disputes related to outer space activities of governmental organizations or non-governmental organizations.
 - Potential use to clarify existing space law treaties.
 - Could be used to enhance a Code of Conduct.
 - Potential use for dispute resolution for the United States' plan to use TCBMs to address outer space security issues.

New Participants in Outer Space Activities

- The Austrian Parliament passed the Austrian Space Act on December 6, 2011.
 - Domestic space law that sets up Austria to become a launching State and satellite operator from within its sovereign territory.
 - The new law embodies and reinforces current international space law treaties.
 - The law mandates use of UN space debris mitigation guidelines for space objects launched under Austria's jurisdiction.

Legal Issues 2012-2013

Commercial Space



Commercial Space in 2012

- Successful COTS mission for Space X means that commercial space will receive further support and move forward with ISS resupply missions; other commercial actors will soon participate.
- Sub-orbital will soon take the stage. Virgin Galactic has received license from the FAA for powered test of Space Ship 2. Flight to take place in late 2012.
- What kind of regulatory environment will evolve as commercial space matures?

Commercial Space Regulations/Space Traffic Management

- Commercial Space Launch Amendments Act of 2004 imposes a moratorium on new regulations on commercial space until October 15, 2015 (by extension); however, as commercial space grows (or an accident occurs) FAA will expand regulation by balancing the need for regulation with safety.
- Many U.S. States have enacted limited liability laws to attract sub-orbital commercial space operators.
 - Liability will grow as commercial space matures.
- FAA and NASA signed MOU on June 4, 2012 to coordinate their respective roles in commercial space and prevent overlap of regulations.

Commercial Space Regulations/Space Traffic Management (continued)

- FAA COMSTAC currently developing recommendations for licensing of commercial spaceports (changes to 14 CFR Part 420.)
- Organizations such as the International Association for the Advancement of Space Safety (IAASS) promote implementing an international regime similar to International Civil Aviation Organization (ICAO) to oversee commercial space activities.
- Customary international law will play a role.
- Other nations will likely follow U.S. example.

Commercial Space Issues

- Issues that may arise from commercial space activities:
 - Does the current body of space law address commercial space?
 - Is a new regulatory body or treaty needed to manage commercial space activities or will customary law and practices fill the gaps?
 - What is the legal status of passengers flying into space on commercial vehicles? Are they entitled to protections under current international law, i.e. astronauts?
 - What happens if 3rd party actors commit an intentional tort or criminal act during space activities. Who is liable? Criminal sanctions and whose jurisdiction will it fall under?

Space Debris Remediation



Legal Issues of Space Debris Remediation

- No legal precedent for intentionally removing space debris from orbit.
- Ownership issues under Article VIII of the Outer Space Treaty of 1967.
 - There are no salvage rights akin to maritime law.
 - Questions arise as to when a nation expressly abandons ownership.
- Export control issues could arise from ITAR.
- Intellectual property rights could be implicated resulting in civil lawsuits.

Legal Issues of Space Debris Remediation (continued)

- Liability and insurance issues will be complicit in space debris removal
- Still to be defined and relevant to the space debris issue:
 - The term “space”
 - The term “space debris”
- Unlikely that any of these issues will be addressed substantially in 2012.
 - More progress may be made after the outcome over negotiations of the Code of Conduct is known.

Outline of Possible Definition of “Space Debris”

- “Space Debris”
 - *is a* space object as defined by Article I(d) of the Liability Convention and Article I(b) of the Registration Convention
 - whether re-entering the atmosphere, in Earth orbit, in outer space or on the Moon or another celestial body,
 - which no longer performs its original function or has no tangible function;
 - is either created intentionally or through the actions or inactions of a launching State;
 - may have economic value to a launching State;
 - may have historical value to a launching State;
 - and/or may have continued national security value to a launching State.

Thank You!