Space Liability Insurance

John Horner
Marsh Space Projects
Space Contracting

- Best Efforts
- Non-recourse
- Mutual Waivers and Hold Harmless between parties
- Single Third Party Liability Insurance policy covering all contractors
Topics for Discussion

• Space Liability Insurance –
  ➞ Launch Site Premises Liability
  ➞ Launch Liability
  ➞ Reentry Liability
  ➞ On Orbit Liability
  ➞ Spacecraft Property Damage Liability
  ➞ Spacecraft Products Liability

• Space Liability Insurance market
• Space Liability Insurance - US Launch Liability regimes
• Space Liability - Human Space Flight
Launch Site Premises Liability Insurance

- GL Policy vs. Aviation Policy?
- Airport Premises vs. Launch Site?
- First Gate vs. Last Gate?
- Launch Liability vs. Launch Site Liability
- CSOSA vs. CSLA
Launch Liability Insurance

- Cross Waivers and Hold Harmless between parties
- Single TPL policy covering all contractors at every tier
- Indemnity excess of TPL insurance
- Covered launch activities
  - Begin and end of covered launch activity varies
  - Duration of coverage varies
## Third Party Liability by Launch Vehicle

<table>
<thead>
<tr>
<th>Launcher</th>
<th>TPL Limit</th>
<th>TPL duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Launch</td>
<td>$300 million*</td>
<td>365 days</td>
</tr>
<tr>
<td>Ariane 5</td>
<td>Euro 60 million**</td>
<td>365 days</td>
</tr>
<tr>
<td>ULA Atlas V</td>
<td>$261 million*</td>
<td>30 days</td>
</tr>
<tr>
<td>ULA Delta IV</td>
<td>$261 million*</td>
<td>30 days</td>
</tr>
<tr>
<td>Proton/BreezeM</td>
<td>$300-500 million</td>
<td>365 days</td>
</tr>
<tr>
<td>Long March</td>
<td>$300-500 million</td>
<td>365 days</td>
</tr>
<tr>
<td>Soyuz</td>
<td>$200 million</td>
<td>30 days+</td>
</tr>
<tr>
<td>GSLV</td>
<td>$300-500 million***</td>
<td>365 days</td>
</tr>
<tr>
<td>PSLV</td>
<td>$300-500 million***</td>
<td>365 days</td>
</tr>
<tr>
<td>START-1</td>
<td>$100 million</td>
<td>30 days+</td>
</tr>
<tr>
<td>Minautor</td>
<td>Up to $100 million</td>
<td>30 days+</td>
</tr>
<tr>
<td>H2A</td>
<td>$200 million</td>
<td>365 days</td>
</tr>
<tr>
<td>Space X</td>
<td>$33 million***</td>
<td>30 days</td>
</tr>
</tbody>
</table>

* with additional US Government $1.5 Billion Indemnity  
**Unlimited excess protection from French Government  
***Anticipated limit, but no TPL bought to date  
****Demo flight  
+30 days if successful or 365 days if unsuccessful
## Space Liability Markets

### Space desk

<table>
<thead>
<tr>
<th>Insurer</th>
<th>Max Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>20.0%</td>
</tr>
<tr>
<td>XL</td>
<td>20.0%</td>
</tr>
<tr>
<td>USAIG</td>
<td>20.0%</td>
</tr>
<tr>
<td>Allianz</td>
<td>20.0%</td>
</tr>
<tr>
<td>Starr</td>
<td>20.0%</td>
</tr>
<tr>
<td>Chartis</td>
<td>20.0%</td>
</tr>
<tr>
<td>Hiscox</td>
<td>10.0%</td>
</tr>
<tr>
<td>Torus</td>
<td><strong>10.0%</strong></td>
</tr>
</tbody>
</table>

**Total**: 140.0%
Spacecraft Operation In Orbit Liability Insurance

- Satellite Manufacturers satellite operations during IOT
  - Limited to $500 million per occurrence
- Several Nations require licensed or registered operators to provide in orbit third party liability insurance
  - Limits and scope vary
    - Great Britain: Euro 60M
    - Japan: US$ 100M
    - France: Euro 60M
    - Hong Kong / Singapore: US$ 100M
- Generally operators only buy if required by regulation or contract
- Space Underwriters primary providers
Spacecraft Re-entry Insurance

- US regulations
  - Re-entry licensed by FAA
- Commercial re-entry insurance
  - Commercial Shuttle
  - SpaceX Dragon
- Planned re-entry vs. uncontrolled de-orbit

WSRF 2012, Dubai
Satellite Property Damage Liability (TT&C)

- Satellite Manufacturer or Third Party TT&C provider
- Liability for damage to a satellite caused by an occurrence
  - Satellite is the property of others
  - Satellite is in the care, custody or control of operator
  - Coverage limited to $500 Million any one satellite
Spacecraft Products Liability Insurance

• Provided under Aviation Products Liability Policy
• Spacecraft Products amendments
  – Definition of Spacecraft products
  – Spacecraft Product PD sub-limits
    – $250 million any one satellite, or
    – $125 million per satellite for multi-satellite launch
2012 Perceived Market Gross Capacity - $1.0 billion limit
Aerospace Liability (US Manufacturer/Operator) Maximum Line

- **Lloyd's**: 57.5%
  - Amlin: 10.0%
  - Antares: 2.0%
  - Catlin: 2.0%
  - Chartis: 10.0%
  - Hiscox: 5.0%
  - Kiln: 7.5%
  - Faraday: 4.0%
  - Global Aerospace: 10.0%
  - QBE (Limit): 2.0%

- **USA Companies**: 60.0%
  - Allianz: 10.0%
  - Global Aerospace: 10.0%
  - Starr Aviation*: 10.0%
  - USAIG: 20.0%
  - XL Aerospace: 10.0%

- **French Markets**: 16.0%
  - SCOR: 10.0%
  - AXA: 2.0%
  - LRA: 4.0%

- **Rest of World**: 24.5%
  - Torus Insurance: 3.5%
  - InterHannover: 5.0%
  - Munich Re: 7.5%
  - Partner Re: 2.0%
  - Swiss Re: 7.5%

**Liability Limit US$1.0B**

**Total Est. Maximum Capacity 2012: 158.0%**

WSRF 2012, Dubai
U.S. Space Liability Regimes

<table>
<thead>
<tr>
<th>Duration</th>
<th>PL85-804</th>
<th>NASA Act</th>
<th>CSLA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Until impact with earth</td>
<td>30 days after launch</td>
<td>30 days after launch</td>
<td></td>
</tr>
<tr>
<td>Scope</td>
<td>Defined by UHR</td>
<td>Covered Launch Activities</td>
<td>Licensed launch Activities</td>
</tr>
<tr>
<td>Cross waivers</td>
<td>None</td>
<td>NASA ISS and Non-ISS waivers</td>
<td>CSLA Cross waivers</td>
</tr>
<tr>
<td>Govt Property</td>
<td>Hold harmless</td>
<td>NAS clauses</td>
<td>Cap of $100M</td>
</tr>
<tr>
<td>Indemnity for Third party Liability</td>
<td>Unlimited indemnity excess of insurance</td>
<td>$1.5 billion excess of insurance</td>
<td>$1.5 billion excess of insurance</td>
</tr>
<tr>
<td>Underlying Insurance</td>
<td>Yes, range from $0 - $500 M</td>
<td>Yes, max. $500 M</td>
<td>Yes, max $500 million, highest MPL $265 million</td>
</tr>
</tbody>
</table>
U.S. Space Liability Regimes
Commercial Space Operation Support Agreement (CSOSA)

CSOSA activities begin at entry onto US Government facility

Launch Pad

CSOSA stops at entry to launch site where CSLA Launch License requirements begin
U.S. Commercial Manned Space Flight

- US CSLAA regulations now address commercial space passenger flight
  - Based on Informed Consent regime
  - Post separation to re-entry hole
  - Regulatory effort underway to limit space passenger liability

- Commercial vs. NASA Commercial Crew Program
- Suborbital operators not yet licensed
Thank you.