STATEMENT OF DR. GEORGE C. NIELD, ASSOCIATE ADMINISTRATOR FOR COMMERCIAL SPACE TRANSPORTATION OF THE FEDERAL AVIATION ADMINISTRATION, BEFORE THE HOUSE COMMITTEE ON SCIENCE, SUBCOMMITTEE ON SPACE AND AERONAUTICS, ON FINANCIAL RESPONSIBILITY AND RISK-SHARING FOR COMMERCIAL SPACE TRANSPORTATION, JUNE 6, 2012.

Chairman Palazzo, Ranking Member Costello, and Distinguished Members of the Subcommittee:

Good morning. Thank you for inviting me to speak with you today.

I would like to begin by offering the Administration's support for extending the Commercial Space Launch Act, as amended, (CLSA) "indemnification" provision, 51 U.S.C. § 50915, for commercial launch and reentry operators for five years beyond its current statutory expiration date of December 31, 2012. This support is in line with the Commercial Space Transportation Advisory Committee (COMSTAC) finding that extension of indemnification past December of this year is "critical to the viability of the commercial launch industry in the US." COMSTAC issued a recommendation just four weeks ago reiterating its support.

The Federal Aviation Administration's (FAA) Office of Commercial Space Transportation licenses and permits commercial launches and reentries. As part of its licensing and permitting mission, the FAA administers financial responsibility and risk-sharing requirements for commercial launch and reentry operators. In doing so, the FAA calculates the required amount of financial responsibility to be satisfied by a licensee based on the maximum probable loss of the license applicant's proposed launch or reentry.

The financial responsibility and risk-sharing regime for launch activities became law in 1988 as part of the CSLA. The regime is a testament to continuous bipartisan efforts recognizing the need for developing a strong commercial launch industry to serve the United States Government and commercial interests. In 1998, Congress extended the regime to apply to reentry. Congress has maintained the regime's functionality and effectiveness over the past twenty-four years by enacting five extensions of the provision providing for the conditional payment of excess claims, subject to Congressional appropriation.

The Importance of Extending Indemnification

Should the indemnification provision expire, all other portions of the financial responsibility and risk-sharing framework would remain in force. Accordingly, the FAA would continue to be charged with licensing launches and reentries subject to minimum financial requirements. I urge the Committee members to assess the impacts on what would remain of the financial responsibility regime were this key element to be allowed to expire. The remaining statutory requirements would only provide license applicants with an amount of financial responsibility that represents the maximum <u>probable</u> loss without regard to maximum <u>possible</u> loss.

Demand for insurance to address maximum possible loss would lead to higher insurance costs. Insurance demand decreases capacity and raises premiums. Companies with fewer resources would struggle to manage risk, and investors would be discouraged from providing capital to companies with catastrophic risk exposure, further restricting access to capital and suppressing growth. A stable regulatory environment, including predictable, risk-based financial responsibility requirements and certainty in allocating risk, is critical to securing investor confidence and willingness to place capital at risk. Investors in new technology must regularly face asset-based risk, namely, the risk that a vehicle may be destroyed during launch because of mission failure or the requirements of public safety. In such an environment, investment capital is better directed to technology development than to managing risk arising out of liability exposure. Although the risk of facing catastrophic liability is strikingly low, it nonetheless exists. This is a regime which has never required any federal expenditure to cover losses. Under the FAA's calculations, the likelihood of any expenditures being required remains extremely low. Unless indemnification continues, the commercial industry must be prepared to absorb the financial risk of a catastrophic event, whether or not adequate insurance is available at affordable rates.

The current financial responsibility and risk-sharing framework was created with Congress recognizing the emergence of foreign launch services made competitive through government subsidies and preferential foreign national laws. Foreign launch service providers continue today to receive preferential treatment including government indemnification. The continuously emerging United States commercial launch industry requires a stable risk-sharing program with government indemnification in order to plan future operations and encourage investment. This will provide an environment favorable to industry growth amidst highly competitive foreign launch service providers, including those with access to indemnification.

Indemnification not only impacts the launch service provider, but also the customer that often makes decisions regarding launches several years out. Should uncertainty exist as to a customers' potential exposure to all possible risk as a participant in the launch, there is extra benefit for a customer to rely on a foreign provider that assures protection. A five year extension would contribute to a stable and predictable domestic market environment.

Fostering growth will produce public benefit in the form of national security, technological capacity, and national pride by enabling domestic access to space for government and commercial users and contributing to United States aerospace preeminence. These concepts were recognized by Congress when it enacted the current regime. More specifically, the continuation of indemnification benefits the public at large with protections against the most probable risk of liability.

Risk Management for FAA Authorized Launch and Reentry Under Current Law

In a nutshell, the utility of the regime arises out of its comprehensive inter-locking design that effectively assigns and balances the management of financial risk. This risk arises, in part, out of the Federal Government's potential liability for damages under international treaty. Additionally, potential catastrophic risk to the domestic commercial launch industry includes liability for third party loss exceeding that for which the industry can reasonably obtain

insurance. The regime is also effective in managing sources of tangential risk, including the risk of foreign competition to the private domestic industry and the financial risk of third parties.

By design, the financial responsibility and risk-sharing regime consists of three inter-locking risk apportionment mechanisms. In the first, the FAA requires an operator of a launch or reentry vehicle to purchase insurance or otherwise demonstrate financial responsibility covering the maximum probable losses that could be incurred by third parties or the United States Government (for property loss) as a result of its launch or reentry. The second consists of two parts: the Government's agreement not to hold launch participants liable for damages to its property in an amount exceeding the maximum probable loss based insurance requirement, and, more importantly for purposes of this discussion, the statutory process for the payment of excess claims, subject to Congressional appropriation. This is popularly referred to as "indemnification." The third is the requirement that all launch and reentry participants agree not to hold each other and the United States Government responsible for damage, with some exceptions, each may experience arising out of launch or reentry activities. The second mechanism's response to third party losses, indemnification, is at issue now.

When these three mechanisms are carried out together, as required by the CSLA before the FAA issues a license, the remaining risk of liability for damage is distributed into three tiers. Tier one includes the most probable risk, which is taken on by the operator. Tiers two and three include more remote risk.

Calculating and Distributing Financial Risk for Damage to Third Parties

Under the CSLA and FAA regulations [1], a launch operator must obtain insurance or otherwise demonstrate financial responsibility to cover the maximum probable loss a launch or reentry could cause. The operator is responsible for damage to 1) third parties-- which Congress has defined as persons not involved in the launch or reentry--and 2) damage to United States Government property. Operators must maintain minimum levels of financial responsibility by insurance or otherwise in an amount that would cover the maximum probable loss calculated by the FAA. This risk may be covered by private insurance and it is how almost all licensees and permittees have historically managed risk for the MPL. An operator's responsibility for the risk of maximum probable loss is limited to no more than $500 million for potential third party liability and no more than $100 million for damage to government property. The insurance an operator obtains must name all launch participants as additional insureds, including the Government and its contractors and subcontractors, further ensuring that the Government does not have liability exposure to the risk associated with maximum probable loss.

The first tier of risk is calculated by the FAA as the maximum probable loss (MPL). The FAA's regulations define MPL to mean the greatest dollar amount of loss for bodily injury or property damage that is reasonably expected to result from a licensed or permitted activity. For United States Government property losses, the FAA has set a threshold of losses with a probability of occurrence of no less than one in one hundred thousand. For third party loss, the FAA has set a threshold of losses with a probability of occurrence of no less than one in ten million. This means that on average, there would be a chance that the Government might need to participate in

[1] *See* Financial Responsibility for Licensed and Permitted Activities, 14 C.F.R. pt. 440 (2012).

assuming loss for one in every hundred thousand or one in every ten million launches. On the other hand, the operator would be responsible for covering the most likely risk of loss up to the maximum probable loss (i.e., that with a probability of occurrence up to the threshold) with insurance.

In the early days of its program, when first employing its methodology, the FAA found that calculating the MPL using a threshold inclusive of risk with a higher probability of occurrence (e.g., a threshold of a one in one million chance as opposed to a one in ten million chance) resulted in determinations that insurance would not be necessary. Accordingly, the FAA relies on a threshold chance of occurrence of one in ten million for third party loss in order to prevent the United States Government from being exposed to the most likely risk, which includes potential liability for the first dollars of loss.

The methodology for calculating MPL, whether for United States Government property damage or third party loss, is similar: the FAA assesses the debris field resulting from a series of assumed failures along a launch or reentry trajectory, models the probability of failure of the activity, and ascertains the presence of property or potential casualties. MPL is expressed in dollar terms and is determined on a case-by-case basis after analysis of information provided by the license applicant. MPL calculations rely on historical data, including that of prior experiences with uncrewed expendable launch vehicles.

Calculating third party MPL requires the FAA to assess harm to persons and property not involved in the launch or reentry. The FAA accounts for the loss of property and life at the launch site as well as losses that could occur uprange and downrange due to debris. To calculate the MPL, the FAA uses a debris overlay method that estimates the inert debris field that would result in the event of breakup. The population density of areas exposed to launch or reentry hazards is factored into the calculation to produce a number of probable casualties due to debris impact. From the casualty amount, the FAA also calculates additional casualties from secondary effects including fires and collapsed buildings. The total direct and secondary casualties are then given a value of $3 million each. The total cost of casualty is then increased by fifty percent to account for third party property damage from debris.

The second tier of risk consists of liability for losses exceeding the licensee's required financial responsibility for which it obtains insurance to cover maximum probable losses. For United States Government property, the Government waives claims for damages in excess of the insurance required to account for maximum probable loss under the reciprocal waivers of claims described below. Although liabilities have never exceeded financial responsibility, the statute provides that Congress may appropriate up to $1.5 billion (adjusted for inflation after January 1, 1989) in excess of coverage assigned under MPL calculation to cover successful third party claims against participants in a launch or reentry. After inflation, the second tier is now capped at $2.7 billion. The statute specifically states that claims against space flight participants are excluded from this authority. Were there to be an accident where damages exceeded the maximum probable loss coverage required by the FAA, the FAA could seek an appropriation from Congress.

The third and final tier of financial risk consists of liabilities for third party claims above the insured amount and $1.5 billion (as adjusted for inflation, now $2.7 billion). This risk is least likely to occur and is again assumed by the launch or reentry operator or other launch participants held liable.

Reciprocal Waivers of Claims

Finally, under the CSLA's risk-sharing requirements, launch and reentry participants, including a licensee or permittee, any customer, contractors and subcontractors are required to waive claims among themselves. Therefore, each party involved in a launch agrees not to bring claims against the other parties and is financially responsible for property damage or loss it sustains, or for death or injury to its own employees resulting from activities carried out under a license or permit. This eliminates the need for launch participants to obtain insurance covering these claims and, as a result, saves money and contributes to increased insurance capacity. Similarly, launch participants and the United States Government must waive claims against each other, their contractors and subcontractors. The Government only waives claims for damage to its property in excess of required insurance. Federal employees are not included in these waivers; the FAA considers them third parties, and losses to them are covered under third party financial responsibility.

The Suitability of the Financial Responsibility and Risk-sharing Regime

I believe that the current financial responsibility and risk-sharing regime is well suited to cover emerging activities such as commercial cargo and commercial crew, and orbital and sub-orbital flights. As mentioned previously, the MPL methodology is based on experience with unmanned expendable launch vehicles that included cargo, or what we call "payloads." When sub-orbital or orbital flight involves human crew or space flight participants, the methodology is not affected, because the MPL is not an estimate of risk to crew or space flight participants, but rather, to third parties, including members of the public and non-flying United States Government employees. Space flight participants and crew are not third parties.

Whether a launch is manned or unmanned should not affect the MPL methodology, but rather the result of MPL calculations. For example, if a vehicle were designed with higher reliability systems in order to protect persons on board, that superiority of design might also reduce the risk of mishaps that would affect third parties.

In Conclusion

The benefits of indemnification are many, both to industry and the United States Government. As Congress itself recognized by statute, the development of the commercial space transportation industry enables the United States to retain its competitive position internationally, contributing to the national interest and economic well-being of the United States. Extension of the indemnification provision would continue to enable industry to attract and maintain a customer base in the face of international competitors who offer more certain indemnification.

The US commercial space industry continues to achieve new milestones. Recently, SpaceX became the first private company to berth with the International Space Station and safely return cargo back to Earth. Soon, SpaceX and Boeing may both be transporting participants to Bigelow Aerospace's first private space station. These unprecedented acts come with equally unprecedented risk and financial investment for a private company. In a situation where nothing is certain, and because everything is new, continuing to address manageable risk through the conditional payment of excess claims is wise public policy for this country.

With the help and leadership of Congress, commercial space transportation will continue without untenable financial setback, and the private space industry in the United States will continue to grow with new jobs, new technologies, and new innovations. Again, I am grateful for this opportunity to speak before you today, and I am happy to answer any questions you may have.