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**COMMENTS
of
LOCKHEED MARTIN CORPORATION
to the
FEDERAL AVIATION ADMINISTRATION'S
NOTICE OF PROPOSED RULEMAKING
on
FINANCIAL RESPONSIBILITY REQUIREMENTS
for
LICENSED REENTRY ACTIVITIES**

Docket No. FAA-1999-6255; Notice No. 99-17

January 21, 2000

FAA-99-6255-10

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Lockheed Martin Corporation ("LMC") hereby submits the following comments in response to the Notice of Proposed Rulemaking ("NPRM") on Financial Responsibility Requirements for Licensed Reentry Activities issued by the Federal Aviation Administration's Office of the Associate Administrator for Commercial Space Transportation (the "Office") on October 6, 1999. 64 Fed. Reg. 54,448.

I. INTRODUCTION

LMC is the world's largest provider of space transportation hardware and services, and a major supplier of civil, military and commercial spacecraft providing communications, remote sensing, global positioning and scientific services and capabilities to public and private sector customers worldwide.

As you know, commercial Titan and Atlas launches provided by our heritage Martin Marietta and General Dynamics companies were among the first to be carried out pursuant to launch operator's licenses issued by the Office's predecessor, the Office of Commercial Space Transportation, pursuant to its authority under the Commercial Space Launch Act of 1984, as amended (49 U.S.C. §§ 70101-21) (the "CSLA"). Today, launch operations using LMC's commercial Atlas and Athena families of launch vehicles are conducted pursuant to licenses issued by the Office. Tomorrow, launch operations using LMC's fully reusable, next-generation space transportation system known as VentureStar™ also will be conducted pursuant to licenses issued by the Office.

LMC is in the process of developing a vehicle called the X-33 intended to demonstrate and validate reusable launch vehicle ("RLV") technologies and operations concepts. The X-33 experience will serve as the foundation for the development of VentureStar™. As an RLV that will operate more like an airplane than a traditional expendable launch vehicle ("ELV"), LMC believes that VentureStar™ will have a dramatically lower cost of operations, thereby offering space transportation services at a fraction of today's costs. Because LMC will offer

VentureStar™ commercially to customers worldwide, its operations, specifically its launch and reentry, will be licensed and regulated by the Office pursuant to authority under the CSLA.

As an experienced licensed launch operator, a user of federal launch ranges and spaceports and the future operator of VentureStar™, LMC is particularly interested in the subject NPRM. LMC appreciates the opportunity to provide comments on this significant undertaking by the Office to establish a transparent and predictable licensing regime for licensed reentry activities, including RLV activities, that responds to the needs of industry, the public and the U.S. Government.

II. DISCUSSION

A. Scope of Statutory Authority

LMC recognizes that the Office has issued this NPRM in accordance with its mandate under the Commercial Space Act of 1998 (the "CSA") (Pub. L. No. 105-303, amending 49 U.S.C. §§ 70101-21), which extends the Office's licensing authority to reentry activities. More specifically, the CSA authorizes the Office to license and regulate reentry activities and the operation of reentry sites when those activities are conducted within the U.S. or by U.S. citizens abroad. As a corollary to this licensing authority, the CSA extends to licensed reentry activities the burdens and benefits of the CSLA's risk allocation regime, namely the obligation of the licensee to demonstrate financial responsibility in an amount established by the Office based on a maximum probable loss ("MPL") analysis and the payment by the U.S. Government of third party claims arising from such activities in excess of the MPL amount. 49 U.S.C. § 70112-13. Neither the CSA nor the CSLA extends the Office's licensing authority to on-orbit activities (*i.e.*, those activities that fall within neither the definition of "launch" nor the definition of "reentry"). It is with this understanding that LMC considered the NPRM.

B. Scope of RLV Launch and Reentry Authorizations

The Office proposes to apply the financial responsibility requirements applicable to the launch of an ELV set forth in 14 C.F.R. § 440 to the launch of an RLV. As such, the scope of an RLV launch authorization would mirror the scope of an ELV launch authorization. That is, "launch" would be defined to include pre-flight ground operations beginning with arrival of a launch vehicle or payload at a U.S. launch site (14 C.F.R. § 401.5). For RLV launches, the definition of "launch" would end not after the licensee's last exercise of control over the launch vehicle as would be the case with ELVs, but upon accomplishment of the launch phase of the mission; that is, the point of payload deployment (or attempted deployment). 64 Fed. Reg. 54,452. The Office states that this definition, if adopted, would offer the added benefit of providing a bright-line reference point for distinguishing the end of a licensed launch flight from other RLV mission phases. *Id.*

Upon the end of launch, the Office suggests that, in a nominal environment, one of two things would happen: (i) the RLV would begin reentry operations; or (ii) the RLV would conduct on-orbit activities of varying durations depending on the RLV and its mission and later commence reentry activities. With this in mind, the Office defines "reentry" to include "activities conducted in Earth orbit or outer space to determine reentry readiness and [that] are

therefore unique to reentry and critical to ensuring public health and safety and the safety of property during reentry.” 64 Fed. Reg. 19,656. For purposes of applying financial responsibility requirements to the reentry phase of an RLV mission, the Office proposes in this NPRM to mark the event of payload deployment as the end of licensed launch flight and the point where the RLV is prepared specifically for reentry and during which reentry is intentionally initiated as the beginning of reentry. 64 Fed. Reg. 54,453. The Office maintains that this approach offers a bright-line demarcation between the end of a licensed RLV launch flight and commencement of licensed reentry activities.

Based on the foregoing, the Office states that where a licensed launch would be followed immediately by a licensed reentry, a seamless risk management program would apply to all vehicle flight. However, in cases where activities occur that are neither within the definitions of launch or reentry there would not be a seamless risk management approach. Moreover, as discussed below, only the ascent and descent phases of the mission would be subject to the burdens and benefits of the CSLA.

Assuming that, due to statutory limitations on the Office’s authority set forth above, only launch and reentry activities will be licensed by the Office, it is critical that the definitions of launch and reentry be tailored to the needs of the RLVs and other reentry vehicles being regulated. For example, in some cases the definition of end of launch may be inappropriate where an RLV does not intend to deploy its payload, but does intend to engage, perhaps, in on-orbit maneuvers that have nothing to do with launch or entry. Furthermore, defining commencement of reentry activities (and, thus, the regulation of such activities) in terms of one uniform point in the reentry phase regardless of the peculiarities of any one system may be impractical and unnecessarily burdensome. For example, the beginning of de-orbit burn may be the more appropriate point to define commencement of reentry for some operators.

C. Mission Approach

The Office requests public comment generally on its proposed flexible approach to applying financial responsibility requirements to an RLV mission. Based on this so-called “mission approach,” a license order may distinguish *launch* financial responsibility requirements (*i.e.*, MPL amount) from *reentry* financial responsibility requirements where, for example, risks presented by the launch of a fully fueled vehicle differ in nature or magnitude from those presented by the reentry of an RLV that has expelled substantially all of its propellant. 64 Fed. Reg. 54,451. Alternatively, the Office may determine that a uniform level of financial responsibility is sufficient to address both launch and reentry risks, provided insurance would be available to respond to claims that arise from both launch and reentry. *Id.* As is the case with the licensing of ELV activities, the Office expects applicants for licenses to conduct RLV or other reentry activities to demonstrate financial responsibility by purchasing insurance in the MPL amount established by the Office in the applicable license order.

Based on informal consultations with its insurance providers, LMC believes that it would be able to obtain insurance for the purpose of demonstrating financial responsibility in the required MPL amounts, subject to the statutory limit, for launch and reentry. However, we understand that the processing of claims arising from a single mission (*i.e.*, the launch and landing of one and the same RLV) for which launch risks coverage is separate and distinct from

reentry risks coverage could be significantly more difficult, time consuming and susceptible to dispute, particularly where an argument could be made that the event giving rise to the claim occurred outside the scope of the licensed launch or reentry activity. Moreover, events deemed outside the scope of licensed activities may be uninsured or uninsurable.

This type of problem in the processing of insurance claims can occur whenever there is an absence of “seamless” coverage, *i.e.*, whenever the mission contemplates so-called “on-orbit” activities that may fall outside the scope of launch and reentry activities as defined in a license order or orders. To ensure that a licensee obtains and maintains “seamless” coverage, however, the Office would have to have the statutory authority to license and regulate, and thereby require insurance for, on-orbit activities. It then could extend to the licensee the benefit of the CSLA's U.S. Government payment of excess third party claims provision. That said, the scope of activities that would be deemed “on-orbit” – and the risks associated with these activities – are not entirely clear at this early stage of RLV development. Accordingly, we believe that it would be premature to conclude whether regulation and/or CSLA risk allocation should be extended to support the “on-orbit” phase of this important, emerging commercial space enterprise.

As stated above, LMC recognizes that the Office does not have the statutory authority to license on-orbit activities at this time. Whether U.S. companies can operate RLVs and other reentry vehicles in an environment where third party claims may arise for which there is no available insurance and/or no promise to pay claims in excess of insurance is an important question. If the answer is yes, industry and the U.S. Government will need to address how innocent third parties would be compensated, particularly in cases where the loss is catastrophic. If the answer is no, we will have to consider statutory changes necessary to allow the Office to ensure seamless coverage for its licensees. In either case, how this question is addressed and answered will have a significant impact on the future prospects of this industry. ,

III. CONCLUSION

LMC recognizes that the issues raised in this NPRM and in our comments thereto are extremely complex and may not be able to be resolved at this time. This is primarily because the RLVs that will engage in the launch, on-orbit and reentry activities addressed in the NPRM are not yet operational. As such, it is difficult to fully assess with a high degree of certainty: (i) those activities that actually may fall within the statute's (and the Office's) definitions of launch and reentry activities; (ii) those activities that may fall outside the scope of defined launch and reentry activities; (iii) whether the activities that are neither launch nor reentry are high, moderate or low risk; (iv) whether the risks arising from such activities are insurable; and (v) if they are insurable, at what cost. LMC stands ready to work with the Office on these issues both from operational and risk management perspectives.

LMC appreciates the Office's attention to and consideration of its comments. We are available to answer any questions the Office may have with respect to this submission and look forward to working with the Office in the development of rules that will affect the next generation of space transportation systems.