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Priority: Normal
Subject: Comments to 1999--5535

Dear Sirs

Please find enclosed the TGV commentart on Docket number 1999-5535, please contact me soonest at 301-913-0071 if there are any issues, or you may reply via e-mail.

regards

Pat Bahn
CEO
TGV Rockets.



Comments to Docket
No1999-5535.doc



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CHIEF COUNSEL
RULES DOCKET

Comments to Docket No. FAA-1999-5535; Notice No. 99-04
Notice of Proposed Rulemaking (NPRM) dated April 20, 1999
Commercial Space Transportation Reusable Launch Vehicles and
Reentry Licensing Regulations
Submitted by TGV Rockets, Inc.

S 401.5 Definitions

Discussion- TGV Rockets and the RLV Working Group have been involved in discussions with the Office of the Associate Administrator for Commercial Space Transportation (AST) proposing to operate low energy, atmospheric flight tests of Reusable Launch Vehicles (RLVs) under experimental aircraft licensing regulations, rather than RLV and Reentry licensing regulations. This would serve to simplify the paperwork required to begin initial flight tests while also providing valuable test data to aid in the process of obtaining a launch license. With this operating scenario in mind, we propose to change the definition of a launch to the following:

Launch means to place or try to place a launch vehicle or reentry vehicle and any payload from Earth in a suborbital trajectory, in Earth orbit in outer space, or otherwise in outerspace, and includes activities involved in the preparation of a launch vehicle for a licensable flight, when those activities take place at a launch site in the United States. The term launch includes the licensable flight of a launch vehicle and preflight ground operations beginning with the arrival of a launch vehicle or payload at a U.S. launch site for the purpose of a flight into outer-space. Flight ends after the licensee's last exercise of control over its launch vehicle. The term launch does not include low energy test flights that remain within the atmosphere below an altitude of 50,000 Ft.

S 431.25 Application requirements for policy review, section (b)

With the exception of the propellants to be used, we do not understand why any of the items in this list are required for a policy review. This list would be much more applicable to a safety review. For example, why would a policy reviewer need to know

what avionics are in the vehicle? We therefore recommend that section (b) be changed to read: (b) Identify the propellants to be used.

S 431.31 General

In the interest of clarity, we suggest rewriting section (a) to read:

- (a) The FAA conducts a safety review to determine if an applicant is capable of operating an RLV without jeopardizing public health and safety and the safety of property. In this instance, operating means launching an RLV and payload from a designated launch site, and reentering the RLV and payload, if any, to a designated reentry site, or otherwise landing the RLV and payload, if any, on Earth.

S 431.33 Safety Organization, section (c) Safety Official

We request that the qualifications required to be considered a “qualified safety official” be explicitly defined in this section, or alternatively, please strike the word qualified from this section.

S 431.35 Acceptable reusable launch vehicle mission risk

Section (b) (1), Discussion: Launch and reentry are being licensed as separate events, much as consecutive launches of a Delta II are separate events. In the case of the Delta launches, each event is required to meet the EC criterion of .00003. However, in the case of the launch and reentry of a reusable launch vehicle, the NPRM proposes that the sum of the launch EC and reentry EC be less than or equal to .00003. Reentry EC should normally be lower than launch EC, so, for the sake of argument, we will assume an average reentry EC of .00001, which requires an average launch EC of .00002 or less for the mission to **satisfy** the NPRM’s proposed mission risk. Thus, the EC requirement for the launch of an ELV is .00003, while the EC requirement for an RLV launch is .00002. This is a clear-cut case of a regulatory environment that favors one launch regime over another. In order to provide a fair and even regulatory environment for both ELV operators and RLV operators, TGV Rockets proposes that section (b) (1) be rewritten such that EC for launch is less than or equal to .00003 and EC for reentry is less than or equal to .00003.

Section (b) (2), Discussion: The intent of this section is that the population located within 100 miles of reentry or abort sites is not exposed to greater than normal risk of death or injury as a result of a licensed reentry. While this is a laudable goal, it is impossible to achieve. People who live near airports are more likely to be killed by a falling aircraft than those who do not. This is an inescapable fact. The same holds true for people who live near RLV or RV reentry sites. Writing regulations like this one will simply force RLV operators to use only reentry and abort sites that have no population within 100 miles, thus weakening their business plans- perhaps fatally. Why is it acceptable for people who live next to an ELV launch facility to be exposed to an EC of .00003, while those who live near an RLV reentry site must not be exposed to an EC greater than .000001? Moreover, how was the EC of .000001 chosen? The RLV Working Group is investigating the validity of this number as the actual background risk of accidental death or injury. Based on our research so far, the actual number appears to be .003. While our recommendation may change pending further investigation, at this time we are recommending that the EC for this section be changed to .00003.

S 431.37 Mission Readiness

Discussion: TGV Rockets is in complete agreement with the intent of this section. However, we do have a different proposal for execution of the intent of this section. Rather than submitting thousands of pages of paperwork, we propose that a full time Designated Engineering Representative (DER) from the FAA AST be assigned to each RLV operator—similar to what is done in the commercial airline industry. The reasons for this are twofold. First, the reporting requirements in this and various other sections of the NPRM are oppressive for small **firms**—and most of the RLV companies are very small. There are thousands of man-hours required to fulfill the reporting requirements of the NPRM and we don't have the money, time, or manpower to support this. We have no objection to maintaining the records required under this section and making them available to a DER, but filling out government forms and submitting thousands of pages of paperwork is not practical for a small company. It would be much more effective to pay the salary of a DER, who works with us every day, has full access to all of our

records, and who is readily available to advise us as to what is or is not acceptable to the FAA on a given issue. If there is any paperwork that needs to go to AST headquarters, the DER will submit it, not us. The second major reason for having a DER is also related to the paperwork required for submission under the NPRM. The NPRM requires very detailed reports on procedures, checklists, etc, months in advance of first flight. Many of these procedures and checklists will evolve rapidly as our knowledge about the vehicles grows due to simulations, flight tests, modifications, etc. Under the NPRM's proposed reporting requirements, any changes to these procedures and checklists must be submitted in writing to the FAA, studied by the FAA, approved by the FAA, and a response sent back to us before we can implement the change. Otherwise, our license is invalid. This clearly will not work. However, with a DER onsite, we can submit our changes directly to the DER and get immediate approval from the DER for the change.

These comments also apply to Sections 431.39, 431.41, 43 I. 43, and 43 I. 45.

S 431.43 Reusable launch vehicle mission operational requirements and restrictions

Section (d) (2)

TGV Rockets disagrees with the requirement to assume $P_f=1$ for this EC calculation. We recommend using the demonstrated $P(f)$ obtained through ground and flight testing.

S 431.53 Classes of payloads

Section (b): Change 60 days to 24 hours. The justification for this change is the same as for S 43 1.79 listed below.

S 431.77 Records

Section (a): We recommend changing record keeping requirements from 3 years to 1 year. With the very large numbers of launches that RLV companies eventually plan to build up to, keeping full records of all launches for 3 years would become a data storage problem.

S 431.79 Reusable launch vehicle mission reporting requirements

Section (a): Replace 60 days with 7 days for a payload type that we have never carried before and replace 60 days with 24 hours for those payload types that we have previously launched and reentered.

Section (b): Replace 15 days with 24 hours.

Justification: The business plans of TGV Rockets and many other RLV operators rely heavily on the rapid response capability of RLVs (launch on demand) to gain a competitive edge over ELV operators. These reporting times may not be a problem for ELV operators because they are not capable of rapid response launches, but these requirements would severely damage the competitive posture of RLV operators relative to ELV operators. Please consider drastic reductions in the time requirements for both of these sections.

Industry Compliance Costs/ Regulatory Flexibility

TGV disagrees with the Compliance costs estimates made by FAA-AST. Loaded costs of engineers, dramatically exceeds \$103,000 per year for personnel qualified to perform these tasks. TGV also feels that these regulations actually strongly discriminate against Small Business. The Proposed regulations place the same regulatory reporting burden on small sub-orbital firms as on large orbital firms. This creates a significant impact financially on small organizations. FAA needs to revisit the decision to treat sub-orbital flight as equivalent to orbital flight. FAA baselines this decision on estimated revenue of \$50 Million per mission, and 1000 employees per firm. TGV notes that True Sub-orbital science missions produce dramatically less revenue per mission. TGV notes their staffing plan will be for dramatically fewer personnel than the FAA estimates. TGV notes that they will be dramatically and disproportionately impacted by these regulations and a flexible regime must be provided. TGV feels alternate regulatory regimes must be made available by FAA

TGV would like to note for the record, that much of the regulations are sound and well intentioned, however, at this point in the industries life, it is best to err on the side of

minimal regulation then excess regulation. TGV would like to thank the FAA personnel for their dedicated work to date.

Submitted For the Record

Patrick Bahn

CEO

TGV Rockets Inc.