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September 19, 2012

FILED/ACCEPTED

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SEP 19 2012

VIA HAND DELIVERY

Federal Communications Commission
Office of the Secretary

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, DC 20554

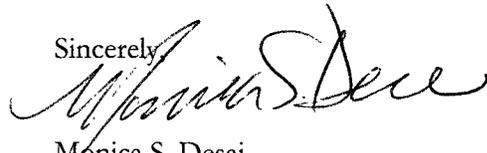
**Re: Notice of Ex Parte – For Public Inspection
Space Exploration Technologies Corp. – Telemetry and Video Downlinks for Falcon
9 Launch Vehicle for October Mission to ISS for NASA in IB Docket No. 02-54**

Dear Ms. Dortch:

On behalf of Space Exploration Technologies Corp. (“SpaceX”), please find enclosed two copies of SpaceX’s Public Inspection version in redacted form of its ex parte letter supplying additional information at the request of FCC staff. The [[]] symbols in the Public version denote redacted Confidential Information. A Confidential version is being filed separately with the Secretary’s Office.

Should you have any questions concerning the foregoing request, please contact the undersigned.

Sincerely,



Monica S. Desai
Patton Boggs, LLP
2550 M Street, NW
Washington, DC 20037
(202) 457-7535
Counsel for Space Exploration Technologies Corp.

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5259660

September 18, 2012

Robert Nelson, Chief
International Bureau, Satellite Division
Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

RE: **STA File No. 0691-EX-ST-2012 – Telemetry and Video Downlinks for Falcon 9 Launch Vehicle for October Mission to ISS for NASA**

Dear Mr. Nelson:

SpaceX appreciates your continued attention to STA File No. 0691-EX-ST-2012 regarding radio frequency licensing for SpaceX's upcoming mission of the Falcon 9 launch vehicle and the Dragon spacecraft to deliver provisions and cargo to the astronauts on the International Space Station. This launch is currently scheduled for as early as October 4, 2012. This mission is being performed for NASA under the Cargo Resupply Services (CRS) contract, and constitutes the first operational cargo resupply mission to the Space Station (CRS-1) following SpaceX's successful demonstration flight under the Commercial Orbital Transportation Services (COTS) program in May of this year. SpaceX appreciated the FCC's assistance in securing temporary authority for the radio links critical to the successful COTS mission in May, and looks forward to an ongoing positive relationship with the FCC for upcoming missions.

This purpose of the CRS-1 mission is to deliver critical supplies (e.g. food and water) as well as experiments and other materials to the astronauts on board the Space Station. SpaceX is partially filling the role previously served by the now-retired Space Shuttle. SpaceX's Falcon 9/Dragon space transportation system is the only system available with the capability to bring significant cargo both to and from the Space Station—a critical national need.

Based on our meeting with the FCC's Office of Engineering and Technology (OET) and International Bureau, Satellite Division (IB) on August 28, 2012, as well as subsequent conversations, we understand the FCC has expressed an ongoing interest in the matter of Third Party Liability (TPL) insurance coverage with respect to the reentry of the second stage of the Falcon 9 launch vehicle. This letter seeks to address any concerns in this respect. We also note that while the FCC has expressed such interest in TPL insurance coverage based on its general public interest authority, we emphasize that the FAA is very specifically and directly charged with examining TPL issues as part of its explicit statutory authority related to the launch and reentry of commercial launches.

In particular, the FAA Office of Commercial Space Transportation is empowered by the Commercial Space Launch Act (Public Law 108-492) to license the launch and reentry of all commercial launches. FAA's prevailing responsibility is to protect public health and safety and safety of property. In discharging its obligations under its licensing authority, FAA requires launch vehicle operators to demonstrate the safety of their systems, including the reentry of the launch vehicle or its components (e.g.

a second stage). The FAA's execution of its explicit public safety authority—which very specifically includes a review of SpaceX's TPL insurance coverage, a review of the random reentry analysis of the second stage, and a review of our orbital debris mitigation plan—demonstrates that the public health and safety and safety of property is already being properly, thoroughly and reasonably protected.

Regarding TPL insurance relating to the launch vehicle second stage, as with the previous SpaceX launch to the Space Station, which was approved by the FAA and FCC respectively, SpaceX has purchased launch liability insurance in the amount, duration, and nature required by the FAA regulations (14 CFR Part 440) for our upcoming mission. Specifically, SpaceX's TPL insurance policy responds to third-party losses arising from any reentry of the launch vehicle, including its upper stage, for the duration of forty-five (45) days following launch. Importantly, SpaceX's policy covers "losses arising from pre-flight activities, launch, or reentry," which we believe reasonably extends to the reentry of the second stage, no matter when reentry occurs. Alternatively, after forty-five (45) days, SpaceX would self-insure against third-party losses, as is customary and accepted in the industry. As a result, SpaceX's policy and practice reasonably address any concerns.

SpaceX has also submitted all required documents to the FAA in order to secure the launch and reentry licenses for the upcoming mission to the International Space Station. As a result of the completeness of our submission, FAA has granted the launch and reentry licenses for this mission. In issuing the launch and reentry licenses for this mission, FAA has certified that SpaceX has met its Financial Responsibility Requirements.

National Security and Foreign Policy Implications

The launch of the Falcon 9 and Dragon for the CRS-1 mission will be conducted by SpaceX on behalf of NASA under the Cargo Resupply Services (CRS) contract. This mission is consistent with the principles and goals of the 2010 National Space Policy, which emphasizes the importance of developing a robust domestic commercial space transportation industry and acquiring commercial space services to meet United States Government requirements. The development of commercial launch service providers is crucial to U.S. national security because, as noted in the 2010 National Space Policy, United States access to space depends in the first instance on launch capabilities.

The SpaceX CRS-1 mission will deliver critical cargo and supplies to the International Space Station to support station operations and the crew on board. As such, this mission will assist NASA in fulfilling its responsibilities for managing its own Space Station program and for the overall program management and coordination of the Space Station itself, which is the responsibility of the United States under the International Space Station Intergovernmental Agreement, an international treaty signed on January 28, 1998 by fifteen governments involved in the Space Station project.

With the retirement of the Space Shuttle fleet, the United States will rely on NASA's CRS program—and specifically the SpaceX Falcon 9/Dragon space transportation system—to provide the U.S. with the capability to resupply the Space Station and return scientific experiments and Space Station components back to Earth.

Public Health and Safety and Safety of Property

In the course of our license application to the FAA, SpaceX has submitted all required documents to ensure compliance with measures to ensure the protection of public health and safety, including random

reentry analysis and debris list, orbital debris mitigation plans, and other similar documents and analyses. With respect to the second stage reentry analysis, FAA has confirmed receipt of this analysis, which was conducted by NASA, on August 22, 2012 (see attached letter). FAA has confirmed that it has undertaken its review of launch vehicle or component reentry risk pursuant to 14 CFR § 440.7 (Appendix A to Part 440, III D). FAA further confirmed receipt of SpaceX's orbital debris mitigation plan and reviewed the plan as required under 14 CFR § 417.129.

In addition, SpaceX has implemented numerous risk mitigation measures to reduce the risk to the public from the launch and reentry of the Falcon 9/Dragon system. As the FAA has acknowledged in granting the license for this mission, the risk to the public from this mission is several orders of magnitude less than the background risk to the public of fatalities due to non-occupational accidents. The E_c for the launch of the Falcon 9 and the Dragon mission remains below the threshold of 100×10^{-6} for human casualties used in the U.S. Government Orbital Debris Mitigation Standard Practices, Range Commanders Council Document 321 10 (Common Risk Criteria for National Test Ranges), and NASA Technical Standard NASA-STD 8719.14 (Process for Limiting Orbital Debris).

Further, SpaceX is in compliance with 14 CFR Part 435 as relates to the protection of public health and safety and the safety of property. Furthermore:

- 1) The mission risk/expected casualty is acceptable by FAA standards;
- 2) SpaceX has a system safety process in place which identifies and assesses risk to public health and safety;
- 3) FAA has reviewed all mission rules, procedures, checklists, emergency plans, and contingency abort plans to ensure protection of the public;
- 4) SpaceX has designated a qualified safety official who is responsible for monitoring and evaluating operational dress rehearsals, completing a mission readiness determination, and compliance with 14 CFR §431.37 and 14 CFR §431.43.

As the FCC acknowledged in its Second Report and Order, Released June 21 2004, In the Matter of Orbital Debris Mitigation, IB Docket No. 02-54, FCC 04-130 ("Second Report and Order"): "To the extent that the debris mitigation disclosure certifies that the debris mitigation plans of the launch vehicle upper stage have been, or will be, reviewed by the FAA, no further FCC examination of the debris mitigation plans of the upper stage will be required." Further, in conducting a review of the literature for prior examples of this type of insurance being required, SpaceX found additional information confirming what we believed to be consistent prior practice by the FCC on this matter: "The FCC's operational and disclosure requirements do not apply to launch vehicles, which in the U.S. are regulated by the Federal Aviation Administration."¹

SpaceX would further note that "Launch" is not within the scope of the Communications Satellite Act of 1962, as amended ("Act"). With respect to space, FCC authority is limited to communications satellite systems. The definition of "communications satellite system" in Section 103 of the Act explicitly *excludes* launch services. See 47 U.S.C. § 702(1). The term "communications satellite system" refers to "a system of communications satellites in space whose purpose is to relay telecommunication information between satellite terminal stations, together with such associated equipment and facilities for tracking,

¹ Kensing, K., Duvall, S., Persaud, S. "The United States Communications Commission's Regulations Concerning Mitigation of Orbital Debris." *Proceedings of the 4th European Conference on Space Debris (ESA SP-587)*. 18-20 April 2005, ESA/ESOC, Darmstadt, Germany. Editor: D. Danesy., p.571.

guidance control, and command functions *as are not part of the generalized launching, tracking, control, and command facilities for all space purposes.*" (Emphasis added).

SpaceX has also been operating under additional guidance provided in the Second Report and Order:

[. . .] the Department of Transportation, through a delegation of authority to the Federal Aviation Administration, has already adopted detailed launch safety requirements that include measures to mitigate orbital debris and regulations requiring launch liability insurance. The Commission has not required applications for FCC space station licenses to submit information regarding debris mitigation plans for the launch vehicle that will be used to launch the space station, nor have we reviewed this information even if it is submitted.

We hope that above information and attachments confirming FAA's review of relevant analysis regarding launch, reentry, and orbital debris satisfy FCC's interest in these areas, separate from its approval of the SpaceX application for temporary radiofrequency authority for telemetry and video downlinks.

Availability of Long-Duration TPL Insurance

Despite our strong belief that the FAA's authority specifically, thoroughly, and exclusively covers any TPL issues related to commercial launch and re-entry, SpaceX nevertheless has conducted significant additional due diligence into the availability of such insurance, which would require it to obtain an insurance policy for two years (or more) for second stage reentry. As a result of its additional investigation, SpaceX has determined that an insurance policy for two or more years in duration is not commercially available. SpaceX engaged International Space Brokers (ISB), a division of Aon, and Willis Inspace, another leading insurance broker, to ascertain further whether coverage of this nature and duration is commercially available. SpaceX also requested that ISB conduct a comprehensive review of the market and report to us on the availability of a TPL policy of this nature and duration.

Both ISB and Willis Inspace indicated that the two-year timeframe would exceed the period of time typically covered by a commercially available insurance policy. Neither of these brokers was aware of any insurance coverage being offered to any U.S. commercial launch vehicle provider in the past for this type and duration. SpaceX has also been unable to identify any example of when such insurance has been required of or obtained by any other U.S. launch services provider.

From these discussions as well as a separate comprehensive review of available TPL insurance policies conducted by SpaceX personnel, SpaceX has identified several reasons why this type and duration of insurance is not available commercially:

- 1) Reinsurers limit their exposure to space liability risks to one year. A two-year or longer liability policy would extend beyond one-year limits in reinsurance treaties.
- 2) Our insurance brokers and other market leaders indicated that the insurance market today lacks the capacity—or sufficient financial capital to set aside to cover risk exposure—to accept a risk for two years or longer in duration.
- 3) There is no regulatory or other requirement for this type of coverage. As a result, no market has emerged in which it would be provided (or even requested). The lack of codified requirements

The SpaceX logo is located in the bottom right corner of the page. It consists of the word "SPACEX" in a bold, sans-serif font, with a stylized, curved line above the letters "X" and "E" that suggests a rocket's trajectory or a wing.

alone should demonstrate to the FCC that this type and length of insurance is novel. Duration of coverage and key terms that are commercially available today adhere to the codified regulations by the FAA under 14 CFR Part 440. Regarding two year or longer coverage for second stage reentry as suggested by the FCC, neither the FAA nor the FCC has promulgated any regulations that would clarify how such policies would be executed.

SpaceX has requested information from the FCC on examples when this type of insurance had been offered. To date, FCC has not provided any concrete examples to SpaceX relating to two-year (or longer) TPL coverage for the reentry of the second stage of a launch vehicle. FCC did reference a recent launch of the Colorado Student Space Weather Experiment (CSSWE) Cubesat, which was developed under a grant from the National Science Foundation (NSF) and launched as a secondary payload aboard NROL-36 launch on August 2, 2012. SpaceX would note that launch vehicle and satellite insurance coverage is materially distinct. Further, as mentioned above, based on previous FCC guidance, operational and disclosure requirements do not apply to launch vehicles because they are already regulated by the FAA.

In any event, an NSF letter to the FCC dated July 19, 2012 supplied to SpaceX by the FCC states that the University of Colorado, Boulder was *not* able to obtain the type of insurance requested of the FCC. The letter states: “. . . the project fully realized the need to address this requirement only very recently and may not, in spite of considerable efforts by CU, be able to obtain insurance prior to Friday, July 20, 2012 when the NRO launch office” sealed the vehicle. At a minimum, this letter demonstrates that long-duration TPL coverage is non-standard in the industry.

SpaceX appreciates the opportunity to provide this additional information to the FCC. We are hopeful that this letter and its attachments address any ongoing concerns. We greatly appreciate your time and attention, and look forward to your expedited resolution of this matter. Please contact me if you have any further questions or need additional information.

Respectfully,



Tim Hughes
Senior Vice President & General Counsel

Attachments

CC: Julius Knapp, Chief, Office of Engineering and Technology
Walter Johnston, Office of Engineering and Technology
Karl Kensinger, Satellite Division, International Bureau





U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., S.W.,
Washington, D.C. 20591

August 22, 2012

Ms. Gwynne E. Shotwell
President
Space Exploration Technologies
1 Rocket Road
Hawthorne, CA 90250

Dear Ms. Shotwell:

We are in receipt of the random reentry analysis and debris list for the Falcon 9-004 second stage, submitted as part of your launch license application.

We are reviewing these documents in consideration of our requirements for launch vehicle or component reentry risk under 14 CFR § 440.7 (Appendix A to Part 440, III D). We are reviewing your debris mitigation plans under 14 CFR § 417.129.

We will advise you if we need any additional information. Mr. Howard Searight will continue to serve as your point of contact with the Licensing and Evaluation Division (AST-200) and will handle all issues concerning the processing of your license application review. Should you have any questions, please contact Mr. Searight at (202) 267-7927.

Sincerely,

A handwritten signature in black ink that reads "Kenneth Wong". The signature is fluid and includes a long horizontal stroke at the end.

Kenneth Wong
Manager
Licensing and Evaluation Division



U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

September 5, 2012

Ms. Gwynne E. Shotwell
President
Space Exploration Technologies
1 Rocket Road
Hawthorne, CA 90250

Dear Ms. Shotwell:

I am pleased to issue you launch-specific license, LLS 12-081, and accompanying license orders authorizing Space Exploration Technologies (SpaceX) to conduct the launch of a Dragon capsule on a Falcon 9 launch vehicle. This launch is authorized to take place from Complex 40 at Cape Canaveral Air Force Station on a flight azimuth of 42.24 degrees.

Our evaluation shows that SpaceX has satisfied the licensing requirements of Title 14 C.F.R. part 415. However, before flight is allowed, SpaceX must comply with all applicable requirements of Title 14 C.F.R chapter III, including the requirements of part 417.

Please note that as a two-mission license, SpaceX is required to keep the FAA informed of changes in the launch vehicle or mission that vary from the license application.

I also wish to extend my thanks to you and your staff for SpaceX's cooperation and responsiveness as we conducted this license application review.

Should you have any questions concerning this matter please contact Mr. Howard Searight at (202) 267-7927.

Sincerely,

A handwritten signature in black ink that reads "Kenneth Wong". The signature is written in a cursive style with a long, sweeping tail on the letter "g".

Kenneth Wong
Manager
Licensing and Evaluation Division

Enclosures



U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

September 17, 2012

Ms. Gwynne E. Shotwell
President
Space Exploration Technologies
1 Rocket Road
Hawthorne, CA 90250

Dear Ms. Shotwell:

I am pleased to issue you reentry-specific license, RLS 12-003, and accompanying license orders authorizing Space Exploration Technologies (SpaceX) to conduct the reentry of a Dragon capsule on a Falcon 9 launch vehicle.

Please note that as a two-mission license, SpaceX is required to keep the FAA informed of changes in the reentry vehicle or mission that vary from the license application.

I also wish to extend my thanks to you and your staff for SpaceX's cooperation and responsiveness as we conducted this license application review.

Should you have any questions concerning this matter please contact Mr. Howard Scaright at (202) 267-7927.

Sincerely,

A handwritten signature in cursive script that reads "Kenneth Wong".

Kenneth Wong
Manager
Licensing and Evaluation Division

Enclosures



September 17, 2012

Mr. Tim Hughes, Sr. VP & General Counsel
Space Exploration Technologies Corp.
1030 15th Street, NW, Suite 220E
Washington, DC 20005

Subject: Opinion of Insurance Broker Regarding Insurance for Falcon 9 Flight
004

Dear Mr. Hughes,

This opinion letter is rendered in compliance with the requirements of 14 § CFR 440.15(d). Specifically, this letter confirms that the insurance obtained by Space Exploration Technologies Corp. complies with all the requirements for insurance of 14 CFR Part 440 and the applicable launch and reentry licenses, LLS 12-081 and RLS 12-003.

Sincerely,

Jeffrey Poliseno
Chief Executive Officer



September 12, 2012

Space Exploration Technologies Corp.
Attn: Tim Hughes, SVP and General Counsel
1030 15th St. NW, Ste. 220E
Washington, D.C. 20005

Space Exploration Technologies:

You have asked us to further investigate the availability of extending Third Party Liability coverage for launch vehicles for up to two years or more of coverage, with respect to coverage for potential second stage reentry. First, we refer you to our letter dated April 2, 2012 and reiterate our conclusion that such insurance "would be atypical and highly unusual relative to standard commercial launch services insurance offerings."

After careful analysis of the market, we have determined that the coverage of two years or more constitutes a duration that is not commercially available under a policy. After further review since our previous letter, we were unable to identify any example of coverage for such a duration being offered to any U.S. commercial launch vehicle provider in the past or presently. In our judgment, there are three reasons coverage for such duration is neither contemplated nor currently available. First, insurers are limited to the duration of coverage they can provide by their reinsurance treaty. Reinsurers limit their exposure of space liability risks to one year, which does not permit the insurer to extend coverage under a policy beyond that period of time. Second, if any capacity could be made available on a net retained basis (without the protection of reinsurance) the amount of available capacity (if any) will fall far short of what is currently required by SpaceX's FAA launch license and the cost is likely to be commercially unreasonable. Third, we are not aware of any regulatory or other requirement for such insurance.

As you know, the duration of coverage and other key terms in commercially available launch and reentry liability insurance policies adhere closely to the insurance requirements set forth by the Federal Aviation Administration (14 CFR Part 440). Because there are no codified requirements relating to the type of insurance you are inquiring about, the terms, coverage amounts, and cost required for such a policy are unclear. In any case, given the complexity surrounding this question, we believe it would be impossible to execute an insurance policy with coverage of this duration in the time period under consideration for your upcoming launch.

Sincerely,

Jeff Polisen
CEO, International Space Brokers

[[

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



Space Exploration Technologies Corp.
1030 15th Street NW
Suite 450 West
Washington, DC 20005

April 2, 2012

To Space Exploration Technologies Corp:

Following up on your inquiries regarding the extension of Third Party Liability coverage beyond the current insured timeframes to ensure coverage of second stage reentry for up to two years in duration, we offer the following response. To begin, in our experience as international brokers of launch insurances, we have observed that duration of coverage and other key terms in commercially available launch insurance policies adhere closely to the insurance requirements set forth by the FAA in 14 CFR Part 440. As such, extending Third Party Liability coverage for up to two years would be atypical and highly unusual relative to standard commercial launch services insurance offerings. In fact, such a timeframe would greatly exceed the period of time typically covered by commercially available insurance policies, and we are not aware of any similar insurance coverage being offered to any U.S. Commercial Launch Vehicle providers. Further, we do not believe that coverage of such a duration would be available in the commercial launch insurance market due to possible reinsurance restrictions. After discussing this position with the Third Party Liability market's leading Insurer, they have confirmed our understanding of the situation. Finally, even if coverage were available for up to two years it would not be via a standard commercial launch third party liability insurance and, as such, is highly likely it would be cost-prohibitive.

Yours truly,

A handwritten signature in black ink, appearing to read "J. Poliseno", is written over a horizontal line.

Jeff Poliseno
CEO, International Space Brokers