THE SECRETARY OF TRANSPORTATION
WASHINGTON, DC 20590

February 26, 2019

The Honorable Roger F. Wicker
Chairman, Committee on Commerce,
Science, and Transportation
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

Enclosed is the "U.S. Department of Transportation Evaluation of Commercial Human Space Flight Activities Most Appropriate for New Safety Framework" report, as required by 51 U.S.C. § 50905(c)(7). Section 50905(c)(7) requires the Secretary of Transportation to submit a report that identifies the activities most appropriate for a new safety framework, including regulatory action, if any, and a proposed transition plan for the framework. The U.S. Department of Transportation (DOT) is pleased to provide the enclosed report.

Since 2004, Congress has maintained a moratorium or "learning period" prohibiting DOT, absent death, serious injury, or launch or reentry that posed a high risk of causing a serious or fatal injury, from promulgating any regulations governing the design or operation of a launch vehicle intended to protect the health and safety of crew and space flight participants. Congress has extended this prohibition twice, and without further extension, it is now set to last until at least 2023. This is an interim report, and DOT will provide Congress with an updated report once consultation with the Commercial Space Transportation Advisory Committee is complete.

A similar letter has been sent to the Ranking Member of the Senate Committee on Commerce, Science, and Transportation and to the Chairman and Ranking Member of the House Committee on Science, Space, and Technology.

Sincerely,

Elaine L. Chao

Elaine L. Chao

Enclosure

THE SECRETARY OF TRANSPORTATION
WASHINGTON, DC 20590

February 26, 2019

The Honorable Maria Cantwell
Ranking Member, Committee on Commerce,
Science, and Transportation
United States Senate
Washington, DC 20510

Dear Senator Cantwell:

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A similar letter has been sent to the Chairman of the Senate Committee on Commerce, Science, and Transportation and to the Chairman and Ranking Member of the House Committee on Science, Space, and Technology.

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THE SECRETARY OF TRANSPORTATION
WASHINGTON, DC 20590

February 26, 2019

The Honorable Eddie Bernice Johnson
Chairman, Committee on Science,
Space, and Technology
U.S. House of Representatives
Washington, DC 20515

Dear Madam Chairwoman:

Enclosed is the "U.S. Department of Transportation Evaluation of Commercial Human Space Flight Activities Most Appropriate for New Safety Framework" report, as required by 51 U.S.C. § 50905(c)(7). Section 50905(c)(7) requires the Secretary of Transportation to submit a report that identifies the activities most appropriate for a new safety framework, including regulatory action, if any, and a proposed transition plan for the framework. The U.S. Department of Transportation (DOT) is pleased to provide the enclosed report.

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Sincerely,

Elaine L. Chao

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THE SECRETARY OF TRANSPORTATION
WASHINGTON, DC 20590

February 26, 2019

The Honorable Frank D. Lucas
Ranking Member, Committee on Science,
Space, and Technology
U.S. House of Representatives
Washington, DC 20515

Dear Congressman Lucas:

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Elaine L. Chao

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**U.S. DEPARTMENT OF TRANSPORTATION**

# Report to Congress:
# U.S. Department of Transportation Evaluation of Commercial Human Space Flight Activities Most Appropriate for New Safety Framework

**51 U.S.C. § 50905(c)(7)**

# Contents

# I. Executive Summary

Under 51 USC § 50905(c)(7), the Secretary of the U.S. Department of Transportation is required to submit a report to Congress by March 31, 2018, that identifies the activities described in 51 USC § 50905(c) & (d) most appropriate for a new safety framework that may include regulatory action, if any, and a proposed transition plan for such safety framework. The Secretary of Transportation has delegated this responsibility to the Acting Administrator of the Federal Aviation Administration. Section 50905(c)(7) of Title 51 requires the Secretary to coordinate and consult with the commercial space sector, including the Commercial Space Transportation Advisory Committee (COMSTAC), or its successor organization. Due to a lapse in its charter, COMSTAC did not meet between October 2016 and June 2018. As a result, this is an interim report and the Secretary of Transportation will submit a final report once COMSTAC's membership has had an opportunity to provide input on this report.[1]

In a report submitted to Congress on October 20, 2017, entitled, "Federal Aviation Administration (FAA) Evaluation of Commercial Human Space Flight Safety Frameworks and Key Industry Indicators,"[2] FAA identified three sets of indicators that might point to the readiness of the commercial space transportation industry to enter into a safety framework. Those sets of indicators included industry readiness areas, industry's progress in developing a safety framework, and U.S. Department of Transportation (USDOT) readiness areas. Those sets included the following areas:

Industry Readiness Areas Indicators

- Purpose of People Flying in Space
- Size and Complexity of the Industry
- Safety of the Industry

Industry's Progress in Developing a Safety Framework Indicators

- Voluntary Safety Reporting
- Voluntary Consensus Standards
- Compliance with Standards

U.S. Department of Transportation Readiness Indicators

- Authority to Transition to a Safety Framework
- Expertise in Human Space Flight Safety

There has been little commercial human space flight activity since FAA submitted the report referenced above. There have been only three FAA-licensed launches that carried humans onboard, and all three of those were conducted by one commercial space launch operator and

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[1] The FAA will provide COMSTAC with this interim report at COMSTAC's meeting in October 2018 and will consult with COMSTAC at the following meeting on activities most appropriate for a new safety framework that may include regulatory action.

[2] This report is available at https://www.faa.gov/about/office_org/headquarters_offices/agi/reports/media/CSLCA_Sec111_Report_to_Congress.pdf.

carried only flight crew. And although industry has taken preliminary steps to develop voluntary industry consensus standards, significant work on those standards remains. Based on these readiness indicators, there are no commercial human space flight activities that are ready for a new safety framework that may include regulatory action.

# II. Introduction

The Federal Aviation Administration (FAA) has exercised oversight responsibility for certain aspects of commercial space transportation activities since 1995, when the Secretary of Transportation delegated authority to the FAA Administrator, and the Office of Commercial Space Transportation (AST) was established at the FAA. The FAA, through AST, licenses and permits the launch of launch vehicles, the reentry of reentry vehicles, and the operation of launch and reentry sites consistent with public health and safety, safety of property, and the national security and foreign policy interests of the United States. AST's mission is unique within the FAA because it also includes the responsibility to encourage, facilitate, and promote commercial space launches and reentries by the private sector, including those involving space flight participants. These complementary mission objectives provide an oversight framework that has proven beneficial to both the industry and the American people. Since the FAA has licensed or permitted over 350 launches and reentries, there have been no fatalities, serious injuries, or significant property damage to the public.

The FAA's responsibilities are not limited to protecting the public. In 2004, Congress granted the Secretary of Transportation authority to oversee the safety of the emerging commercial human space flight industry, but limited the Secretary's rulemaking authority. To ensure that the industry has an ample "learning period" to develop, Congress prohibited the Secretary, absent death, serious injury, or an unplanned event during a launch that posed a high risk of causing a serious or fatal injury, from promulgating any regulations governing the design or operation of a launch vehicle intended to protect the health and safety of crew and space flight participants until the year 2012. Congress has extended this prohibition twice – the FAA Modernization and Reform Act of 2012 extended it to October 1, 2015, and the Commercial Space Launch Competitiveness Act (CSLCA) extended it to October 1, 2023. However, Congress did encourage FAA to continue to work with industry on ways to improve human space flight safety.

On October 20, 2017, the FAA submitted a report on key industry metrics that might indicate readiness of the commercial space sector and the DOT to transition to a safety framework that may include regulations for commercial human space flight. The tables below describe the indicators outlined in the FAA's previous report to Congress.

**Table 1**

**Industry Readiness Indicators**

| Readiness Area | Indicators |
|---|---|
| • Purpose of People Flying in Space | • The extent to which people are flying for adventure purposes.<br>• The extent to which people are flying as part of their occupation.<br>• The extent to which people are flying as a mode of transportation. |
| • Size and Complexity of the Industry | • The number of suppliers of orbital or suborbital space flight.<br>• The number of suppliers of similar space flight types, such as vertical suborbital, horizontal suborbital, and balloon.<br>• The extent to which there is a broad supplier network.<br>• The extent to which operations occur internationally. |
| • Safety of the Industry | • The extent to which there is evidence of unsafe operations.<br>• The extent to which the industry is having difficulty attracting new customers.<br>• The extent to which insurance companies are willing to insure human space flight operations. |

**Table 2**

**Industry's Progress in Developing a Safety Framework Indicators**

| Readiness Area | Indicators |
|---|---|
| • Voluntary Safety Reporting | • The extent to which individual companies have an internal voluntary reporting system to identify and address potential precursors to accidents.<br>• The extent to which industry members share safety data with each other, with a common data format and taxonomy. |

| | |
|---|---|
| • Voluntary Consensus Standards | • The extent to which industry has formed a consensus on top level performance standards.<br>• The extent to which industry has developed and maintains voluntary consensus standards in high priority areas.<br>• The extent to which industry has developed and maintains a robust set of voluntary consensus standards. |
| • Compliance with Standards | • The extent to which individual companies self-verify compliance with voluntary consensus standards.<br>• The extent to which a third party verifies compliance with voluntary consensus standards. |

**Table 3**

**U.S. Department of Transportation Readiness Indicators**

| Readiness Area | Indicators |
|---|---|
| • USDOT Authority to Transition to a Safety Framework | • Status of the "learning period." |
| • USDOT Expertise in Human Space Flight Safety | • The extent to which the FAA has helped create elements of a space safety framework.<br>• The extent to which the FAA has engaged with industry regarding standards development.<br>• The extent to which the FAA has published safety practices related to commercial human space flight.<br>• The extent to which the FAA has experience participating in a space safety framework. |

## III. Legislative Direction

The CSLCA requires the Secretary of Transportation to submit a report that identifies activities most appropriate for a new safety framework that may include regulatory action, if any, and a proposed transition plan for such safety framework. Specifically, Section 111(5) of the CSLCA revised 51 U.S.C. § 50905(c) by inserting, among other things, a new paragraph (7), which states:

> (7) REPORTS.—Not later than March 31 of each of 2018 and 2022, the Secretary, in consultation and coordination with the commercial space sector, including the Commercial Space Transportation Advisory Committee, or its successor organization, shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives a report that identifies the activities, described in this subsection and subsection (d) most appropriate for a new safety framework that may include regulatory action, if any, and a proposed transition plan for such safety framework.

# IV. Activities Most Appropriate For New Safety Framework

There has been little commercial human space flight activity since FAA submitted the report referenced above. There have been only three FAA-licensed launches that carried humans onboard, and all three of those were conducted by one commercial space launch operator and carried only flight crew. And although industry has taken preliminary steps to develop voluntary industry consensus standards, significant work on those standards remains. Based on the readiness indicators provided in FAA's October 2017 report to Congress, there are no commercial human space flight activities that are ready for a new safety framework that may include regulatory action.

The future of the commercial human space flight industry will depend on its ability to continually improve its safety performance, and FAA is dedicated to improving safety. As Congress noted in 51 U.S.C. § 50901(a)(15):

> The regulatory standards governing human space flight must evolve as the industry matures so that regulations neither stifle technology development nor expose crew, government astronauts, or space flight participants to avoidable risks as the public comes to expect greater safety for crew, government astronauts, and space flight participants from the industry."

At this point in the commercial human space flight industry's evolution, transition to a new safety framework might stifle technology development. As the industry continues to evolve, FAA remains committed to aiding the development of voluntary industry consensus standards and is actively engaged with industry in that effort. Industry's proactive participation in creating a safety framework can influence the timing and extent of government regulatory involvement, and successful implementation of an industry-led framework could minimize the need for government involvement.