Congress of the United States

U.S. House of Representatives

Committee on Small Business

2361 Rayburn House Office Building

Washington, DC 20515–6315

Memorandum

To:	Members, Subcommittee on Agriculture, Energy and Trade
From:	Committee Staff
Date:	June 6, 2016
Re:	Hearing: "Ready for Liftoff: The Importance of Small Businesses in the NASA Supply Chain"

I. Introduction

On Tuesday, July 12, 2016 at 11:00 a.m. the Subcommittee on Agriculture, Energy, and Trade will conduct a hearing titled, "Ready for Liftoff: The Importance of Small Businesses in the NASA Supply Chain." The Subcommittee will examine the challenges facing small businesses that conduct business with the National Aeronautics and Space Administration (NASA). Since the space shuttle's retirement in 2011, some downstream engine and parts suppliers have struggled to survive in the gap period to the next manned-rocket system. The hearing will focus on how they've addressed these challenges, their impact on the local economies, the importance of small firms to the supply chain, and the significance of small manufacturers helping lead the way in space exploration.

II. Background

History changed on October 4, 1957, when the Soviet Union successfully launched Sputnik I. The world's first artificial satellite was about the size of a beach ball (22.8 inches in diameter), weighed only 183.9 pounds, and took about 98 minutes to orbit the Earth on its elliptical path. That launch ushered in new political, military, technological, and scientific developments. While the Sputnik launch was a single event, it marked the start of the space age and the United States-Soviet Union space race. [1] Although the United States already had its own satellite plans in place as part of the International Geophysical Year, the Russian events spurred the Space Age, and in particular gave urgency to the founding of an American national space agency.

The Sputnik launch led directly to the creation of National Aeronautics and Space Administration (NASA). In July 1958, Congress passed the "National Aeronautics and

[1] http://history.nasa.gov/sputnik/.

Space Act,"[2] which created NASA as of October 1, 1958 from the National Advisory Committee for Aeronautics (NACA) and other government agencies. The "Space Act," as it came to be called, set forth a broad mission for NASA to plan, direct, and conduct aeronautical and space activities; to involve the nation's scientific community in these activities; and to disseminate widely information about these activities.[3]

The 1960s brought an era of rapid change and innovation for NASA. By 1961, the agency was launching rockets along the east coast of Florida. Project Mercury already was under way, having launched the first American, Alan Shepard, on a suborbital flight May 5, 1961 and on February 20, 1962, John Glenn became the first American to orbit Earth. On the heels of the Mercury Project, and following President John Kennedy's famous proclamation[4] the Apollo Program followed Project Gemini. Its goal was to land humans on the moon and assure their safe return to Earth. On July 20, 1969, the Apollo 11 astronauts—Neil Armstrong, Michael Collins, and Edwin "Buzz" Aldrin Jr. followed through on President Kennedy's declaration.

The 1970's brought continued changes at NASA. Following Apollo 17's final manned lunar landing, a shift to more unmanned and longer distance explorations occurred, including missions such as Mariner 9, the first satellite to orbit Mars, Pioneer 10, the first satellite to do a flyby of Jupiter, and Voyager program designed to study the planets, moons, and celestial objects within our solar system and immediately beyond.

The Space Shuttle[5] program was the primary NASA manned space flight program for much of the next three decades. The Shuttle was active between 1981 and 2011. During that time, NASA launched the Shuttle 135 times[6] with varying missions such as delivering the Hubble Space Telescope into orbit, numerous supply missions to the International Space Station, and various scientific experiments.

III. Retirement of the Shuttle and Cancellation of the Constellation Program

Following the Space Shuttle Columbia accident in February 2003 and the subsequent investigation into its cause, President George W. Bush announced a new "Vision for Space Exploration"[7] on January 14, 2004, to reinvigorate and redirect NASA's human exploration program beyond the Space Shuttle and the International Space Station. The plan focused on the next steps for low-Earth orbit and beyond. It also

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[2] Pub. L. No. 85-568, Stat. 426.

[3] ROGER D. LAUNIUS, CHIEF HISTORIAN, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, LEGISLATIVE ORIGINS OF THE NATIONAL AERONAUTICS AND SPACE ACT OF 1958 3 (July 1998), *available at* http://www.hq.nasa.gov/office/pao/History/40thann/legislat.pdf at 3.

[4] *"I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the Earth."* President John Fitzgerald Kennedy, Address to a joint Session of Congress (May 25, 1961).

[5] Officially named the Space Transportation System, or STS.

[6] http://www.space.com/12376-nasa-space-shuttle-program-facts-statistics.html.

[7] NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, THE VISION FOR SPACE EXPLORATION (February 2004), *available at* http://www.nasa.gov/pdf/55583main_vision_space_exploration2.pdf.

provided a general vision that the NASA Administrator could use to "implement an integrated, long-term robotic and human exploration program structured with measurable milestones and executed on the basis of available resources, accumulated experience, and technology readiness."[8]

The plan included four main goals and objectives: to implement a sustained and affordable human and robotic program to explore the solar system; to extend human presence across the solar system, starting with a human return to the Moon by the year 2020, in preparation for human exploration of Mars and other destinations; to develop the innovative technologies, knowledge, and infrastructures both to explore and to support decisions about the destinations for human exploration; and promote international and commercial participation in exploration to further United States scientific, security, and economic interests.[9] The Constellation Program was born out of the Vision for Space Exploration of 2004 and the work for this new program began with NASA's budget request for fiscal year 2005.

In 2009, President Obama ordered a review of the Constellation program which was completed on October 22, 2009.[10] Based in large part on the findings of this evaluation that found "since Constellation's inception, the program has faced a mismatch between funding and program content,"[11] President Obama offered a budget for fiscal year 2011 that proposed to cancel the Constellation program.[12] Additionally, July 2011 saw the final Space Shuttle mission.

IV. Current Programs and the Role of Small Business

The importance of keeping human exploration programs on track through Presidential transitions has been an ongoing challenge. Multiple NASA advisory panels and commissions (mentioned throughout in this memo) that study the human exploration program have concluded that the importance of keeping the program of record on track is paramount to ensuring budget and schedule stability.

The current program designed to take humans to high earth orbit, Mars and beyond is NASA's Space Launch System, or SLS and Orion program. SLS is an advanced launch vehicle for a new era of exploration beyond Earth's orbit into deep space. SLS, the world's most powerful rocket, will launch astronauts in the agency's Orion spacecraft on missions to an asteroid and eventually to Mars, while opening new possibilities for other payloads including robotic scientific missions to places like Mars, Saturn and Jupiter.

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[8] *Id* at 6.
[9] *Id.* at 5.
[10] NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, REVIEW OF U.S. HUMAN SPACEFLIGHT PLANS (October 2009), *available at* https://www.nasa.gov/pdf/396093main_HSF_Cmte_FinalReport.pdf.
[11] *Id* at 58.
[12] NASA, FY 2011 CONGRESSIONAL BUDGET JUSTIFICATION EXP-15 (2010), *available at* http://www.nasa.gov/pdf/428837main_NASA_FY_2011_Congressional_Justificaton_Budget_Book_Rev-01_BOOKMARKED.pdf.

The federal government routinely spends nearly half a trillion dollars through prime contracts each year. Given the sheer volume of dollars spent, this is a crucial market for small businesses as prime contractors and subcontractors. For example, in Fiscal Year 2015, the federal government obligated over $437 billion in prime contracts, which in turn resulted in approximately $225 billion in subcontracts.[13] Small businesses received over $97 billion in prime contracts and over $75 billion in subcontracts.[14]

In FY 2015, NASA spent over $14.4 billion, with nearly $2.5 billion going to small businesses in the form of prime contracts.[15] The same year, they provided over $2.3 billion in subcontract dollars. These numbers have remained relatively steady over the course of the last three or four years.[16] These investments in the small business sector of the industrial base help to provide some level certainty for small businesses looking to do business with NASA in the future. However, continued support of small firms as prime and subcontractors will be necessary to ensure a healthy and vibrant sector to garner new technologies, lower prices, and speed delivery to NASA in the future.

V. Conclusion

This hearing will provide members the opportunity to learn more about the challenges faced by small businesses who do business with NASA. Small businesses across the United States (not just in Florida and Texas) contribute billions of dollars worth of goods and services to NASA each year, however, the fits and starts of various lead programs at the highest levels of multiple presidential administrations often provides little certainty for small firms looking to enter the NASA contracting arena.

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[13] Prime contracting data retrieved from the Federal Procurement Data System, *available at* www.fpds.gov; subcontracting data provided by SBA and on file with the Committee.
[14] *Id.*
[15] NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, SPACE LAUNCH SYSTEM FACTS 6 (October 2015), *available at* http://www.nasa.gov/sites/default/files/atoms/files/sls_october_2015_fact_sheet.pdf.
[16] FY 2014 can be found here: http://www.osbp.nasa.gov/swf/2014-SBIA-Awards.swf and FY 2013 can be found here: http://osbp.nasa.gov/docs/event-presentations/2014-Aug-Delgado-LaRC-Industy-Day-Presentation.pdf.