

## National Aeronautics and Space Administration

### *Witnesses:*

#### **The Honorable Charles Bolden**

Administrator, National Aeronautics and Space Administration

### *Committee Members Present:*

Frank Wolf (R-VA), Chairman

Chaka Fattah (D-PA), Ranking Member

John Culberson (R-TX)

Adam Schiff (D-CA)

Jo Bonner (R-AL)

José Serrano (D-NY)

On March 20, 2013, the House Committee on Appropriations Subcommittee on Commerce, Justice, and Space held a hearing to receive testimony on the operations of the National Aeronautics and Space Administration (NASA).

Subcommittee Chairman Frank Wolf (R-VA) stated in his opening statement that, given the current lack of a budget, the hearing would focus mainly on discussing general goals for NASA rather than specific funding levels. He focused on discussing security issues facing NASA given the recent attempted theft of NASA technology by a Chinese national formerly working as a contractor. He noted that China is an “active, aggressive espionage threat,” attempting to steal space and flight technology; therefore, it is “critically important for us to have confidence in NASA’s ability to protect sensitive technologies and information from exploitation by entities that are looking to gain an advantage over the United States economically or militarily.” Wolf stated that while previously “this subcommittee has worked very hard...to protect the research and development programs from the full impact of recent budget reductions...[it] cannot continue to do” so without assurance from NASA “that those investments will be adequately protected from entities and countries that have been designated as potential threats.”

Chaka Fattah (D-PA), subcommittee ranking member, referred to the 2012 landing of the Curiosity rover on Mars as an “event galvanizing the nation” to recognize the degree of NASA’s success, and a “message to the nation that NASA really was at the forefront.” He outlined some of the major developments currently taking place at NASA, from Curiosity to the James Webb Space Telescope to the Space X program. He noted that he too was concerned regarding NASA’s ability to protect “our national security and intellectual property.”

In his testimony, Charles Bolden, administrator of NASA, opened by discussing “NASA’s continuing progress in implementing the bi-partisan program” created by the “President and Congress...[to] ensure the United States continues to lead the world in space exploration, technology, innovation, and scientific discovery.” He listed some current objectives that NASA is working toward including sending “humans to an asteroid by 2025 and on to Mars in the 2030’s,” constructing the Space Launch System and Orion Multi-Purpose Crew Vehicle with the first manned missions in 2021, continuing the work on the International Space Station (ISS), expanding Mars research programs, launching the James Webb telescope in 2018, and developing new technologies. He stated that “NASA’s on track to send our astronauts to space from American shores, using American companies by 2017” and remains the “world’s premier space science organization.”

In his written testimony, Bolden expanded on the status of NASA’s earth science research. He mentioned the current 17 earth science missions orbiting Earth and the addition of the Landsat Data Continuity Mission, “which is currently undergoing on-orbit checkout.” He stated, “NASA is working to complete and launch three new Earth science missions in FY 2014, with a fourth scheduled for launch in Fall 2014:” the Global Precipitation Measurement (GPM) mission, Orbiting Carbon Observatory-2 (OCO-2), Stratospheric Aerosol and Gas Experiment III (SAGE III), and the Soil Moisture Active Passive (SMAP) mission.

In astrophysics, the James Webb Space Telescope, “the most powerful telescope in history,” is set to launch in 2018 and “will allow us to observe objects even fainter than the Hubble Space Telescope can see.” The Stratospheric Observatory and Infrared Astronomy (SOFIA) airborne observatory continues making “science observations...that are unobtainable from telescopes on the ground.”

In the heliophysics program, the Van Allen Probes launched last year, the Interface Region Imaging Spectrograph (IRIS) launches

this year, and the Magnetospheric Multiscale (MMS) mission is projected to launch in 2015. He noted that “NASA continues to formulate the Solar Probe Plus (SPP) mission and develop its contribution to the European Space Agency’s Solar Orbiter mission.”

Bolden also addressed the security concerns raised by Wolf and Fattah outlining the steps taken regarding the recent breach at Langley Research Center involving a Chinese national contractor who is no longer working for the organization. He provided seven steps that he is taking to improve NASA security.

During the question and answer section, Fattah asked Bolden to discuss the relationship between NASA and CASIS in supporting and constructing the “nation’s newest federal [national] laboratory,” the International Space Station. Bolden responded that “CASIS is a private entity” with the responsibility of “recruiting and managing experiments and researchers in the U.S. segment” of the ISS. The goal of working with CASIS is to “bring credibility to the work...being done on station.” He stated that this relationship has led to the decision to “put up some earth science instruments on station” and a solar science mission. He noted that “I was led to believe that the station was not a good platform for earth science, that was not true.”

Fattah also inquired about the relationship between NASA and the National Science Foundation (NSF). Bolden stated that “the big thing is collaboration between agencies.” He noted that NASA has a number of facilities that are sponsored or funded by NSF. He outlined how the NASA/NSF collaboration assists with the new “observatory in Chile [that] will give us another instrument...for identification and tracking” of asteroids, as well as flights “towards both poles to do ice research.”

John Culberson (R-TX) asked for an outline of the trajectory for the heavy lift and Orion vehicles as well as the planetary science program and Mars and Europa projects. Bolden stated that Orion would “fly its first flight a little more than a year from now” in fall 2014 and the heavy lift would be available in 2017. The first combined unmanned launch is planned for 2017 with the first manned launch in 2021.

Bolden described the science program as “aggressive and ambitious and highly successful.” Some developments he listed included next year’s Mars Atmosphere and Volatile Evolution (MAVEN) mission, the 2016 launch of the Interior Exploration using Seismic Investigations, Geodesy and Heat Transport (InSight) mission which will “core meters into the martian surface,” and the 2020 launch of a “Curiosity-like” Mars rover. He mentioned U.S. involvement with the 2016 and 2018 European Space Agency’s ExoMars missions, but noted that a lack of funding prevented more significant participation in the project.

Culberson inquired specifically into Bolden’s commitment to missions to Europa. Bolden responded that the Mars mission and a sample return from Mars are the first priority for NASA as per the National Research Council’s (NRC) decadal survey directive. He noted that if Congress and the Administration are unable to agree on funding that “will not preclude that lander from being able to be the beginning of a sample return mission,” they will likely “forget” about Mars and head on to Europa. He stated that given the current funding levels, NASA will continue to invest in Europa mission development at lower levels but cannot afford to fully develop both Mars and Europa missions.

Culberson asked Bolden to comment on the Senate appropriation and continuing resolution funding for fiscal year 2013, particularly with regard to the heavy lift rocket and planetary research programs. Bolden discussed the “opportunity to put the triangle back together” meaning to create the space program outlined in the 1970s that never came to fruition. The triangle he described is based on the establishment of the ISS, construction of a heavy lift launch vehicle and multipurpose crew vehicle, and development of commercial crew and cargo capabilities. As far as funding, Bolden stated, “I’m always happy to get whatever the Congress appropriates me,” but while the amount “is close to what we asked for” there are “shortcomings” that are “exacerbated by sequestration” and could be harmful to the program later. He advocated for “flexibility within the top line” of the budget to move money where it is needed so as to keep the programs running sequentially. He stated he doesn’t need “a lot of extra money in the heavy lift” vehicle but does need money for the commercial crew work so as to not pay Russia for crew capabilities beyond 2016. Fattah prompted Bolden to discuss the work NASA does in terms of education. Bolden responded that he will follow President Obama’s interest in that increasing “the number of engineers in STEM fields that come out of this country.” He noted that the U.S. is no longer able to bring in scientist and engineers from outside the U.S. to train and work in the states but instead needs to train American engineers in order to compete with other countries. He indicated that NASA focuses on STEM education in K-12 and on encouraging involvement in STEM fields in underserved communities.

Opening statements, witness testimonies, and an archived webcast of the hearing can be found on the Committee’s web site.

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