COMMITTEE ON
SCIENCE, SPACE, & TECHNOLOGY
Lamar Smith, Chairman

For Immediate Release
October 4, 2017

Media Contacts: Thea McDonald, Brandon VerVelde
(202) 225-6371

Statement from Space Subcommittee Chairman Brian Babin (R-Texas)

Powering Exploration: An Update on Radioisotope Production and Lessons Learned from Cassini

Chairman Babin: Exploration of our solar system continues to amaze and inspire us all. From rovers on the surface of our neighbor, Mars, to spacecraft visiting the distant reaches of Pluto, and the recent completion of the extraordinary Cassini mission to Saturn, their discoveries are truly awe-inspiring. The exploration and science achieved by these missions is enabled by the production of Plutonium-238 (Pu-238), and the radioisotope power systems (RPS) that turn fuel into electricity for spacecraft. RPS are necessary for missions that go beyond Jupiter where the sun's energy is not strong enough to power solar arrays, and for rovers that have unique mission requirements. Unfortunately, America's stockpile of Pu-238 is low, despite efforts to reestablish production. This hearing allows us to review NASA and DOE's efforts to reconstitute Pu-238 production, and better understand how it enables scientific discovery and exploration by hearing about the Cassini mission, which was enabled by Pu-238 and its RPS system.

Over the last 50 years, NASA has relied on RPS to power many of its missions into deep space. This was made possible by a ready supply of Pu-238 that was derived from weapons production. After the U.S. ended the production of nuclear weapons in the 1980s, Pu-238 was less plentiful, so America had to purchase Pu-238 from Russia. We no longer purchase Pu-238 from Russia, and now find ourselves in a quandary. The existing stockpile of Pu-238 is all but gone. The infrastructure necessary to produce Pu-238 is being reconstituted, but, as GAO will highlight, challenges remain.

NASA funds the entire enterprise, but DOE owns and operates the facilities. Not all of the reactors involved in the production are currently active. Future missions to the outer planets will undoubtedly require Pu-238. Current assessments of the volume of Pu-238 that DOE can produce per year, and NASA's assessment of its needs for future missions, remain uncertain.

For instance, when NASA assumes how much Pu-238 it needs, does it assume the fuel will be used in legacy Multi-Mission Radioisotope Thermoelectric Generators (MMRTGs) or in future Advanced Sterling Radioisotope Generators (ASRGS). ASRGs are much more efficient, and use less Pu-238, but the program was cancelled a few years ago.

Are NASA's estimated needs based on systems that are no longer being developed? NASA is also exploring plans to blend fuel to stretch its supply. Does this impact the quality of the supply and the missions it can support? Since NASA is wholly dependent on DOE for isotope production, how will DOE's future management of its laboratories and reactors impact NASA missions? Is NASA planning missions based on low production rates, or are DOE's production rates determined by a lack of requirements from NASA?

The recent completion of the Cassini mission offers us an opportunity to reflect on the amazing science and discoveries that were enabled by Pu-238. Stunning images and findings still stream in from the Curiosity rover on Mars, which is also enabled by Pu-238. NASA currently has roughly 35 kilograms of fuel left. NASA and DOE plan to produce 1.5 kilograms a year by 2025. A single MMRTG uses 4.8 kilograms of fuel. To put that into perspective, Cassini used 33 kilograms in one mission.

I look forward to your insightful testimony about the future of exploration and how we can ensure that we continue to push the envelope of discovery. Thank you to our witnesses and their staff. You were all able to accommodate a compressed schedule to appear today. Your service to the Committee and the nation is greatly appreciated.

###