OPENING STATEMENT

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of the Subcommittee on Space

House Committee on Science, Space, and Technology
Subcommittee on Space
"In-Space Propulsion: Strategic Choices and Options"
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Good morning. And welcome to our distinguished panel.

Thank you Mr. Chairman for calling this important hearing to look at ongoing developments in advanced in-space propulsion technologies.

Chemical propulsion remains a critical part of today's human exploration program. Indeed, the two rocket boosters on NASA's Space Launch System use a solid chemical propellant and SLS's RS-25 core stage rockets utilize liquid chemical propellant. However, relying solely on chemical propulsion for deep space travel would result in spacecraft having to carry large amounts of propellant, possibly requiring multiple launches even before a mission can be initiated. That is why many experts believe that NASA will need advanced propulsion systems to power the agency's future robotic and manned spacecraft.

NASA is currently using non-chemical in-space propulsion in the form of electric propulsion. Electric propulsion is a continuous, low thrust process and has been used by a few NASA robotic spacecraft, such as the Dawn probe which has investigated the asteroid Vesta and is now orbiting Ceres.

Department of Defense (DoD) space vehicles and commercial satellites also make use of solar electric power, but primarily for orbit raising and repositioning. For example, each Advanced Extremely High Frequency (AEHF) Space Vehicle, which provides critical global communications to our warfighters, uses solar electric propulsion subsystems.

Another type of in-space propulsion—enabled through the use of nuclear reactors—was studied to a limited extent in the 1960s. However, engineers found that the amount of shielding needed to protect crew from the dangerous effects of prolonged exposure to radiation generated by the nuclear reactor as well as other technical difficulties were challenges that were hard to overcome at that time.

With plans now focusing on extended human travel into space, research into all forms of advanced propulsion technologies, including nuclear fission, is likely to intensify in the years ahead. It's critical that we find ways to reduce the time crew is exposed to galactic cosmic rays and other dangerous deep-space radiation. Significantly reducing mission duration times can only be achieved through advanced in-space propulsion.

As NASA continues developing our plans on how to send humans to Mars and returning them safely to Earth, now is a good time to examine the present and future options for in-space propulsion. Mr. Chairman, I am looking forward to hearing from our witnesses about different propulsion technologies and the unique characteristics that make them best suited to particular missions in space.

Thank you and I yield back.