COMMITTEE ON
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Opening Statement of Ranking Member Brian Babin

Subcommittee on Space & Aeronautics Hearing – Accelerating Deep Space Travel with Space Nuclear Propulsion

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Space nuclear power and propulsion holds great promise. It could lead to faster travel times, less radiation exposure for astronauts, greater mission flexibility, and more power for operations and instruments. Other nuclear applications like surface reactors could also support a robust space exploration architecture.

Nuclear power and propulsion for space exploration is not a novel concept. The Air Force, the Atomic Energy Commission, and NASA partnered in the 1950s and 60s on Project Rover and the Nuclear Engine for Rocket Vehicle Applications (NERVA) program to develop nuclear rockets. The Systems for Nuclear Auxiliary Power (SNAP) program resulted in the launch of a nuclear-powered satellite in 1965, the Russians flew TOPAZ reactors in the 80s and 90s, and NASA has incorporated Radioisotope Power Systems into missions since the dawn of the space age. Support for new space nuclear projects have come and gone over the years as well. The Space Reactor Prototype was cancelled in the 90s, nuclear projects associated with the Strategic Defense Initiative and the Space Exploration Initiative faded with the overarching programs, and Project Prometheus was cancelled due to budget constraints 15 years ago.

If future programs are not crafted carefully with strategic forethought, they may fall victim to the same fate. As the National Academies pointed out in their report from earlier this year, "[r]ecent, apples-to-apples trade studies comparing [nuclear electric propulsion] NEP and [nuclear thermal propulsion] NTP systems for a crewed mission to Mars in general and the baseline mission in particular do not exist." The Academy also called on NASA to conduct an objective comparison of the two systems. Other decisions such as whether Highly Enriched Uranium (HEU) or High Assay Low Enriched Uranium (HALEU) should be used as the fuel and whether Hall, MPD, or VASMIR should be used for NEP thrusters should also be studied further.

Extensibility, or the ability of a system to be used for future missions and not be a "dead-end" technology, will also be important for the future viability of nuclear space propulsion. Architectures developed for crewed missions, uncrewed mission, surface power, low-Earth orbit operations, and missions to the Moon, Mars, and beyond should

all build upon each other and leverage previous investments. These space architecture trades should not only meet near-term goals, but also account for future exploration challenges. What might seem ideal in the near-term may not be the best solution in the long-term. When budgets get tight, and funding gets prioritized, high-risk, high-reward technologies like space nuclear power and propulsion have often been left on the chopping block. Because of this reality, NASA should evaluate extensibility in future strategic decisions regarding space nuclear power and propulsion architectures.

Coordination with other agencies and the private sector will also determine the success of space nuclear power and propulsion research and development. The Department of Energy has an Advanced Reactor Demonstration Program and a Nuclear Reactor Innovation Center, DARPA initiated the Demonstration Rocket for Agile Cislunar Operations (DRACO) program, the Strategic Capabilities Office started the Pele project, the Defense Innovation Unit issued a solicitation for small nuclear-powered space engines. Furthermore, companies like BWXT, X-energy, USNC, and General Atomics have proposed technologies that may meet NASA's space exploration needs. For NASA's space nuclear power and propulsion efforts to be successful, they will have to coordinate with these other efforts. The National Strategy for Space Nuclear Power and Propulsion (Space Policy Directive 6), the Executive Order Promoting Small Modular Reactors for National Defense and Space Exploration, and the Presidential Memorandum on Launch of Spacecraft Containing Space Nuclear Systems were issued by the last Administration to enable this coordination, but oversight will be necessary to ensure the agencies follow through.

Adhering to the National Strategy with consistent, steady, and predictable investments; coordinated partnerships with other agencies and the private sector; and a strategic perspective for exploration will all influence whether space nuclear power and propulsion will live up to its promise. I look forward to hearing from our witnesses today and yield back the balance of my time.