THE WHITE HOUSE

President Donald J. Trump is Establishing America's National Strategy for Space Nuclear Power and Propulsion

Under President Trump's leadership, the United States has recommitted itself to space discovery and exploration. As the U.S. embarks on a new generation of American space missions, the ability to use space nuclear power and propulsion (SNPP) systems safely, securely, and sustainably is vital to maintain and advance U.S. dominance and strategic leadership in space. Space Policy Directive – 6 establishes high-level goals, principles, roles and responsibilities, and a supporting roadmap that demonstrate the U.S. commitment to using SNPP systems effectively and responsibly.

Space Nuclear Systems

- Space nuclear systems power our spacecraft for missions where alternative power sources are inadequate, such as environments that are too dark for solar power or too far away to carry sufficient quantities of chemical fuels. Space nuclear systems include radioisotope power systems (RPSs) and nuclear reactors used for power, heating, and/or propulsion.

- RPSs use radioactive decay to generate electrical power or heat: radioisotope thermoelectric generators (RTGs) generate electrical power, and radioisotope heating units (RHUs) produce heat to keep instruments warm.

- Nuclear reactors generate energy through nuclear fission, typically of uranium fuel.

Space Nuclear Power and Propulsion

- NASA has used RPSs since the 1960s to help power spacecraft and landers in the outer solar system, the surface of Mars, and other environments where solar and other power sources are inadequate.

- RPS were used in several Apollo missions to the Moon, the Galileo mission to Jupiter, the Cassini mission to Saturn, and the Pluto New Horizons mission that photographed the first resolved images of Pluto.

- While no space nuclear propulsion systems have been launched to-date, they will be necessary in the future to shorten travel times to Mars and elsewhere. This would decrease the time humans are exposed to the harsh radiation environment of space.

Space Policy Directive – 6

- For modest power needs, radioisotopic thermal generators—which are essentially nuclear batteries—can use the energy of radioactive decay to generate electricity for decades. For higher power needs, small

nuclear reactors can provide heating, electricity, and spacecraft propulsion. SNPP systems can enable spacecraft, and rovers and other surface systems, to operate in environments where other energy sources are inadequate. SNPP systems can also shorten transit times for crewed and robotic spacecraft, thereby reducing radiation exposure from harsh space environments.

- Looking to the Moon and beyond, the United States must develop and leverage SNPP systems where appropriate to enable and achieve U.S. scientific, exploration, national security, and commercial objectives.

- This Directive establishes high-level goals, principles, and a supporting roadmap that demonstrate the U.S. commitment to using SNPP systems effectively and responsibly.

- The United States will pursue goals for SNPP development and utilization that are both enabling and ambitious:
    - Develop capabilities that enable production of fuel suitable to a range of planetary surface and in-space SNPP applications;
    - Demonstrate a fission power system on the Moon;
    - Establish technical foundations and capabilities that will enable options for in-space nuclear propulsion; and
    - Develop advanced radioisotope power systems to enable survivable surface systems and extend robotic exploration of the solar system.

- The United States will adhere to principles of safety, security, and sustainability in its development and utilization of SNPP systems.

- The United States will pursue a coordinated roadmap for Federally-supported SNPP activities and a framework to encourage commercial activities to achieve goals and uphold the principles established in this Directive.

With this Directive, the Trump Administration is establishing a national strategy that will ensure development and leveraging of SNPP systems where appropriate to enable and achieve U.S. scientific, exploration, national security, and commercial objectives.