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### Ad Astra Rocket Company and NASA sign second collaborative agreement relating to the VASIMR™ engine



Signing ceremony at Ad Astra's new Houston Facility; from left to right, Franklin Chang Díaz Ad Astra's Chairman and CEO, Michael Coats, Director, NASA Johnson Space Center.

[Houston, TX. For immediate release] - Ad Astra Rocket Company and NASA have signed an Umbrella Space Act Agreement relating to the space agency's potential interest in the VASIMR™ engine, a new space propulsion technology currently under development by Ad Astra.

A VASIMR™ engine could allow its operators to conduct space operations such as lunar cargo delivery, interplanetary flights, and drag compensation of space stations in low Earth orbit to be carried out with much smaller amounts of propellant than chemical rockets.

This agreement provides a framework for collaboration between the parties, setting out the general conditions governing aspects of their ongoing relationship, including respective rights and obligations, and is intended to promote flexibility, cooperation, efficiency and clear communication during the next phase of Ad Astra's maturation of the VASIMR™ technology. In June 2005, Ad Astra signed its first Space Act Agreement with NASA which led to the development of the VASIMR™ engine.

By maintaining a close relationship with Ad Astra while the VASIMR™ technology is developed, NASA will be able to assess the future utility of the VASIMR™ engine in its exploration programs. While the agreement does not include, imply, or commit to any purchase of Ad Astra products or services by NASA, it leaves open the possibility of such purchases via future contracts awarded through the normal procurement process.

VASIMR™, short for Variable Specific Impulse Magnetoplasma Rocket, is a new plasma-based space propulsion technology initially studied by NASA, and is now being developed privately by Ad Astra. The agreement recognizes the importance the VASIMR™ engine may have in supporting NASA's space exploration programs, and provides the space agency with continued access to the latest advances in plasma technology being developed by Ad Astra.

The signing ceremony was held today at the new Ad Astra Houston research facility in the city of Webster, Texas, 2 miles west of the Johnson Space Center.

"Our Technology Transfer Office looks forward to exploring collaborative opportunities in this next phase" said Ms. Michele Brekke, JSC Director of Technology Transfer. "Against the background of vigorous space programs emerging in China, Japan, India and Europe, I believe that today's agreement puts NASA in the best position among all potential Ad

Astra customers to be the first to exploit the VASIMR™ capabilities" said Dr. Timothy Glover, Ad Astra's Director of Development. "I am very pleased with the collaborative framework the NASA-Ad Astra team has developed and I look forward to our working together to bring this technology to full commercial fruition" said Franklin R. Chang-Díaz, Ad Astra's Chairman and CEO.

#### **ABOUT AD ASTRA**

Ad Astra Rocket Company is a privately-owned corporation established January 14, 2005 to commercialize the technology of the VASIMR™ engine, a plasma propulsion system originally studied by NASA with potential to support an emerging in-space transportation market. The company has its main laboratory and corporate headquarters at 141 W. Bay Area Boulevard in Webster, Texas, USA. Ad Astra also owns and operates Ad Astra Rocket Company, Costa Rica, a supporting research and development subsidiary in Guanacaste, Costa Rica.

#### **THE TECHNOLOGY**

The VASIMR™ engine works with plasma, a very hot gas at temperatures close to the interior of the Sun. Plasmas are electrically charged fluids that can be heated to extreme temperatures by radio waves and controlled and guided by strong magnetic fields. The magnetic field also insulates any nearby structure; so temperatures well beyond the melting point of materials can be achieved and the resulting plasma can be harnessed to produce propulsion. In rocket propulsion, the higher the temperature of the exhaust gases, the higher their velocity and hence the higher their fuel efficiency. Plasma rockets feature exhaust velocities far above those achievable by their chemical cousins, so their fuel consumption is extremely low and their fuel-related costs substantially reduced.