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CONSTELLATION PROGRAM: ARES I-X FLIGHT TEST VEHICLE

NASA's first test flight of a new era for the Agency's Constellation launch vehicle is launching in 2009. The test flight, called Ares I-X, will bring NASA one step closer to its exploration goals — to return to the moon for ambitious exploration of the lunar surface and then to travel to Mars and destinations beyond.

The Ares I-X flight will provide NASA an early opportunity to test and prove hardware, facilities and ground operations associated with the Ares I crew launch vehicle. The Constellation/Ares launch site is Kennedy Space Center's Launch Complex 39B.

Data collected will begin to confirm the vehicle as a whole is safe and stable in flight before astronauts begin traveling into orbit.

The Ares I-X test vehicle will be similar in mass and size to the actual Orion and Ares I vehicle systems, but it will incorporate a mix of proven space flight and simulated, or mock-up, hardware. The test vehicle will be powered by a single, four-segment reusable solid rocket booster — flight hardware currently in the Space Shuttle inventory — modified to include a fifth inactive segment to simulate the Ares I five-segment booster.

The test flight profile will closely follow the approximate flight conditions to be experienced by the Orion/Ares I vehicle through Mach 4.7 — more than four times the speed of sound — at which point the vehicle is expected to separate at 130,000 feet. The maximum altitude, or apogee, of the test flight will be about 150,000 feet. The test will simulate the launch vehicle's first stage burnout and separation from the upper stage, which occurs about two minutes into flight. The upper stage, with a simulated Orion crew module and launch abort system mock-ups, will separate from the first stage and fall into the Atlantic Ocean.

The first stage booster will continue through a complete recovery sequence, releasing its Ares I prototype three-stage parachute recovery system, falling safely into the ocean and floating until the hardware can be retrieved for inspection and analysis.