NASA poised to launch spacecraft to Jupiter

August 5 2011, by Kerry Sheridan

An Atlas V rocket bearing NASA's Juno spacecraft ahead of launch at Cape Canaveral Air Force Station in Florida on August 4. NASA is set to launch the craft - a one billion dollar solar-powered spacecraft - on a five-year journey to Jupiter in search of what makes up the solar system's biggest planet.

NASA is poised to launch on Friday a one billion dollar solar-powered spacecraft called Juno on a five-year journey to Jupiter in search of what makes up the solar system's biggest planet.

The unmanned satellite observatory is set to propel into space aboard an

Atlas 4 rocket, blasting off from the Cape Canaveral Air Force Station in Florida at 11:34 am (1534 GMT).

Just under an hour after launch, Juno "will separate from the Centaur upper stage of its Atlas V rocket. At this point, Jupiter will be five years and 1,740 million miles (2,800 million kilometers) away," the US space agency said.

Once it arrives in July 2016, the spacecraft will orbit the poles of the gas giant, which has more than twice the mass of all planets in the solar system combined and is believed to be the first planet that took shape around the Sun.

The mission aims for 30 orbits over a period of one year.

Juno aims to get closer to Jupiter than any other NASA spacecraft and will be the first to undertake a polar orbit of the planet, said Scott Bolton, Juno principal investigator and scientist at the Southwest Research Institute in San Antonio, Texas.

"If we want to go back in time and understand where we came from and how the planets were made, Jupiter holds this secret," he said.

In 1989, NASA launched Galileo, an orbiter and probe that entered the planet's orbit in 1995 and plunged into Jupiter in 2003, ending its life.

Other NASA spacecraft -- including Voyager 1 and 2, Ulysses and New Horizons -- have done flybys of the fifth planet from the Sun.

When it gets there Juno will make use of a series of instruments, some of which were provided by European space agency partners Italy, Belgium and France, to learn about the workings of the planet and what is inside.

Two key experiments are to gauge how much water is in Jupiter and whether the planet "has a core of heavy elements at the center, or whether it is just gas all the way down," said Bolton.

Scientists also hope to learn more about Jupiter's magnetic fields and its Great Red Spot, a storm that has been raging for more than 300 years.

"One of the fundamental questions is how deep are the roots to that red spot? How does it maintain itself for so long?" said Bolton during a presentation to reporters last week.

Back in 2003, when plans for Juno were being crafted, NASA briefly considered using some sort of nuclear fuel to power the spacecraft, but engineers decided it would be quicker and less risky to go with solar, he said.

Juno is part of a series of new planetary science missions, to be followed by Grail which is headed to the Moon in September and the Mars Science Laboratory set to take off in November.

"These missions are designed to tackle some of the toughest questions in planetary science, all about our origin and the evolution of the solar system," said Jim Green, director of the planetary science division at NASA headquarters in Washington.