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SCIENCE & SPACE

Hubble casualty of Bush space plan

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WASHINGTON (AP) -- The Hubble Space Telescope will be allowed to degrade and eventually become useless, as NASA changes focus to President Bush's plans to send humans to the moon, Mars and beyond, officials said Friday.

NASA canceled all space shuttle servicing missions to the Hubble, which has revolutionized the study of astronomy with its striking images of the universe.

John Grunsfeld, NASA's chief scientist, said NASA administrator Sean O'Keefe made the decision to cancel the fifth space shuttle service mission to the Hubble when it became clear there was not enough time to conduct it before the shuttle is retired.

The servicing mission was considered essential to enable the orbiting telescope to continue to operate.

"This is a sad day," said Grunsfeld, but he said the decision "is the best thing for the space community."

He said the decision was influenced by President Bush's new space initiative, which calls for NASA to start developing the spacecraft and equipment for voyages to the moon and later to Mars. The president's plan also called for the space shuttle to be retired by 2010. Virtually all of the shuttle's remaining flights would be used to complete construction of the International Space Station.

The shuttle has been grounded since the explosion of the Columbia nearly a year ago.

Grunsfeld said Bush "directed us to use this precious resource" (the shuttle) toward completing the International Space Station and fulfilling U.S. obligations to the 15 partner nations.

Without servicing missions, he said, the Hubble should continue operating until 2007 or 2008, "as long as we can." NASA was already planning to replace the Hubble with a new, improved version, called the James Webb Space Telescope, scheduled for launch in 2011.

The Hubble has revolutionized astronomy. Using images from the craft, scientists have determined the age of the universe, about 13.7 billion years, and discovered that a



Hubble Space Telescope

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mysterious energy, called the dark force, is causing all of the objects in the universe to move apart at an accelerating rate. This force is still poorly understood.

The observatory has ailing gyroscopes which were to be replaced on the servicing mission, which already has been delayed by the Columbia accident. Grunsfeld said the Hubble has three good gyros and one that is not working well. Software was being developed to work with only two gyroscopes, he said, but the telescope will not have the same capabilities.

Grunsfeld said the Hubble control team will attempt to extend the life of the telescope, but the gyros will degrade. He also said that while the batteries on the craft are constantly recharged, they eventually "will run out of juice."

The Hubble will eventually fall out of orbit and crash to Earth, probably in 2011 or 2012. To make that event safe, Grunsfeld said, NASA will design and build a small robot craft that will be launched and guided to the Hubble.

The robot craft would "grab the Hubble and bring it into the atmosphere in a controlled manner," he said, guiding the school-bus-sized craft to harmlessly splash into a remote part of an ocean.

One reason for the cancellation of repairs, Grunsfeld said, was the requirement that a backup space shuttle would have to be primed for launch when a space shuttle was sent to service the Hubble, a requirement set after the Columbia accident. NASA officials decided then that a backup would have to be ready to help any shuttle going anywhere but the International Space Station.

Servicing missions are required to the Hubble every few years to tune up the complex craft and to replace worn-out parts. Four times previously, spacewalking astronauts have installed new parts or upgraded the observatory with new instruments.

The Hubble, the first of NASA's orbiting observatories, was launched in 1990 with the promise that it would see farther out in space than any previous telescope. But scientists quickly learned that its main mirror was, in effect, nearsighted due to a flaw in manufacturing of the basic mirror. Astronauts in 1993 installed optics that sharpened the vision. Later servicing missions replaced broken parts and added improved cameras and other instruments.

Images from the Hubble glimpsed galaxies back to a point just a few hundred million years after the Big Bang, thought to be the explosive beginning of the universe. Astronomers have found that galaxies and clusters of galaxies formed much earlier than theorists had expected. This suggests that planets where life was possible could have formed as early as about 12 billion years ago. The solar system, which includes the sun and Earth, is much younger, about 5 billion years old.

BUSH SPACE INITIATIVE

- Spend \$12 billion on new space exploration plan over next five years. \$1bn will be new money, the rest reallocated from existing NASA programs.
 - Retire shuttle program by 2010
 - Develop new manned exploration vehicle
 - Launch manned mission to moon between 2015 and 2020
 - Build permanent lunar base as "stepping stone" for more ambitious missions
 - Complete commitments to International Space Station by 2010
- Source: White House

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