The New York Times
nytimes.com

February 7, 2004

Engineer's Papers Dispute Hubble Decision

By DENNIS OVERBYE
About the Hubble
This article describes a pair of reports by a NASA engineer questioning the decision to abandon the Hubble telescope and saying it could not be justified on safety grounds, as space agency officials had asserted. The reports, supplied to The New York Times by a scientist who disagrees with the decision now appear here:
Applicability of CAIB Findings
Risk Considerations

NASA's decision to abandon its crown scientific jewel, the Hubble Space Telescope, cannot be justified on safety grounds, according to a pair of reports by a NASA engineer that have been circulating in scientific and political circles in the last few days.

The unsigned documents are attracting attention on Capitol Hill, particularly in the House Science Committee, which is expected to discuss the Hubble decision at a meeting on Thursday.

"We're reviewing the Hubble decision, looking at it very closely," said a spokesman for Representative Sherwood Boehlert, Republican of New York and chairman of the committee. "We're going to be examining the views in this particular document as well as a whole host of others."

The documents have also created a buzz among astronomers, who hope that their wider distribution will help spark a larger debate about the telescope's fate. The reports have deepened astronomers' skepticism that safety and not politics and money was the issue last month when Sean O'Keefe, the NASA administrator, announced the cancellation of the space shuttle's planned 2006 maintenance visit to the telescope. As a result, the telescope will probably die in orbit within three years, astronomers say, instead of lasting into the early part of the next decade as originally planned.

In explaining his decision, Mr. O'Keefe had cited a recommendation of the board that investigated the Columbia space shuttle disaster last year that NASA must develop a way to inspect and repair damage to the shuttle's thermal protection system.

While the National Aeronautics and Space Administration was committed to developing this ability for missions to the International Space Station, which could serve as a "safe haven" for the astronauts if the shuttle was damaged, Mr. O'Keefe said it was too risky and expensive to develop an "autonomous" inspection and repair capability for a single mission to the telescope.

The new reports challenge Mr. O'Keefe's conclusion, citing data and references from NASA documents in arguing that the administrator's statement "cannot be supported."

The Columbia Accident Investigation Board recommendations and NASA's plans for "return to flight" include ultimately developing just such an ability to inspect and repair the tiles independently of the station. That autonomous ability is needed because the shuttle might fail to make it to the space station, or the space station may become too big and complex to serve as a repair base, according to the papers.

One of the reports concludes that missions to the telescope "are as safe as or perhaps safer than" space station missions "conducted in the same time frame."

The author is a NASA engineer who wrote the reports based on internal data and who declined to be identified for fear of losing his job. Copies of the documents were provided to The New York Times by an astronomer who is not part of NASA

and opposes the decision to let the telescope die.

"Those documents certainly undercut the public position of the agency," said Dr. Garth Illingworth, an astronomer at the University of California at Santa Cruz and a member of a committee that advises NASA on space science.

Dr. Illingworth added that it was important to open up debate on these issues. "We need to get real information out there, and not just have a few people in NASA saying we know what's best," he said.

A Congressional staff member who was given the documents said they appeared to be credible. "We are taking them seriously," he said. Referring to the requirement of an autonomous repair capability, he said, "NASA's going to have to spend the money to do this" if the agency follows the accident board's recommendations.

The documents also argue that missions to the space station might actually be riskier than going to the space telescope for several reasons. Because of the space station's orbit in relation to the equator, the shuttle has to use more energy, increasing the chances that something will go wrong and that it will not make it into orbit. Moreover, one of the biggest dangers to the shuttle's skin is micrometeorite impacts while it is in orbit. When it is at the telescope, unlike when it is docked to the station, the shuttle can orient itself backwards in its orbit, protecting its leading surfaces from such impacts.

As for a safe haven, that could be met by launching the Hubble mission just before a planned station mission, the report says. If there was trouble, a second shuttle could be dispatched to rescue the crew. Using an airlock system, astronauts could move from one shuttle to the other without going outside.

The debate about the Hubble's demise is the latest chapter in the turbulent history of the space telescope, which was launched in 1990 with a flawed mirror and repaired by spacewalking astronauts. Floating above the murky atmosphere, which blocks some infrared and ultraviolet light from reaching the Earth, the telescope has provided views with unmatched clarity.

Last week, in response to meetings with Senator Barbara A. Mikulksi, Democrat of Maryland, where the Space Telescope Science Institute and the Goddard Space Flight Center are located, Mr. O'Keefe agreed to have his decision reviewed by Adm. Harold W. Gehman Jr., who was chairman of the Columbia Accident Investigation Board.

Efforts to reach Admiral Gehman and Mr. O'Keefe were unsuccessful. A NASA spokesman issued a statement saying that the administrator would await Admiral Gehman's review, adding, "At the end of the day, however, the NASA administrator cannot delegate his ultimate responsibility for decisions related to the safety of human spaceflight."

Dr. Douglas D. Osheroff, a physicist at Stanford and a member of the accident investigation board, said he agreed there was not much difference in the risks for Hubble- versus station-bound missions.

Asked about the board's deliberations, he emphasized that he was speaking for himself and not the whole board, which disbanded last September, and said in an e-mail message, "I think we may have mentioned Hubble, but do not think it was our intention of making it impossible for NASA to service Hubble."

Other space experts said that the reports appeared to be credible and authoritative. Capt. Bruce C. McCandless, an astronaut who flew on the shuttle in the 1980's and is now with the Lockheed Martin Corporation, said they appeared to be "well researched and written."

He said that the catch regarding the autonomous repair capability was the word "ultimately" in the accident investigation board's report. The canceled mission had been 11th on the post-Columbia schedule. "Sooo, if "ultimate" means in the first 10 missions," he said in an e-mail message, the service mission would be covered.