

## Re: Robotic Hubble mission would cost \$2 billion

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**Date:** 08/12/04

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Explorer8939@yahoo.com (Explorer8939) wrote in  
news:64c0d119.0408111734.7c5e2a98@posting.google.com:

> *"BitBanger" <Bb@dd.net> wrote in message*  
> *news:<4119cff4\$0\$31049\$ee9da40f@news.wanadoo.nl>...*  
>> *[http://www.space.com/news/hubble\\_mission\\_040810.html](http://www.space.com/news/hubble_mission_040810.html)*  
>>  
>> *The robotic mission to save Hubble would cost up to \$2 billion,*  
>> *several times what a human-run Shuttle mission would cost. I*  
>> *predicted this and I'm wondering if it wouldn't be more prudent to*  
>> *make an exception for Hubble and ignore the safety rules.*  
>>  
>> *OTOH the success of a robotic mission would be a quantum leap for*  
>> *teleoperated servicing in space.*  
>  
> *What safety rules are required for a Shuttle to service HST?*

"Required" or "Desired?"

The only CAIB recommendation that applies to an HST mission but not to an ISS mission is standalone TPS inspection and repair (R6.4-1). Even that one is arguable due to its fourth paragraph:

"The ultimate objective should be a fully autonomous capability for all missions to address the possibility that an International Space Station mission fails to achieve the correct orbit, fails to dock successfully, or is damaged during or after undocking."

The strongly implied meaning of this paragraph is that NASA cannot escape the requirement to develop standalone inspection/repair capability simply by cancelling all non-ISS flights. NASA appears to believe otherwise.

The other commonly-publicized "required" safety rule for an HST mission is a standby rescue flight, but a careful reading of the CAIB report shows no such recommendation. This is a rule that originated from NASA's "raising the bar" initiative, and it is one that they are not applying consistently between ISS flights and HST flights.

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For ISS flights, NASA is assuming that all consumables from the damaged orbiter can be scavenged and that all ISS life support systems function nominally, resulting in a duration approaching 60 days. For HST flights, NASA's white paper asserts that the rescue flight would have to be ready to launch immediately, neglecting the fact that NASA's own analysis for the CAIB showed that an early powerdown and conservation of consumables could have stretched STS-107 from 16 days to 30. An HST mission (without 107's EDO kit) could be stretched from 11 days to nearly 20, so an immediate rescue flight is unnecessary unless additional malfunctions are assumed which are not assumed in the ISS scenario.

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JRF

Reply-to address spam-proofed - to reply by E-mail,  
check "Organization" (I am not assimilated) and  
think one step ahead of IBM.