

## Re: Hubble tug

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- *From:* [wsnell01@xxxxxxxxxxxx](mailto:wsnell01@xxxxxxxxxxxx)
  - *Date:* Sun, 31 May 2009 11:01:03 -0700 (PDT)
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On May 31, 12:47 pm, "Scott Smader" <[sma...@xxxxxxxxxxxx](mailto:sma...@xxxxxxxxxxxx)> wrote:

"Chris L Peterson" <[c...@xxxxxxxxxxxxxxxxxxxx](mailto:c...@xxxxxxxxxxxxxxxxxxxx)> wrote in message [news:ssi325h29bt16eu9ul8oih4lqbuqiui18o@xxxxxxxxxxxx](mailto:news:ssi325h29bt16eu9ul8oih4lqbuqiui18o@xxxxxxxxxxxx) On Sat, 30 May 2009 17:02:18 -0700, "Scott Smader" <[sma...@xxxxxxxxxxxx](mailto:sma...@xxxxxxxxxxxx)>

wrote:

Agreed that the cost of getting to orbit dominates, but this seems an argument to salvage what's already in orbit.

It's also worth considering that the HST is very expensive to simply operate, and the mission isn't funded forever.

Not really germane to the replace v. upgrade question, unless upgrades can't render same ease-of-maintenance.

Newer instruments will be coming on line, and there is only a limited amount of funding available.

Let's just keep doing the comparison each time one comes on line.

While I'd certainly be the first to vote for a lot more funding for unmanned space studies,

Ok, me second.

The HST is> aging, it is in a harsh environment, and at some point it will simply

Re: Hubble tug

become too expensive to maintain at all. It isn't clear we aren't getting close to that point.

Ok, let some bright and qualified engineers review pros and cons of repair v. replace.

No argument that politics can set NASA priorities, but given that politics dictated that NASA was going to use a shuttle to "upgrade" the Hubble, it's hard to believe, that the program managers would choose the lesser performance of incremental repairs when they could get a whole new telescope for the same cost. Thus, I still conclude that there is cost savings from reusing resources already on orbit.

I believe I've heard that for the total servicing cost of the HST to date, between four and six additional space telescopes of the same design could have been launched.

Without access to the study, "I heard 4–6 more scopes of 'same' design" doesn't sound a whole lot different in cost from 4 upgrades.

But it really doesn't sound like we're in much disagreement, are we? I'm only suggesting looking at the costs of salvage instead of burning. You're advocating best bang for buck. Sounds like both are fairly reasoned positions.

The Shuttle was sold as a cheap, reliable means of getting into orbit, but that did not turn out to be the case. At the time that the space telescope was envisioned, a 2.4-meter telescope was a rarity, so the idea of such a telescope being disposable might have been seen as wasteful. Given that we were working so hard to build a "re-usable" spacecraft it isn't surprising that one might think that satellites should be re-used and refurbished too.

In hindsight, expendable space telescopes launched on expendable rockets might have been a cheaper strategy. As a kid I thought that

Re: Hubble tug

Re: Hubble tug

any sort of manned spacecraft should have been much smaller, no larger than a small private jet and used only for sending 3 or 4 people to and from orbit, with almost everything else sent up on expendables. But no one would have listened to me.

The real cost of getting into space is spent on attaining downrange velocities on the order of 17,000 MPH.

The new launch system that NASA is supposed to be developing for use by 2015 should give more flexibility. We will see.