Re: Why did it take so long to reach the moon

Source: http://sci.tech−archive.net/Archive/sci.space.history/2008−03/msg00125.html

- *From*: BradGuth <bradguth@xxxxxxxxx>
- *Date*: Fri, 7 Mar 2008 09:14:55 −0800 (PST)

On Mar 3, 11:34 pm, terry <tfm...@xxxxxxxxxxxxxx> wrote:

> On Mar 4, 5:50 pm, BradGuth <bradg...@xxxxxxxxx> wrote:
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> > On Mar 3, 12:02 pm, terry <tfm...@xxxxxxxxxxxxxx> wrote:
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> > > On Mar 4, 2:02 am, BradGuth <bradg...@xxxxxxxxx>
> > > wrote:
> > >
> > > > On Mar 3, 4:18 am, terry
> > > > <tfm...@xxxxxxxxxxxxxx> wrote:
> > > >
> > > > > On Feb 26, 2:15 am,
> > > > > P...@xxxxxx wrote:
> > > > >
> > > > > > I was just
> > > > > > looking at
> > > > > > the Apollo
> > > > > > 15 DVD
> > > > > > set. It
> > > > > > showed
> > > > > > them flying
> > > > > > over their
> > > > > > landing site
> > > > > > at GMT 96
> > > > > > hours and
> > > > > > something.
> > > > > > that's 4
> > > > > > whole
> > > > > > days after

launch. If they were traveling at 25,000 MPH, they should have made it in about 10 hours. Did they slow down along the way? Do they orbit earth a few times to check things out or head for the moon as soon as they're in the right position?

25,000 mph is about the speed to escape the earths gravity, then the craft just coasts , gradually losing speed until the moons gravity is stronger and it begins to accelerate again. Actually the time of flight to the moon is a very strong function of the injection speed. the flight time chosen for Apollo missions was about 72 hrs which required an injection speed of about 10.84 km/sec. Increasing the injection speed to just 11.2 km /sec would have reduced the flight time to only 32 hours. It is all a balance of the wt of fuel

> > > required versus the extra
> > > supplies for life support.
> > > The above figures come
> > > from " fundamentals of
> > > astrodynamics" by Bate,
> > > Mueller and White. I highly
> > > reccommend it for
> > > explaining the maths of
> > > various spaceflight
> > > trajectories.
> > > Terry
>
> > > Obviously there wasn't sufficient fuel for
> > > retro−thrusting on behalf
> > > of getting there any sooner than they
> > > supposedly did. Of course
> > > robotics have little of anything that isn't
> > > rad−hard to start off
> > > with, so there's no great hurry.
>
> > > Coasting through the moon's L1 as slow as
> > > possible is by far the most
> > > fly−by−rocket efficient alternative, and that
> > > should be rather easily
> > > simulated.
>
> > The minimum injection speed is 10.82 km/sec, which will
> > give a flight
> > time of 120 hrs. anything less than this speed, the craft will
> > not
> > make it and fall back to earth. same ref as given earlier)
> > terry
>
> In other words, that initial 10.82 km/s is going to become just
> slightly better than zero meters/sec velocity or speed of advance as
> arriving into the moon's L1. Is that it?
> . − Brad Guth− Hide quoted text −

yep that would be my interpretation.

Of course that low of SOA, as per coasting efficiently into the moon's

L1, as accomplished without applied retrothrust is going to take somewhat longer than those NASA/Apollo missions had taken place, but otherwise such a near zero velocity at this Earth−Moon L1 zone of mutual or null gravity would have been an extremely energy efficient application of fly−by−rocket deployment, as well as for accommodating whatever Clarke Station like station−keeping format if that was ever the intent of a given mission.

Too bad there's no such public simulators (especially of nothing in 3D interactive eye−candy format) available for running off various payloads simulations, as per trekking through this gravity nullified oasis.
.. − Brad Guth
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