

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

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- *From:* terry <[tfmann@xxxxxxxxxxxxxxxx](mailto:tfmann@xxxxxxxxxxxxxxxx)>
  - *Date:* Mon, 3 Mar 2008 23:34:25 -0800 (PST)
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On Mar 4, 5:50 pm, BradGuth <[bradg...@xxxxxxxx](mailto:bradg...@xxxxxxxx)> wrote:

On Mar 3, 12:02 pm, terry <[tfm...@xxxxxxxxxxxxxxxx](mailto:tfm...@xxxxxxxxxxxxxxxx)> wrote:

On Mar 4, 2:02 am, BradGuth <[bradg...@xxxxxxxx](mailto:bradg...@xxxxxxxx)> wrote:

On Mar 3, 4:18 am, terry <[tfm...@xxxxxxxxxxxxxxxx](mailto:tfm...@xxxxxxxxxxxxxxxx)> 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?

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

25,000 mph is about the speed to escape the earth's gravity, then the craft just coasts, gradually losing speed until the moon's 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 recommend 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

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

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.

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