Re: How Rockets Differ From Jets

Source: http://sci.tech−archive.net/Archive/sci.space.shuttle/2005−10/msg00537.html

- *From*: "Brad Guth" <ieisbradguth@xxxxxxxxx>
- *Date*: 27 Oct 2005 23:18:30 −0700

>tomcat; It may have something to do with 'X amount of energy
>requirement for a 200 mile high orbit'. Wings or not you have
>to have 'X amount of energy', they say.
"They say" a lot of things. "They say" the mutual gravity−well/nullification zone between us and the moon is roughly 84% of the distance towards the moon, and thereby we're talking 16% of the distance away from the moon. "They say" we've walked upon the moon but, somehow managed to lose all of their related fly−by−rocket lander R&D as well as having lost their Kodak conditional laws of photon and film physics that apparently only applies to our moon.

16% of 384,400 km is 61,504 km away from the center of the moon and thereby 59,766 km off the gravitational center portion of the lunar deck that's always nicely aligned with the gravitational center of mother Earth (actually the Earth CG somewhat moves about as Earth rotates and the moon doesn't seem to budge so much as a micro−degree with respect to the whole of Earth, suggesting that the moon in fact has a slushy core that's somewhat self aligning to the well certified variable CG alignment of mother Earth.

With regards to spaceplane wings or perhaps that of one massive aerodynamic foil worth of a waverider spaceplane body, thus affording far more usable interior than any tile covered wing outfitted body as suggested by your "huge gleaming white triangular spaceplane";
>Rocket equations take drag into consideration, but not gravity's
>assistance. While vertical/tubular rockets have drag too, it doesn't
>apply to them, because they don't have wings for using atmospheric
>energy.

>This is why it is true that it takes 'X amount of energy' to do a given
>amount of work for whatever vehicle is chosen. And, it explains why a
>'winged rocket' does so much better than a vertical/tubular rocket.
>Wings draw energy from gravity itself through the medium of air
>molecules that are being 'squeezed' to the Earth.

>So, all in all it means that success will come by making one gigantic
>monster of a waverider: tomcat's huge gleaming white triangular
>spaceplane.
I see no problem with your bigger is better. Of course folks like

"George Evans" seem to think small by way of continually thinking inside the box, as well as having those pesky ulterior motives of saying one thing while acting upon getting something entirely different across.

Just wondering a bit; Are you thinking of a 45 degree final atmospheric assent?

The composites of what basalt fibers and basalt microballoons as having a degree of CNT involved seems likely of what should eventually become doable. However, of what I've already provided upon existing basalt is just the iceberg tip of what that composite alone can achieve as a structurally insulative material that need not exceed 64 kg/m3 unless the added mass of using more fibers and less balloons becomes a priority.

Too bad that what I have to suggest is much like what you have to offer as a plate full of the first, second and third helping, all of which should more than have the inert mass of what any SRB assisted spaceplane and of it's massive ET should amount to. Thus a replacement shuttle as in the form of your "bigger is better" spaceplane should have any problem whatsoever achieving those 100t deployments at 400+km, with energy to spare.

Of course, if my Ra226−−>LRn222−−>ION thruster arrays become the alternative to those SSMEs that are worth a 10t investment plus fuel and the vast volumes necessary for accommodating such fuel per each fully integrated SSME and, no matters what these SSMEs should still suck LH2 and LO2 like there's no tomorrow, whereas without SSMEs but instead LRn−−>ION thrusters might represent payloads that can become half again or roughly 50/50 of the spaceplane package. Meaning a 150t spaceplane that's still having to be SRB assisted (possibly two−stage SRBs) past 250,000'(76 km) could thus manage to safely deploy a 150t item or that of multiple items that amount to 150t past the 400 km mark.

Unfortunately the ulterior motivated likes of "George Evans" being rather mindset upon carbon fibers that are extremely frail and spendy as all get out compared to basalt fibers, whereas as far as I know of there are no such things as carbon microballoons, nor for that matter a CNT microballoon. There are however terrific insulative and combined structural capability per cm3 of basalt, along with those existing graphite epoxy as binders is still the overall king of the hill that's not one cent on the dollar per carbon fibers and, perhaps not .001 cent on the CNT dollar that's still another good decade down the winding R&D road.

>George Evans; Here again, the extreme thermal conductivity of CNT is a
>drawback. Everybody mocks the TPS tiles on the shuttle but they really
>are amazing. If they are banded to a CNT/graphite epoxy composite
>structure, those fillers you are concerned about probably wouldn't be

>necessary.
George is another all or nothing sort of guy by way of his thinking 100% CNT or bust. Whats' so hard about thinking a little outside the box, such as incorporating the CNT fibers as a fabric layer or perhaps that of a wise matrix of CNT/basalt fibers representing the outer structural composite layer that's containing the bulk of basalt microballoons?

In inner most hull layer and certainly the likes of stringers, ribs, decks and bulkheads could be 100% structural basalt composite that could range anywhere from 32 kg/m3 to 2560 kg/m3. Purely insulative basalt microballoons might easily represent less than 1 kg/m3 if those little basalt suckers are full of H2 or even He. Christ almighty folks, what more can you or the likes of lord/wizard "George Evans" possibly ask for that has been doable for the past several decades?

I'd actually think that a little extra thermal conductivity for what's directly below the Corelle/ceramic tiles or whatever spray−on ceramic microballoon coating would be highly desirable, as possibly performing a similar thermal rate of expansion by which this CNT/basalt outer shell could best match the rate of ceramic expansion. I do agree with "George Evans" that tile fillers need not be incorporated unless no other thermal expansion alternative becomes available.

BTW; I'm not exactly sure how LH2 and slush LH2 differ in energy density by all that much. In either case, a terribly insulative containment of the likes of LH2 (slush or not) and the same goes for LO2 could each be accommodated by way of using a composite of basalt fibers and those highly insulative balloons along with the graphite epoxy binders if not in some cases just utilizing good old end−user friendly JB−WELD. A metallic internal coating via plasma spray could make for quite another weight saving improvement. In fact, there could be two or three viable containment layers of plasma applied metallic coatings at less weight impact than a conventional tank that's composite wrapped.
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Kurt Vonnegut would have to agree; WAR is WAR, thus "in war there are no rules" − In fact, war has been the very reason of having to deal with the likes of others that haven't been playing by whatever rules, such as GW Bush.
Life upon Venus, a township w/Bridge & ET/UFO Park−n−Ride Tarmac:
http://guthvenus.tripod.com/gv−town.htm
The Russian/China LSE−CM/ISS (Lunar Space Elevator)
http://guthvenus.tripod.com/lunar−space−elevator.htm
Venus ETs, plus the updated sub−topics; Brad Guth / GASA−IEIS
http://guthvenus.tripod.com/gv−topics.htm

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- ***Follow−Ups***:
  - ***Re: How Rockets Differ From Jets***
    - *From:* tomcat
- ***References***:
  - ***Re: How Rockets Differ From Jets***
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  - ***Re: How Rockets Differ From Jets***
    - *From:* Fred J . McCall
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    - *From:* George Evans

- Prev by Date: ***Re: Magnetic levitation for launch ?***
- Next by Date: ***Re: What would it take to convert ISS to an interplanetary mission?***
- Previous by thread: ***Re: How Rockets Differ From Jets***
- Next by thread: ***Re: How Rockets Differ From Jets***
- Index(es):
  - ***Date***
  - ***Thread***