

Mission to Mars

(c)2005 Written by D.J. Barrow

barrow_dj@yahoo.com

Inspired by others

December 16, 2005

Chapter 1

Going to Mars, The future of space travel

Space Travel & Aviation is where we aren't keeping up with science fiction & most definitely not improved much in the last 40 years. Everybody thinks going to Mars & back is much harder than going to the Moon. There is one critical difference which makes it in some ways easier, Mars has an atmosphere, jet engines will work there. The downside is that the gravity on Mars is higher than the Moon's the Moon's gravity is about 16% of Earth's, Martian gravity is around 38% that of Earth's & its escape velocity is about 45% that of Earth's at 11250 miles an hour. The little Eagle Module was enough to get off the Moon probably a 2 stage rocket would be needed to get off Mars, this would be nearly impossible to land on Mars & this kind of payload would require something larger than a Saturn V to carry it to Mars & it probably is impossible to make using liquid propulsion.

Feynman first introduced the Rodger Ramjet idea of using an atomic powered jet engine high in the Earth's atmosphere where it is very thin to reach escape velocity & slingshot to the planets. For compactness in the design I suggest to make a hybrid scramjet/rocket engine. When the engine starts going initially it is a rocket & it gradually changes from a rocket to a scramjet as it picks up speed, for the remainder of the document I am going to use the term scramjet to mean a rocket/scramjet hybrid. The great thing about an atomic scramjet is that it has almost no theoretical upper speed limit except for the speed of light (I researched this fact quite a lot) & design limitations because it has to carry no propellant with it while in jet mode. This idea was dumped because of its environmental fallout in the atmosphere not to mention in the crew compartment when it was realized that atomic energy causes cancer. Hopefully fear of environmental fallout

will change when curing cancer will become easier in the near future, see the next topic below. The radiation in the crew compartment is the greatest risk of all, this can be minimized by moving the crew compartment as far away from the radioactive core as possible & putting a “shadow” shield as near as possible to the core which creates a radiation “shadow” around the crew compartment which prevents neutrons, gamma rays & other radiation from entering the crew compartment from the reactor core, This shadow shield will add a lot of weight to the craft putting the propellant tank in the way also will reduce the radiation risk to the crew further. Because it probably would be a huge lump of lead, I personally hate the idea of a shadow shield & if anyone has a more innovative idea I am all ears. Ideally the scramjet should be using fusion as this is environmentally friendly but this probably will be impossible for another 50 years.

The “Greenpeace friendly” & technically easier but more expensive approach would be to use a Saturn V to carry the atomic scramjet to Mars (this of course is only environmentally cleaner if the Saturn V doesn’t explode so for safety it would be best to choose some remote desert like the Sahara), seeing as the atomic scramjet would now only have to work in Mars’s atmosphere & not have to work in Earth’s it would be easier to design. If Greenpeace allows a halfway house & allows the atomic scramjet operate high in the earths atmosphere it could be piggybacked up by either the American U2 spy plane or something bigger but similar to scaled composites/Virgin Galactic’s Spaceship One launch vehicle provided it is powerful enough. According to TM-1998-208834-REV1.pdf (see below) A Nuclear Thermal Rocket NTR (& therefore a scramjet) would only use up around 10g of enriched U-235 to leave the Earths atmosphere, seeing that an atomic bomb like the one that exploded in Hiroshima used around 11Kg of enriched U-235, the amount of fallout generated by an atomic scramjet would only be less that 0.1% of the fallout generated by an atomic bomb, surely this is acceptable even to Greenpeace. Compared to other moronic proposed ideas like Project Orion which was to ride the shock waves generated by exploding atomic bombs behind the space ship this is a walk in the park, this unfortunately isn’t nice for getting to Mars because it would take 8 over weeks minimum to get to Mars, I personally would be hoping to do it in 2, this would use 16 times more fuel or 160g of Uranium in the Earths atmosphere because $Energy = Mass \times Velocity^2$ of course a chemical rocket if it could go that fast would also have to burn 16 times as much fuel, but I believe it can’t go that fast anyway.

To take off in the Martian atmosphere would be more difficult than Earth's because the atmospheric pressure is 6.1MB (about 1/150th that of Earth). This means a lot of speed would need to be picked up before the scramjet in jet mode & aerodynamics work. Maybe aerodynamic surfaces like wings should be avoided altogether on some crafts if the weight impact isn't offset by the usefulness of them. I would suspect that the scramjet would need to reach somewhere between 5,000 & 15,000 miles an hour before it can switch fully from rocket mode to scramjet mode. Because the Martian atmosphere is so thin an adjustable funnel which can open very wide at low speeds might be useful so that the scramjet can operate in jet mode at lower speeds. The great thing about an atomic scramjet is it needs to carry no propellant except for the bit of propellant to operate start off while in rocket mode. It should be easy to get a unmanned small manless scramjet Mars for initial testing, an average sized rocket should do.

A very sensitive long range radar & an autopilot with the ability to make minute course adjustments under computer control may be needed to avoid space debris which would be lethal at such high speeds,

I would like the ship to be made as much as possible from one solid piece of material & be flexible enough change shape naturally as aerodynamic stresses are applied to it. I personally don't like things that vibrate vibrations typically cause things to break, for moving parts I like things that go round & round like turbines, they don't break much.

For manless space probes hopefully no shadow shield will be needed provided the electronics are fault tolerant to radiation. This opens the possibility of a space probe going to Mars first, then slingshotting inside the Martian atmosphere where the environmentalists won't be giving out about fallout to a large percentage of the speed of light & heading off to Alpha Centauri, this is possible with an atomic scramjet engine. The difficult bit which I haven't figured out is how to slow down the probe from the speed of light once it gets there if there are no planets with atmosphere's nearby of which there are none around Alpha Centauri, The atomic core could power a powerful radio transmitter which would send back data to earth 4.31 years after arriving there. If a probe cannot transmit receivable data over that great distance maybe the scramjet plane could get close enough into the edge of Alpha Centauri's atmosphere to slingshot around the star & return to the solar system without burning up. A test flight around the Sun could be done first to check if the idea works.

Videos of Alien abductions is the place to look for ideas for spaceships. The more observant people will describe their experiences accurately. An interesting concept from a video I watched points the future for materials science, the materials blended into each other without joints. Anybody who watch "Das boot" knows that rivets pop in World War II U-Boats at 250 meters & glued Space Shuttle heat shield tiles keep falling off not to mention O rings which caused the 1984 Challenger space shuttle disaster, Joints are from an engineering point of view bad ideas.

Dynamic blends of material need to be made, blending smoothly into each other, I suggest making alloys/dynamic blends of titanium, carbon fiber, plastic, glass, fiberglass & the ceramics in space shuttle heat shields.

To prevent loss of life the initial prototypes will be radio controlled & I hope John Mc Carmac would be interested in writing the autopilot software to land the spaceship on Mars. Owing to fifteen minute delays caused by radio waves getting to Mars & back the distance from Earth would be too far to land by remote control I also would hope that Scaled Composites could be made interested.

More propellant can be accumulated in the propellant tank while flying by taking in some from the air intake of the scramjet before leaving the atmosphere, if travelling fast enough there may be enough gas in the vacuum of space to keep the scramjet going in jet mode at least some of the time.

If some of the scramjet is made in Russia maybe the Uranium 235 or Plutonium in some of the decommissioned nuclear warheads can be used as fuel for the scramjets. A parachute would make a good airbrake I would suggest making the parachute in the scramjet plane out of a strong metal capable of standing high temperatures & possibly with hinges so it naturally packs away neatly, but maybe a metal fabric is better. An alternate method of braking in space would be to turn the plane around 180 degrees & fire the rocket this could slow the ship down by around 10,000 miles an hour but not more as the rocket will run out of propellant, this also cannot be done in the atmosphere because the flames would be blown onto the ship & destroy it. The ship I believe would need a protective magnetic field to prevent cosmic rays once we get outside the Val Allen Belt.

I got talking to a rocket scientist Bryan in NASA over email about this project & he pointed me at similar proposals in NASA

Proposal Title Exploration of Jovian Atmosphere Using Nuclear Ramjet Flyer

Principal Investigator Maise, George

http://www.niac.usra.edu/studies/study.jsp?id=510&cpnum=00-01&phase=II&last=Maise&first=George&middle=&title=Exploration%20of%20Jovian%20Atmosphere%20Using%20Nuclear%20Ramjet%20Flyer&organization=Plus%20Ultra%20Technologies,%20Inc.&begin_date=2001-03-01%2000:00:00.0&end_date=2003-01-31%2000:00:00.0

The Mars nuclear airplane is discussed here:

Principal Investigator Powell, James

http://www.niac.usra.edu/studies/study.jsp?id=424&cpnum=99-03&phase=I&last=Powell&first=James&middle=&title=Development%20of%20Self-Sustaining%20Mars%20Colonies%20Utilizing%20the%20North%20Polar%20Cap%20and%20the%20Martian%20Atmosphere&organization=Plus%20Ultra%20Technologies,%20Inc.&begin_date=2000-05-01%2000:00:00.0&end_date=2000-10-31%2000:00:00.0

Vehicle and Mission Design Options for the Human Exploration of Mars/Phobos Using "Bimodal" NTR and LANTR Propulsion

AUTHOR(S): Stanley K. Borowski, Leonard A. Dudzinski, and Melissa L. McGuire

<http://gltrs.grc.nasa.gov/reports/2002/TM-1998-208834-REV1.pdf>

High Power Nuclear Electric Propulsion (NEP) for Cargo and Propellant Transfer Missions in Cislunar Space

AUTHOR(S) Robert D. Falck and Stanley K. Borowski

<http://gltrs.grc.nasa.gov/reports/2003/TM-2003-212227.pdf>

He also found nothing obviously impossible in my proposal, a mission to Mars & even Alpha Centauri is very feasible using todays technology. This is Bryan's reply

Hello,

Please do not use my name.

Your suggested ideas really need a LOT more refinement... The ramjet idea will fly in the atmosphere or Earth or Mars, but you still need to have propellants to get to Mars, and that is a LOT of propellant.... Please see the papers on NTR for a general idea...

8CHAPTER 1. GOING TO MARS, THE FUTURE OF SPACE TRAVEL

Scooping all of that propellant out of the atmosphere and processing it into something usable for the interplanetary flight requires a pretty massive and complex system...

It is much simpler using a "traditional" NTR.

See you,

Bryan

What I figured out from this reply is that we should be still able to get to Alpha Centuari using a atomic scramjet in the Jovian Atmosphere.

The reason that the space race to the Moon happened was that John F. Kennedy suggested it & he had the clout to throw tons of money at the idea national pride, fear of them damn commies & space supremacy got involved to generate the space race. The trip to Mars should only cost only a tiny fraction of the trip to the Moon if an atomic scramjet could operate in both the Earths & the Martian atmosphere.

The reply I received from virgin galactic is below.

Subject: RE: Any interest in going to Mars?

Date: Mon, 21 Nov 2005 17:11:03 -0000

From:virgingalactic@virgin.com

Dear DJ

Thanks for your email.

We're still at the early stages of the project and very much focusing all of our resources on getting it off the ground, so at this stage Mars is a long way off.

Thanks so much for thinking of us and who knows, one day ...

Kind regards

The Team

Virgin Galactic

By the time Virgin Galactic starts operating commercially it will be 50 years since the first man Yuri Gagarin went into space & they won't even be going as high. They certainly are not boldly going where no man has gone before even commercially they are doing nothing new except making a hop to the edge of space relatively cheap. I personally suggest that you email virgingalactic@virgin.com & pester them till Richard Branson & Burt Rutan & the others start listening to give serious consideration about going to Mars using my suggestions & the suggestions in the the proposals provided by NASA to make this happen. Exploration of space needs to continue & it might be necessary for private enterprise to take over from government agencies. If the Russians were enterprising enough to take a space tourist up they will gladly go with this project if they get funding.

Other people you can contact or pester:

George W. Bush: president@whitehouse.gov
Whitehouse switchboard 202-456-1414

Dave Fanning: dave@2fm.ie
He would be able to get Bono, Richard Branson & Bob Geldof to listen.

Gerry Ryan:

Gerry Ryan Show

From Rep. Of Ireland: 1850 715 922

From N. Ireland or UK: 08457 585 285

(The Ryan Line is open Mon-Fri 9am-12)

Text: 087-772-0000

Email: grs@rte.ie

Gerry Ryan gerryryan@rte.ie this email goes directly to Gerry Ryan's researcher.

Gerry Ryan would be able to get Richard Branson possibly Bono, Bob Geldof & Cmdr Collins the space shuttle astronaut whom he interviewed around November 2005 to listen.

I am going to set a goal for getting to Mars, to 3 to 5 years time, see my open letter to Bob Geldof Richard Branson & others if you want to see how I hope this will be achieved.

Chapter 2

Cures for cancer

Some cancers can be cured by a virus, see <http://www.onoclyticsbiotech.com> for more info. Surely this is the way to go as opposed to chemotherapy. How about some preventative medicine imagine if children were immunized against cancer before they got it or even having the virus put into the food-chain atomic power would become quite safe. As Kristian Walsh pointed out radiation causes more damage than just cancer the question I ask is this damage acceptable. It would also be worth researchers while to figure out why the animals living near Chernobyl are surviving & make use of the information.

Chapter 3

Spacesuits

These wouldn't be necessary for the mission to Mars but if we manage to mitigate the cosmic rays causing cancer problem by the anti cancer virus in the future how about Spacesuits rather than weighing around 650lbs instead made so tight they prevent the body exploding owing to pressure outside the suit, these would not need atmospheric pressure built up inside them & be more like high altitude skydiving suits. The only thing I am not sure about is whether the spacesuit could be made to have insulation properties & have heating equipment installed to survive the temperature extremes of space.

Chapter 4

**Open letter to NASA, Gerry
Ryan, Bob Geldof, Bill Gates,
Bono,
Steve Jobs, Larry Ellison,
Michael O' Leary, Eddie
Jordan, Richard Branson,
Burt Rutan John Mac Carmac,
Paul Allen & Michael Jackson**

Bill Gates I know you love Richard Feynman, so do I. I know you love Porches & the film The Clockwork Orange my favourite film is Dangerous Liaisons, it's better, any interest in a Dangerous Liaison with me? Bill you are worth more than the GDP of many countries Why not give half your money to Africa & your kids won't be spoilt if they learn the value of money, stop overprotecting them. You can put a tiny bit of the rest of it in the Mission to Mars Project, you will still be a billionaire many times over anyway & still worth more than the GDP of many countries. What the hell do you want it all for anyway?, you can't take it with you when you die.

Bob Geldof, Bono, Michael Jackson how would you like to hold a leg of Live Aid 2 from Mars. Michael Jackson you are a nice guy. I heard you were interested in meeting Martians, we can make the guys who go up in the

scramjet citizens of Mars, would that do you?

Larry Ellison I know you love MIGs what do you think of my Bat out of hell idea would you like to go up? The Scramjet, if aerodynamics prove useful for it in the Martian atmosphere may perform like a fighter but would be much faster to get you home from Mars in time for tea, the atomic engine should last years while flying inside the Martian atmosphere & we can put an autopilot on it so you can sleep & you only have to come home when you get bored. Steve Jobs have any interest in dropping the rollerblades & getting involved?, what about you Richard? Michael O' Leary CEO of Ryanair have you any interest in keeping control of finances to make sure the job gets done cheaply?, Eddie Jordan have you any interest in organizing the advertising? The only thing I would like painted on the thing myself is a Swastika with a Star of David next to it symbolizing peace between Germans & Jews & possibly a bit of Graffiti. Gerry Ryan can you get Bob Geldof, Bono & Cmdr. Collins the NASA Astronaut who recently went up on the Space Shuttle whom you interviewed recently going so he can get NASA interested, & make Live Aid2 a reality.

I love Russian Tu-144 jets, they were made of primitive technology & were 300 miles an hour faster than Concorde. If the craft is being built by private enterprise it would be cheapest to build it in Russia. While the Americans have their spaceships in the Smithsonian Museum the Russians have theirs rotting in the back yards of their launch pads, it's sad. They Russian's space agency would really appreciate the money provided by private enterprise they really deserve a shot to help make this happen. In any case I would like the other space agencies like NASA to get involved too.

Bill I know you are interested in beating Linux at it's own game, here is what you do... support Cygwin. You can already run nearly all the Linux apps on Windows. Steve Jobs has got Linux engineers flying to MacOS X in droves because there are about 50 gui's on Linux hardly any of them any good except KDE. Windows is safe your users don't want the headache of learning Linux. KDE boys your software is far too expensive on Windows. why don't you make your software MYPL 'pay us what you think the software is worth', In an ideal world everything should be under MYPL even food. If KDE is any good people will pay you for it rather than see it die. I personally hope that all the open source GUI developers will stop reinventing the wheel & go with KDE & give us a consistent interface for Linux. Bill I think all software should be sold under MYPL All my software is officially under GPL

but unofficially I hope to be paid for it. I am a communist rather than a capitalist unlike yourself who likes haggling, I couldn't be arsed running around looking for money off people who really don't want to give it to me possibly because they don't think my software is much good anyway & chasing "software pirates" it wastes too much energy.

Sincerely, D.J. Barrow