

Diabologic: Space Shenanigans 2005

by Frank Dolinar

October 4th should be a national holiday. On October 4, 1957, the former Soviet Union launched Sputnik I, the first artificial earth satellite. The ensuing "Space Race" dramatically improved the educational system in this country with new courses in math, chemistry, physics, materials, and computer science. The space program gives us a lot. Even if it's not obvious, it's worth paying some attention. Here's your chance.

NASA & the U.S. Space Program

On August 24, the X-15 pilots were officially awarded astronaut wings for their work in the 1960s. It's about time. These were the men who made it to the edge of space before NASA's creation. Their tools and technologies, had they been further developed, probably would have been a better and safer way to get into space than the shuttle. Who knows, by now we might even have had that single stage to orbit spaceplane in regular commercial operation.

The shuttle Discovery landed safely at Edwards Air Force Base in California on the early morning of August 9. We all breathed a collective sigh of relief -- and hoped for a quick replacement of the aging shuttle fleet with something less prone to damage. We have good company. An oversight panel gave NASA's efforts in getting back into orbit a scathing critique.

It's 2005, and no one seems to know whether the space station will ever be finished. I had hoped for something more grand -- for space stations as seen in "2001: A Space Odyssey", research sites and colonies on the moon, real and reasonably safe exploration of Mars, and a fleet of probes to the outer solar system.

We could see all of this if NASA's support of nanotech research delivers the advanced electronics and smart materials packaged in layer upon layer of highly interactive, and very complex, molecule-sized machines. In the near term, however, researchers at the University of Toronto are working on a project that could replace current large & expensive satellites with flocks of tiny (milk carton sized), 3.5 kilogram, low-power devices -- identified as the "Canadian Advanced Nanospace eXperiment 2" (CanX-2).

Near Earth

Virgin Galactic, the joint venture of Burt Rutan's Scaled Composites and Richard Branson's Virgin Group, has been busy since its formation in July. The plan is for the 9-seat *SpaceShipTwo* to be suborbital and, if successful, the larger *SpaceShipThree* will be an orbital vehicle. They are in competition with t/Space and SpaceX, among others, for Robert Bigelow's \$50 million America's Space Prize for orbital flight.

Mars

NASA has developed a product it calls RXF1, a tough, new version of polyethylene that is stronger and lighter than aluminum and is an effective solar radiation shield. Near future spacecraft may be built, in part, of this material. If you're ready for a jaunt to Mars, get started calculating the trajectory. Today, of course, Mars is a very big, very cold desert. There are proposals for terraforming Mars by warming the planet with greenhouse gases, by genetically designing plants to grow and thrive in the frigid Martian environment, and by releasing the water known to have flowed on the planet recently (in geologic time).

These bold ideas are certainly worth pursuing, but terraforming a planet is a slow business and would probably take hundreds of years. Take your time with the calculations for the trip.

Far Out

The *New Horizons* probe will be launched in January 2006 to explore Pluto and the Kuiper belt at the very edge of the outer solar system. You can submit your name to NASA for inclusion on the probe -- and be famous when the probe returns to the inner solar system in about 50,000 years.

Finally, in a truly "far-out" announcement, recent data from the Spitzer Space Telescope has determined that the Milky Way galaxy has the form of a "barred spiral". Perhaps it's time to rewrite all those old astronomy textbooks.

Bottom Line

Dream big, aim high, shoot for the stars, and learn everything you can along the way.