Subject: Absolutely fascinating
Posted by KIRBY098 on Fri, 02 Jul 2004 12:29:34 GMT
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Mankind is capable of great things:

http://www.space.com/scienceastronomy/cassini_rings_040701.html

Subject: Absolutely fascinating
Posted by Javaxcx on Fri, 02 Jul 2004 12:31:38 GMT
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The craft due to land on Titan next year will be even more spectacular.

Subject: Absolutely fascinating
Posted by KIRBY098 on Fri, 02 Jul 2004 12:44:04 GMT
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The amount of science this thing will bring is just amazing.

The greatest question I have : Does Titan have a solid surface, or just oceans of exotic, liquified gasses.

I looked at the Jupiter pictures from this probe. They are equally inspiring.

Subject: Absolutely fascinating
Posted by Javaxcx on Fri, 02 Jul 2004 12:51:23 GMT
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Well, reports I've read and seen say that Titan is a solid body with liquids flowing over it. Just like earth. The only exception is the theory that it has liquid ethane or methane. And the bodies of lquid are compariable to the great lakes.

I suppose it's kind of lucky there isn't any oxygen there, eh?

Subject: Absolutely fascinating
Posted by KIRBY098 on Fri, 02 Jul 2004 12:56:57 GMT
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Great scenery, no neighbors, real estate is cheap.

If there was, I would be on the first ship out....

Subject: Absolutely fascinating
Posted by Ferhago on Fri, 02 Jul 2004 17:15:09 GMT
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I hope you dont smoke

Subject: Absolutely fascinating
Posted by Xtrm2Matt on Fri, 02 Jul 2004 18:26:19 GMT
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If i'm correct.. wasn't Earth atmosphere filled with methane and ethance billions of years ago? I'm talking about the creation of the planet. The only reason it is how it is now, is because the Volcanoes liked us, knew we were coming, and the Oceans ate (dissolved..) all the CO2

Plants grew. And of course, Plants produce Oxygen. Cutting the CO2 level down to the 0.04%'s, and oxygen to around the 27-28% mark.

Subject: Absolutely fascinating
Posted by frijud on Fri, 02 Jul 2004 18:27:39 GMT
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Remember, this spacecraft was almost not launched because of huge protests regarding its nuclear battery. The spacecraft uses a Pu-238 power cell for power. The sun is to far away to use solar energy, so they use Plutonium instead.

Another great use of nuclear power. Now where are all the protestors now? Nowhere...because they were proven wrong (again).

Subject: Absolutely fascinating
Posted by SuperFlyingEngi on Fri, 02 Jul 2004 18:38:21 GMT
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Dude...actually, launching anything like plutonium into orbit is a big risk, because if the ship explodes in high orbit, it showers a large part of earth with plutonium. And that sucks.

Subject: Absolutely fascinating
Posted by KIRBY098 on Fri, 02 Jul 2004 18:42:04 GMT
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SuperFlyingEngiDude...actually, launching anything like plutonium into orbit is a big risk, because if the ship explodes in high orbit, it showers a large part of earth with plutonium. And that sucks.

You lack vision.

Everything great requires risk. Enjoy life in mediocrity, 'dude'.

Subject: Absolutely fascinating
Posted by Doitle on Fri, 02 Jul 2004 18:45:34 GMT
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You gotta realize if they use a chunk of plutonium and it explodes. I can only rain so far. It's not like it will continue to gain mass. It has as much mass as it does. Actual particles can only cover a small area. The radiation can carry though. However, Let's just hope the atmosphere does it's thing and protects us from radiation like it always does. *fingers crossed* lol. If not we're boned.

Subject: Absolutely fascinating
Posted by frijud on Fri, 02 Jul 2004 19:14:03 GMT
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Do you realize that many nations have blown up weapons in the atmosphere, whith many kilograms to tons of plutonium. I assure you that 12 more grams won't make a difference. And besides, Pu-238 only has an 87.7 year half life, unlike Pu-239 which is a lot longer.

Nuclear power for space travel is a very good idea. We should still be careful when whe shoot it into space. We can't let people's fear of things drive what we do, especially when the fear is not based on fact.

SuperFlyingEngiDude...actually, launching anything like plutonium into orbit is a big risk, because if the ship explodes in high orbit, it showers a large part of earth with plutonium. And that sucks.

Subject: Absolutely fascinating
Posted by Deathgod on Fri, 02 Jul 2004 19:37:45 GMT
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If worrying about a satellite exploding and showering a small amount of plutonium into the atmosphere is your biggest concern, I hope you never open your eyes.

Subject: Absolutely fascinating
Posted by gibberish on Fri, 02 Jul 2004 19:43:08 GMT
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On the subject of atmospheric plutonium releases, particularly those

involving accidental releases from radioisotope thermoelectric generators (RTGs) carrying the short-lived isotope Pu-238, the book SPACE NUCLEAR POWER, by J.A. Angelo Jr. and D. Buden (Orbit Book Co., 1985) is a good reference.

On p. 244 is the following section (chapter 13) :

Aerospace Nuclear Incidents

To date, the United States has launched 19 space missions with radioisotope
power sources. After four successful RTG launches, the Transit-5BN-3 failed
to achieve orbit on 21 April 1964 due to a launch vehicle abort that was traced to conflicting guidance controller signals occurring during ascent. This guidance malfunction caused the launch vehicle to pitch improperly and
orbital insertion of the payload was not achieved. Despite the ascent abort,
however, the SNAP-9A RTG on board the spacecraft as designed for a launch/mission abort and it burned up on reentry into the earth's atmosphere. The RTG's plutonium-238 metal fuel was injected into the atmosphere in the Southern Hemisphere at an altitude between 45 and 60 kilometers. Airborne and surface sampling was initiated following this abort
and four months later plutonium dioxide (PuO2) was first positively identified at an altitude of 32.9 km at 35 degrees south latitude. It was subsequently concluded that, as designed, the radioisotope fuel had completely burned up during reentry over the West Indian Ocean north of Madagascar [2,6].
The second U.S. RTG aerospace nuclear incident occurred on 18 May 1968 and involved a SNAP-19 generator on board the Nimbus B-1 meteorological spacecraft. In this case, erratic behavior of the launch vehicle forced its
intentional destruction by the Range Safety Officer when the vehicle and its
payload were at an altitude of 30 km and traveling downrange from the Vandenberg Air Force Base launch site. Tracking data placed the impact point
of the launch vehicle and spacecraft debris in the Santa Barbara Channel about 5 km north of San Miguel Island off the California coast. Here, the water depth is about 90 meters. The SNAP-19 generator was designed for intact reentry and had been tested in a marine environment. Since data indicated that the radioisotope fuel capsules were still intact and that they posed no immediate environmental or health problem, there was no immediate urgency to recover them from the ocean floor. In fact, the SNAP-19
generator was recovered from the Pacific Ocean five months later (see Fig.

13.1). The entire incident verified that the radioisotope fuel capsules of this design could remain in a marine environment for long periods of time following a launch/mission abort without concern for fuel release. Post-incident examination of the fuel capsules revealed that no detrimental effects were suffered from the destruction of the launch vehicle, impact in the ocean, or nearly five months residency on the ocean bottom. The graphite ablators surrounding the capsule were also intact [2,6].

A third RTG aerospace nuclear incident involved the aborted Apollo 13 mission to the Moon in April 1970. In this event, the SNAP-27 fuel capsule, containing 44,500 curies of plutonium-238 oxide microspheres, reentered the Earth's atmosphere along with the Aquarius Lunar Module (LM) which had served as a translunar trajectory lifeboat for the in-flight stranded Apollo 13 astronauts. En route to the Moon, an oxygen tank had exploded in the Service Module. Following the near fatal explosion, astronauts Lowell, Swigert, and Heise powered up the Aquarius, battened down the crippled command ship Odyssey, and continued on a course around the Moon and back to the Earth. For more than 90 hours these three men rode a lunar landing craft designed to accommodate just two astronauts for two days. Then, approaching Earth, they again fired the Aquarius (LM) engine to thread themselves carefully through a narrow reentry corridor, shifted to the lifeless Odyssey command module (CM), and cut loose both the damaged Service Module and their LM lifeboat. The three astronauts were recovered within 45 minutes of splashdown in the Pacific Ocean [7].

The Apollo 13 SNAP-27 fuel capsule, on the other hand, was contained in a graphite fuel cask attached to the LM. Both reentered at approximately 122 km above the South Pacific Ocean. Atmospheric monitoring at several high and low altitudes in the area indicated that no nuclear fuel was released. Consequently, it was assumed that the SNAP-27 capsule impacted intact, as designed, in the deep ocean south of the Fiji Islands and now resides near the Tonga Trench in some 6 to 9 kilometers of water. There was no observable adverse effect on the biosphere as a consequence of this incident -- indicating again the efficacy of the U.S. aerospace nuclear safety program.

On page 140 :

Consistent with aerospace nuclear safety philosophy of the day, the fuel capsules were designed for intact impact under launch abort conditions and for high altitude burnup and dispersal in the event that a mission abort caused the spacecraft to reenter the Earth's atmosphere.
The liner... material accommodated atmospheric burnup.
The segmented fuel block design permitted separation of the capsules for exposure to aerodynamic heating during a reentry abort.
[Comment : the metal form of Pu-238 also contributed to the burning up -- in contrast to the PuO2 used today, which is already oxidized & will therefore not support a chemical reaction with oxygen...]

page 136 :

The SNAP-3B and -9A systems were designed for nuclear fuel burnup and high altitude dispersal in the event of an atmospheric reentry of the nuclear-powered spacecraft.

Tables 8.1, 8.2 and 8.3 give technical details :

The 12.2 kg SNAP-9A power source [with 17,000 Ci of Pu-238 METAL (!!)], which was launched on the Transit-5BN-3 Navigational Spacecraft on 21 April
1964 burned up on reentry after the mission was aborted during launch.

All subsequent RTGs [SNAP-19 and later models] used PuO2 rather than metal
and were designed to survive reentry intact.
The SNAP-27 in the Apollo 13 incident had 44.5 kCi of PuO2 - 30.8 kg without
the cask - when it crashed intact into the South Pacific Ocean on 11 April 1970.

In the SNAP RTGs the primary reentry heat shield, consisting of graphite, formed an outer cylinder around all the fuel capsules. The larger RTG developed for the Galileo and Cassini missions is composed of General Purpose Heat Sources (GPHS-RTGs), and is a modular power unit design providing flexibility for different spacecraft power demands. Each 250 watt-thermal module has its own passive safety provisions, including an aeroshell serving as the structural element and an ablator

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Subject: Absolutely fascinating
Posted by KIRBY098 on Fri, 02 Jul 2004 19:51:39 GMT
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Columbia deposited more dangerous debris than a RTG ever would.

Subject: Absolutely fascinating
Posted by Dr.Snuggles on Sat, 03 Jul 2004 17:34:55 GMT
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Here's an idea. Why not focus on present problems here on our planet, rather than spending ridiculous amounts of money exploring the vast beyond. First things first, chief.

Subject: Absolutely fascinating
Posted by liberator on Sun, 04 Jul 2004 03:22:06 GMT
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Because technology and techniques developed for use in space can be used here on Earth to improve life here. That computer you're looking at right now is a result from an exhorbitant amount of money spent by the space program to research the miniturization of technology, however indirect it may be.