

Triton Fun Company

Science Newsletter August 2008

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The Space Shuttle Program – Still Alive and Kicking

J. Bartlett

Special points of interest:

Beloved space shuttle

Triton Fun stuff

Superfluous questions

As an engineer working on the Space Shuttle Program, I should realize that not everyone pays as close attention to the current status and eventual fate of the Program as I do. When people find out that I work on the Space Shuttle Program, the response is usually one of two things:

One is, “The Shuttle? I thought they retired the Shuttle after that last accident?” Or, “Are they ever going to replace the shuttle? It’s sooo old now.”

Either of these questions requires me to launch into a 5 minute (or longer) answer session about the aftermath of the Columbia accident, the birth of the Constellation/Ares Program and how the Shuttle program is still alive and launching large chunks of the Space Station to low earth orbit, not to mention the final servicing mission to the Hubble Space Telescope (HST) very soon.

At this point in the conversation, if the eyes of the person asking the question haven’t yet glazed over, I will then tell them about the upcoming mission to Hubble and how the orbit is different from the International Space Station and thus there is no safe haven. “Safe Haven?” After the Columbia accident, arrangements have been made, in the event of damage to an orbiter, for shuttle crews to survive

for extended periods on the station while waiting for an emergency shuttle mission to be processed and launched to their rescue. Reaching the Station is not possible on the HST mission and therefore, another shuttle must be fully processed and be on standby to rescue the crew of Atlantis (OV-104) should the Orbiter not be able to re-enter the atmosphere due to damage of the thermal protection system. In this event, the rescue mission would be flown aboard the Orbiter Endeavour (OV-105) and is officially designated STS-400. This is a special designation for the HST LON (launch on need) rescue mission. Generally, Space Station bound rescue (LON) missions are designated STS-3XX, where the XX is replaced by the last two digits in the nominal STS mission number. For example, mission STS-165, would be followed by mission STS-166. Since the vehicle slated for STS-166 is next in line to be processed for flight after STS-165, it would be designated as the rescue vehicle and would be given the mission designation of STS-366. Once STS-165 is launched and it is determined the orbiter was not damaged and is capable of a safe landing, then the STS-366 mission will be renumbered STS-166. If all goes well with Atlantis on the Hubble mission, then Endeavour will not have to fly STS-400 and will go on and



Space shuttle:
still flying, still inspiring

launch the STS-126 mission to the Space Station as planned.

So what else is happening in world of the space shuttle and the space station? After the final HST refurbishing and repair mission (STS-125) in October 2008, Endeavour will launch STS-126 in November to deliver more supplies and equipment to the Space Station with the delivery of a *multi-purpose logistics module*. The multipurpose logistics module is a spacecraft section brought by the shuttle that is temporarily mated to the station. The module arrives from Earth packed with supplies and new equipment which are unloaded and then old equipment and refuse are placed into the module for transport back to the surface when the shuttle departs. Because the mission is for re-supply, STS-126 is designated as a utilization and logistics flight (ULF2).

continued, pg 2 —>

We are always looking for **contributors** to the Science Newsletter. If you would like to write an article about a science subject you are excited about, or contribute a superfluous question, or if you would like to be on our **mailing list** for future newsletters, please e-mail us at:

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Space Shuttle: Still Flying...

Photos/Info: NASA/JSC/KSC

Next up in February 2009 will be Discovery (OV-103) on STS-119, which will deliver another large section of the starboard truss to the Station. The truss is the structural backbone of the Space Station. It is the superstructure to which the solar arrays are attached as well as the pressurized modules, etc. Because the fully assembled truss is quite long, the shuttle has brought up the truss in a piecemeal fashion over the last decade, and is finally nearing completion. Once the truss is complete all the solar arrays may be properly positioned to supply the Station with full power for the planned laboratory operations. Soon the International Space Station will be able to support a fulltime crew complement of 6 people and the station will finally get down to the business of serious microgravity research. At last it will become our stepping stone to other worlds and help to make a brighter future here on Earth.

After STS-119, there will be at least 7 more shuttle flights through the year 2010 to the Space Station to finalize Station construction and for re-supply missions. Beyond that is anyone's guess. The Bush Administration decreed that the Space Shuttle Program shall be retired in 2010 to allow NASA to concentrate on development and implementation of the Ares rockets which will be designed to replace the space shuttle and allow for further human exploration of the Moon and Mars.

But the development and implementation is beginning to appear as if it will take quite a bit longer than originally envisioned. As originally planned, the shuttle would retire in 2010 and the new vehicle would start launching in 2011 or 2012. Now the estimate for first launch of the new system is 2014 or 2015, with many still unresolved design issues.

This will produce a gap in U.S. human space launch capability of at least 4 to 5 years. Some would solve the problem by relying on the Russian Soyuz to deliver U.S. personnel to the Space Station. However, many space industry people think we should not solely rely on Russia for access to space. Many in Congress are beginning to think this is not an option. They are talking about increasing NASA's budget to allow both the development of the Ares rockets and to continue to fly the shuttle concurrently. As a step in that direction, there is an effort in Congress (H.R. 6063) to increase NASA's budget to about \$19 billion which would add at least one more shuttle flight to the agenda. This flight, if approved, would deliver the *Alpha Magnetic Spectrometer* (AMS) to the Space Station. The AMS is to be used for cutting edge astrophysics research on-orbit, is worth approximately \$1 billion, has already been built and is ready to fly. However, the Bush Administration deemed that the hardware was not essential to completion of the Space Station and was cut out of the schedule so that the Shuttle Program could end in 2010. H.R. 6063 was approved by the House and referred to the Senate for consideration. Personally, I will be writing to members of the Senate asking them to support this vital bill.

Speculation abounds about what will happen if the gap in launch capability continues to grow and what the direction will be with the next presidential administration. Both major party candidates have stated that they will continue the course with the Constellation/Ares program, though there have been hints that suggest the shuttle program might not be going away in 2010 as planned. This would be fine with me as I would get to keep my job for at least a little while longer!

Resources

1) http://www.nasa.gov/mission_pages/shuttle/shuttlemissions/



Supply ship

The Space Shuttle Discovery, with its cargo bay doors open, approaches the International Space Station for docking. A silvery multipurpose logistics module, similar to the one planned for the November STS-126 mission, is being carried up to the ISS in the shuttle's cargo bay.



Spaceship back home

STS-122 Atlantis lands in February 2008 after a successful mission installing the Columbus laboratory onto the ISS. This laboratory has extensive science capabilities and can do experiments in life sciences, fluid physics, physiology in space and many other disciplines.

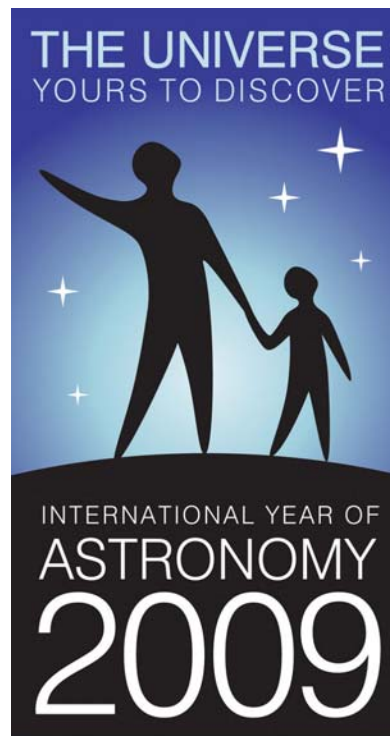
TRITON FUN PRODUCTS

2009 has been declared the "International Year of Astronomy". Events and activities to further the excitement of astronomy are being planned by IYA committees in over 100 countries. The logo for the IYA2009 is shown below. For more info on upcoming IYA2009 events, go to: <http://www.astronomy2009.org>

Triton Fun is an authorized distributor of T-shirts, sweatshirts and long-sleeve tees sporting this new logo. Part of the proceeds from the sale of these shirts will go to support astronomy clubs and astronomy activities connected with IYA2009 in California.

These shirts can be ordered online on our website:
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** Send us your superfluous questions for a future issue ! They can be on any subject. The funnier, the better. M.D., our editor, appreciates the help and will send you a free Triton Fun coffee mug as compensation for your question. Or write an article for us and be read by professional and amateur astronomers and scientists in the U.S. and Canada ! **

Superfluous Questions:

1) A ringgit is a unit of currency in *what* country ?

- a) Gambia b) Malaysia c) Madagascar d) Nepal

2) Who discovered the planet Neptune ?

- a) William Herschel b) Johann Galle c) Christiaan Huygens d) William Lassell

3) The actor-comedian Bob Newhart was born *where* ?

- a) Boston, MA b) Chapel Hill, NC c) New York, NY d) Oak Park, IL

4) What year did Texas become a state ?

- a) 1845 b) 1859 c) 1822 d) 1891

→ ANSWERS in next months issue of the Science Newsletter ! ←---

** ANSWERS to July's Superfluous Questions: 1. c) Bernadette Peters 2. d) U. of Chicago 3. b) Dodgers 4. d) Vancouver