

## 2010 SpaceOps News Poll Analysis

The following summary presents the results of the polls posted in the Communicator during the past three years. The author found it interesting to compare the predicted results with the actual developments (status: Dec. 2010) thus measuring the predictions (“feelings”) of the SpaceOps community against political/financial decisions. The first poll was posted in February 2008 with George W. Bush and Mike Griffin still in office. It is also interesting in which unexpected direction the once hailed “Vision for Space Exploration” (VSE) went in those view years since than.

### Poll-1 (Feb. 2008)

#### **Should the International Space Station (ISS) be operated under an international space port authority once construction is complete?**

58,33% voted for an international space port authority.

 ISS Logo

Up to date (Dec. 2010) nothing changed with respect to the operations concept of the ISS (“bulkhead approach”, i.e., each partner is responsible for utilization, operation and maintenance of his contributions). The construction of the ISS was completed in 2010 with the delivery of the last European element, the Cupola. A crew of 6 is permanently maintained on a half-yearly rotational basis since May 2009. Unfortunately the scientific interest (except for human spaceflight related experiments) is not living up to the expectations yet.

### Poll-2 (March 2008)

#### **The Vision for Space Exploration (VSE) should be goal or capabilities oriented?**

A clear majority voted for “capabilities oriented” (83,33%), 16,67% voted for “goal-orientation”. The implications of “goal” or “capabilities” orientation will be discussed below: “Best course for project Constellation” (see Poll-9).

### Poll-3 (May 2008)

#### **The most convincing argument for spending taxpayer’s money on space exploration is scientific investigation, technical innovation, commerce, expression of pioneering spirit, national pride, support of national industry, strategic aspects or other?**

The majority voted for “commerce” (60%), followed by “scientific Investigation” and “strategic aspects” (20% each).

One comment sums up this result by pointing out that the potential for commercial development initiated by space exploration creates the greatest ultimate incentive for the sheer level of capital necessary.

The 2010-NASA Authorization Act acknowledges this by supporting COTS, CCDev and the design of a (shuttle-derived ?) heavy lift rocket for missions beyond low Earth orbit.

### Poll-4 (July 2008)

#### **Which do you feel is the greatest justification for returning to the Moon?**

The majority of the votes, 35,29% voted for “applications (e.g., Helium 3 and other resource mining)”, the other choices were “colonization” (29,41%), “science”, “technological advancement” and “other” (11,76% each).

One comment pointed to the commercial development of technologies, resources and spin-offs as the major reason, as likely to produce the greatest long term benefit. As platform alone, the Moon would have little to add to a Mars program apart from resources developed there that contribute to a (Mars) mission. Although it is acknowledged that the Moon can be used as a stepping stone in the manned exploration of the solar system and would give humanity a lot of experience in living away from earth it is suggested that such research should first be done at the ISS. Therefore the operations and use of the ISS should be of significantly greater priority than a return to the Moon.

### Poll-5 (Oct. 2008)

#### **How should access to the ISS after 2010 be ensured?**

The majority of the votes (52,38%) went to “SpaceX Falcon/Dragon (COTS)”, the runner-up was “NASA should extend shuttle flights” (23,81%) followed by “other” (14,29%) and “Congress should grant a waiver to INKSNA” (9,52%).

The US Congress voted for a waiver to INKSA (“The Iran Non proliferation Act of 200”, prohibiting NASA to buy additional Soyuz/Progress spacecraft from Russia) allowing NASA to continue to purchase Soyuz flights beyond 2011, through July 2016. The Agency does not intend to purchase cargo services after 2011, and will look to the US commercial sector to provide the (ISS) needs. At the time of the poll the VSE and the Constellation program had still a strong bipartisan support.

One comment to the poll summed up the situation still valid as of today (Dec. 2010): The approach to solve the problem needs multiple choices. NASA needs Soyuz and Progress to assure crew and supply delivery to the ISS. We have seen that having only one delivery vehicle is a bad idea. NASA needs a



Dragon capsule being berthed to ISS (Artist's conception)

shuttle capability to provide heavy lift and return capabilities and it is obvious that new systems need to be implemented to deliver crew and supply to and from the station.

The INKSNA waiver is considered a short term solution only, commercial access (COTS and CCDev) should be pushed for including the use of ISS partner capabilities (ATV, HTV).

The current situation, i.e., after the passage of the NASA Authorization Bill (Sept. 29, 2010) calls for:  
- adding one more Shuttle flight in 2011 (in addition to the delayed Discovery launch to Feb. 2011), and with possible another one later in 2011, the so called “launch-on-need mission”.

- support for government sponsorship of commercial astronaut transportation services (CCDev),  
- the development of a heavy lift capability capable of lifting at least 70 metric tons into low Earth orbit by 2016.

This means basically the discontinuation of the Ares-1 development, leaving the fate of the Orion Crew Exploration Vehicle uncertain, which should now be used as ISS life boat and could be redesigned in an evolutionary process to serve later as a spacecraft able to carry astronauts beyond low earth orbit.

In addition NASA Administrator Charles Bolden interpreted the text of the Authorization Bill as a clear mandate to extend the ISS program to 2020.

#### **Poll-6 (March 2009)**

**The FAA’s Office of Commercial Space Transportation (AST) is responsible for licensing and certifying commercial spacecraft. In the future, NASA plans to fly its astronauts, scientists and payloads on some of those craft. Should NASA also become a part of the regulatory process in addition to FAA/AST?**

A majority of 75% voted against NASA’s involvement.

As one comment put it: “Things tend to get complicated with more people involved. Let FAA give it a different slant and lead the role of industry advocated, because they recognize space commerce as player, while NASA does not.”

On the other hand it was observed that if NASA astronauts will fly on commercial spacecraft, NASA will make sure to get involved.

#### **Poll-7 (April 2009)**

**If funded, the D option of NASA’s Commercial Orbital Transportation Services Contract (COTS-D) would provide commercial transport of astronauts to the International Space Station, Do you support that option?**

The result was: Yes (90.91%).

In order to understand the following comments the nature of the COTS Program is explained briefly (copy from Wikipedia):

**Commercial Orbital Transportation Services** is a [NASA](#) program to coordinate the delivery of crew and cargo to the [International Space Station](#) by private companies. The program was announced on January 18, 2006. NASA has suggested that "Commercial services to ISS will be necessary through at least 2015."

COTS must be distinguished from the related Commercial Resupply Services (CRS) program. COTS relates to the development of the vehicles, CRS to the actual deliveries. COTS involves a number of [Space Act Agreements](#), with NASA providing milestone-based payments. COTS does not involve binding contracts. CRS on the other hand does involve legally binding contracts, which means the suppliers would be liable if they failed to perform. [Commercial Crew Development](#) (CCDev) is a related program, aimed specifically at developing crew rotation services. It is similar to COTS-D. All three programs are managed by NASA's Commercial Crew and Cargo Program Office (C3PO).

On December 23, 2008, NASA entered into CRS contracts with [Orbital Sciences](#) and [SpaceX](#) to utilize their COTS cargo vehicles—[Cygnus](#) and [Dragon](#), respectively—for cargo delivery to the International Space Station.

The comments to the Poll-7 above endorsed the vote seeing the COTS contract as great opportunity to promote commercial access capabilities during the Shuttle/CEV gap in the light of the “hugely mistaken” path of phasing out Shuttle before alternative US-government capabilities have a high confidence of being available and leaving a \$100-billion taxpayer investment – the ISS – underutilized and unable to provide the maximum return on that investment.

Under the given circumstances it would provide more stability than a purely Government program because it involves a broader base of interests less subject to budget stretches once commercial space makes the step to orbital flights.

The developments of the two major COTS contractors, the Orbital Science Corporation (Orbital Sciences) with the Taurus-2 launcher and the Cygnus cargo capsule, and Space Exploration Technologies (SpaceX) with its Falcon-9 and Dragon cargo capsule are late according to the original schedule, therefore the additional Shuttle mission, the “launch-on-need mission” planned for mid of 2011 seems to be justified. The COTS and CCDev activities receive full NASA attention within the 2010-NASA Authorization Act.

#### **Poll-8 (June 2009)**

**Do you support the nomination of Charles F. Bolden as Administrator of NASA?**

The votes were split equally between the options yes, no and undecided (33% each).

### Poll-9 (April 2010)

**What do you see as the best course for project Constellation, cancellation, redefinition or other?**  
The voters clearly decided for a redefinition of the project (66,67%), only 33,3% voted for cancellation.

One comment recommended to “ keep the heart of the program, which was to get to the Moon, not LEO”.

The original Constellation program as part of the Vision for Space Exploration (VSE), established by President George W. Bush in January 2004 had the goal to establish an extended human presence on the Moon by 2020 and consisted of the Ares 1 launch vehicle and the Orion orbiter capsule, also known as Crew Exploration Vehicle (CEV) with up to 4 astronauts being able to get to LEO and service the ISS starting in 2014. Return would be via parachute capsule landing.

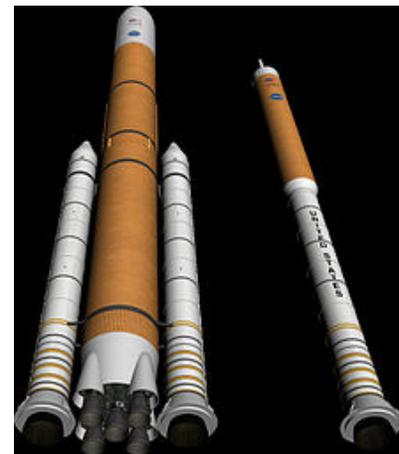
In a second step the Ares V launcher (first flight 2018) would carry the Altair moon lander (crew of 4) together with an Earth Departure Stage which would transfer the Orion and Altair after rendezvous and docking in LEO into a moon orbit. Altair would land on the Moon while Orion would be circling in a lunar orbit waiting for its return. After the crew's transfer to the Orion capsule the Orion would return on an earthbound trajectory, re-enter and land in an “Apollo”- style “splash-down”.

It should also be mentioned that VSE declared the retirement of the Shuttle by 2010 thus creating a gap of 4 years (shuttle/CEV gap) during which a transport of astronauts to and from the ISS would only be possible with Russian vehicles.

The conclusion of the “Augustine”- Report (“Review of US Human Spaceflight Plan Committee” initiated in 2009), released in October 2009 was that this type of program is not compatible with the available funding. President Obama's Administration had the task to come up with a suitable program - restructuring or replacement fitting the budget. Many options were discussed, among others the idea to first develop a set of new technological capabilities (“game changing technologies”) for a couple of years and then decide which way to go. This discussion was concluded by the 2010-NASA Authorization Act postulating the two basic program elements to be

- a spacecraft that can carry astronauts beyond low earth orbit and to
- settle on a design on a new heavy lift rocket for missions beyond low earth orbit within 90 days from the (Authorization Act) Bill's enactment and begin work on such a vehicle next year (2011).

However the final target for human exploration under this new bill is not defined yet, therefore the last poll of this series was formulated to find out what the SpaceOps Community would recommend.



Ares-V and Ares-1

### Poll 10 (Nov 2010)

#### Next landing target for human spaceflight: Moon, Mars Asteroid or other?

The preferred next target for human spaceflight was to go to the Moon (50%), Asteroid and “other” received 25% each.

One comment suggested for “other” to go to one of the Mars moons which probably is more similar to an Asteroid landing than Moon or Mars landings.

**Many thanks** to all the readers of the “Communicator” and the excellent comments. It was fun to compile this little summary and to look back over the past three years. We hope you all will participate in the future as actively as you have done so far and we will follow together with interest how the future human and robotic space exploration will develop.

**“Die Wege, auf denen Menschen Einsichten in die Dinge des Himmels erlangen, scheinen mir beinahe ebenso des Staunens wert wie diese Dinge selbst.“**

„The means people use to gain insights in the secrets of the sky, to me seem equally astonishing than the secrets themselves.“

**(Johannes Kepler, German Astronomer 1571-1630)**