



# NASA News Summary

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION OFFICE OF PUBLIC AFFAIRS

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## LEADING THE NEWS

### NASA Appears To No Longer Be Shooting For The Stars (LAT)

**The likely termination of the Constellation moon project points to the constraints on the once ambitious space program that accomplished so much in half a century.**

By Ralph Vartabedian

[Los Angeles Times](#), July 18, 2010

In a cavernous structure at NASA's Plum Brook Station near Lake Erie, a concrete chamber five stories high rises from the ground. Its walls are 2 feet thick to withstand the blast of powerful gas-operated horns strong enough to destroy human organs.

The \$150-million facility was built to contain the next-generation manned spacecraft for the Constellation program, NASA's project to send humans back to the moon. It is the largest acoustic test chamber in the world, created to buffet the spacecraft with intense sound waves, simulating the stresses of launch.

The only problem is that the Constellation program almost certainly will be dead within months.

President Obama in January proposed cancelling the troubled moon program, and a key Senate committee voted this week to kill Constellation.

Despite the apparent kiss of death, construction continues at Plum Brook Station and other NASA centers and at private aerospace companies across the nation, where more than 14,000 people are still working on Constellation. Under pressure from Congress, NASA has been spending an average of about \$9 million a day on the project.

After accomplishing so much in space for half a century, the nation now appears to lack not only the resources to mount a major human space program, but also the political will to eliminate the thousands of jobs connected with it.

"It is a sad spectacle," said Loren Thompson, a longtime aerospace policy expert in Washington, referring to the dual-edged political sword that has constrained the once ambitious U.S. space program. "It is devolving into everybody trying to protect their home turf."

Veteran space industry observers say the manned space program is in deeper trouble and greater turmoil than at any time since the U.S. landed men on the moon more than 40 years ago.

"The choice is: Do we have a space program or a jobs program, because we can't have both," said Jeff Greason, president of XCOR Aerospace Inc. in Mojave and a member of a presidential panel that delivered a scathing assessment of the space program last year.

Politicians cannot agree on long-term goals for the human spaceflight program, and the vast network of NASA facilities and private contractors is unable to make plans that keep pace with political action in the capital.

In Texas, Alabama, Florida, Louisiana, Mississippi and Ohio, NASA is going forward with new test facilities, machine shops and assembly rooms, among other things that were started for the Constellation program.

At Marshall Space Flight Center in Alabama, where NASA is developing the new J-2X rocket engine for Constellation, a spokeswoman said officials had not received guidance about what will happen after the end of the current fiscal year.

"The space program has never been in as much disarray as it is now," Thompson said.

The manned space program is powered by \$9 billion of NASA's \$18.7-billion budget this fiscal year and creates jobs by the tens of thousands across the country.

It is, by all accounts, a Cadillac enterprise, driven by high-profile past failures that have forced NASA into an extraordinarily risk-averse - and expensive - approach to spaceflight.

The Plum Brook acoustic chamber is part of that obsessive safety culture. It was sized to accommodate the entire Altair lander, which was originally designed to ferry as many as four astronauts to the lunar surface.

The planning for Plum Brook and a slew of other Constellation facilities began not long after the 2004 space vision proposed by President George W. Bush. One year after the Columbia space shuttle accident, Bush said the Constellation would start flying by 2012.

The program meant a new pot of money for NASA, including a \$1.2-billion contract to build the J-2X and \$180 million to develop a new spacesuit for the moon program.

But, according to a report last year from the presidential panel of space experts, the program was never adequately funded, receiving perhaps only a third of what it needed to meet its objectives. The project was estimated to cost \$240 billion but was getting about \$3 billion per year.

"We were on an unsustainable path," Greason said. "So change of some kind was inevitable."

When Obama said he wanted to kill the Constellation program, it ignited a political backlash. Congress was reluctant to cancel it, wanting to preserve jobs and expertise in the nation's industrial base.

The battle over Constellation has revolved largely around jobs at NASA's major centers in Texas, Florida and Alabama. But the termination of Constellation also threatens companies that have long supported NASA, such as rocket engine manufacturers Pratt & Whitney Rocketdyne in Canoga Park and ATK Aerospace Systems in Utah.

A possible compromise was struck last week by a Senate committee, but only after jobs were preserved. The Senate Commerce, Science and Transportation Committee agreed to cancel Constellation but voted to add \$1 billion to keep the space shuttle flying through next summer and possibly much longer to preserve jobs. The space shuttle was supposed to be retired this year.

The compromise was consistent with the Obama administration's strategy of shifting focus to a new breed of private launch companies to ferry astronauts to low Earth orbit to avoid the high cost and slow pace of development by government-run programs.

Space Exploration Technologies Corp., or SpaceX, has a NASA contract to supply the space station with cargo and eventually hopes to develop a spacecraft that can carry up to seven astronauts into orbit. So far, the Torrance-based company has developed its Falcon family of rockets and conducted six unmanned test flights.

"NASA used to be allowed to take more risks," said Kenneth Bowersox, a veteran astronaut who is now a vice president at SpaceX. "A failure can paralyze them for years."

The NASA centers have begun to sense the shift and are trying to market their capabilities to the new era.

David L. Stringer, a retired Air Force brigadier general who is director of Plum Brook, argued that even without Altair, the center's acoustic test chamber will ultimately be useful for future programs, whatever they are.

Stringer is promoting a plan to build a \$30-million runway at Plum Brook so spacecraft can be flown directly into the center, rather than to airports near Cleveland. Plum Brook has unique testing facilities, including the world's largest thermal vacuum chamber, which can simulate the conditions of deep space.

But experts worry that a loss of expertise within NASA could drain away the ambition to put humans in space, which has been the driving force of the space program for more than 50 years.

"What is really happening here is the end of the U.S. human space exploration program," Thompson said. "It is emblematic of a shortening of American horizons."

## **New Mission For American Aerospace Giants (NYT)**

By Jack Duffy

[New York Times](#), July 19, 2010

NEW YORK - For Boeing, Lockheed Martin and the other aerospace giants that have been the backbone of the American space effort for decades, the shift in U.S. space policy announced by President Barack Obama means a major change in mission.

After working for decades with largely one customer - the U.S. National Aeronautics and Space Administration - to ferry astronauts and equipment into orbit, major players in the aerospace industry are facing a commercial market with a range of entrepreneurs who say they can do that work for less.

Under Mr. Obama's ambitious initiative, NASA would rely on commercial companies to provide a kind of taxi service to the International Space Station, while focusing its efforts on missions into deep space with international partners.

How the aerospace industry establishment will fit into this new plan remains far from clear, analysts say.

"I see a certain analogy with what happened when computers went from being room-sized to being on the desktop," said Louis D. Friedman, executive director for Planetary Society, a space exploration advocacy group.

"Some companies barely survived, while others adapted and thrived. I think we are going to see something like this in the aerospace industry."

The most immediate effect of the proposed policy shift will be on jobs. Mr. Obama's plan to cancel the Constellation program, started five years ago by President George W. Bush to send astronauts back to the moon, could mean the end of nearly 12,600 jobs, according to estimates by aerospace contractors. The cuts would fall most heavily on Alabama, California, Florida, Texas and Utah, and political opposition from those states has been vociferous.

The Constellation program has already cost American taxpayers about \$9 billion.

The end of Constellation would largely stop work on the Ares I rocket, which was to replace the space shuttle for carrying astronauts into orbit and would scale back work on the Orion crew capsule, which was to ride atop the Ares I. Lockheed Martin said more than 2,000 jobs depended on the Orion program, while Boeing said 1,500 jobs would be affected by the retirement of the space shuttle and the canceling of Constellation. Alliant Techsystems, known as ATK, said the ending of Ares I would put 5,000 jobs at risk at its plants and those of its subcontractors.

Mr. Obama has said that the changes do not amount to a retreat from manned spaceflight and that adding private entrepreneurs to the mix will create a more vibrant industry with more astronauts in space and more business for established companies and newcomers alike.

One established player that appears to accept Mr. Obama's plan is United Launch Alliance, a 50-50 joint venture of Boeing and Lockheed Martin. The company, whose Atlas and Delta rockets have carried military and commercial satellites into space for decades, said it had no plans to cut any jobs.

"Just the opposite," a U.L.A. spokesman said.

"The president's new plan could have a significant increase in demand coming from NASA and could create new jobs at U.L.A.," the spokesman said, adding that U.L.A.'s long record of successful launchings made it "very different from new entrants."

One new entrant much on the minds of the aerospace community is Space Exploration Technologies, founded by Elon Musk, the Internet entrepreneur who helped found the payment system PayPal. The company, which did not exist a decade ago, has \$2.5 billion in contracts, including \$1.6 billion from NASA to provide a minimum of 12 flights to deliver cargo to the space station starting in 2011.

The company, known as SpaceX, bolstered the credibility of Mr. Obama's plan by launching into orbit last month the Falcon 9, a rocket measuring 158 feet, or 48 meters, and weighing 735,000 pounds, or 335,000 kilograms. The rocket,

which the company said cost about \$50 million, put a model of its Dragon capsule into orbit about 160 miles, or 260 kilometers, above the Earth without a hitch - an unusual development for a maiden flight.

SpaceX, which plans to launch a fully operational rocket and capsule this summer before sending one to the International Space Station next year, said the successful June trial was a major victory "for NASA's plan to use commercial rockets for astronaut transport."

The part of Mr. Obama's plan that calls for missions that leave the Earth's orbit to explore deep space will probably not be spelled out for several years. Mr. Obama has said that NASA will start developing a heavy-lift rocket for deep-space missions by 2015.

That gap of several years between the planned end of the Constellation program and the start of work on a new heavy-lift vehicle does not please the aerospace contractors, who say they could shift at least some workers who might otherwise be laid off into a new deep-space program. It is also dangerous, some analysts say, because after canceling the Ares I, the United States would have no backup rocket if new commercial companies failed to deliver on their promises.

"It's a risky strategy," said Loren B. Thompson, an analyst at the Lexington Institute, a research group financed in part by military contractors. "Our capacity to send man-rated rockets into space is at risk."

In a statement in response to Mr. Obama's April 15 speech at the Kennedy Space Center in Florida outlining his new policy, Boeing emphasized the need for immediate development of a heavy-lift vehicle.

"We have the technology and the people to commence development of these vehicles now," Boeing said. Accelerated development of a deep-space launching vehicle and capsule "could achieve maximum benefit for American tax dollars by drawing on the cutting-edge technology already being developed for the Constellation program," Boeing said.

John M. Logsdon, the former director of the Space Policy Institute at George Washington University, said he had no doubt that NASA would contract for a heavy-lift vehicle sometime in the next few years and that the traditional aerospace companies would get the bulk of this work.

"But in the short-term, they stand to lose the contracts for Constellation and all that goes with it," he said "They are trading contracts in hand for some very uncertain contracts in the future."

## **JSC Rescue: Senate Bill Bolstering Manned Space Flight Welcome News For Houston (HC)**

[Houston Chronicle](#), July 17, 2010

With a strong push by Texas Senator Kay Bailey Hutchison, a compromise NASA funding bill won unanimous approval from a key committee and has good prospects for approval by Congress with support from the White House.

While it cancels a mission to the moon, it also would save key programs and thousands of jobs at Houston's Johnson Space Center.

"The bill that we put out of committee today preserves our workforce, our creativity and the commitment to humans in space," said Sen. Hutchison after the vote. The Texas Republican and Florida Sen. Bill Nelson, a Democrat, cosponsored the bipartisan effort to craft a budget with a more robust manned spaceflight component than that proposed by President Barack Obama.

There's a lot for Houstonians to like in the \$19 billion spending plan. While it cancels the Constellation program moon missions, it substitutes Mars and asteroids as long-term destinations. It will extend the life of the International Space Station through 2020, direct NASA to build a new heavy-lift launch rocket to be operational in six years, and continue development of the Orion crew exploration vehicle. At the same time it preserves the thrust of the Obama plan to support development of commercial launch crews to low Earth orbit.

In addition to saving most of the expected 7,000 layoffs at JSC under the Obama plan, the compromise would maintain the Clear Lake facility's primacy as the center for astronaut training. According to Bob Mitchell, president of the Bay Area Houston Economic Partnership, the Senate measure, if passed by Congress, would solidify JSC's position as "the home of human space exploration."

The Senate budget also provides for an extra space shuttle flight, extending the life of the program through next year. Sen. Hutchison has called for continuation of shuttle launch capabilities until an alternative launch craft is operational. We believe that is in the national interest and well worth the additional expense.

Otherwise, America will be dependent upon costly flights on Russian Soyuz craft for access to the space station and rescue missions in the event of an emergency there.

NASA officials have noted that the shuttle fleet remains in good flight condition and that safety is not an overriding concern.

In an interview with the Chronicle's Eric Berger, NASA Deputy Administrator Lori Garver called the compromise "a big step in the right direction."

We agree, and urge legislators in both the House and Senate to move swiftly to provide essential funding to keep manned space exploration - and the Johnson Space Center - on track in the next decade.

## **EDITORIAL: NASA 'Compromise' A Good Start (AL.com)**

By John Peck, The Huntsville Times

[al.com \(blog\)](#), July 19, 2010

HUNTSVILLE, Ala. \_ NASA hopes to dodge a budget meteorite under a Senate plan that would avert cuts to the space agency's role in America's manned spaceflight program.

President Obama wanted to put a heavier reliance on the commercial rocket sector while leaving the futuristic stuff - like landings on Mars and an asteroid - to NASA.

That move threatened to kill scores of NASA jobs, including hundreds in Huntsville working on imperiled NASA rocket programs.

It also put sole reliance on Russia to haul astronauts and supplies to the International Space Station until private space vehicles could be developed.

Now, a key Senate committee has unanimously backed a reported compromise between the White House, which wants to kill NASA's post-shuttle Constellation rocket program, and Congress, which wants to keep it.

The compromise keeps NASA in the business of building manned rockets, while also retaining robust financing for commercial space vehicle development.

The measure won unanimous, bi-partisan approval Thursday by the Senate Commerce, Science and Transportation Committee.

And while that's strong support, the plan still has a long way to go through the authorizations and appropriations process, including approval by the White House and full Senate, and reconciliation from the House of Representatives.

Portions of the Constellation program, including the Orion crew capsule and a heavy-lift rocket designed to travel to Mars, appear likely to survive in some form but details won't be known until the final vote.

The \$19 billion budget provides for another shuttle flight some time next summer in addition to planned launches in November and February next year.

It continues development of the crew capsule and expedites development of a heavy lift rocket.



A key provision requires NASA to use existing contracts, workers and capabilities from the space shuttle, Orion and Ares 1 programs.

Under the White House budget proposal released in February, NASA would have stopped work on the Orion capsule and Ares rocket projects. Those projects, under the combined name of Constellation, represented America's plan to resume human exploration of the moon and beyond.

The Senate authorization keeps asteroid and Mars goals for NASA but accelerates the development timeline for a new heavy-lift rocket so it is fully operational by Dec. 31, 2016.

Space advocates are optimistic the White House can support the bill because it leaves Mars, rather than the moon, as a primary destination.

It also retains funding, though at reduced levels, for commercial space development - an industry the president wants to see flourish.

A key here is that all sides seem to be talking. America can't have a space program that changes like the wind with each new president, new Congress and NASA administrator.

Nor can it be led by an executive branch without buy-in from Congress, through its constituents. A solid U.S. space program contributes greatly to our science, our technology, our economy and yes, our pride.

The compromise is a good first step to perpetuate a NASA that can thrive for the betterment of mankind.

## **Bill Saves Michoud Jobs, Sen. David Vitter Says (NOTP)**

By Bruce Alpert, Times-Picayune

[New Orleans Times-Picayune](#), July 19, 2010

A Senate committee Thursday voted to establish a new U.S. space agenda that one of the panel's members says will protect hundreds of jobs at the Michoud Assembly Facility in New Orleans.

View full size [John McCusker/The Times-Picayune](#) The final external fuel tank made at the Michoud Assembly Facility rolls out July 8.

"With this bipartisan bill, we're not only going to start making the changes we need to save Michoud, we're going to ensure these jobs stay in Louisiana and bring NASA back in line with its original mission as the world's leader in manned space flight," said Sen. David Vitter, R-La.

Vitter made his comments after the Senate Commerce, Science and Transportation Committee unanimously approved legislation setting future space goals for NASA.

Michoud, which has built the external fuel tanks for NASA's space shuttle program, has already downsized from 2,600 employees in 2009 to about 1,300 today.

There will still be more job cuts, but the Senate bill, should it win approval by the full Senate and House, and get the requested financing, could keep the facility functioning for years to come, according to Vitter, the top Republican on the committee's space subcommittee.

It's a bit of good news after the announcement this week by Northrop Grumman that it would close its Avondale Shipyard, which employs 5,000 workers.

The Senate bill, which won a quick White House endorsement, is a compromise between President Barack Obama, who wanted a faster transition toward commercial rocket launches to save money, and members of Congress who wanted to protect space agency jobs in their communities.



The bill supports Obama's call for an additional \$6 billion for NASA, though it cuts in half the administration's request to fund development of commercial manned space exploration.

Vitter said the compromise requires that the Orion crew vehicle be developed for space missions. That provision, according to Vitter, should ensure retention of 250 to 300 jobs at Michoud.

Another provision directs NASA to begin refurbishing the ET-94 space shuttle external fuel tank, which was damaged by Hurricane Katrina. That should provide 300 to 500 jobs at Michoud, according to Vitter.

The bill directs NASA to fly another shuttle mission in 2011, though that fuel tank wouldn't be used for the mission. Rather, it would serve as a backup in case another shuttle mission is required to deal with an emergency at the International Space station, or for some other unanticipated need, according to Vitter staffers.

The bill also directs NASA to move forward with developing a heavy-lift launch rocket immediately, a change from the president's proposal to begin development by 2015. Vitter said that should also generate more work at Michoud.

Vitter called the agreement, hammered out by Democrats and Republicans on the Senate Commerce Committee, a rare example of bipartisanship in a Congress that has been one of the most partisan in American history.

"It's somewhat of a miracle that we have been able to achieve the unanimity in this consensus," agreed Sen. Bill Nelson, D-Fla., a former astronaut who helped negotiate the final deal.

Marion LaNasa, spokesman for Lockheed Martin, which operates the Michoud assembly facility, said company officials need to review the legislation in detail before projecting precise job impacts.

"We're also all familiar with the legislative process, and I would think there are a number of steps to go before this is a done deal," LaNasa said.

Back in February, the White House announced that NASA would cancel the constellation program, which cost \$9 billion but produced only one formal test of the program's Ares 1 rocket.

The Senate bill wouldn't change the general outlines of the Obama proposal. Just as the president recommended, the Senate bill drops the goal established by President George W. Bush for a resumption of manned space flights to the moon by 2020.

Still, the bill directs NASA to use existing technology from the shuttle program and the constellation program to develop a new heavy-lift vehicle.

"I believe we have reached a sensible center," said Sen. Jay Rockefeller, D-W.Va., the Commerce Committee chairman.

Vitter said that usually there are no guarantees the Senate Appropriations Committee will fund the program designs set by the authorizing committee. But in this case, he said both the Democratic and Republican leaders of the Appropriations subcommittee that controls NASA spending are on board with the Commerce Committee policy directives.

## **Nelson 'Compromise' Could Hurt Florida In Space (SUNSTAT)**

By Kenric Ward

[Sunshine State News](#), July 19, 2010

A space appropriation bill promoted by Sen. Bill Nelson may have Floridians thinking President Barack Obama's plan wasn't so bad after all.

The Nelson-backed compromise legislation would accelerate development of a heavy-lift rocket -- a move that Space Coast officials applauded Thursday -- but it pulls \$13.8 billion from projects that would have benefited Florida.

"We do not have an objection to a heavy-lift vehicle, because that's good in the long run for Florida," said Space Florida President and CEO Frank DiBello.

"In the short run, however, the heavy lift will benefit Alabama, Texas and Utah far more than Florida," he said.

Nelson argues that a heavy-lift launch by 2016 -- five years sooner than planned by NASA and the Obama administration -- would help to ease expected job losses on the Space Coast.

But DiBello said, "We are concerned that heavy-lift development will be paid for by line items in the budget that were good for Florida -- specifically technology development and the commercial crew venture, for which the Kennedy Space Center was to be the manager."

"A delay in the commercial crew component places onerous restrictions" on future NASA launch initiatives, DiBello added.

From a political standpoint, other states appear better positioned than Florida to maneuver the spending process in their favor. While Rep. Bill Young is Florida's lone lawmaker on an appropriations committee, Maryland, Texas and Alabama have multiple representatives and senators in place.

Nelson, a Democrat, and Sen. Kay Bailey Hutchinson, a Republican from Texas, called the so-called compromise legislation "a major breakthrough," indicating that Senate passage is likely.

"I do have some concerns over that," DiBello responded. "As this legislation continues through the sausage-making process on Capitol Hill, it's important that the Florida delegation step up to defend the elements that are good to Florida."

U.S. Rep. Bill Posey, R-Rockledge, said, "The proposal is a step in the right direction in that it does not embrace the president's most recent proposal, but it still falls far short of the president's August 2008 promise to the Space Coast and the nation that he would close the gap between shuttle and Constellation.

"Legislation I introduced over a year ago would have continued to fly the space shuttle until either the Constellation is ready to come online, or another commercial vehicle is ready to take its place," Posey said. "In my view, that's the best way to maintain America's national security, leadership in space, and meet our future mission commitments."

Nelson spokesman Dan McLaughlin said, "The process is still ongoing, and the goal of Sen. Nelson has been to put the state of Florida, the Space Coast economy and the overall space program in as good a shape as possible."

## **John Kelly: NASA Headlines Raise Questions (FLTODAY)**

### **White House backtracks on Bolden; Constellation may get a compromise**

By John Kelly

[Florida Today](#), July 19, 2010

BP and the government may be close to capping the oil well leak, but the gusher of space news continues.

These were two stories and one photograph that caught my eye and raised good questions.

Question: Is the White House tip-toeing away from what NASA Administrator Charles Bolden told Al-Jazeera?

Answer: It's beginning to look that way. Maybe they're clarifying. Maybe they're submitting to political pressure. The week before last, two different White House officials defended Bolden's statement that President Barack Obama told him improving relations with Muslim nations was one of his "foremost" priorities in international relations. This week, the White House press secretary said international relations "are not among Bolden's assigned duties." Which is it?

It bears repeating a brief version of last week's column: this is a nonsensical waste of important time. The White House, Congress, NASA and the nation's science and aerospace leaders need to be setting a course for the paralyzed space agency, which is waiting for politicians to work out their differences over NASA's mission. International relations has

always been one of NASA's missions. Remember Apollo-Soyuz? Shuttle-Mir? Foreign nationals flying on the space shuttle? The International Space Station?

Bolden's mistake was labeling it "foremost" instead of one small part of NASA's international relations goals. NASA and the White House need to get back to business. Instead, the White House's latest statement fueled blazing rumors about Bolden's future.

Question: Is the U.S. Senate about to reinstate the once doomed Constellation program?

Answer: Yes, at least parts of it, under different names. A compromise bill shifts funding for privatized space taxis into future years, which critics say stunts their growth and supporters say forces them to prove what they can do before they land fat NASA contracts. The measure uses some freed-up money to start now on the development of a new heavy-lift rocket (based on concepts borrowed from the shuttle and the rocket previously known as Ares V). The legislation also requires development of Orion as a fully-capable spacecraft, not just a space station escape pod.

Some Florida leaders are worried. They say it protects some short-term jobs here, but delays financial seed money for a more vibrant, diversified commercial space sector. Certainly, it keeps more KSC workers on the job in 2011 and 2012 -- about 2,000 under optimistic estimates. The goal of supporters like Sen. Bill Nelson, the Florida Democrat who once flew on the shuttle, is a more stable bridge between the current program and the future.

The biggest question: can a compromise get through Congress before the election season. The worst thing that can happen for NASA is no new budget -- rather, an extension of the current one -- leaving the space agency stuck for months or even another year in limbo.

Question: Who isn't curious about asteroids?

Answer: Check out the stunning photographs of Lutetia, a metal asteroid, snapped July 10 by Rosetta, an international probe built by the European Space Agency and involving NASA instrumentation. The more we see and learn about asteroids, the more captivating it is to think about sending human explorers on a rendezvous or landing mission to one.

## **NASA's Lori Garver Addresses The Senate Bill Issue (HC)**

By Eric Berger

[Houston Chronicle](#), July 19, 2010

Since her appointment NASA deputy administrator Lori Garver has been something of a lightning rod, almost the "bad cop" to Charlie Bolden's "good cop" when it came to supporting President Obama's spaceflight proposals. Some people viewed her as the architect of the President's plan.

However, after speaking to Garver late Thursday, it appears that she is largely on board with the Senate's plan for NASA, which strikes a compromise. In this respect she is also speaking for the White House, I believe.

I thought NASA observers might find a full transcript of the short interview helpful.

What do you think about the Senate bill?

It is something we feel is very strongly aligned with the milestones the President laid out, accelerating the beyond low-Earth orbit capability.

Can I take that to mean the White House is likely to support this bill in large part?

We think it definitely supports key aspects of what the President set out to do with NASA and we think it's a big step in the right direction.

Do you see the Senate bill moving forward only after significant modification?

We continue to work with the Congress. What's nice is that this is a collaborative effort now and we think this is a great start. It accomplishes the major shifts the President set out to have for the space program.

Do you think it is important to fly the additional shuttle mission that the Senate bill calls for sometime next summer?

We have of course evaluated the launch-on-need mission and had planned to have it available if needed. If the funding is ultimately there in the final bill I think we can well utilize it. Obviously trying to reduce the gap has been a goal of all of us. And I think the workforce transition is something we have all been concerned about, and this helps address that as well.

One of the big components of the President's plan was funding for advanced technologies so that we could get to Mars more quickly and efficiently. He proposed \$6 billion over five years. The Senate is offering less than \$1 billion over three years. Is that a concern?

We hope to be able to start on as many of the technology investments that we can. We believe there's some room in the heavy-lift program also for some technology development. It is something we want to continue to work with Congress on.

There has been, needless to say, a lot of acrimony surrounding human spaceflight since the President's budget proposal in February. Do you hope today is the beginning of a healing process?

I think an important aspect of what has happened today, and in recent days and weeks, is the fact that we are working together toward common goals. Frankly I have always felt we would get here. Even I found it hard to wish for this to happen this so soon. The leadership of the committee has been fabulous. We really look forward to exactly what you said. A lessening of the tension and a recognition that what we've all been working for, and I've tried to say this lately quite a bit, we aren't fighting over whether we should have a robust human spaceflight program, we're fighting over what the best way is to do it. In the old days we used to fight about whether we should have one. So this is progress. But yes I am sensing a definite way to work together.

From NASA's perspective is the proposal outlined in the Senate doable? Is there enough funding to build a 70 to 100 ton metric rocket and crew capsule by 2016, or are they asking too much?

NASA is all about doing ambitious things. It's an ambitious program.

We really feel that the bill preserves those most important parts of the President's budget in pivoting to a realignment of the program to the 21st century. So just the rocket itself we feel is a piece that takes advantage of the commercial crew aspects that allows us to reduce the space transportation costs for astronauts. We also are investing in the 21st century launch which should reduce our infrastructure costs. All of that will teach us, and we have to learn it quickly, how to do things differently so that we can have this budget be a doable thing. Over the last few months industry has been talking to us about doing things differently, things we can do to help us be more effective, play a more traditional government role, which is along the lines of what we're trying to do with commercial crew and cargo so that we can work with industry and be more efficient.

## **Meanwhile, In The House... (SPACEPOL)**

[Space Politics](#), July 19, 2010

With the Senate moving ahead with an authorization bill, what will the House do? "As the ranking member of the House authorizing committee, I'm eager to reauthorize NASA and get the train back on track," Rep. Ralph Hall (R-TX), ranking member of the House Science and Technology Committee, said earlier this week at a Space Transportation Association breakfast on Capitol Hill. "I think it's possible... It's something we absolutely have to do."

That committee is drafting its version of an authorization bill, but Hall said the Democratic leadership of the committee has not shared any details about the legislation with him. "The chairman has not shared a bill with us," Hall said, referring to committee chairman Rep. Bart Gordon (D-TN). "But I'm hopeful we're going to get some of these things in there by the end of September" because if the process extends beyond that, he said, it would be hard to get anything done. "Some of these things" referred to his priorities for NASA: human spaceflight, a "balanced" science program (expressing concern about an outsized increase in Earth sciences funding), and aeronautics research. For human spaceflight Hall indicated his support for Constellation, which he said "would have provide a logical job transition path for workers coming off the Space Shuttle contracts, and kept the faith with international partners."

Hall didn't indicate in his remarks his opinion of the Senate bill, but one key House member endorsed the bill on Thursday. "I applaud the Senate Commerce Committee for reporting out a NASA authorization bill that embraces our compromise proposal on exploration," said Rep. Frank Wolf (R-VA), ranking member of the Commerce, Justice, and Science subcommittee of the House Appropriations Committee, in a post on The Hill's Congress Blog. The "compromise proposal" he refers to is a letter he and about 60 other members of the House signed last month, asking President Obama to begin the immediate development of a heavy-lift launch vehicle.

Wolf's subcommittee, when it took an up an appropriations bill late last month, elected not to take a stand and defer to authorizers on the future direction of NASA's human spaceflight plans. "I hope the House Science Committee will similarly adopt this compromise and consider its authorization bill," Wolf wrote yesterday. "As ranking member on the House Appropriations Subcommittee on Commerce, Justice and Science, I believe it's important for the authorizers to signal their support so that we can enshrine this new policy in the fiscal year 2011 appropriations bill."

## Shuttle, I Can't Quit You (PARABOL)

By Doug Messier

[Parabolic Arc](#), July 19, 2010

There are a number of conclusions that can be drawn from this week's Senate vote on NASA:

1. We're stuck with the space shuttle forever. Although the orbiter fleet will be retired, the system's legacy will live on through the shuttle-derived heavy-lift vehicle (SD-HLV) that Congress is ordering NASA to start building immediately.

This system is expensive technology that requires a small army of people to build, launch and maintain. The good news: a lot of highly-skilled people are employed. The bad news: it soaks up so much money that we can't do very much in space once we get there.

The American space program has been hobbled by this reality for decades now. The Senate plan ensures that we'll be stuck in that cycle for the foreseeable future.

Texas Sen. Kay Bailey Hutchison

2. The job you save could be your own. This move was, above all, about saving jobs. Not only aerospace jobs in Alabama, Texas, Utah and elsewhere, but the jobs of the people who represent those states in Congress.

3. Don't ever let Congress design a rocket. The SD-HLV is supposed to serve as a backup in case NASA's efforts to contract with private-sector launchers fail. However, using it to launch a small Orion into a 250-mile high orbit is an insanely expensive waste of money.

Yes, the heavy-lift vehicle could send Orion to the moon or asteroids. However, there doesn't seem to be much money in the budget to do the other things required in order to conduct such missions. So, we're rushing to build a heavy-lift vehicle for which we have no real short-term need.

ULA's Delta IV Heavy rocket

4. You're still learning how to walk even at age 50. In justifying a slow build-up on commercial crew systems, Sen. Bill Nelson says the industry must learn to walk before it can run. Really?

It's a strange thing to say, given that United Launch Systems is a joint venture of two companies, Lockheed Martin and Boeing, that have been around since the beginning of the Space Age. ULA has two rockets - Delta IV and Atlas 5 - that could be human-rated for orbital missions. In fact, the company just celebrated the 50th anniversary of the first Delta flight.

If they haven't figured it out by now, they never will. What can they learn in the next four or five years that will make a real difference? If NASA can't work with its industrial partners to build and fly safe rockets and spacecraft, they should all hang it up and call it a day.

5. Charlie Bolden should not take any sales jobs. I respect Bolden as an astronaut and a military man. But, whatever his other attributes are as a leader, he's a poor salesman. He got off to a bad start when he announced the new plan in February. To his credit, he took responsibility for it.

NASA Administrator Charles Bolden

However, his performance really didn't improve very much. Bolden was never able to articulate a coherent vision or rally much support for the President's plan. And he didn't seem to get that much help from President Barack Obama, whose public statements about the plan didn't clarify matters.

6. All things being equal, I would rather watch sausage making. My criticism of Bolden and the Administration notwithstanding, I place much of the blame on Congress.

The behavior of many Congressional opponents has been atrocious. They made little effort to really understand the plan. They told outright lies about it. They whispered ominously of dark conspiracies. They held hearings that were jokes. And, worst of all, they failed to fully face most of the unpleasant realities outlined in the Augustine Committee's report.

The result could very well be heavy-lift, Orion and commercial crew programs that continue to be underfunded and behind schedule. The gap in flights between the end of the space shuttle program and its successor could be equally as long, if not longer, than they are now.

Former NASA Administrator Mike Griffin

7. Mike means never having to say you're sorry. Faced with a decision five years ago about how to implement President George W. Bush's plan to return to the moon, then NASA Administrator Mike Griffin had a chance to put an end to the shuttle era once and for all. He could have chosen an expendable booster for orbital missions and gotten NASA started on a heavy-lift vehicle built from new technologies.

Instead he opted to use shuttle-derived rockets for both missions. Officially the decision was based on engineering and safety concerns. The reality was more pedestrian: a need to keep people employed in key states.

The effort turned into a fiasco that the Obama Administration was left to fix. Given a chance to admit his error and support a realistic approach, Griffin opted to defend his legacy. In so doing, he demonstrated an unfortunate trait of the last Administration; namely, never admit mistakes.

Well Mike, you got most of what you wanted. We'll have to wait and see if it's really what the country needs.

## NASA NEWS

## DIPLOMACY (HC)

## **Nothing new about NASA outreach**

By John Getter

[Houston Chronicle](#), July 17, 2010

The reaction to the NASA administrator's comments about Muslim outreach makes me sad, but probably not for the same reasons it is upsetting to many others. For nearly two decades, I had the great privilege of watching and even participating a bit in the American space program, mostly as a journalist with the enviable assignment of "space reporter" in Space City, USA, Houston, Texas. I covered the rebirth of the American space adventure after the long period when only Russians flew because our government had ended the Apollo program and chose to allow nearly a decade to pass without a functioning space program.

When the space shuttle program came to life in 1981, it rekindled a great passion in America and Americans. It is our birthright, tradition and habit to explore, to test limits, to try new things and go to new places. We create amazing machines to do so, or perfect the underdeveloped tool that changes mankind. We did not invent the horse-drawn wagon, but we conquered and settled an entire continent using them. Americans did not invent the car, but we perfected its manufacture and made it useful for billions of people. We did not invent the airplane, but we made it work. And, we did not invent rockets or spaceflight, but with the shuttle we opened up a new era when common people could do the amazing - travel at Mach 25, five miles every second and circle the Earth to live and work in space.

In 1985 President Reagan, recognizing the tremendous political power, prestige and privilege of flying in space, especially in the underdeveloped world, made good on a deal with our new friends in Saudi Arabia and invited Prince Sultan Salman Al-Saud to be part of the crew of STS 51-G. The first Arab to fly in space had a significant effect on our relations with many Arabs. It had a big impact in Saudi Arabia. It made this Arab prince appear accepted as an equal by the world's greatest advanced nation. He was in a position to become not just the first Muslim to have a proven flying carpet, but to float on that prayer rug, spot the new moon at Ramadan and be part of a show of American goodwill and diversity in places where people still ride camels, men and women are kept apart and girls cannot read. When they saw the sultan (as he insisted we all call him) they saw his American crewmates, commanded by a man named Brandenstein, accompanied by a French spatonaute and a woman scientist. At the time, it was big stuff.

Back then, Charlie Bolden was one of the astronauts we all grew to truly admire. This now-retired Marine general meets the standard of "an officer and a gentleman" as well as anyone who has ever worn a uniform. He was a highly respected astronaut among a batch of 200 of the brightest overachievers in the world. He is an intensely spiritual and religious man and I am proud to count him among my friends.

And that is why this latest story makes me sad.

Bolden knows first-hand the magical power that spaceflight can have to make people literally see the world differently. As he and others have observed, from up there it is hard to pick out any borders. But having worked directly with space travelers from many countries and political systems, he also knows first-hand that it takes a lot of work to overcome differences, and that nothing furthers that goal better than joining together to take on a difficult, dangerous and amazingly spectacular mission.

In the same week that Bolden's comments to Al Jazeera were published, there were some other space developments in the national media. An American arrived at the International Space Station and a shipload of new supplies also docked there, both using Russian spacecraft. Meanwhile, here in America, more than a thousand of the best and brightest were laid off by NASA even as the last shuttle fuel tank for the final shuttle mission left the assembly plant for its slow barge trip to Florida. It was an unheralded funeral procession for a once-great space program.



That President Obama told Bolden to reach out and use the space program as a tool to build bridges with all sorts of people is not a new idea and is certainly a reasonable thing to undertake. But to ask him to do so at the same time he had canceled the shuttle, canceled a return to the moon and effectively canceled the NASA manned space program for at least the next decade, probably longer, is disheartening and un-American.

And, just as the president has become so adept at blaming others for any failure while tap dancing to avoid taking responsibility for almost every problem, Bolden now takes the heat for saying a prime goal of the American space program is to gain influence with adversaries and friends.

Once, there was a great space race between two competing systems, the communists and the capitalists. The goal was the moon but the very real political ends were the hearts and minds of Third-World and developing nations. Which system would they see as superior? America won.

Then, thanks to the development of a remarkable machine called the Space Shuttle, there came a period of great economic and development cooperation. The joint program to build the space station that could only succeed with Russian experience making big parts of a space station that could only be taken into orbit by a shuttle played a key role in helping to keep the dramatic end of the Soviet Union peaceful. It meant the same people who could build bombs and rockets to carry them were instead paid to build a space station that involved 17 nations. The world won.

Now, we have chosen to pull back. We have decided that in spite of history. We know that great nations explore and develop leading-edge technology. We know that when they cease doing so they decline. But don't despair. We are the ones we've been waiting for and we need not lead the way. We have decided that private industry, struggling to simply stay alive in the midst of economic chaos, is somehow equipped to replace a huge investment in space technology that had been considered so large only the government could do it for 60 years.

Once we said we choose to go to the moon in this decade . not because it is easy, but because it is hard. Now, we say we'll get to an asteroid somewhere, sometime, somehow with something or other. And, oh yes, the program that will do that will be seen as so prestigious and cutting-edge that it will allow us to build new bridges, turn enemies into friends and impress the world that our way of living is the way of living. Sure.

Bolden's comments are a reminder of what we could do, what we could be and how we could continue to help create a better world. He could make it happen if he had the political backing of national will. That his comments ring hollow and make him appear nearly foolish to many shows the tragedy of having an American president who thinks we are unexceptional, arrogant to assume we can lead and too poor to tell our children there is more to see, to do and to learn.

What he said was, "Yes, we can!" What he did was, no, we can't.

So, it makes me sad for my friend Charlie. And, it makes me sad for my country.

Getter, who covered the space program for KHOU-TV in the 1980s, is an award-winning journalist and television producer.

## **Our Take On: Off In Space & Post-ed Notes (ORS)**

[Orlando Sentinel](#), July 17, 2010

Off in space

The last thing supporters of a robust U.S. space program - and we count ourselves among them - need at this pivotal juncture for NASA are distractions.

But NASA Administrator Charles Bolden created a big one when he told the Arabic news network Al Jazeera last month that a "foremost" goal of his agency is to "engage much more with predominantly Muslim nations to help them feel good about their historic contributions to science and engineering."

After a predictable uproar ensued, presidential spokesman Robert Gibbs clarified to reporters that outreach to the Muslim world is "not the task of NASA." Indeed, that would be the State Department's role.

When we chided Mr. Bolden last month for poor judgment, an indignant reader called it "character assassination." Not by a long shot; we were deploring a different example of the administrator creating controversy at a time when NASA can ill afford it.

Mr. Bolden needs to do a much better job in keeping the focus on the future of the space program.

Post-ed notes

Lucky the Orange County School Board didn't have Paul Revere's job. Colonists would've been knee-deep in redcoats by the time word came.

The board has decided to post workshop agendas online. But only after they're finalized, and board members get first peek, will meeting and workshop materials be posted online.

Nice try, but that'll leave citizens facing reams of files to get up to speed with short notice. It's unfair, scuttles informed discussion, and violates the spirit of state law, which promotes posting everything online a week ahead.

Late notice would've been bad for the colonies. And it's bad for the county.

## **Obama's Monday: Mercury Astronaut, Mercury Team (AP)**

[Associated Press](#), July 19, 2010

Back from a weekend vacation, President Barack Obama is welcoming a Mercury astronaut and the Phoenix Mercury women's basketball champions to the White House. The day that will end with the East Room resounding with the music of Broadway.

The president begins his week with remarks about the economy from the White House Rose Garden.

He'll pay tribute to the Phoenix Mercury, who won the WNBA championship last year, and then discuss space exploration with former Sen. John Glenn, who orbited the Earth in the Mercury spaceship in 1962.

In the evening, Obama and first lady Michelle Obama will host the Broadway salute, featuring music from familiar theatrical productions.

## **Apollo-Soyuz Test Project Crew Reunites For 35th Anniversary (COLSPACE)**

[collectSPACE.com](#), July 19, 2010

July 16, 2010 - The four surviving American astronauts and Soviet-era cosmonauts who flew the first international space mission, the July 1975 Apollo-Soyuz Test Project (ASTP), reunited on Thursday to celebrate the flight's 35th anniversary and introduce a commemorative edition of the watch they wore in space.

Thomas Stafford and Vance Brand, who with the late Donald "Deke" Slayton formed the American ASTP crew, met with their Russian counterparts, Alexei Leonov and Valery Kubasov at the Omega Watches Boutique in New York City.

All but Leonov, who had fallen ill earlier in the day, took part in an evening panel discussion at the watchmaker's flagship store coinciding with the date of the mission's two launches.

Two crews, one mission

Separated by half a world and seven-and-a-half hours, the Soviet Soyuz and U.S. Saturn IB rockets lifted off on July 15, 1975 from the Baikonur Cosmodrome in Kazakhstan and Kennedy Space Center in Florida, respectively. Two days later, the two capsules rendezvoused and connected with the help of a specially-designed docking adapter that launched with the U.S. spacecraft.

"We got up there and I flew in and we did the docking, and we were soft-docked and captured," recalled Stafford, the U.S. commander for the ASTP mission, in an interview with collectSPACE. "I spoke to him in Russian and so did Vance, and Valery and Alexei spoke to us in English, and then we moved into the hard dock and we were locked together. Alexei said, 'We have capture.'"

Three hours after docking, at 3:17 p.m. EDT on July 17, the hatches were opened and Stafford and Leonov greeted each other.

"The best part of our joint flight was the occasion when we opened the hatch and I saw the face of Tom Stafford," described Leonov, who in addition to serving as the Soviet commander for the ASTP mission was the first to conduct a spacewalk 10 years earlier. "I said, 'Hello Tom! Hello Deke!' and at this moment we shook hands."

Up to then, the U.S. and Soviet Union were competitors in a space race that began two decades earlier. The next two days of joint crew operations were the pinnacle of four years of planning and cooperation between the two Cold War adversaries.

"It was shown as a symbol to the rest of the world that two great superpowers with different languages, different units of measurement, and certainly different political systems could have a common goal they could work together to achieve. It was really the highpoint of the opening of the Iron Curtain and a great goodwill in the middle of the Cold War," remarked Stafford.

Building off their cooperative success

"Apollo-Soyuz started a big thing," remarked Brand, who served as Apollo command module pilot. "It has evolved into other cooperative programs: Mir and the International Space Station (ISS). The International Space Station has something like 15 countries involved. There is a lot of cooperation that I think was never expected back in the 1970s and it has been a very good thing."

"Thirty-five years later, there are so many areas where we have good cooperation," Leonov agreed.

The ASTP commemorative plaque is assembled on orbit. (NASA) During their two days together in orbit, the astronauts and cosmonauts exchanged ceremonial gifts -- including U.S., Soviet and United Nations flags, commemorative plaques, medallions, certificates and tree seeds -- and conducted joint science experiments. The three Americans and two Russians visited each other's spacecraft, shared meals and conversed in each other's language.

They also spent time observing their respective nations from space.

"Valery and I had a telecast over the Soviet Union, which was a little bit larger than what Russia is now. It was a huge country -- still is -- and to get across it, it was nine or 10 timezones, at least," described Brand. "I remember looking down at that terrain and Valery and I were describing it to people. We were describing the mountains, the deserts, the fields, the cities and that was an example of something that was a lot of fun to do."

The crew members today see their mission and the way they conducted themselves aboard as having provided the groundwork for the joint projects that followed in the three decades since.

"The basis, the premise of how we operate [the ISS] was all based on Apollo-Soyuz, or Soyuz-Apollo as they say in Russia," said Stafford.

Astronauts Stafford and Slayton toast 'vodka' -- actually borchtsoup labeled as vodka -- aboard Apollo-Soyuz. (NASA) "I think that crews now in orbit on the International Space Station use the lessons from the Soyuz-Apollo mission for how to fly in space together with other countries like the United States, Russia and European countries," added Kubasov, who later flew another international mission with the first Hungarian in space.

Indeed, the Russian commander of the next Soyuz to fly to the International Space Station in October recalled the ASTP mission during an interview earlier this week.

"When the Soyuz-Apollo flight happened, I was a student and I could only dream of becoming a cosmonaut at that time. But then I got to know and became acquaintances with all of the Soviet cosmonauts who participated in the program. I became friends with all of them. And of course, I got to meet Tom Stafford and Vance Brand -- Deke Slayton was not alive by then -- and so I got interested in the program. It was very exciting," said Alexander Kaleri.

"At that time, it was very hard if not impossible to imagine that it would all lead up to this," added Kaleri, who on prior missions has worked with international crews aboard Mir and the ISS.

"I think we are all happy that our mission 35 years ago inspired people to become astronauts back then and they are now flying in space," remarked Brand.

"After our flight, the Soviet government said that the flight of Soyuz-Apollo was conducted 'perfectly.' It was the first time [to be called perfect], by the way," said Leonov.

"This program was an example of very good cooperation between our scientists, different specialists and the crew. It was very nice to be perfect the first time," he said.

Commemorating their time together

The astronauts and cosmonauts had a chance to reflect and celebrate their anniversary together courtesy of Swiss watchmaker Omega, whose Speedmaster Professional chronograph was worn by both the American and Soviet crew members during the mission.

Stafford, Kubasov and Brand pose at the Omega Boutique in New York on the 35th anniversary of their mission. (Omega) "Thirty five years ago, on the Soyuz-Apollo mission we had Omega watches. Russian cosmonauts took these Omega watches for the first time," explained Kubasov.

"The Soviet crew noticed that all of our crews had Omega [watches] and we explained how they had been through very, very rigorous tests and had been there for Gemini and all through Apollo, Skylab and now we were wearing them for Apollo-Soyuz. They were a standard issue to all the American astronauts," said Stafford. "They decided -- so that we could be synchronized together -- that we would all wear Omegas."

"After that, we flew more Omega watches with Russian crews in space. But during Soyuz-Apollo mission, Omega watch helped us to dock our spacecraft in space and to do our program in space successfully," added Kubasov.

To celebrate the mission, Omega has introduced this year a limited-to-1,975-pieces, 35th anniversary Apollo-Soyuz Test Project Speedmaster Professional. In addition to featuring the mission's insignia etched on its case back, the watch has a dial crafted from a meteorite.

Stafford and Kubasov display Omega's 35th Anniversary Apollo Soyuz Test Project Speedmaster Professional. (Omega) On Thursday, the two Americans and two Russian crew members signed and then donated ten of the watches to the Omega Boutique in New York.

As for their own space-flown Omegas, the U.S. crew's timepieces now belong to the Smithsonian. Leonov flew three Omegas on the mission, one each set to "American time, Moscow time and flight time." Kubasov flew two of the chronographs.

"I took on this flight two Omega watches, one on my hand [wrist] and one in my spacecraft. After our landing and return on the Earth, I give one of the Omega watches to my son and one I give in Russian space museum. My son uses that Omega watch even now, after 35 years," said Kubasov.

## **Governor Wants Retired Space Shuttle (WDTN)**

### **Wright-Patt is "perfect" home**

By Jessica Neidhard

[WDTN-TV](#), July 19, 2010

DAYTON, Ohio (WDTN) - Governor Ted Strickland made a push to have a retired space shuttle in our backyard.

He made announcement at the Vectren Dayton Air Show Saturday.

The governor wants one of three remaining space shuttles to call Dayton home at the National Museum of the United States Air Force at Wright-Patterson Air Force Base.

Strickland said Ohio's deep history of flight is a perfect place for a shuttle.

"Of course the local folks here are totally behind this effort and I think we need to get all Ohioans joined together to fight for a shuttle to come to the air force museum here in Dayton," he said.

There are 18 former NASA astronauts and 20 senate and house members of the Ohio congressional delegation who are behind the shuttle initiative.

## **Exhibits Trace Our Path To Lunar Exploration (HT)**

By Sarah Cure, The Huntsville Times

[Huntsville \(AL\) Times](#), July 19, 2010

HUNTSVILLE, AL. - What happened from 1957 to 1975 when U.S. President John F. Kennedy challenged Americans to be the first to the moon?

How did the development of the Saturn V rocket play a key role in the Apollo missions?

Who is George Mueller?

Don't know the answers? You will once you visit the two new permanent exhibits at the Davidson Center for Space Exploration at the U.S. Space and Rocket Center.

Kennedy's race to the moon was a decade-long challenge for Americans to land a man on the moon and return him safely to Earth before the Soviet Union. In what he called the "exciting adventure of space," Kennedy's dream was achieved on July 20, 1969.

"Into Space" and "To the Moon" both chronicle NASA's initiative to establish its foothold in space and lunar exploration while highlighting influential figures such as George Mueller, NASA's former associate administrator for manned space flight. Mueller changed the face of NASA and its Apollo missions with his "all up" concept for unmanned and manned space flight.

The Space & Rocket Center opened the exhibits Friday and celebrated Mueller's 92nd birthday during the first Space Exploration Celebration.

The first exhibit, "Into Space," gives you a behind-the-scene look into the Saturn V launch. That includes a media and artifact timeline outlining America's race to the moon and the development of the Saturn V, four informational kiosks, two large-scale Saturn V models and interactive exhibits.

"To the Moon" showcases the events leading up to Apollo 8 - the first manned lunar flight - and other missions that made it possible for the U.S. to land on the moon. It will include a media and artifact timeline tracing the events leading up to the first moon landing, a command module mockup that will provide visitors a glimpse into launch-day preparations from an astronaut perspective and a Launch Umbilical Tower (LUT) service arm enhanced with audio effects.

## EXPLORATION SYSTEMS

### SpaceX Plans Demonstration Flight (FLTODAY)

#### **Falcon 9 booster waits in hangar for Sept. launch**

By James Dean

[Florida Today](#), July 19, 2010

The first stage of a Falcon 9 rocket expected to fly the first in a series of NASA demonstration missions in September is resting in its Launch Complex 40 hangar.

The roughly 100-foot long, 12-foot wide booster and its nine Merlin engines arrived at Cape Canaveral Air Force Base from Texas late last week on an oversized flatbed truck, wrapped in protective tarps.

"We're glad to see their first stage arrive here," said George Diller, a NASA spokesman at Kennedy Space Center. "This is the first NASA-sponsored test flight, so it's a significant first step toward having a commercial payload service to the space station."

Delivery of the liquid-fueled rocket stage came six weeks after Falcon 9's successful maiden voyage on June 4.

The flight delivered the rocket's upper stage and a simulated Dragon spacecraft to their intended orbit -- a "bull's-eye," according to SpaceX.

That rocket's first stage broke up when it hit the ocean, but its recovery was not a mission objective. Engineers have been working to correct some unexpected roll that occurred during liftoff and second-stage engine firing.

The second Falcon 9 flight, now targeted for the second week of September, is the first under a NASA program intended to prove that Hawthorne, Calif.-based SpaceX is ready to deliver cargo to the International Space Station.

SpaceX has a \$1.6 billion contract to fly 12 missions to the space station through 2016. Orbital Sciences Corp. of Dulles, Va., has another contract.

The supplies will be crucial to the station's long-term operations after the shuttle program retires next year.

The first demonstration flight under NASA's Commercial Orbital Transportation Services program will fly a real Dragon spacecraft for the first time.

The capsule is supposed to separate from the upper stage and orbit the planet up to three times before splashing down in the Pacific Ocean and being recovered.

At least one, possibly two, additional demonstration flights are planned before a first station supply run next year, if all the tests go well.

SpaceX plans to deliver the rocket's second stage and the Dragon next month.

### Second Falcon 9 Rocket Begins Arriving At The Cape (SFN)

By Stephen Clark

[Spaceflight Now](#), July 19, 2010

Six weeks after the first Falcon 9 rocketed into orbit, pieces of the second launcher have begun arriving at Cape Canaveral for a shakedown flight of SpaceX's Dragon capsule in September, according to the company's top executive.

The Falcon 9 rocket's first stage inside the hangar at pad 40 on Thursday. Credit: SpaceX

The Falcon 9 first stage pulled into Cape Canaveral Thursday after a truck ride from SpaceX's test site in central Texas.

The stage was placed inside the company's rocket assembly hangar at launch pad 40. Officials said they untarped the rocket and completed initial inspections Thursday night.

Engineers plan more testing over the next several weeks to make sure the stage and its nine Merlin engines are ready for flight.

The Falcon 9 upper stage should arrive in Florida by August, according to Elon Musk, SpaceX's founder and CEO.

The objective of the privately-built rocket's second mission is to send the first operational Dragon spacecraft to orbit, where it will briefly test its propulsion, pressure, communications, guidance, navigation and control systems.

"It's really just testing the core functionality of the system," Musk said. "Can it go up there, can it maneuver around, does it maintain integrity, maintain communications, can it re-enter?"

SpaceX is developing the Dragon to ferry cargo to and from the International Space Station beginning next year. The company says the capsule could also be modified to carry humans to orbit within about three years, making the Dragon a leading candidate to win a slice of NASA's plans to procure commercial operators for human transportation to space.

The Falcon 9's first launch June 4 placed an inert Dragon capsule in orbit, but the craft stayed attached to the rocket's second stage. Engineers are methodically reviewing all of the Dragon's systems for the more ambitious upcoming test flight.

Artist's concept of a Dragon spacecraft orbiting Earth. Credit: SpaceX

"It's really driven by Dragon's schedule," Musk said in an interview. "At this point, Falcon 9's design is done, so there are really no changes being done between Flight 1 and Flight 2. This is the first time we're launching an operational Dragon, so that's where the development schedule risk lies."

The Dragon should be shipped to Cape Canaveral sometime in August, but Musk cautioned it is difficult to predict exactly when it will be ready.

"Then there's about a month of preparation, and we'll try to launch in September, I think," Musk said. "It's impossible to predict the exact end of the development schedule."

The Falcon 9 was scheduled to launch around Sept. 9, but the company decided this week to install manual drain valves to back up solenoid valves on the Dragon. That decision will add a few weeks to the schedule, according to Musk.

"There are a bunch of little things like that adding time to the schedule," Musk said.

SpaceX is reconsidering the duration of the Dragon demonstration flight, which was slated to last three orbits, or approximately five hours.

"There's a slight debate internally," Musk said. "It will be somewhere between one and three orbits. We haven't made a firm decision on that point."

The Dragon's heat shield will also be put to the test during re-entry. The capsule's blunt end is coated with phenolic impregnated carbon ablator, a resistant insulator used by NASA's Stardust mission that returned comet samples to Earth.

The ablator, called PICA-X for short, was tested inside an arc jet laboratory at NASA's Ames Research Center at Moffett Field, Calif.



"It's actually the most powerful stuff known to man. Dragon is capable of re-entering from a lunar velocity, or even a Mars velocity with the heat shield that it has," Musk said.

Two redundant drogue parachutes and three main chutes will slow the craft to a gentle landing in the Pacific Ocean a few hundred miles off the coast of California.

Artist's concept of Dragon descending under three main parachutes. Credit: NASA

Musk said SpaceX is tweaking two parts of the Falcon 9 rocket to resolve issues observed in the first flight.

Roll torque from the first stage's nine engines triggered an unexpected twisting motion as the rocket ascended from the launch pad.

"It was more than we expected, but we did expect to see that roll torque," Musk said. "The bottom line is it's a very simple fix. We're going to recalibrate the engines to take out that roll torque."

The engines were programmed not to control the vehicle's rolling motion at the moment of liftoff because engineers were worried the twisting motion could damage the launch pad's hold-down system.

A few minutes later, the second stage began a dramatic spin as the rocket reached space. The roll was captured in views from an on-board camera.

"The roll on the second stage was also a non-fatal situation. We think the actuator may have overheated due to radiative heating from the nozzle," Musk said. "This is speculative, but we can trace the problem down to the roll actuator itself."

More insulation will be added around the actuator to prevent the same problem on the next launch.

"I almost feel concerned that they're aren't more issues," Musk said. "We're continuing to look for near-misses, but we haven't seen any yet. The staging was just spot-on. It went out super straight, no issues there. Ignition was great."

SpaceX was hoping to recover the Falcon 9's first stage in the Atlantic Ocean, but the rocket broke apart as it fell back to Earth.

A restart of the second stage engine also did not go as planned.

"We initiated a short restart on the other side of the Earth," Musk said. "That was not part of the default mission. We're sort of saying no comment on that one, except to say that it did initiate the restart, and it did light the engine. We're not happy with how it did that."

The upper stage may not have been in the correct orientation for the engine's second ignition due to the rolling motion in the stage's first burn, Musk said.

"I really don't want to cast any aspersions on the flight, when it was never one of the goals," Musk said.

## **Maneuvering Engine Attached To Discovery (SFN)**

By Stephen Clark

[Spaceflight Now](#), July 19, 2010

Workers installed the shuttle Discovery's right-side Orbital Maneuvering System pod Thursday at the Kennedy Space Center after replacing a faulty valve.

The 22-foot-long OMS pod was removed from the shuttle June 4 and taken to the Hypergolic Maintenance Facility, where technicians removed a troublesome helium isolation valve.

The component failed during preparations for Discovery's most recent flight, but NASA approved the shuttle's launch in April after analysis showed the valve issue was not serious.

The suspect valve was inside Discovery's Reaction Control System, a network of small maneuvering jets that keep the shuttle in the correct orientation in space. Each of Discovery's two OMS pods include a large orbit-changing engine, 12 primary maneuvering thrusters and two vernier jets.

NASA decided to remove and replace the valve before Discovery's next launch scheduled for Nov. 1, but that required engineers to remove the OMS pod from the shuttle.

Discovery's Nov. 1 launch will begin its final scheduled mission. Commander Steve Lindsey will lead a six-person crew on an 11-day flight to the International Space Station with a storage module, supplies and a spare parts platform.

## **STS-132's OBSS Cable Snag Sets Up Potential Mitigation Plan (NASASF)**

By Chris Bergin

[NASASpaceFlight.com](http://NASASpaceFlight.com), July 19, 2010

Following the snagged cable incident on Atlantis' Orbiter Boom Sensor System (OBSS) Pan Tilt Unit (PTU) during STS-132, the Program Requirements Control Board (PRCB) have outlined their investigation findings, and a potential mitigation plan. Later this month, engineers will test the addition of a permanent cable tie, in order to avoid future snags.

### **OBSS PTU Snag:**

The OBSS and its sensor package are one of the unsung heroes of the Return To Flight (RTF) era, allowing for post-launch and pre-entry inspections of critical area of the orbiter's Thermal Protection System (TPS).

Teamed with an arsenal of imagery footage and expert engineers with the Damage Assessment Team (DAT) in Houston, all post-Columbia missions have successfully returned with added - and justified - confidence in the health of the heatshield.

The evaluations into the TPS begins as soon as the shuttle launches, with ground-based cameras and radar tracking debris hazards, working in tandem with orbiter based assets, such as the ET cameras and crew photography footage of the tank - the main source of debris threats.

Flight Day 2 is highlighted by the first use of the OBSS during the mission, focusing on three primary areas; the nose cap and the port and starboard Wing Leading Edges (WLE) - ensuring the Reinforced Carbon Carbon (RCC) panels avoided damage during ascent.

STS-132's FD2 inspections began without issue, with the OBSS unberthed, followed by the activation and calibration of the Laser Dynamic Range Imager (LDRI) on the boom's sensor suite. A quick check for ice on the starboard T-0 umbilical was followed by a robotic translation to the start point for the starboard wing survey, which revealed an issue with the PTU.

"Background of Issue: During the beginning of STS-132 FD2 Inspection procedures, PTU readings and behavior were erratic and eventually lead to determination that it was not able to move the entire tilt range," noted the PRCB presentation, available on L2.

Ground controllers asked the crew to reset the PTU in an effort to correct the issue, prior to the crew visually noticing a cable - known as the W601 cable - was snagged on the unit's protruding reed sensor.

"All attempts to resolve were unsuccessful: Crew manipulation, ground control manipulation, change in PTU speed. PTU was unable to point to the tilt values required to support FD2 Inspection. A cable snag was confirmed by the crew viewing PTU motion from the Flight Deck windows."

Despite losing the PTU's full range of motion, most of the survey was completed, with a plan to utilize Flight Day 3's R-bar Pitch Maneuver (RPM) - aided with additional ISS crewmembers, armed with cameras - to capture additional imagery footage for the DAT engineers.

Meanwhile, the Mission Management Team (MMT) asked KSC engineers to look into how the snag could have occurred, checking closeout photos of the OBSS PTU ahead of Payload Bay Door (PLBD) closure for flight, along with flight history and checks into replaced elements of the hardware.

"Cable Flight History: Sensor Pack 1 (SP1) with W601 Cable S/N (Serial Number) 1002 is the same unit that flew on STS-130. Prior to STS-132, SP1 assembly required a PTU change out - requires disconnect and re-connect of W601 cable (same cable, S/N 1002)," added the presentation.

"Full pan and tilt range was confirmed post re-assembly during the STS-132 Pre-Installation Acceptance (PIA) testing with no issues of a cable snag. Installation procedures and close out photos were reviewed - no indication of incorrect installation. S/N 1002 Cable has flown on STS-130, STS-128, STS-125, STS-123/124, STS-115, STS-114."

With the MMT noting their preference for the full use of the PTU to be restored, a cable tie plan was implemented on EVA-2 of the mission, freeing and holding back the snagged cable, and ultimately allowing for a nominal Late Inspections to be carried out without issue.

"In-Flight Resolution: During EVA2, the cable was physically removed from the snag point and an additional cable tie was installed to preclude the snag from reoccurring. Full PTU pan and tilt motion was restored and Late Inspection was performed nominally.

"Photos of flight hardware post STS-132. Red circles are area of snag occurred."

Post Flight Troubleshooting:

Once Atlantis was back inside her Orbiter Processing Facility (OPF-1), engineers began a hands-on inspection of the PTU by removing the unit from the OBSS, part of the nominal procedures for preparing the PTU for its next flight, although this time including the enforced changeout of the troublesome cable.

"Troubleshooting Plan: Post flight activities - remove from vehicle, post flight functional of LDRI, manipulate Pan and Tilt to verify proper cable movement with added cable tie, cut added cable tie, manipulate SP1 assembly to attempt and recreate snag," the presentation continued.

"Replace W601 Cable S/N 1002 with S/N 1005, confirm W601 cable S/N 1005 cable characteristics during full pan and tilt motion. Per Pre-Installation Acceptance procedure pan/tilt values. Per on-orbit operational pan/tilt values, determine if additional cable tie required, perform STS-133 Pre-flight PIA in prep for OPF testing."

Implementing part one of the plan, engineers cut the cable tie installed during EVA-2, and attempted to perform the movement of the PTU with the old W601 cable that snagged during FD2 inspections. Just like it did on orbit, the cable snagged several times during ground testing.

"Performed troubleshooting on 6/16/10 in lab at KSC. Verified proper cable movement during PTU motion with cable tie attached. Cut added cable tie. Cable retained some memory of the added cable tie adjusted configuration thus cable had to be manually manipulated to re-create the pre-launch configuration," noted the presentation.

"Cable laid flush against the PTU tilt ring at +102, -252 (pan, tilt). Moved PTU pan to +85 and the cable remained against the tilt ring. When the PTU was tilted up, it was observed that the cable snagged against the fixed electronic stop (Reed Sensor).

"It was concluded that the cable had to have been laying flat against the tilt ring at +102, -252, when the crew began panning and tilting in slow rate in order for the cable to snag. Able to recreate this scenario multiple times using W601 cable SN 1002."

Engineers then replaced the old W601 cable with a new spare, re-performed the movement of the PTU, and successfully avoided the cable snagging during the tests.

"With successful recreation of the issue, W601 cable S/N 1002 was changed out with S/N 1005. Motion of PTU and cable characteristic was verified - values per PIA procedures, which include full range of motion, and on-orbit operational values."

Forward Plan:

As to what caused the old cable to snag on the reed sensor during STS-132, and how can such a situation be avoided in the future, engineers checked to see if the W601 cable was somehow being pressed against the PTU after the Payload Bay Doors have been closed - in other words, if hardware was breaching into the space (envelope) of where the cable was positioned.

"Envelope Measurement History: Each of the three fully assembled SP1 units were measured for dynamic envelope to confirm clearance to the radiators and to any stowed payload," added the presentation.

"Current Active Sensor Pack 1s: S/N 1003 with W601 cable S/N 1005. S/N 1007 with W601 cable S/N 1003. During this activity, it was noticed that each W601 cable has its own characteristics with respect to routing, translation and memory."

With those findings - showing it may be an uncontrollable issue if left as-is - the Orbiter Project Office (OPO) will test the potential of added an additional cable tie, in order to guarantee the W601 cable avoids being pressed into a position that threatens it subsequently being snagged on the reed sensor.

"OPO has requested to assess the envelope measurement with the additional cable tie. Pending confirmation of positive envelope impacts, cable tie will remain in place for flight," confirmed the conclusions to the presentation.

Testing on the viability of adding a new cable tie will take place during the week of July 26.

## SPACE OPERATIONS

### More Glimmers Of Good News (NYT)

By Amy Harmon

[New York Times](#), July 16, 2010

Yes, the cap seemed to have at least temporarily helped. Still, times are dreary - in the economy, in the national mood, overseas. Isn't anything positive happening? We tried hard to find better news out there.

A Clear Route to Mecca

In a 120-degree swelter in Basra, Iraq's second city and its gateway to the Persian Gulf, a Boeing 777 landed on Thursday. This would be a no-news moment anywhere else in the world, but the flight was the first to Iraq by a Saudi Arabian passenger airline since Saddam Hussein invaded Kuwait 20 years ago.

Yarek Waszul

Basra, like most places in Iraq, is a wreck of a city these days - tense and polluted, short on electricity, long on despair. Protests last month ended with a clash with the police and two funerals. In Baghdad, there's still no new government more than four months after parliamentary elections, a political torpor that befits the summer's heat.

With the flight, though, one more blast wall of Iraq's isolation has toppled, opening a route for regular service in and out of a country that remains on a slow road to recovery after seven years of war and decades of dictatorship. In this case, the flights are operated by Alwafeer Air, a charter company based in Jeddah, Saudi Arabia, that specializes in pilgrimages to Mecca and Medina. Its mission, according to its Web site, is "setting the standards of excellence for the guests of Allah."

"I ask God to bless this step in both countries," Alwafeer's deputy manager, Montasar al-Gisan, said at a ceremony on arrival that included dozens of Iraqi officials. A bit later the jet took off for Mecca, ferrying 450 passengers on their holy journey.

Flying to Iraq is no longer the corkscrew-landing adventure it was when the violence made even driving to the main airport, in Baghdad, a tense race through enemy territory.

Baghdad International Airport offers regularly scheduled commercial flights to and from Amman, Jordan; Beirut; Cairo; Tehran; and Abu Dhabi. I travel on Turkish Airways via Istanbul, a commute that feels increasingly normal, even if the destination isn't.

The airport in Baghdad is dingy, worn in the way old Soviet-era airports are, and the checkpoints make the security screening in America seem like a soft once-over. The terminal is clean, though. There are cafes and duty-free shops, of a sort. I haven't lost a bag yet.

"We hope all countries will start journeys with us," said the manager of Basra's airport, Abdul Amir Ganim.

Wishful thinking for now, but at an uncertain moment in Iraq's history, even the thought counts for something.

STEVEN LEE MYERS

Fewer Teensy Babies

Here's an overdue date. For the first time in almost three decades, fewer American babies are arriving too early.

Year after year, the rate of premature births in the United States had crept ever upward. With that rate grew the risk of death and disability - and of course huge hospital bills. But in 2007 and 2008, prematurity rates finally fell, the first two-year decline since 1981, health officials reported in May. In 2006, the rate was 12.8 percent; in 2008, it was 12.3 percent.

Yarek Waszul

Half a percentage point may not seem like much, but it translates into about 21,000 fewer babies born too early in 2008.

The reason for the dip in early births is not certain. Researchers suspect that some credit belongs to campaigns by medical groups persuading doctors not to perform Caesareans or induce labor before the 39th week unless there is urgent medical need (pregnancy normally lasts 40 weeks; a premature birth is one that occurs before 37 weeks). However, the report noted that the prematurity rate was down for all types of births - Caesarean, normal and induced.

Programs to treat women's illnesses and help them with problems like drinking, drug use and smoking before and during pregnancy have also been shown to help prevent prematurity.

Even with the recent decline, more than half a million babies are born prematurely every year. Their care costs \$26 billion. DENISE GRADY

Iran Is a Slow Student

It's hard to find much good news about the Iranian nuclear program - until you recall the predictions of a few years ago. If they had come true, Tehran might well be the capital of a nuclear-armed state already.

In fact, beyond the stories of defectors who un-defect, or the democracy movement that has, for now, been strangled on the streets, there is a less-told story of Iran - that its engineers are having trouble making nuclear material.

Exactly why is a subject of debate in Washington. Some experts there say that for all their vaunted skills, the Iranians are simply not very good at this. Others argue that United Nations sanctions are working, making it ever harder for Iran to get the components it needs for centrifuges, the tall, silvery machines that spin at nearly the speed of sound, enriching uranium. Or the cause could be the not-so-secret covert American program to undermine the Iranian effort, by messing with the project's computer systems and secretly inserting flaws into vital components shipped into the country.

Whatever the reason, fewer than half of the 8,000 or so centrifuges now installed in Natanz, the main nuclear site, are spinning, according to recent estimates from the International Atomic Energy Agency. Nuclear fuel is being produced steadily, but at nowhere near the pace American intelligence officials, just a few years ago, were guessing it might be by now.

In other words, according to American officials, all of this effort seems to be buying some time - a year or two, maybe three, before Iran has the material with which it could build a bomb. As one official put it recently, "At this pace, will they get to a bomb capability? You bet. But it's been 20 years, and they are not there yet." DAVID E. SANGER

#### American Fashion Perks Up

The mall-ification of Manhattan took a breather in the last two years as the global recession claimed stores from both the high end and the low. Meanwhile, European fast-fashion retailers, including Desigual, Topshop and AllSaints Spitalfields, have invaded lower Broadway like bedbugs, taking advantage of the lowered rents.

But American designers appear to be making a retail comeback, with more than half a dozen projects opening by September. And some are coming from a new wave of fashion stars.

Alejandro Ingelmo, who makes swanky shoes favored by the Condé Nast set, announced last week that his first store would open by the end of August in SoHo. This month, the fashion blog ThreadNY reported that Alexander Wang, the coolest kid in the current crop of emerging designers, has his eye on one of Yohji Yamamoto's recently vacated downtown storefronts. And Rag & Bone, which just won the men's designer of the year award from the Council of Fashion Designers of America, plans to open its fourth store in Manhattan this week.

Also on tap is a J. Crew men's shop on Madison Avenue, close to its women's, children's and bridal stores (all opened in the last two years), as well as new megastores down the street from the well-established designers Carolina Herrera and Ralph Lauren. Back downtown, Michael Kors said last week that he hoped to have a new Kors store opening in time for the holidays on Bleeker Street, where there are already so many Marc Jacobs, Ralph Lauren and Tommy Hilfiger stores that you could rename it the Mall of the Americans. ERIC WILSON

#### We're Loving the Art

People in the art world must be feeling a little glum these days. Collectors are holding their wallets tight - slowing business for dealers, auction houses and anyone trying to unload a Picasso (or, heaven forbid, a Damien Hirst). Meanwhile, museums have been forced to make cuts, after declines in government, foundation and corporate financing.

But here's a not-so-small consolation:

Americans seem to care about art more than ever - at least as indicated by high attendance at museums. The Metropolitan Museum of Art had 5.2 million visitors in the fiscal year that ended June 30, its highest number since 2001. The Museum of Modern Art welcomed 3 million people, its highest attendance ever. (Just consider: visiting either museum is substantially more expensive than going to a movie. MoMA's admission is \$20, as is the Met's, though it is technically a suggested donation.)

MoMA's numbers were buoyed by blockbuster exhibitions, including Monet's "Water Lilies" and retrospectives of the filmmaker Tim Burton and the performance artist Marina Abramovic. The latter, which included nude performers

"reperforming" old works of Ms. Abramovic's and an endurance performance by Ms. Abramovic herself, who sat at a table inside the museum every day throughout the six of the exhibition, was a succès de scandale. A visitor, arriving the day after the show closed, asked a staff member plaintively where "the naked people" were.

Nationally, in a survey by the Association of Art Museum Directors, almost half of museums reported an increase in attendance from 2008 to 2009. Twenty-nine percent reported a decrease.

Those who had to fight the crowds to see the Abramovic show might not think the rush was such a good thing. But these numbers will certainly be valuable ammunition when museums go back to their donors, looking for support. KATE TAYLOR

Send in the Robots

Human failings of one kind or another may have led to terrorism, economic decline and environmental disaster, but hey, at least we've invented robots to save us from ourselves. Fourteen of them, gyrating 5,000 feet underwater, capped the well spewing crude into the gulf. In May, a robot disarmed the bomb planted in Times Square. Robots are dropping bombs, too, so soldiers in Afghanistan don't have to. And the military is working on more exotic machines: the BigDog Project, for instance, features a device that can go anywhere people and animals can go, carrying 200 pounds of supplies through fields and up steep hills.

Yarek Waszul

Skyrocketing demand for hip and knee replacements attributable largely to an obesity epidemic? Never fear, robotic surgery is here - possibly cheaper, less painful and more efficient than the old-fashioned kind. Bacterial infections from fresh food? Robots that do not get colds or fail to wash hands are increasingly being deployed in its processing. Aging population? Robots to flip elderly people in their beds, urge them to take medicine and cuddle up when they are lonely are all either here or coming soon.

We may have scrapped plans to revisit the moon ourselves, but NASA plans to launch the first humanlike robot into space this year as a resident of the International Space Station. And you could say that robots are saving jobs from being outsourced by making United States manufacturing more efficient.

Driving the proliferation of robotic devices is the falling price of key parts, the rising power of computing and, perhaps, the human instinct to push boundaries, technological and otherwise.

"They are enabling us to do things we have never done before," said Henrik I. Christensen, director of the Center for Robotics and Intelligent Machines at the Georgia Institute of Technology.

That's a good thing. Right?

## Scott Simon Soars Through (Simulated) Space (NPR)

[NPR](#), July 17, 2010

There are only a few more missions before the space shuttles go off to museums. Host Scott Simon previews his trip to the Johnson Space Center in Houston, where he takes a ride with Cmdr. Mark Kelly in the space shuttle simulator.

SCOTT SIMON, host:

After almost 30 years, the U.S. Space Shuttle program is drawing to a close, though a Senate panel approved a plan this week that would extend it for another year. There'll be one, maybe two or more last missions before the shuttles go off to museums and the U.S. manned space program prepares for what may be next.

Commander Mark Kelly will captain the Endeavour Space Shuttle STS-134, now scheduled to launch next February. Next Saturday we'll take a ride with him in the space shuttle simulator. The SIM's a replica Endeavour that shakes, rattles,



rolls and roars as in actual flight while sophisticated graphics flash by in the windows - Cap Canaveral, clouds of smoke, flashes of light and finally stars. If you've never lifted off in a rocket before, the SIM seems utterly real.

Commander MARK KELLY (NASA): Okay. Look at the clock - seven, six seconds.

SIMON: Yeah.

Cmdr. KELLY: The main engines are going to start. See, these (unintelligible)

SIMON: Yeah.

Cmdr. KELLY: Two, one, liftoff. Watch the power go by.

(Soundbite of laughter)

Cmdr. KELLY: We're going straight up. And want you to say: Houston, Endeavour, roll program.

SIMON: Houston, Endeavour, roll program.

Cmdr. KELLY: And then the capcom would say: Roger, roll, Endeavor.

SIMON: The idea is to make astronauts know what to expect, what they'll see, hear, even feel in space flight. But they train in the SIM day after day so that ground controllers can throw problems at them. The controllers push buttons to make fuel cells fail, oxygen leak, and computers go blank, then sit back to see how the astronauts scramble to bring themselves back home.

Next Saturday, arrive with the crew of Endeavor STS-134, which is currently scheduled to lift off next February, as the crew trains for the flight that will write their names into history, and muse about the future of American space flight.

## **NASA Reviews COPV Reliability Concerns For Final Program Flights (NASASF)**

By Chris Gebhardt

[NASASpaceFlight.com](http://NASASpaceFlight.com), July 19, 2010

Since the Return to Flight timeframe, concerns regarding the state of the Composite Overwrapped Pressure Vessels (COPVs) on the orbiter fleet have led to restrictions in terms of ground processing to ensure the protection of the hardware and the workforce. However, recent testing of the COPVs has resulted in a request from the SSP (Space Shuttle Program) to re-examine these restrictions to determine if one of the restrictions could be eliminated for the final two currently scheduled flights.

COPV Risk Mitigation Findings and Background:

According to a PRCB (Program Requirements Control Board) presentation dated March 4, 2010 and available for download on L2, the SSP has put forth a request to "Re-examine restrictions in place for Composite Overwrapped Pressure Vessel (COPV) hazards, including ground hazards and OMS offload, to determine if any of them can be relaxed in light of the recent Orbiter COPV testing."

The request, generated at the Flight Readiness Review (FRR) for STS-130 back in January 2010, was aimed at providing updated information on the following four areas: "reliability calculations for changes in the OMS (Orbital Maneuvering System) loading with respect to the current Shuttle Manifest, PRA score in comparison to top risk scores, performance benefits of full load, and Ground Operations acceptance and recommendation to retain safety clears."

In all, the recent COPV safety procedures were put into place after concerns were raised regarding the health of the COPVs over the predicted remaining lifetime of the Shuttle Orbiter fleet.

In all, an investigation of the COPVs during the Return to Flight time period resulted in two COPVs on Atlantis being deemed "high risk." Those two COPVs were subsequently replaced (OV-104 MPS tank S/N 006 and 007).

As a result of the initial investigation, several new safety regulations were placed into effect to ensure that proper care was given to the COPVs to "mitigate risk of a COPV failure."

These safety regulations included an OMS offload to reduce the stress loads on the Helium COPVs, a two stage loading process that resulted in reduced loading temperatures, a reduced pad-stay time at load (COPVs are now loaded 4-days prior to launch instead of the previous 12-days prior to launch load timeline), and restricted Pad access to essential personnel only after COPV pressurization.

As such, an "accepted risk" was determined and accepted by the SSP in October 2007.

At the time of STS-130's FRR, the accepted risk was based on a COPV reliability model that was developed based on tank stress ratios and accumulated and predicted effective time.

The COPV risk was further established as a function of the "total life of Program reliability" - which is the accumulated risk for the three Orbiter vehicles.

This overall Program reliability (which contained a built-in assumption of two pad hold days for every mission from October 2007 through the end of the Program) contained a mean reliability of 0.9980 - which translates to a 1:489 chance of COPV failure - and a confidence reliability of 0.9925 (or 1:134) - a 95% confidence reliability.

Per vehicle the reliability numbers were: Discovery: 0.9992; Atlantis: 0.9999; Endeavour: 0.9996.

To verify the reliability numbers from the accepted risk determination, a four phase Accelerated Stress Rupture Test was performed on COPV tank S/N 007 - one the "high risk" tanks removed from Atlantis.

For Phase I, the test was conducted at flight pressure - 4850 psi - aged at 130°F to 38,000 total effective hours. At this stage, the reliability model predicted a 50% chance of COPV failure. The tank passed the test with no issues.

Phase II was conducted at flight pressure, aged at 160°F to 87,000 total effective hours. At this rate, the reliability model predicted a 95% chance of COPV tank failure. Again, the tank performed without issue.

Phase III included an increase in operational pressure to 5200 psi (above flight pressure limits) aged at 160°F to 113,000 total effective hours. Here, the model predicted a 99% chance of tank failure. Once again the tank performed with no issues.

Finally, Phase IV was performed at a pressure of 5400 psi age at 174°F. The COPV tank finally failed on October 23, 2009 after accumulating a total of 3,100,000 effective hours.

As such, "The successful completion of the Accelerated Stress Rupture Test (of Serial Number 007) provides additional model confidence," notes the PRCB presentation.

"The Reliability Model developed for STS-118 and subs has not been updated to account for the test results. Because the model was shown to have significant conservatism, the impact of the test result to the reliability calculations would show an Enhancement of Safety."

However, validation of the model cannot be accomplished with only one test (i.e. a single data point). The presentation notes that under ideal circumstances a total of 30 COPV tanks would have been tested to create a more sound and diverse data bed.

"Instead, we have one test result for flight justification of 70 Orbiter Tanks," notes the PRCB presentation. "Was our 'worst flight tank' SN-007 the 'energizer bunny of vessels' or a 'demonstration of overstatement of risk'? Is it possible that a tank vessel survived 85 times prediction? Is it possible that Analysis Team is off by 20% on Stress Ratio?"

This led to the questioning of how the Orbiter Stress Ratio Model was established. In all, the stress ratio is a combination of two factors: Volume growth during tank manufacturing (known as the autofrettage process) and Tank Burst Pressure.

Tank Burst Pressure for a 40-inch tank was determined to be 7,313 psi based on a 7,667 psi burst pressure on tank SN-011 and an 8,010 psi burst pressure on tank SN-002.

Likewise, the 26-inch MPS vessels were designed with a Tank Burst Pressure of 6,751 psi; however, testing revealed an actual burst pressure of 8,890 psi (SN Q003), 9,020 psi (SN Q004), and 9,570 psi on SN Q001.

STS-133 Specific Articles: <http://www.nasaspaceflight.com/tag/sts-133/>

This would seem to point to a "highly variable anomalous feature in an OMS vessel" with the 40-inch tanks operating between 4-7% above their design limits and the MPS 26-inch vessels operating at 36% above design limits.

Therefore, the question was then asked: "What did Orbiter Accelerated Stress Rupture Demonstrate?"

"Test was first experimental determination of tank lifetime (industry wide)," notes the PRCB presentation. "Test of a Flight article (exposed to space environments) proves no missed physics (confirms analysis)."

This Accelerated Stress Rupture therefore provides the best model confirmation given that no validation is possible.

Proposed Change to the COPV Risk Mitigation Plan for STS-133 and STS-134:

Based on the previously implemented COPV risk mitigation plan, all pad flows toward launch of the Space Shuttle vehicle involve the offload of OMS propellant and helium to negate a "full load" OMS prop launch.

This offload, approved by the OPO (Orbiter Project Office) has since become the Program standard and is now referred to as the "Nominal Offload."

However, based on the completion of COPV SN-007 Accelerated Stress Rupture testing and the desire to increase APM (Ascent Performance Margin) to maximize upmass on the final two scheduled flights on the Shuttle manifest, a request has been put forward to "quantify the delta risk" for removing the "Nominal Offload" from the final manifested flights (currently STS-133 and STS-134).

In essence, the request is asking engineers to examine the risk of launching Discovery (STS-133/ULF-5) and Endeavour (STS-134/ULF-6) with full OMS prop and He loads - a decision that could give each mission an increase to their APMs of between 65-90 lbs.

"Flight Design has indicated that increasing OMS prop to full capacity (~2,100 additional lbs) would increase the ascent performance margin by 65-90 lbs of performance."

While at the time of this PRCB presentation the current flight order had not yet been realigned to reflect the delays to the AMS-02 (Alpha Magnetic Spectrometer -02) payload for STS-134, a presentation chart indicates that the Flight Operations & Integration (FO&I) office recommended a full OMS load for STS-133 as "Additional APM [would] allow more ISS cargo to orbit."

At the time of this presentation's creation, STS-133 was the final baselined and manifested flight on the Shuttle manifest, with STS-134/Endeavour still officially slated to fly prior to 133. As such, the presentation notes that FO&I had not yet made a firm determination on whether or not to recommend full OMS load for STS-134 as "Additional APM not currently required. Will reassess if payload complement drive the need."

However, that decision could change now that STS-134 is the final manifested flight on the Shuttle launch schedule.

Additionally, it has been recommended to not perform a full OMS load on the LON (Launch On Need) STS-335 mission as that flight carries an APM of over 3,000 lbp (pounds performance) - therefore negating the need for additional APM.

Nonetheless, to conduct the risk study for STS-133 and STS-134, a comparison between the new calculations were compared to the baseline calculations for STS-118 and subs in accordance with an OPO decision.

"In October 2007, the OPO decided that all future COPV Reliability calculations would be compared to the same baseline (from STS-118 and flights beyond). The thinking was, as you continued to evaluate the manifest, the calculated flight risk would continue to decline" the closer to the end of the manifest the calculated risk was determined. Therefore, a "false sense of diminishing risk" could be created when the actual cumulative risk would not have changed.

In all, however, the risk calculation team determined that the delta risk remained the same if one examined the risks for the final two flights alone or the entire STS-118 and subs manifest.

"No matter whether you look at remaining missions or STS-118 and subs the delta risk is the same ~1:1300 (point)."

The presentation further notes that "this may not seem like much when averaged over two missions, but the change is important."

For STS-133 the delta risk for launch with a full OMS load would be ~1:3100 per mission - meaning the chance of COPV failure is approximately 1 flight in every 3,100 missions.

This would place the COPV failure risk at #6 on the SPRA iteration 3.1 top risk contributors for STS-133 - behind (1) MMOD orbit strikes, (2) SSME-induced SSME catastrophic failure, (3) ascent debris strikes to TPS leading to LOCV on orbit or entry, (4) crew error during entry, and (5) RSRM-induced RSRM catastrophic failure.

For STS-134 - should a full OMS load be deemed necessary - the delta risk would be ~1:7700 and would therefore rank 14th on the SPRA iteration 3.1 top risk contributors.

Nevertheless, a determination on whether or not a full OMS load is required will be determined on a mission-by-mission basis based on the APM needs of the particular mission.

Should OMS full load be approved for STS-133 and possibly STS-134, current ground processing control and pad access restrictions would be maintained at their current status.

## **Kennedy Space Center An Out Of This World Vacation (CHRLGAZ)**

By Seth Skiles

[Charleston \(WV\) Gazette](#), July 19, 2010

CHARLESTON, W.Va. -- Hidden among the vast marshes of coastal Florida, NASA's Kennedy Space Center is a spectacular destination for those visiting the Orlando area. The center is NASA's launch headquarters for all missions in space, including moon missions and transportation of astronauts to the International Space Station.

There is also a Visitor Complex, which offers a multitude of interactive exhibits and displays about this respected institution. Guests enter into Information Central to find maps directing them to these engaging activities.

In the Rocket Garden, visitors can view actual rockets that sent astronauts to space. The Redstone, Atlas and Titan are crowd pleasers.

The Early Space Exploration exhibit is a remarkable attraction highlighting the first manned space orbits. It focuses on the Gemini and Mercury expeditions, featuring artifacts from their missions.

The IMAX theaters lets guests venture to the stars by watching 3D space launches on five-story high screens. Spectacular films include stories of the Hubble Space Telescope in "Hubble 3D," narrated by Leonardo DiCaprio, and simulations of moving across the moon's rough terrain in "Walking on the Moon 3D."

The public can attend daily astronaut encounters with men and women who have dedicated their lives to journeying into space. They can also visit the moving Astronaut Memorial near the rear of the Visitor Complex, which commemorates fallen heroes; the Challenger, Columbia and Apollo 1 missions are represented here.

The most absorbing and informative service the Visitor Complex offers is a guided, air-conditioned bus tour covering Kennedy Space Center's massive Cape Canaveral property. Numerous launch pads and observation points are shown on the tour, providing guests opportunities to observe working space equipment.

An important tour stop is the Launch Complex 39 Observation Gantry. Visitors can climb the gantry for a huge view of the launch pads and crawlerway, a road system used to transport space shuttles for launching.

The tour also stops at the International Space Station Center. Guests look through tall windows to see production on Space Station components being readied for transport into space.

Recently, Kennedy Space Center was of national interest as a result of President Obama's cuts in NASA's moon program. This important aspect of American history is well preserved at Kennedy Space Center.

Now is the time to support NASA's triumphs over the last 60 years. Make a point to visit this extraordinary place where thousands of Americans are employed and vast discoveries benefiting the future are unfurled.

Admission to Kennedy Space Center is \$41 for adults and \$31 for children ages 3-11. This includes the bus tour, IMAX films and all exhibits and shows. Tickets are good for two days. For more information, visit [www.kennedyspacecenter.com](http://www.kennedyspacecenter.com).

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## David Grigor's Hoping To Leave His New Space Pupils Starstruck (SCOTSMAN)

By Victoria Raimes

[The Scotsman](#), July 19, 2010

MANY children dream of becoming an astronaut, but getting the opportunity to travel to space may seem as rare as a cow jumping over the moon.

Now youngsters could turn into the next Neil Armstrong after a Lothians teacher became one of the first people in the UK to be trained by Nasa to give astronaut lessons.

Rocket mad David Grigor, from Tranent, was picked from more than a thousand applicants to attend a seven-day course at the Kennedy Space Centre, in Florida.

The 41-year-old was part of a group of 16 - three of whom were from the UK - who learned everything there is to know about travelling to the moon and beyond.

Now David, who collects space memorabilia, is one of the only people in Britain who can promote and provide Advanced Space Education to an acclaimed standard.

After learning about the technical elements of a space suit, discovering how a shuttle works, going on missions in a simulator rocket, eating space food and experiencing the gravity - or lack of - on the moon, David is now equipped to teach all about space and how to take your first steps towards an astronaut career.

David, who is currently a secondary school teacher for children with special needs, said he hoped he too could one day would venture into space.

He said: "I've been obsessed with space since I was 14. Patrick Moore came to our school to talk about space and I have been enchanted since then.

"I've completed an Academy Educators course before, but this was the most advanced class you can do to date.

"Although traditionally very few people ever become astronauts, more doors do seem to be opening now."

He added: "Trying out space walking felt very strange. You feel like you can't walk straight and you constantly bounce up and down."

David, who last year won a prestigious Right Stuff space award, now hopes he can teach children in schools across Edinburgh and university students. He was awarded the qualification alongside fellow cadets, Kenny Osborne, from Glasgow, and Kat Dee, from Somerset, all pictured left.

Although he admits he would like to become an astronaut himself, David said highlighting the potential of space travel was enough.

He said: "As long as I'm working in the space sphere, I can't think of anything better to do."

## SCIENCE

### 25,000 New Asteroids Found By NASA's Sky Mapping (AP)

By Alicia Chang, AP Science Writer

[Associated Press](#), July 19, 2010

LOS ANGELES - Worried about Earth-threatening asteroids? One of NASA's newest space telescopes has spotted 25,000 never-before-seen asteroids in just six months.

Ninety-five of those are considered "near Earth," but in the language of astronomy that means within 30 million miles. Luckily for us, none poses any threat to Earth anytime soon.

Called WISE for Wide-field Infrared Survey Explorer, the telescope completes its first full scan of the sky on Saturday and then begins another round of imaging.

What's special about WISE is its ability to see through impenetrable veils of dust, picking up the heat glow of objects that are invisible to regular telescopes.

"Most telescopes focus on the hottest and brightest objects in the universe," said Richard Binzel of the Massachusetts Institute of Technology. "WISE is especially sensitive to seeing what's cool and dark, what you could call the stealth objects of the universe."

Mission team members are elated with the discoveries of the \$320 million project, which launched in December. By the end of the year, researchers expect to have a cosmic census of millions of newfound objects that should help answer questions about how planets, stars and galaxies form.

Besides all those asteroids, WISE has also sighted 15 new comets. It has spied hundreds of potential brown dwarfs - stellar objects that are bigger than a planet but much smaller than a star - and confirmed the existence of 20 of them, including some of the coldest ever known.

Click image to see other photo from NASA's Wide-field Infrared Survey Explorer

AP

The telescope also detected what's thought to be an ultraluminous galaxy, more than 10 billion light years away and formed from other colliding galaxies.

"We're filling in the blanks on everything in the universe from near-Earth objects to forming galaxies," said project scientist Peter Eisenhardt of the NASA Jet Propulsion Laboratory, which is managing the mission. "There's quite a zoo."

WISE's 16-inch telescope was built by Utah State University's Space Dynamics Laboratory. It circles the Earth 300 miles high and takes snapshots every 11 seconds over the whole sky.

Since the sky survey began, the JPL team has reported the new near-Earth objects to the International Astronomical Union's Minor Planet Center, which keeps track of all small solar system objects.

WISE is discovering near-Earth asteroids that are on average larger than what's found by existing telescopes, which should help scientists better calculate their potential threat, said Harvard astronomer Timothy Spahr, who directs the Minor Planet Center.

The WISE mission comes a quarter century after the Infrared Astronomy Satellite made the first all-sky map in infrared wavelength in 1983. Unlike its predecessor, WISE is far more powerful. It's expected to keep taking images covering half of the sky until October when it will begin to run out of coolant.

NASA has released a picture a week of WISE's myriad finds. But the full celestial catalog of what's out there will not be released to the public until next year after the team has had time to process the images and flag false alarms.

"The real discoveries will come when we let the whole world in on the data," Eisenhardt said.

## **Prolific NASA Sky-Mapper Finds 25,000 Hidden Asteroids (SPACE)**

By Denise Chow, Space.com Staff Writer

[SPACE.com](http://SPACE.com), July 16, 2010



A prolific NASA sky-mapping telescope will complete its first full survey of the sky Saturday, having beamed back to Earth more than a million images of everything from asteroids and comets to distant galaxies - some previously unseen until now.

"The primary goal of the mission is to do an all-sky survey in the thermal infrared with much higher sensitivity than has ever been done before," Edward Wright, the principal investigator of the mission at the University of California, Los Angeles, told SPACE.com. "We're succeeding in that."

The Wide-field Infrared Survey Explorer (WISE) has observed more than 100,000 asteroids, of which 25,000 were previously undetected. Most of these space rocks are located in the main asteroid belt between Mars and Jupiter, but some - called near-Earth objects - include asteroids and comets with orbits that pass relatively close to Earth. WISE has observed over 90 new near-Earth objects, and has also discovered over a dozen comets that orbit far from Earth.

## **WISE Mission Completes First Glance Through Universe (SFN)**

By Stephen Clark

[Spaceflight Now](#), July 19, 2010

The WISE infrared telescope finished surveying the universe Saturday, but its \$320 million mission will continue until its funding and hydrogen coolant run out later this year.

WISE captured this mosaic of the Pleiades star cluster in a web of cold dust. Credit: NASA/JPL-Caltech/UCLA

Launched from California last December, NASA's Wide-field Infrared Survey Explorer has slowly scanned the sky since January, uncovering faraway galaxies, stars and dark asteroids that could threaten Earth.

"Like a globe-trotting shutterbug, WISE has completed a world tour with 1.3 million slides covering the whole sky," said Edward Wright, mission's principal investigator at the University of California, Los Angeles.

WISE is designed to find unseen luminous galaxies, ultra-cool brown dwarfs, and asteroids beyond the observing limit of ground telescopes.

It has already spotted 25,000 new asteroids, most of them in the main belt between Mars and Jupiter, but more than 90 of WISE's asteroid discoveries are on tracks that could threaten Earth.

WISE has also tracked more than a dozen new comets traveling in the distant solar system, according to NASA.

"WISE is filling in the blanks on the infrared properties of everything in the universe from nearby asteroids to distant quasars," said Peter Eisenhardt, project scientist for WISE at the Jet Propulsion Laboratory in Pasadena, Calif. "But the most exciting discoveries may well be objects we haven't yet imagined exist."

The six-month survey wrapped up Saturday, but it will map half the sky again until WISE runs out of chilly solid hydrogen coolant.

WISE's infrared detectors are kept inside a hydrogen-filled cryostat, exposing parts of the telescope to frigid temperatures as low as 8 Kelvin, or -447 degrees Fahrenheit.

But the frozen hydrogen is gradually sublimating, or turning from a solid to a gas, putting WISE's sky scans on the clock. The spacecraft launched with about 35 pounds of hydrogen, and the latest estimates show WISE will run out sometime in November, slightly later than expected, according to Wright.

"The predicted lifetime has grown a bit, so we now anticipate lasting until November," Wright said.

Artist's concept of the WISE spacecraft. Credit: NASA/JPL-Caltech

WISE should see half the sky again by November, according to NASA. Officials plan to end the mission when the coolant is gone, meaning WISE will complete one-and-a-half surveys of the infrared universe.

The satellite takes pictures of the sky in strips as it circles Earth, and the planet's orbit around the sun exposes WISE to different parts of the universe.

Wright and other mission scientists proposed continuing the WISE mission after November, when the satellite's 16-inch telescope could still observe the universe in two of its four wavelengths, even without the hydrogen cooling agent.

The telescope's focal plane is predicted to rise to 72 Kelvin, or -330 degrees Fahrenheit, once the hydrogen sublimates. Scientists say WISE could still view the universe in near-infrared light at such temperatures.

The so-called "warm phase" proposal would have extended WISE's mission for three more months, permitting the satellite to finish its second all-sky survey with half its imaging power.

But NASA's 2010 Astrophysics Senior Review Committee recommended not funding the extended mission, saying it was "impressed with the promise of the cryogenic mission" but "did not find adequate scientific justification in the proposal for the cost" of the warm phase operations.

"We are not planning a warm phase," Wright told Spaceflight Now. "But we are discussing several decommissioning options."

Wright did not discuss the decommissioning options or say whether WISE could continue some observations past November.

## **WISE Discovers 95 New Near-Earth Asteroids (DISC)**

[Discovery Channel](#), July 19, 2010

It's WISE to know your neighborhood, especially when countless pieces of rock are flying around.

Millions of tiny meteors bombard the Earth every day, but burn up in the atmosphere long before they can cause anything other than a pretty light in the sky. One day, however, we may get hit by the "the big one" that might destroy a city, or worse. That's why I'm pretty glad that astronomers have detected up 25,000 new asteroids, 95 of which are considered "near Earth asteroids."

"Near Earth" for astronomers means 30 million miles away, almost a third of the way to the Sun, yet a hair's breadth in terms of the size of our solar system. There's no doomsday threat just yet.

These asteroids have all been discovered as part of the Wide-Field Infrared Survey Explorer, or WISE, a space telescope designed to survey the entire sky in the infrared. Asteroids glow in the infrared because they are warm, and thus easier to detect in this way than hoping to catch reflected light from the sun.

Asteroids aren't just important because of their potential threat to life on Earth. Asteroids also contain some key elements for life on Earth to have begun, such as water and amino acids. The history of the solar system, as well as life itself, may be trapped in the myriad of rocks that silently orbit the Sun.

Near Earth asteroids are also potential targets for human exploration, as outlined in the latest space policy speech by Obama, and as recommended as one path of exploration by the Augustine Commission. In addition to better understanding a potential foe, these asteroids may be mined, or serve as a proving ground for space technology bound for Mars. Having nearly 100 more possible targets is certainly a good thing.

In any case, WISE will continue to make such discoveries as it starts its survey mode once again around the whole sky. Its discoveries may include some of the most distant and fascinating galaxies, but it's also good to know your neighborhood.

## **Nasa 'Elated' After New Telescope Uncovers 'Previously Invisible Space Objects' (TEL)**

**An array of previously "invisible" space objects have been discovered by one of Nasa's newest space telescopes, the Wide-field Infrared Survey Explorer (WISE), in just six months, officials said.**

By Andrew Hough

[Daily Telegraph \(UK\)](#), July 19, 2010

In what has left scientists at the space agency "elated", the \$320m (€195m) sky-mapping spacecraft has for the first time identified previously thousands of unseen space objects including stars, asteroids, dust clouds, comets and even a new galaxy.

Using technology to photograph the entire night sky one and a half times in infra-red light, Nasa said the telescope detected more than 25,000 new asteroids since beginning operations late last year.

'Unseen' fraud fuelling record rise in car insurance, AA warns

Gunman Raoul Moat sent shot ex girlfriend 'get well card'

Astronomy experts said almost 100 were considered "near Earth", or within 30 million miles (48 million km). None, they added, posed any real threat to Earth.

The telescope also sighted 15 new comets and hundreds of potential brown dwarfs, or failed stars. It also confirmed the existence of 20 "dwarfs", including some of the coldest ever known.

WISE also detected what Nasa scientists believe is an ultra luminous galaxy, more than 10 billion light years away that formed from other colliding galaxies.

The findings, released late last week, have left the space agency thrilled. Most of the objects have been invisible to most other telescopes before now.

Nasa hopes that by discovering near-Earth asteroids that are on average larger than what's found by existing telescopes, it could help scientists better calculate their potential threat to the earth.

WISE completed its first full scan of the sky on Saturday before beginning another round of imaging in what Nasa hopes will pick up even more objects.

By the end of the year, researchers expect to have a cosmic census of millions of new-found objects that should help answer questions about how planets, stars and galaxies form.

"We're filling in the blanks on everything in the universe from near-Earth objects to forming galaxies," said project scientist Dr Peter Eisenhardt of the Nasa's Jet Propulsion Laboratory, which is managing the mission.

"There's quite a zoo."

Richard Binzel, a scientist with the Massachusetts Institute of Technology, said the telescope was able to "see through" almost impenetrable veils of dust, picking up the heat glow of objects that are invisible to regular telescopes.

"Most telescopes focus on the hottest and brightest objects in the universe," he said.

"WISE is especially sensitive to seeing what's cool and dark, what you could call the stealth objects of the universe."

WISE's 16-inch telescope, built by Utah State University's Space Dynamics Laboratory, circles the Earth 300 miles high and takes snapshots every 11 seconds over the whole sky.

Since the sky survey began, the JPL team has reported the new near-Earth objects to the International Astronomical Union's Minor Planet Center, which keeps track of all small solar system objects.

It comes a quarter century after the Infrared Astronomy Satellite made the first all-sky map in infrared wavelength in 1983 but unlike its predecessor, WISE is far more powerful.

It is expected to keep taking images covering half of the sky until October when it will begin to run out of coolant.

While Nasa has released a picture a week of its myriad finds, the full celestial catalogue of what's out there will not be released to the public until next year after the team has had time to process the images and flag false alarms.

"The real discoveries will come when we let the whole world in on the data," Dr Eisenhardt added.

## **NASA WISE Space Telescope Has Found 20 Brown Dwarf Stars And 25,000 New Asteroids (NBF)**

[Next Big Future \(blog\)](#), July 19, 2010

WISE has observed more than 100,000 asteroids, both known and 25,000 previously unseen. Most of these space rocks are in the main belt between Mars and Jupiter. However, some are near-Earth objects, asteroids and comets with orbits that pass relatively close to Earth. WISE has discovered more than 90 of these new near-Earth objects. The infrared telescope is also good at spotting comets that orbit far from Earth and has discovered more than a dozen of these so far.

The first release of WISE data, covering about 80 percent of the sky, will be delivered to the astronomical community in May of next year

WISE has spied hundreds of potential brown dwarfs - stellar objects that are bigger than a planet but much smaller than a star - and confirmed the existence of 20 of them, including some of the coldest ever known.

The planetary orbits are labeled on the left and on the right is the 50% of the sky that has been surveyed and data processed by the WISE space telescope mission.

## **Powerful Cosmic Blast Breaks Records (DISC)**

**The burst of X-rays was so strong that it temporarily blinded a NASA satellite.**

[Discovery Channel](#), July 19, 2010

A burst of X-rays that temporarily blinded a NASA satellite last month was the most powerful blast ever recorded, leaving astronomers mystified about its origin.

The Swift X-ray observatory, which tracks gamma-ray bursts, was so overwhelmed by the June 21 event that computer analysis of data collected during the burst discarded the information as junk.

It wasn't until a research assistant, who was returning from vacation, went back to look at the data dropout that scientists had an inkling of what happened.

"We actually didn't realize at first how bright the X-ray emission was," Swift lead researcher Neil Gehrels at NASA's Goddard Space Flight Center in Maryland told Discovery News.

"If someone had asked me before Swift launched how bright these X-ray afterglows of gamma ray bursts would be, I'd never have guessed it'd be this bright," Gehrels added. "It really knocked our socks off."

The burst was about 200 times brighter than astronomers' benchmark for X-ray radiation, the supernova remnant known as the Crab Nebula, and it stemmed from a galaxy about 5 million light-years away.

After spending a few weeks verifying Swift's health and re-checking the data, scientists have moved on to a more taxing problem: figuring out what triggered the blast.

Gamma-ray bursts that sire these types of X-ray blasts typically occur when a massive star collapses into a black hole.

"We're trying to grapple with what happened here. The best thinking is that it was still a burst of a black hole. But when this particular black hole was born, there was something particularly violent going on in the outflow," Gehrels said.

Scientists believe gamma-ray bursts occur about one or twice a day somewhere in the universe. Swift, which continually scans the sky for bursts, typically picks up one or two a week. When it detects a burst, the observatory automatically repositions its X-ray telescope to home in on the target.

The June 21 blast, which lasted about a minute, was nearly over when the X-ray telescope got in position. The photons were coming in so fast and so powerfully that they oversaturated the sensors.

"We got the telescope there with about 10 seconds to spare. If we had been a little later, we wouldn't have seen it," Penn State astronomer David Burrows, lead scientist for Swift's X-ray telescope, told Discovery News.

At its peak, the gamma-ray burst produced 145,000 X-ray photons a second -- about 10 to 15 times brighter than anything previously seen by Swift.

## **Deep Space X-ray Flash Is Most Powerful Ever Recorded (NEWSCIENTIST)**

By David Shiga

[New Scientist](#), July 19, 2010

It was bright, fierce and thankfully short. A mysterious event in a distant galaxy has blasted our solar system with the most powerful burst of X-rays ever recorded, temporarily blinding an astronomical satellite.

At 0303 GMT on 21 June, a sudden burst of X-rays struck the Swift spacecraft, the mission team reported on Wednesday.

X-rays from space are absorbed by Earth's atmosphere, so pose no danger on the ground. However, Swift orbits Earth at an altitude of 600 kilometres, where the blast was so intense that it overwhelmed the spacecraft's X-ray detector. It also confused the software that analyses the mission's data on the ground, says David Burrows of Pennsylvania State University in University Park, the mission's chief scientist.

"[The software] basically threw up its hands and said, 'Something must be wrong, because the data doesn't make sense,'" he says. Puzzling pummelling

Swift's records show that at its peak, the burst pummelled the spacecraft with 143,000 X-ray photons per second. That made it nearly 15 times as bright as Scorpius X-1, a neutron star 9000 light years from Earth that is normally the brightest X-ray object in the sky. The burst dimmed rapidly during its first few seconds but continued glowing for about 10 minutes.

This powerful beginning was probably the most powerful X-ray flash ever recorded, Burrows says. An X-ray flash observed in 1979 may have appeared brighter - the comparison is hard to make because the 1979 flash was observed by a different spacecraft - but only because it occurred in a nearby galaxy, just 160,000 light years from Earth. By contrast, the June flash was traced to a vastly more distant galaxy 5 billion light-years away.

No one knows what caused the burst, but a clue lies in the fact that it accompanied a lengthy burst of gamma rays from deep space. Swift's purpose is to determine the origin of such bursts using three telescopes that detect gamma rays, X-rays, and ultraviolet and visible light. Long gamma-ray bursts are thought to be due to jets of matter shooting out almost at the speed of light from a star that is collapsing to form a black hole: the same type of event may have caused the recent X-ray burst.

However, shock waves from these violent events normally produce around 10 to 100 X-ray photons per second, so the Swift team is at a loss to explain why this X-ray burst was more than 1000 times brighter than this.

"We're very puzzled - we don't understand it yet," Burrows says. "Every once in a while something comes along that's completely unexpected and this is one of them."

## Nasa Satellite 'Blinded By Biggest Ever Star Explosion Seen In Space' (TEL)

**A Nasa satellite was temporarily blinded after the brightest explosion of a star ever witnessed in space, officials admitted.**

By Andrew Hough

[Daily Telegraph \(UK\)](#), July 19, 2010

The space agency's orbiting Swift observatory was overwhelmed by glare from the eruption, called a gamma-ray burst.

Such was the power of the last month's blast that the observatory's software ignored it as if it were an anomaly.

Scientists at Nasa's Goddard Space Flight Centre, in Maryland, said the explosion of X-rays that followed came from a star that died five billion years ago, far beyond our own Milky Way galaxy.

Experts say the timing meant the blast, which astronomers believe was caused by a star collapsing to form a black hole, occurred before the Sun and planets formed.

When a star explodes, radiation travels at the speed of light in all directions. Gamma rays reach Earth first, followed by X-rays.

Light from the flare-up, titled GRB 100621A, reached Earth on June 21 after it had travelled nearly halfway across the universe.

It then hit the satellite, which formed in 2005 to observe the sky with X-ray style eyes.

Observing gamma-ray bursts is one of the satellite's prime objectives but it was not built to cope with such an intensely bright blast.

"The intensity of these X-rays was unexpected and unprecedented," said Neil Gehrels, Swift's principal investigator.

"Just when we were beginning to think that we had seen everything that gamma-ray bursts could throw at us, this burst came along to challenge our assumptions about how powerful their X-ray emissions can be."

Dr Phil Evans, of Leicester University's space department, added: "The burst was so bright when it first erupted that our data-analysis software shut down.

"So many photons were bombarding the detector each second that it just couldn't count them quickly enough.

"It was like trying to use a rain gauge and a bucket to measure the flow rate of a tsunami. This burst is one for the record books."

When the telescope recovered, Dr Evans and colleagues were able to measure that the distant explosion had been 140 times brighter than the brightest steady source of X-rays, a neutron star 500,000 times closer to Earth.

Professor David Burrows, of Penn State University, who is lead scientist for Swift's X-ray Telescope (XRT), said: "This gamma-ray burst is by far the brightest light source ever seen in X-ray wavelengths at cosmological distances."

## Huge Gamma-ray Burst Blinds Telescope (COSMOS)

By Emma Bastian

[Cosmos](#), July 19, 2010

A space-based telescope was blinded by the "brightest explosion ever witnessed by humanity", Astronomers said.

"Just when we were beginning to think that we had seen everything that gamma-ray bursts could throw at us, this burst came along to challenge our assumptions about how powerful their X-ray emissions can be," Neil Gehrels, from NASA's Goddard Space Flight Centre, said in a statement.

Gamma-ray bursts are short-lived bursts of highly energetic radiation, which occur about once a day. The initial bright burst is followed by an 'afterglow' of longer wavelengths such as ultraviolet, optical and infrared.

Swift X-ray Telescope was 'blinded'

The space observatory Swift has an X-ray telescope, set up in 2005 to observe and measure the brightness of gamma-ray bursts.

On June 21, a gamma-ray burst that had been travelling through space for approximately five billion years, was detected by the telescope. It 'blinded' the Swift X-ray Telescope and shut down the data-analysis software.

"So many photons were bombarding the detector each second that it just couldn't count them quickly enough. It was like trying to use a rain gauge and a bucket to measure the flow rate of a tsunami," said Phil Evans, a researcher at the University of Leicester in the United Kingdom, who helped write and monitor the data-analysis software used by the Swift Observatory.

Five times brighter

The researchers were able to measure the brightness of the gamma-ray burst, named GRB 100621A, by detecting the photons a distance away from the centre - the centre itself was too bright to measure. Using this technique, they found that GRB 100621A was 168 times brighter than a typical gamma-ray burst and five times brighter than the previous record holder.

Brian Schmidt an astronomer at Australian National University in Canberra believes the discovery of GRB 100621A "pushes the envelope by a long ways of how extreme the universe can be - it is intrinsically the brightest explosion ever seen by humanity."

Schmidt advises that some of the most interesting work is yet to come - scientists need to determine the size of the star that caused this explosion - given the brightness of the explosion, it should be an impressive size, he said.

## **Yelling And Threats Alleged In NASA Ames Dust-up (MOUNVIEW)**

**Union president says deputy director 'charged' at him in e-mail spat**

By Daniel Debolt

[Mountain View Voice](#), July 19, 2010

Last month an eyebrow-raising e-mail was sent out to NASA Ames Research Center's 2,500 employees by Ames director S. Pete Worden, who reminded everyone that management should not interfere with union activities.

According to the vague explanation in the e-mail, the message was required in a settlement agreement for "an unfair labor practice charge filed by the Ames Federal Employees Union," the June 3 e-mail stated.

It turns out that the "unfair labor practice" involved Worden himself, along with his number two, deputy director Lewis Braxton III. According to documents filed with the Federal Labor Relations Authority, Braxton is alleged to have verbally "assaulted" AFEU president Leland Stone while Worden was present at an August 2009 meeting. The incident took place immediately after Stone sent an e-mail to union members which disparaged Ames management and boasted about the union's accomplishments.

The e-mail said to have incited the conflict read, in part, that "while Ames management is all a-twitter with the International Space University, Singularity University, new green office building construction, Zeppelins, new cafes in the research park, cheap beer at the golf course, and other peripheral activities, your union has prioritized its efforts on core issues crucial for maintaining Ames as a premiere R&D center and NASA as America's aerospace agency."



According to the charge filed by the AFEU, the meeting about those remarks flared up to the point that "Mr. Braxton charged across the room, lunged at Dr. Stone, and proceeded to scream and yell at him at the top of his lungs with his face within about 1 inch of Dr. Stone's face while shaking his finger in Dr. Stone's face about 1 inch from his eye. The assault lasted about half a minute."

The description goes on to say that director Worden watched and said nothing during Braxton's alleged tirade, but allegedly joined Braxton in making "vague verbal threats that the Union could expect hostile treatment if we did not amend certain statements in the e-mail."

After the charge was filed, the FLRA launched an investigation into the complaint and queried witnesses who attended the meeting, including Janice Fried, the Ames director of human capital, and Dr. David Schwenke, AFEU's first vice president.

In brief e-mails about the incident to the Voice this week, both Dr. Stone and Ames management (speaking through public affairs) tried to put the incident behind them, with Stone calling the incident "old news."

Both sides acknowledged that Worden's e-mail, the only requirement in the settlement agreement, was appropriate. It read in part that "intimidation, threat, or coercion" of union members is not allowed under the union's labor agreement, including "conferring any benefit (such as appointment, promotion, compensation, settlement, or redress), or effecting or threatening to effect any reprisal (such as deprivation of appointment, promotion, or compensation)."

"Ames management believes that the allegations made in the complaint have already been addressed and settled, and Ames unequivocally stands by the sentiments in the Centerwide statement," wrote communications director Delores Beasley in an e-mail.

"The matter you refer to in the attachment is nearly a year old," Stone told the Voice in an e-mail. "The events were investigated by the Federal Labor Relations Authority, which has adjudicated the matter. An appropriate settlement was reached and has been implemented. This is old news."

Stone's AFEU represents nearly 1,000 union employees at Ames, including engineering and scientific staff.

## **Edwards Students Write To NASA (VAIL)**

[Vail Daily News](#), July 19, 2010

EDWARDS, Colorado - The pre-kindergarten class at the Family Learning Center was "outraged" to find that Pluto is no longer considered a planet, so the students wrote a letter to NASA to share their concerns.

Their teacher, Jennifer Girard, wrote down the comments and sent them to NASA, along with the students' drawings of Pluto.

The students were thrilled when NASA responded to their letter thanking them for the pictures of Pluto. NASA's letter also told the students their thoughts and ideas about furthering space exploration are important.

Dear Solar System,

Pre-K wants Pluto back in its spot. May we please give Pluto back its spot as a planet, because it's silver, really pretty and cute. Also because it's a little baby, the smallest one. Just because it's different, we don't need to kick it out. All planets are different. It doesn't matter, every planet is different, so we want Pluto back.

Love,

Pre-K

Dear students,



On behalf of NASA, thank you for the picture of Pluto, the dwarf planet. NASA wants you to know that your thoughts and ideas to further space exploration are important, and we hope that you will continue to learn all you can about NASA's space programs, missions and accomplishments. Just think - in a few years, you could be one of the pioneers that may help lead America's activities for better understanding of our earth and for exploring space.

Below are websites that contain resourceful information about NASA's space programs and activities. If you or your school does not have a computer that can connect with the Internet, perhaps you can visit a local library and use one of their computers.

. Web site <http://www.nasa.gov/audience/forstudents/k-4/index.html> has NASA-related resources and information for students in kindergarten through the fourth grade.

. Web site <http://www.spacecamp.com/spacecamp> has program information on the U.S. Space Camps. These programs are for you and your teachers.

. Web site <http://www.spaceflight.nasa.gov/outreach/jobsinfo/astronaut.html> has information that you may find interesting on how to become an astronaut.

Again, your interest in NASA and America's space program is appreciated. NASA wishes you every success in earning good school grades and encourages you to keep reaching for the stars!

Sincerely,

Public Communications Office

Office of the Deputy Associate Administrator for Public Outreach

Office of Communications

## **Mars Missions Topic Of JPL Scientists At Park Events (OCR)**

[Orange County Register](#), July 19, 2010

Free events at Carbon Canyon and Irvine regional parks will spotlight the Reconnaissance Orbiter and Science Laboratory missions.

OC Parks will welcome scientists from NASA's Jet Propulsion Laboratory to Carbon Canyon and Irvine regional parks in the next couple of months as they continue a series of public programs about various missions to Mars.

The opener of the three-night series was Saturday at Caspers Wilderness Park in San Juan Capistrano, showcasing the Phoenix Mars Lander mission.

## **Large NASA Project To Use ULA Rocket (DENBIZ)**

By Greg Avery, Denver Business Journal

[Denver Business Journal](#), July 16, 2010

Most of the money for a \$485 million NASA mission to study Mars' atmosphere in 2014 is going to Denver-area aerospace companies and the University of Colorado.

NASA recently confirmed it will use a rocket from Centennial-based United Launch Alliance for the Nov. 18, 2013, launch of the Mars Atmosphere and Volatile Evolution probe (MAVEN) on a nine-month flight to the red planet.

That means more than \$400 million from MAVEN will flow through the Denver area, given the respective roles of University of Colorado-Boulder, Lockheed Martin Space Systems and United Launch Alliance overseeing the science, satellite building and launch of the mission.

"It's a lot of money for Colorado," said Bruce Jakosky, a veteran Mars researcher at CU-Boulder who is the lead scientist on MAVEN. "And it really highlights the depth of aerospace we have here."

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## Red Planet Rover Could Emerge From Slumber Soon (SFN)

By Stephen Clark

[Spaceflight Now](#), July 19, 2010

NASA officials say the best chance to hear from the napping Spirit rover again will be in September or October, but the timing of the robot's revival from winter hibernation is an engineering guessing game.

Spirit was forced to sleep by the cold winter in the Martian southern hemisphere, where low sun angles were not sufficient to power the rover through solar panels.

The stranded rover last communicated with Earth on March 22. Spirit has been stuck in a sand pit known as Troy since April 2009, leaving the rover tilted away from the sun and limiting its ability to produce electricity.

The winter solstice at Spirit's location was May 13, and conditions should now be improving. But the rover's batteries likely won't be collecting enough sunlight to begin communicating again until September or October.

Spirit's energy production had dipped to 134 watt hours before controllers lost communications March 22.

"While we've passed winter solstice, and the sun is getting a little higher in the sky, the intensity of the sun is still very low," said Doug McCuiston, the director of NASA's Mars exploration program. "So we actually don't think we're going to have enough power to hear from it for another month-and-a-half or two months. The peak probability is going to be in late September or early October."

But that's just a best guess, according to Steve Squyres, the top scientist for the Spirit and Opportunity rovers from Cornell University.

"It depends on the power projections, which are obviously uncertain," Squyres said in an interview last week. "It depends very much on how much dust is on the solar arrays, and we have no way of monitoring that at the current time. Our best guess is probably like October-ish, but that's got a lot of uncertainty in it."

NASA's large communications antennas are regularly listening for messages from Spirit, just in case the rover wakes up earlier than predicted.

Then there's the concern that Martian dust has accumulated on Spirit's solar arrays, the robot's lifeline to wake up from its winter slumber.

"The solar array panels were pretty dirty," McCuiston said. "If there has not been a cleaning event, and through winter typically you don't get those, the dust build-up on the arrays could be pretty significant. So we don't know when we'll be getting enough power into the arrays to actually get the batteries charged up and get the computers back online."

The dust reduces the efficiency of the craft's fixed solar arrays. Occasional gusts of wind blow dust off the solar panels, giving the rovers a jolt of electricity.

But the fortuitous wind gusts aren't common in winter, and if Spirit's solar panels have collected more dust since March, the rover could face a master clock fault.

"If you stack worst case on top of worst case, there is one failure mode we could get into, in principle," Squyres said. "We think it's unlikely, but it's possible. It's called a master clock fault. If we have a master clock fault, we probably wouldn't

hear from the vehicle until the next time we had one of these cleaning events -- the gusts of wind that clean the solar arrays."

Engineers believe Spirit is now in a low-power fault, in which the craft only powers its master clock to periodically check its power status until there is enough electricity to wake up and radio Earth or an orbiting satellite, according to NASA.

"There are two different levels of faults," Squyres said. "One is low-power fault mode, which we know the brand. We know that we've tripped that, and we think if that's the fault mode that we're in, we will come out of it sometime probably in October, with big error bars. If the power has dipped lower than our projections say, which is possible if there was some big dust event, the next level of fault protection is the master clock fault. If that happens, it gets much harder to predict when we might hear from it again."

McCuistion, NASA's top Mars official, said Spirit's sensitive electronics are being exposed to temperatures they have never seen before, even lower than worst-case testing conducted before the craft launched.

"It's an environment Spirit's never encountered before," McCuistion said. "Some of this is crossing your fingers and some of it is good engineering guesses, but none of it is hard science because we just haven't experienced this before."

If Spirit survives the winter, NASA is planning a series of geophysical science experiments probing the Red Planet's interior, monitoring weather and studying the composition of nearby soil.

Studying the deep interior of Mars has long been a high priority for researchers, according to McCuistion.

Spirit will be used to track tiny wobbles in the rotation of Mars, which could tell scientists whether the planet has a molten or solid core.

NASA gave up on removing Spirit from its sandy trap in January after 4.8 miles of driving across the bed of Gusev crater and into a range of highlands called the Columbia Hills.

McCuistion said the value of Spirit's new science mission, buoyed by its high ranking in researchers' decadal survey reviews, means the rover isn't in danger of being shut down anytime soon.

"The cost is negligible, frankly," McCuistion said in an interview last week. "It's not that expensive to do that kind of science."

Like most missions in NASA's portfolio, the rovers are the subject of an annual review by independent scientists to gauge their research value.

"Getting an asset on the surface of Mars is so hard, that when you have them there doing good science, it's a lot cheaper to keep them going," McCuistion said. "As long as they're doing good science, we're not going to turn them off unless they turn themselves off."

## **Rackspace Goes Open Source With Cloud Platform (CNET)**

By Dave Rosenberg

[CNET News](#), July 19, 2010

Data center and cloud infrastructure service provider Rackspace is expected to announce Monday the release of a new open-source offering that will allow users to build and launch their own internal and hosted clouds.

Dubbed OpenStack, the new Apache-licensed project will feature several cloud infrastructure components, including a fully distributed object store based on Rackspace Cloud Files, the company's highly scalable storage engine.

In addition to the initial offering, a scalable compute-provisioning engine based on the NASA Nebula cloud technology and Rackspace Cloud Servers technology is expected to be available later this year.

Rackspace has been hosting enterprise computing for many years and the use-cases of the OpenStack software are relevant to both software providers and enterprises.

Part of the reason this project is open source is that enterprise developers have more specific domain knowledge than service providers might and that open source provides a way for interested users to collaborate to create a better product, according to Mark Collier, Rackspace VP of business & corporate development.

It's important to note that this software powers Rackspace's cloud infrastructure--or at least a fairly large chunk of it--not just a random new open source project. The software has been proven in production and should provide a high level of confidence to those interested in the project.

And while service providers are typically running much larger infrastructures than enterprises, companies of all sizes are interested in experimenting with cloud-like functionality--especially if its free and open source.

Collier told CNET that the company decided to launch and support this project because it believes standardization is important in this space. I would expect a number of companies such as Red Hat and Canonical, as well as Hewlett-Packard and others to be interested in including this as part of their enterprise Linux and data center offerings.

Enterprises don't want to be locked-in to a specific technology or cloud provider right now--the market is just too nascent and most have spent significant amounts of dollars on virtualization efforts only to be locked-in to a specific VM provider.

There is an opportunity for open-source cloud infrastructure to become as ubiquitous as the Apache Web server. This project could provide a huge leap forward in opening up the clouds.

## OpenStack Targets One Million Machine Nebula (REG)

By Timothy Prickett Morgan

[The Register](#), July 19, 2010

NASA and Rackspace have joined forces to open source a new platform for building so-called infrastructure clouds. Known as OpenStach, the platform is available under an Apache license, and when completed ♦?" possibly by the end of the year ♦?" NASA and Rackspace will ditch their current infrastructure cloud platforms, which don't scale as they would like.

NASA's Nebula infrastructure cloud is installed installed at NASA's Ames Research Center and is in the process of being and extended to the Goddard Spaceflight Center outside of Washington, DC. The Nebula cloud was spearheaded by Chris Kemp, who is now NASA's chief technology officer, and in an interview with El Reg, Kemp had nice things to say about the Eucalyptus cloud fabric controller that Nebula was currently using, which is an open source clone of Amazon's EC2 compute cloud and S3 storage cloud.

But Kemp also said that the scalability of the product and other issues with Eucalyptus (including the inability by NASA to get some of its enhancements into the Eucalyptus code base) compelled Kemp to take the entire Nebula team and dedicate it ♦?" for the past six months ♦?" to creating a new fabric controller, called Nova, from scratch.

It was serendipity that at just the time when NASA was working on the guts of a new compute engine that Rackspace had decided to contact NASA about its plan to open source the "Ozone" code behind its Cloud Servers compute cloud and the Cloud Files storage cloud (formerly known as CloudFS). NASA had released the Nova cloud fabric controller under an Apache 2 license at <http://novacc.org/> (the code is currently at the 0.42 release level and admittedly buggy), and according to Jim Curry, vice president of corporate development at Rackspace, decided not only to open source its Cloud Servers

code but to start the OpenStack project to mix-and-match the best bits of its Ozone code base with NASA's Nova code base to forge a better cloud fabric controller.

Nova is written in C, C++, and Python and Ozone is written in Python, and at this point, the exact nature of the merged project is being hammered out by NASA, Rackspace, and 25 other partners who are lining up to support the OpenStack Compute fabric controller.

Like the Eucalyptus tools NASA is currently using in its Nebula cloud, the Nova cloud fabric controller is built to mimic Amazon's EC2 and S3 APIs. Most of the code is written in Python, using the Tornado and Twisted frameworks. It uses the open source Advanced Message Queuing Protocol (AMQP) that Red Hat has championed for its Enterprise MRG cloudy Linux stack as well as a Redis distributed key value store. The code was released at the end of May.

NASA will be adopting the OpenStack Object Storage as its default object-based storage, and this code is literally Rackspace's Cloud Files opened up under an Apache 2 license to match that of NASA's Nova fabric controller.

Sometime in the fourth quarter, after the OpenStack project gets fully organized and programmers from inside NASA and Rackspace as well as from the OpenStack community decide what features and standards to support, both NASA and Rackspace intend to put the OpenStack Compute and Object Storage code into production. At that point, Eucalyptus and VMware's vSphere will be relegated to jobs where NASA needs to support a cloud that has third party application certification, something that Kemp never envisioned doing on the Nebula cloud in the first place and still doesn't see happening. "There is a place in the enterprise for all of these platforms," says Kemp.

The problem with the tools being created and sold by Eucalyptus Systems, VMware, and others trying to provide tools to fluff up clouds is that the scale that NASA and Rackspace are wrestling with is beyond the capability of these products.

"We are not the target customer," says Kemp. "We are constantly working around issues and creating code because of this." The difference is between a platform, which you can pull apart in a modular way ♦?" perhaps changing the networking engine or the queuing engine to boost performance ♦?" and a product, which is tends to be a single, integrated thing bound by the needs of an average of customers, not those pushing the scalability limits.

What kind of scalability are NASA and Rackspace talking about with the OpenStack software? The initial design goals agreed to by the two parties (who do not have any kind of formal arrangement except to contribute code to the OpenStack project and work in the community) is for OpenStack to span 1 million host machines and control up to 60 million virtual machines.

"VMware has not built something that can scale up to Amazon-level scalability of hundreds of thousands to millions of servers," says Curry at Rackspace. And as for Eucalyptus, Kemp over at NASA said "our team's analysis is that it could not get anywhere near it," meaning the design goals for OpenStack. Curry joked that if anyone wants to provide Rackspace with the iron, it would be happy to test it across a million boxes. (What do you say, Google?)

The exact feeds and speeds of the OpenStack Compute fabric controller have not been hammered out, but Rackspace hosted a design summit in Austin, Texas from July 13 through 16 where 100 technical advisors from 25 companies were on hand to help hammer out the initial details. These include AMD, Autonomic Resources, Citrix Systems, Cloud.com, Cloudkick, CloudSwitch, Dell, enStratus, FathomDB, Intel, iomart Group, Limelight, Nicira, NTT Data, Opscode, Peer 1, Puppet Labs, RightScale, Riptano, Scalr, Sonian, Spiceworks, ThoughtWorks, Zenoss, and Zuora. The initial cloud fabric will support KVM virtual machines as well as Xen virtual machines based on the open source Xen as well as Citrix Systems' XenServer implementation. (It is not clear yet how the Xen community, which created its own cloud

stack last summer, and Citrix, which sells a commercial cloud fluffer called Citrix Cloud Center (or C3 for short), will participate in the CloudStack project.)

By the way, other goodies in the Ozone compute fabric from Rackspace are not being open sourced, such as the Rackspace internal control panel, metering and billing systems, and ticketing systems. The OpenStack Compute tool will have APIs in them to let homegrown or third party systems plug into the fabric controller to provide these functions. (Service providers already have all these anyway, and so do many IT shops).

While NASA and Rackspace are looking to roll out OpenStack Compute and OpenStack Object Storage in the fall, other companies will be looking to do it soon thereafter once the code is put through the paces. And if they decide to use it in production, then Rackspace is going to set itself up to be the Red Hat for open source clouds, offering Level 2 and 3 tech support for the OpenStack tools to anyone who wants to pay cashish for it. (NASA will almost certainly not pay for support for OpenStack from Rackspace, given that it will know as much about it as anyone else on the project. But maybe some day. . . . )

On first glance, the fact that Rackspace is supporting open source cloud tools might sounds a bit like selling bullets to your enemies so they can shoot back at you. And Curry admits there will be a bit of that.

But Curry also says that Rackspace, NASA, and other organizations (hosting companies and governments alike) that want to support or sell virtualized infrastructure need compatibility and scalability more than they need anything else right now, and if enough people back OpenStack, it can become a de facto standard, much as Amazon and its EC2 and S3 have become in clouds and VMware's ESX Server has become in commercial data centers.

Rackspace is betting that even if it helps some of its rivals in the hosting space, its "maniacal support" and broad offerings (including VMware and Hyper-V virtual infrastructure for those who want it) will give it an edge. This is the same bet that all of the participants in the Linux community who sell commercial support for Linux are betting. And just maybe, Rackspace can make a tidy sum selling OpenStack support to smaller service providers, benefiting from the niches where these companies play and reaching customers they would not normally get to.

## **Va. Firm Picked As Chileworks Integrator (SPCENWS)**

By Space News Staff

[Space News](#), July 16, 2010

Millennium Engineering and Integration Co. of Arlington, Va., was tapped as the lead systems integrator for the Pentagon's new Rapid Response Space Works facility, according to a July 14 NASA press release.

Rapid Response Space Works, nicknamed Chileworks for its Albuquerque, N.M., location, was conceived by the Pentagon's Operationally Responsive Space (ORS) Office to rapidly build and launch operational satellites to augment or replace existing capabilities in as little as seven days. NASA's Ames Research Center in Mountain View, Calif., is acting as the acquisition agent for Chileworks.

Chileworks' first project will be the Modular Space Vehicle program, which is intended to refine the procedures and standards for developing satellites on short order. The Modular Space Vehicle program is planned to culminate in 2012 with the launch of a synthetic aperture radar satellite, but the Pentagon has said having that capability on orbit is less important than the processes to be established. A hardware contract award for the Modular Space Vehicle is expected in August, according to an industry source.

Millennium Engineering was awarded a five-year, indefinite-delivery, indefinite-quantity contract for planning, engineering and integration activities at Chileworks, the press release said. That contract and the Modular Space Vehicle contract have a combined ceiling of \$500 million, it said.

## **NASA Officials Repair Giant Antenna At Goldstone (BDD)**

By Robert S. Hong

[Barstow \(CA\) Desert Dispatch](#), July 19, 2010

FORT IRWIN . Officials from NASA's Deep Space Network have embarked on a huge undertaking this summer as they attempt to make some repairs to a 44-year-old giant antenna at Goldstone on Fort Irwin.

The antenna, referred to as Deep Space Station 14, or the "Mars antenna," is the second largest of its kind in the world. At 70 meters, it is able to rotate freely on its axis and can be aimed in almost every direction, covering the entire sky.

But after four decades of wear and tear, the rotating antenna is beginning to run down its support system, and officials at NASA decided it was time for some upgrades.

Since March, workers have been out at Goldstone working to replace the runner of the antenna's hydrostatic bearing - an 80-foot donut-shaped piece of metal that the antenna rests on top of, which allows it to rotate.

The bearing is assembled so that the weight of the antenna rests on three pads, which slide along a film of oil around the large ring as the antenna moves. This bearing had become uneven from years of use.

"We decided it was prudent to replace the bearing before it got worse," said Peter Hames, manager of antennas and facilities for the Deep Space Network.

Seeping oil has also worn away the grout - a cement-like material - which the antenna rests on. So in addition to antenna repairs, workers have been adding a new even layer of oil-resistant grout beneath the antenna.

The project has been no easy task as several million pounds of equipment have had to be lifted in order for the bearing to be changed. Using hydraulic jacks, NASA workers lifted the antenna about a quarter of an inch, which was enough to allow them to complete the process.

The high temperatures in the desert were part of the reason the antenna needed repair as the hot weather takes a toll on the oil in the bearing that supports the rotating load.

"On the hottest days of the year, the oil thins out in the heat," Hames said. "The new design will give us an increased margin to be able to resist the hot days."

The antenna has been used primarily for deep-space communication, and was used during the Apollo 11 mission, where men first walked on the moon.

It is so powerful that it can be used to communicate with spacecrafts near Saturn and Pluto.

The project is estimated at \$1.25 million. Officials expect work to be completed by September, and it should be up and running by the beginning of November.

## **Sun's Outer Atmosphere Revealed By Total Solar Eclipse (SPACE)**

By Tariq Malik

[SPACE.com](#), July 19, 2010

The atmosphere of the sun blazes clearly in a new image from NASA that combines observations from Earth and space during the only total solar eclipse of this year.

The new solar eclipse photo used observations from two NASA space telescopes and ground-based astronomers from Williams College in Massachusetts to assemble a detailed look at the sun's ultra-hot corona when the moon completely blocked the sun during the July 11 total solar eclipse.

"The sky was wonderful," Williams College astronomer Jay Pasachoff told SPACE.com after the eclipse. Pasachoff led a Williams team that ventured to the remote Easter Island in the southern Pacific Ocean to study the sun's corona during the solar eclipse. [2010 Total Solar Eclipse Photos]

#### Atmosphere of the sun

The corona is the outer atmosphere of the sun and can be seen only during solar eclipses. While the surface of the sun is typically about 10,000 degrees Fahrenheit (5,538 degrees Celsius), the gas in the corona can be up to 100 times hotter.

During a total eclipse, when the disk of the sun is entirely blocked by the moon, the corona is suddenly visible as bright, wispy tendrils that can be safely viewed with the naked eye. (Protective glasses are required to watch the phases of the eclipse before and after totality. Viewing the sun's disk directly can cause permanent eye damage.)

#### Sun's corona revealed

The NASA photo of the July 11 solar eclipse is a mosaic of three images layered on top of each other.

The photo's outer ring in red is a false-color view of the sun's outer corona recorded by the LASCO instrument on the SOHO space observatory (a joint project of NASA and the European Space Agency), which observes the sun at a stable point in space between the star and Earth. LASCO is a coronagraph that uses a disk to blot out the sun and inner corona so its faint outer corona can be observed.

Pasachoff's observing team took the gray-and-white image that makes up the eclipse photo's middle ring. The corona's tendrils are easily visible in this ring stretching out away from the sun.

In place of the moon at the center of the new image, NASA has added a view of the sun's surface as seen by the space agency's powerful Solar Dynamics Observatory (SDO). The SDO photo is actually an extreme ultraviolet light view of the sun, but was taken at about the same time as the others that make up the solar eclipse mosaic.

The July 11 solar eclipse was the only total solar eclipse for this year, but it was actually the second solar eclipse to occur in 2010. An annular solar eclipse, in which the sun was not completely covered by the moon, occurred on Jan. 15.

The total eclipse was touted as one of the most remote solar eclipses ever because it occurred over a hard-to-reach swath of the Pacific Ocean, visible on only a few islands and part of South America.

"An impossible eclipse at the end of the world," said skywatcher Daniel Fischer, who watched the solar eclipse from the Patagonia region of Argentina as the sun set behind the Andes mountains.

The next total solar eclipse will occur in November 2012.

## Lake Levels Change On Titan (ANOW)

By Dr Emily Baldwin

[Astronomy Now](#), July 19, 2010

For the first time, the levels of liquid in Titan's lakes have been found to fall and rise with the seasons, just like on Earth.

Titan, Saturn's large, planet-like moon, is the only location in the Solar System - aside from the Earth of course - that has a hydrological cycle. While Earth's hydrological cycle runs on water, Titan's distance from the Sun makes for much chillier conditions, and a hydrological cycle that is based on liquid methane, ethane and propane. Synthetic Aperture Radar



(SAR) map of Ontario Lacus, the largest lake in Titan's southern hemisphere. Radar altimeter tracks show that Ontario lies in a shallow regional basin. The early (June 2005) and subsequent (June/July 2009) outlines of the lake are shown in cyan and blue, respectively. During the four-year observation period the lake receded by ~10 km at places, consistent with an average depth reduction of ~1 m/yr. Inset; Region A with contours of constant distance from shoreline. Image: Radar Science Team, NASA/JPL/Caltech

Now, after analysing Cassini spacecraft data collected over a period of four years, scientists have found that the depth of liquid in Titan's southern hemisphere lakes have dropped at a rate of about one metre per year. For the case of Ontario Lacus (named for its similar size to Lake Ontario on Earth), the scientists found that between June 2005 and July 2009, a period of time that covers the transition between mid-summer and autumn on Titan, the shoreline receded by around ten kilometres.

The results are based on radar altimetry and Synthetic Aperture Radar (SAR) data, which measures the roughness of a surface such that a flat, smooth surface such as a lake appears dark, while rough features (such as mountains) appear bright. By combining the SAR and radar altimetry data, the scientists could build up a picture of the absorptive properties of the liquid. "It argues that the liquids are relatively pure hydrocarbons made up of methane and ethane and not a gunky tar," says Oded Aharonson, associate professor of planetary science at Caltech.

"The liquid is not highly attenuating," explains Alexander G. Hayes, also from Caltech, "which means it is fairly clear to radar energy - that is, transparent, like liquid natural gas. Because of this, radar can see through the liquid in Titan's lakes to a depth of several metres. Then the radar hits the floor, and bounces back. Or, if the lake is deeper than a few metres, the radar is completely absorbed, producing a 'black' signature." Ephemeral lake observations in Titan's south polar region near (60S,150E). The blinking image shows partially filled lakes (outlined in cyan) disappearing between images obtained in December 2007 (Cassini pass T39) and May 2009 (T55). Models of the change in radar brightness suggest that the amount of liquid loss is ~1 m/yr, consistent with the analysis of shoreline recession at Ontario Lacus. Image: Cassini Radar Science Team, NASA/JPL/Caltech

Taking into account the liquid's optical properties, the researchers could then focus on the depth of the lake. "We were able to determine the bathymetry of the lake out to a depth of about eight metres," says Hayes, who adds that the lake is shallowest and most gently sloped along its southern edge, in areas where sediment is accumulating. Along its eastern and northern shore, where it hits a mountain range, the slope of the lake is somewhat steeper, which Hayes calls the 'beachhead'.

Comparing images of Ontario Lacus separated by four years revealed that the lake had shrunk. "The extent to which the lake has receded is related to the slope - i.e., where the lake is shallow, the liquid will have receded more," says Hayes. "This allows us to deduce the vertical height by which the lake depth has dropped, which is about one metre per year."

The rate of evaporation of methane from nearby lakes was also determined by comparing the radar signatures from images taken in December 2007 and May 2009, in terms of how 'dark' the signature appeared. In all the lakes the radar darkness decreased or disappeared entirely, translating as a reduction of liquid. "We got the same result: one metre per year of liquid loss," says Aharonson.

As yet, no analogous changes have been noted in the northern hemisphere lakes, which is now entering spring. "We would expect it will happen, but we don't know how it would manifest in the data if the lakes in the north are significantly deeper," says Aharonson "We'll continue to look for this effect with future radar images, to disentangle the seasonal variations from longer-term climate variations we previously have proposed."

## Single Star Count Ups Odds Of ET (NEWSCIENTIST)

By David Shiga

[New Scientist](#), July 19, 2010

Solitary suns like ours are not as rare as we once thought, boosting the likelihood that there are other life-friendly solar systems in the universe.

It is not always easy to tell if a star has a companion, since they are often too close together to distinguish as separate objects with a telescope. But astronomers can look for other clues, such as periodic changes in the star system's light spectrum caused by the motion of the stars as they orbit one another.

Previous surveys had suggested that most systems containing a star the same mass as our sun have two or more stars orbiting each other, in contrast to our solar system. Now that has been thrown into doubt.

When Deepak Raghavan of Georgia State University in Atlanta and colleagues looked at 454 sun-like stars, they found that 56 per cent were single like our sun and just 44 per cent had a stellar companion. Their study will be published in *The Astrophysical Journal*. Stable singles

The team's finding is at odds with a survey completed in 1991, which found that the majority of systems containing a sun-like star were multiple star systems. So why the conflicting results?

One point is that the 1991 survey was based on a smaller sample. Also, its authors assumed that some stars in the sample had companions that were below the survey's detection threshold. This may have led them to overestimate the number of companion systems, suggests Raghavan's team.

Single stars provide a stable planetary system, which makes them suitable for life. Planets can form in multiple star systems, but the gravity of the additional stars can hurl planets into their parent star, says John Chambers of the Carnegie Institution for Science based in Washington DC, who was not involved in the study.

Stellar companions may also interfere with the formation of comets in the outer reaches of a planet-forming disc, Chambers says, thereby eliminating a potential source of water for rocky planets through comet impacts.

## ScienceShot: A Quasi-Stellar Looking Glass (SCINOW)

By Kristen Minogue

[ScienceNOW](#), July 19, 2010

For decades the intense light of quasars has blinded astronomers trying to learn more about them and the galaxies they inhabit. But that's about to change. In a new study, published today in *Astronomy & Astrophysics*, researchers used gravitational lensing to see through the brilliance. Until now, scientists have applied this technique by finding a massive galaxy directly in front of a quasar, a super-bright object that sits at the center of another galaxy and is powered by a black hole. Because of gravity, the galaxy bends the light from the quasar and produces multiple images of it to astronomers. But this time researchers tried the opposite: finding a quasar directly in front of a galaxy, a task much harder because of quasars' tendency to conceal whatever is behind them with their bright light. The team hopes that by learning the mass of the quasar's galaxy, they can learn more about how quasars and their galaxies evolve, and whether galaxies with quasars are at all different from galaxies without them.

## AERONAUTICS RESEARCH

### U. Student Gets 2nd Internship With NASA (DESMN)

By Daniel Ng

[Deseret Morning News \(UT\)](#), July 19, 2010

HAMPTON, Va. - For University of Utah student Brittany Green, spending the summer at NASA's Langley Research Center is becoming routine.

Green, from Kaysville, was selected for the second summer in a row for the Langley Aerospace Research Summer Scholars program.

She said the experience has been "life-changing. I get to meet people from all over with all kinds of interesting backgrounds."

Interns in the program have the opportunity to work with NASA scientists and engineers.

The summer program includes hands-on research, allowing Green and her fellow interns to gain as much experience as possible.

"The experience of working at such a prestigious and diverse organization is very exciting," Green said. For information about LARRS or for an application visit, [www.nianet.org/larss](http://www.nianet.org/larss).

## **AEROSPACE NEWS**

### **Wing's Colonel To Rise In Rank (FLTODAY)**

By R. NORMAN MOODY

[Florida Today](#), July 19, 2010

Air Force Col. Ed Wilson, the commander of the 45th Space Wing at Patrick Air Force Base, will be promoted to brigadier general during ceremonies on Friday.

Wilson, 47, assumed command of the 45th Space Wing in February. He comes from a military family, and entered the Air Force in 1985 as a graduate of the Air Force Academy.

The promotion ceremony will be held Friday afternoon but is not open to the public.

At Patrick, Wilson said one of the first things on his agenda was to continue the strong relationship between the base and its mission partners, NASA, the communities surrounding the base and Cape Canaveral Air Force Station.

Wilson, who was born at Maxwell Air Force Base in Alabama, is part of five-generation family tradition of military service dating back to the Civil War. His father served in the Vietnam War and retired as a lieutenant colonel; a grandfather served in World War II.

During his career, Wilson has worked in such areas as space operations, acquisition, policy, strategy, planning and combat support. He previously commanded at the squadron, group and wing levels, as well as served on the staffs of Air Force Space Command, U.S. Space Command, and the National Reconnaissance Office.

Wilson also served as a Secretary of Defense corporate fellow at Cisco Systems, where he received senior service college credit. Before his current assignment, he served as the commander of Space Development and Test Wing overseeing more than 1,000 military, government civilians and contractors responsible for delivering small, responsive space capabilities to users across the National Security Space community.

### **U.S. Air Force May Slow Planned GPS 3 Production Pace (SPCENWS)**

By Turner Brinton

[Space News](#), July 16, 2010

WASHINGTON - The primary payload for the U.S. Air Force's next-generation GPS 3 navigation satellites recently was cleared for production even as the service contemplates slowing down the program based on the health of the current GPS constellation.

Current plans call for GPS 3 prime contractor Lockheed Martin Space Systems of Denver to deliver four satellites per year, with the first slated to launch in 2014, but the Air Force is currently re-evaluating the production rate, said Dave Podlesney, Lockheed Martin's GPS 3 program director. The health of the existing constellation and launch rate of the current-generation GPS 2F craft - to date just one of 12 of the Boeing-built satellites has been launched - are factors, he said in a July 13 interview.

The U.S. Department of Defense, in a 2010 budget reprogramming package submitted to Congress July 2, is seeking permission to redirect \$2.7 million that had been appropriated for GPS 3 parts procurement to other activities. It is not clear whether the request has any connection to a possible slowdown of the program. The Air Force currently plans to fully fund three GPS 3 satellites in 2012, two satellites in 2013, five satellites in 2014 and two satellites in 2015, according to Air Force spokeswoman Maj. Angie Blair. She declined to say if any possible changes to this schedule are being considered.

Lockheed Martin, meanwhile, is slightly ahead of schedule on the multibillion-dollar program, having completed 62 of 65 program reviews in preparation for hardware manufacturing, Podlesney said. The Air Force Space and Missile Systems Center and GPS 3 contractor team will conduct a critical design review in August, which would clear the way for production to begin, he said.

One critical GPS 3 component, the primary navigation payload being supplied by ITT Geospatial Systems of Rochester, N.Y., already has cleared critical design review and production of a prototype has started, Podlesney said. ITT has the supplied payloads for all previous generations of GPS craft.

The initial payload is slated for delivery by the end of 2011 for integration with the GPS Non-flight Satellite Trailblazer, a prototype that will closely resemble the flight-model spacecraft, Podlesney said. The construction of the Trailblazer is one example of the new and more cautious approach being taken on GPS 3 to avoid the cost and schedule problems that have plagued military satellite procurements in recent years.

Lockheed Martin was put under contract in May 2008 to deliver the first two of as many as 12 satellites under the initial GPS 3 block, known as Block 3A. The next two blocks, GPS 3B and GPS 3C, are planned to feature improvements such as better anti-jamming capabilities.

GPS 3 satellites are designed to produce more accurate signals than previous GPS satellites thanks to improved on-board atomic clocks. The spacecraft also will feature a more powerful M-code signal for military users and compatibility with the European Galileo navigation satellites, scheduled to begin launching as early as 2012.

GPS 3 is one of the first procurements to be managed according to the Air Force's so-called back-to-basics approach to satellite development, which was adopted following the problems experienced on programs that were placed under contract in the 1990s and early 2000s. Experts have attributed the problems - many of which occurred on Lockheed Martin-led programs - to factors including inadequate up-front systems engineering and the adoption of commercial-like practices featuring less government oversight.

The reduced oversight extended to quality control on parts. The Air Force previously had maintained a meticulous catalog of specifications for space-qualified parts, which was not kept up to date during what is sometimes referred to - with some irony - as the acquisition reform era. GPS 3 marks a new era of closer Air Force involvement in the engineering

and integration of satellite systems, which will pay dividends for future development programs as well, said Keoki Jackson, Lockheed Martin's GPS 3 deputy program director.

"We have come to recognize that there have been problems in the industry with parts, and a response was needed," Jackson said. "With the way the [military] standards had not been kept up, we are essentially blazing a new industry standard for parts procurement, so this is going to be a tremendous value to the Air Force as a whole from the standpoint of space procurement. The government and contractors put a lot of thought into overall mission assurance and risk reduction."

However, as often happens with corrective measures, the pendulum may have swung too far back the other way in the case of GPS 3, Podlesney said.

"We're trying to work through some of that with the government right now in terms of what areas we might have overachieved," Podlesney said. "In some cases where the government is trying to solve a problem they think they understand in industry, and they put it into [requirements] documents, they're not necessarily solving the problem they set out for."

The increased oversight and quality control have come at a price in the form of higher-than-expected costs for GPS 3 components, Podlesney said. However, these costs are not expected to impact Lockheed Martin's ability to manage the program within the planned budget, company spokesman Michael Friedman said in a July 14 e-mail.

## **FCC Moves To Free Up Mobile Satellite Spectrum For Wireless Services (SPCENWS)**

By Space News Staff

[Space News](#), July 16, 2010

PARIS - U.S. regulators on July 15 proposed making it easier for terrestrial wireless broadband providers to get their hands on radio spectrum now reserved for mobile satellite services. But they left in place most hurdles that mobile satellite companies must clear before using their spectrum for ground-based networks.

In a proposed rulemaking, the Federal Communications Commission (FCC) specifically did not drop a requirement that mobile satellite operators using their satellite spectrum to roll out ground-based networks need to maintain spare satellite capacity before being allowed to start the terrestrial service.

Whether easing this requirement would be enough to stimulate the businesses of struggling mobile satellite providers DBSD North America, formerly ICO North America, and TerreStar Networks - both of which are in difficult financial circumstances - is unclear.

The FCC is being pulled in two directions with respect to mobile satellite operators.

On the one hand, it looks at the recent history of mobile satellite services deployment in the United States and sees companies unable to maximize the use of spectrum that has been reserved for them, particularly in the S-band portion of the radio spectrum. The agency concludes that these companies should be encouraged to surrender some of their spectrum assets.

On the other hand, U.S. policy remains one of encouraging mobile satellite services in places and circumstances in which a terrestrial alternative is non-existent, such as in rural areas and during disaster recovery efforts.

"We intend to modify our rules in a way that both expands terrestrial mobile broadband and ensures that America has a robust mobile satellite capability," FCC Chairman Julius Genachowski said in a statement accompanying the proposed rulemaking.

The U.S. National Broadband Policy has identified 90 megahertz of spectrum now reserved for satellite services that should be considered for terrestrial broadband use - 40 megahertz in the 2-gigahertz S-band spectrum used by DBSD and TerreStar; 40 megahertz in L-band, used by SkyTerra and Inmarsat; and 10 megahertz in the so-called "Big LEO" spectrum used by Globalstar and Iridium.

The question for the FCC is how to make this spectrum available for terrestrial broadband networks without further weakening the satellite players whose business models are already so shaky that the survival of one or more is in doubt.

In its notice of proposed rulemaking, the FCC floats several ideas and is asking interested parties to comment by mid-August, with replies to the initial comments due by September.

Among these ideas:

Allow licensed mobile satellite companies to return part of their spectrum to the FCC for what the FCC calls an "incentive auction" in which the satellite company would share in the proceeds.

Permit satellite license holders to lease their spectrum to pure terrestrial players that have no satellite plans of their own.

Establish a policy stating that S-band spectrum held by a licensed mobile satellite operator whose business fails will not be distributed to any satellite companies still in business, but returned to the FCC and made available for terrestrial mobile broadband.

While the FCC's proposal acknowledges that development of S-band mobile satellite services has been "a slow process," it says current licensees "must continue to comply with all the commission's existing . rules" for deploying ground-based networks using satellite spectrum.

The FCC has spent a decade trying to create a regulatory environment that maintains a mobile satellite services industry even if many of its participants ultimately view the satellite component of their business as a kind of tax on their main business of providing ground-based mobile broadband.

The most noteworthy attempt by the FCC to force a mobile satellite service onto a reluctant market is the agency's decision to permit mobile satellite operators to obtain licenses to use their spectrum for ground-based networks called Ancillary Terrestrial Components, or ATCs.

Instead of having to purchase this spectrum at auction, terrestrial broadband operators could use it free of charge, with the condition that they maintain what the FCC calls "a substantial satellite service."

This policy drove the creation of several mobile satellite services companies financed by Wall Street speculation that, sooner or later, a terrestrial operator would arrive with the several billion dollars needed to deploy an ATC network across the United States. But that has not happened.

Two events in the business world have nonetheless given the FCC reason to hope that things might develop as intended.

The first is the agreement between "Big LEO" spectrum licensee Globalstar of Milpitas, Calif., and regional wireless broadband provider Open Range Communications of Greenwood Village, Colo., to deploy an ATC network using Globalstar spectrum.

The second is the recent purchase by hedge fund Harbinger Capital Partners of SkyTerra Communications, which is launching two large L-band mobile communications satellites in the next two years. New York-based Harbinger has promised the FCC that it would spend several billion dollars to deploy an ATC network in the United States using the SkyTerra spectrum, with at least 100 million people covered by the end of 2012.

Harbinger has yet to announce strategic partnerships that the company is seeking to share in the investment.

## **Virgin Galactic Spacecraft Makes 1st Crewed Flight (AP)**

[Associated Press](#), July 19, 2010

MOJAVE, Calif. - A company working to send tourists on suborbital flights says it has tested its spacecraft with a crew for the first time.

Virgin Galactic says the craft remained attached to a specially designed airplane throughout a six-hour flight over California's Mojave desert Thursday.

On its website, the company congratulated the crew and said "Objectives achieved." It says the two crew members evaluated all of the spaceship's systems and functions.

Virgin Galactic says the flight test program will run through 2011 before it starts commercial operations.

## **SpaceShipTwo Makes First Flight With Crew Aboard (WIRED)**

By Jason Paur

[Wired](#), July 19, 2010

SpaceShipTwo staged a dress rehearsal for its glide flight and flew with a crew for the first time.

Anticipation mounted yesterday as word spread that SpaceShipTwo, attached to its mother ship Eve, departed the Mojave Air and Space Port. Many, including us, were anxious to hear whether the first glide flight of the spacecraft also known as VSS Enterprise would happen, especially since we knew a chase plane followed SpaceShipTwo into the sky.

As we reported yesterday, the flight test team at Scaled Composites has been busy preparing for the first glide flight. There have been four flights of WhiteKnightTwo in the past month where the crew has made practice approaches similar to what will be flown in the VSS Enterprise.

Virgin Galactic, the company behind the development of SpaceShipTwo and private space tourism, says yesterday's flight marked the first time SpaceShipTwo flew with a crew on board.

Peter Siebold, test pilot and director of flight tests at Scaled, joined fellow test pilot Michael Alsbury aboard the VSS Enterprise as it remained mated with WhiteKnightTwo throughout the flight. It was the third captive flight for the craft and the 33rd flight for the mother ship. The craft spent six hours and 12 minutes aloft testing SpaceShipTwo's systems. Virgin says all went well.

There has been no announcement on a date for the first solo flight of SpaceShipTwo.

## **Virgin Galactic's Private Spaceship Makes First Crewed Flight (SPACE)**

By Clara Moskowitz, Space.com Senior Writer

[SPACE.com](#), July 16, 2010

A private suborbital spaceship built for the space tourism firm Virgin Galactic made its first flight with a crew onboard Thursday as it soared over California's Mojave Desert beneath its enormous mothership.

The commercial spaceliner - called VSS Enterprise, one of the company's fleet of SpaceShipTwo spacecraft - did not try to reach space in the test flight. Instead, it stayed firmly attached to its WhiteKnightTwo VMS Eve mothership.

The two crewmembers riding onboard VSS Enterprise evaluated all of the spacecraft's systems and functions during the 6-hour, 12-minute flight, Virgin Galactic officials said in a statement. In addition, automated sensors and ground crews conducted thorough vehicle systems tests. [Photos from the SpaceShipTwo test flight.]

## **Private Spacecraft Makes First Crewed Flight (TGDAILY)**

By Emma Woollacott

[TG Daily](#), July 19, 2010

Richard Branson's private commercial spaceship has made its first crewed flight.

The VSS Enterprise - the first member of Virgin Galactic's fleet of SpaceShipTwo spacecraft - flew over California's Mojave desert. It was the third flight for the Enterprise, and the 33rd for the mothership.

It did not reach space, achieving an altitude of 45,000 feet, and remained attached to the WhiteKnightTwo mothership.

During the six-hour and 12-minute flight, test pilot and flight engineer Peter Siebold and crew member Michael Alsbury were on board while various systems tests were carried out by ground crews.

Mark Stucky, Peter Kalogiannis and Brian Maisler crewed the VMS Eve mothership.

"For the first time, the two crew members on board VSS Enterprise evaluated all of the spaceship's systems and functions from end to end in the air," says Virgin Galactic. "Objectives achieved."

Flight tests will continue throughout this year and next before commercial operations start. The next stage will be to uncouple the spaceship from the mothership and carry out independent glide flight, to be followed by powered flight.

Virgin Galactic will offer flights for \$200,000. The company has already taken around \$45 million in deposits from around 330 customers. It is building a new terminal at the Spaceport America site in New Mexico.

Flights will carry six people at a time to a sub-orbital altitude, allowing a zero-gravity experience - as well as beautiful views of Earth.

## **Moray Airbase Still In Space Race (ABERPJ)**

### **Minister confirms that RAF Lossiemouth is Virgin Galactic's first choice for venue in UK**

By Kaye Nicolson

[Aberdeen Press and Journal](#), July 19, 2010

Virgin Galactic is still interested in using a Moray site as a commercial base for space tourist flights.

Enterprise, Energy and Tourism Minister Jim Mather confirmed last week that Highlands and Islands Enterprise was in talks with Virgin Galactic to support possible space operations from Scotland.

The company plans to offer space tourism flights to the paying public within five years - and Lossiemouth's RAF base is their first UK choice as a spaceport.

Richard Lochhead, MSP for Moray, said: "There is enormous potential for Lossiemouth and Moray if Virgin Galactic were to operate a base for space tourism. It could be a significant attraction for other technology businesses."

He added: "Testing of the space vehicle is currently under way in the United States and we must continue working to ensure that everything is done to make such an investment possible."

Moray MP Angus Robertson said: "I have met both Scottish Government and UK Government ministers to push for their support to try to make this happen and very much emphasise the importance of the military bases here in Moray."

Highlands and Islands Conservative MSP Mary Scanlon said: "It is clear that there are benefits for Virgin Galactic to use RAF Lossiemouth by utilising the closed air space and having a runway at the edge of the sea, enabling take-off over the Moray Firth."

The minister for enterprise, energy and tourism had added that there are still significant regulatory and planning issues to overcome before plans can be taken any further, however.

It emerged in November that UK laws could be a large stumbling block for the plans.



Virgin Galactic president Will Whitehorn had warned that Britain had no regulatory authority or legislation relating to space flights.

Britain created the Outer Space Act in 1986 but did not set up any formal structure or regulations for the possibility of space flights.

### **Science Team To Study Data From China's First Lunar Probe (XHUA)**

[Xinhua](#), July 19, 2010

BEIJING, July 16 (Xinhua) -- China's space agency has set up a committee of 123 leading scientists to consider how the country might apply the vast amount of data acquired by China's first lunar probe.

The project had resulted in data about the distribution and content of important elements on the moon, such as uranium, thorium, potassium, aluminum, silicon, iron and titanium, said the State Administration of Science, Technology and Industry for National Defense Friday.

China launched its first lunar probe Chang'e-1, named after China's mythical Moon Goddess, on Oct. 24, 2007 in southwestern Sichuan Province. The probe ended its 16-month mission on March 1, 2009, when it hit the lunar surface.

The administration said in a statement that China was making "periodic" progress in processing, analyzing and studying the data from the probe, and the "world class" map of the moon's entire surface.

The map, produced by a stereo camera using a charge-coupled device (CCD) on the probe to form images, was highly accurate, said Ouyang Ziyuan, chief scientist of China Lunar Exploration Project.

Chang'e-1 had produced digital elevation models and a three-dimensional topographical map with the highest possible accuracy and resolution, he said.

The probe had also provided researchers with data on the microwave radiation temperatures of the lunar regolith, the powdery soil layer on the moon's surface, which was significant to identify the thickness of the regolith and the rare gases within it, said Ouyang.

"Unique" data about the high-energy particles in near-lunar space and solar-wind particles had also been obtained, which would enrich knowledge about solar radiation, the magnetic field between the sun and the earth, and the moon, Ouyang said.

The scientists, from some of China's leading research institutions and universities, would consider about 2.76 terabytes (TB) of data generated from the 1.37 TB of information sent back from Chang'e-1, said Ouyang.

### **US Report Claims China Shoots Down Its Own Satellite (CHINADAILY)**

[China Daily](#), July 19, 2010

For the second time in three years, China has shot down one of its dysfunctional satellites with a missile, US-based Foreign Policy magazine reported in its latest issue.

The destruction of the satellite, which reportedly happened in January, shows China's defensive missile ability, the magazine said.

China's Ministry of National Defense has yet to comment on the report.

The reported firing took place at almost the same time as a successful missile interception test that China conducted on Jan 11.

The website of Hong Kong-based Phoenix TV said the anti-satellite missile test, if confirmed, is likely related to the missile interception test, which occurred at the peak of a dispute between Beijing and Washington on a massive US arms sales deal to Taiwan.

During the interception test, US agencies spotted two missiles launched from two locations from the Chinese mainland, colliding outside the atmosphere, a Pentagon spokesperson said.

China's Foreign Ministry then said the interception test was defensive in nature and was not targeting any country.

Many military scholars believe it was targeting the Patriot missile defense system that Taiwan was trying to buy from the US at that time.

China's first anti-satellite missile test was conducted successfully on Jan 11, 2007, destroying an abandoned Chinese satellite.

The Foreign Policy article did not reveal any other details of the move or any response from the US government.

Chinese military experts even warned that Washington appeared determined to surround China with US-build anti-missile systems.

However, Peng Guangqian, a Beijing-based military expert, said the newly reported anti-satellite missile test was not necessarily related to the US arms deal with Taiwan.

"It was a large test which needs time to prepare for," he said.

"If confirmed, I think it was a further step for China to improve its defensive ability in space."

Peng also said that China has long advocated the principle of a nonmilitary outer space, on which the US has long kept silent.

## **Putin To Discuss Russian Space Program With Industry Officials (RIAN)**

**Russia plans to increase its share in the global space market by designing new models of unmanned and manned spacecraft**

[RIA Novosti](#), July 19, 2010

Prime Minister Vladimir Putin will visit Russia's Energia space corporation on Monday to discuss the plans for future space exploration, the government's press service said.

"During the visit...the space officials will deliver a report on the future of the Russian space industry," the press service said in a statement.

Russia plans to increase its share in the global space market by designing new models of unmanned and manned spacecraft, participating in a large number of international space projects and building a new space center.

Russian Soyuz and Progress spacecraft will continue to play a crucial role in maintaining the International Space Station after NASA folds its outdated shuttle program later this year.

The Energia corporation recently said it had the capacity to build five Soyuz spacecraft per year instead of four, meaning that at least one Soyuz spacecraft could be used for space tourism purposes in the future.

Russia is also pondering new applications for yet-to-be-built nuclear-powered spacecraft, including military satellites, nuclear power plants, and space tugs.

Federal Space Agency Roscosmos director Anatoly Perminov recently said the development of Megawatt-class nuclear space power systems (MCNSPS) for manned spacecraft was crucial if Russia wanted to maintain a competitive edge in the space race, including the exploration of the Moon and Mars.

## **Putin To Visit Energia Corporation, Meet With Astronauts (ITAR)**

[ITAR-TASS](#), July 19, 2010

Prime Minister Vladimir Putin will visit on Monday the Energia Aerospace Corporation, a source at the government press office told Itar-Tass.

"The prime minister will tour corporate industrial buildings, view new space products, visit a space museum and meet with astronauts, including participants of the first in the history of astronautics Soyuz-Apollo international flight on July 17-19, 1975," the source said.

"This is not a protocol visit. The prime minister will come here to congratulate the collective on the 35th anniversary of the historic space docking of the Souz and Apollo spacecraft," the president of Energia, Vitaly Lopota, told Tass.

Deputy Prime Minister Sergei Ivanov, Federal Space Agency head Anatoly Perminov and Moscow Regional Governor Boris Gromov will be accompanying the premier on the visit. Energia President and General Designer Vitaly Lopota will inform them about space exploration projects. According to Lopota, the leadership of the corporation plan to inform the prime minister about their vision of the sector's development. "We want to present technologies for designing safe and high-quality space and rocket hardware," he specified.

The corporation, set up by the founder of that branch Sergei Korolyov, is a leading participant in international space programs, among them Soyuz-Apollo, InterCosmos, EuroMir, Mir-NASA, Mir-Shuttle and the International Space Station (ISS). Currently, the corporation is a key transporter of cargo and crews to the ISS. Once the U.S. space shuttle program ends in 2011, Energia will be the sole transporter servicing the ISS.

The main directions of Energia activity include the development and operation of the International Space Station, the designing and supply of Russian systems for European ATV cargo craft on the ISS programme, the development and operation of communication satellites, earth remote sensing and production of boosters for GLONASS satellites among others.

Last year, Energia's sales revenues made up 19.2 billion roubles, which is 52 percent more as compared with 2008. The corporate production may grow to 23.4 billion rubles this year.

Late in June, the corporation presented its design of a new piloted spacecraft that is to replace Soyuz spacecraft. Tests of the new craft in an unmanned version will begin in 2015, while in the pilot-controlled mode - in 2018.

## **EADS Astrium Sees Limited Cooperation (AVIATION)**

By Amy Butler

[Aviation Week](#), July 19, 2010

Full cooperation among all of the nations in the European Space Agency on space situational awareness technologies is unlikely because of security concerns, says Francois Auque, CEO of EADS Astrium.

The most likely cooperative work is expected from bilateral or trilateral agreements among the governments of France, Germany and the United States, he says. "Due to the military aspects of [space situational awareness], I have my doubts that there can be cooperation ESA-wide," Auque told reporters during a series of pre-Farnborough International Airshow briefings July 17. Those three countries working directly could "save a lot of time," he says.

Like the United States, European countries are looking for ways to better identify the objects that are in space and determine whether they pose a threat to friendly spacecraft. The U.S. Air Force expects to know in the coming weeks when it can launch its first ever satellite designed specifically to surveil other aircraft. The Boeing/Ball Space-Based Space

Surveillance satellite was to launch earlier this month, but it was scrubbed due to a software problem in the Minotaur IV booster. This satellite has top priority for the next launch out of Vandenberg AFB, Calif.

The U.S. Air Force is also in the midst of a program to upgrade its ground-based radar detection system called the Space Fence.

Space situational awareness is one area the White House says is ripe for cooperation beyond U.S. borders as part of its newly released National Space Policy. Pentagon officials say a willingness by the Obama administration to reach out to allies on such matters will open up a new set of dialogues on the matter. This area has long been closed for talks with foreign countries.

Last week, Gary Payton, deputy undersecretary of the Air Force for space, suggested that the Defense Dept. is interested in putting space situational awareness payloads onto commercial satellites to boost the number of sensors aloft. He also proposed putting these systems onto U.S. civil payloads. Plans, however, are not solid.

## **World Hails IKAROS Solar Sail Spacecraft For Super-advanced Japanese Technology (MNCHIDLY)**

[Mainichi Daily](#), July 19, 2010

The world's first solar sail spacecraft IKAROS is becoming increasingly popular both at home and abroad, with some 34,000 people following the animated "IKAROS-kun" character on Twitter.

IKAROS was launched on May 21 together with the "Akatsuki" Venus climate orbiter. It has been developed mainly for the purpose of establishing solar sails navigation technology. On June 10, the craft's solar sail was unfurled successfully -- the hardest part of the operation. IKAROS is continuing on course to Venus.

The craft travels with the tiny amount of photon energy striking its solar sail, which is 14 meters on each side and 0.0075 millimeters thick -- less than one-tenth the thickness of plastic kitchen wrap. The cellophane-like film of the sail is made of the same materials used for the electronic substrate of mobile phones, and it boasts an expected operational life of over 10 years even as it is exposed to strong radiation in space.

The IKAROS spacecraft is pictured from a detached camera. (Photo courtesy of JAXA)

With all three of the United States' attempts to launch its own solar sail spacecraft ending in failure, the world's attention has become focused on the Japanese IKAROS.

U.S. Time Magazine recently featured IKAROS and Hayabusa -- the Japanese asteroid probe which returned to Earth in June -- saying, "The country that invented the Walkman may be back on track to burnish its image as a technological pioneer," while BBC News reported on the deployment of IKAROS' sail, explaining with a graphic illustration how it was unfurled in space. A British magazine called the spacecraft the "origami yacht" and hailed the technological capability of Japanese scientists.

The Japan Aerospace Exploration Agency (JAXA)'s Institute of Space and Astronautical Science is based in the Kanagawa Prefecture city of Sagami-hara. The operation room for IKAROS is located right next to the office of the Hayabusa project team.

The IKAROS project team is young, with 36-year-old project leader Osamu Mori the eldest of the bunch. About half of them are graduate students.

Project members post tweets on Twitter as "IKAROS-kun" -- an animated character modeled after the craft -- saying things like "I will work as hard as my brother Hayabusa," "It looks like my schedule is not so tight today," or "I'm still far away from Venus."

They are also planning to release some character merchandise, including cell-phone charms and wrapping cloths, while a cartoon show dubbed the "IKAROS-kun no Daikokai" (The Great Voyage of IKAROS-kun) was released online in late June.

In the early days of JAXA, which was founded in 2003, the development of the IKAROS craft was temporarily suspended because "it was too challenging." However, the project team consistently promoted the program, and in 2004, the first experimental model with the four-leaf clover-shaped sail was completed.

"We have been engaged in development so that more people will be interested in space through the IKAROS program," Mori said.

The spacecraft does not require a nuclear power cell, often used in conventional long-distance probes such as Voyager. The eco-friendly design of IKAROS is expected to play an indispensable role in future interplanetary exploration.

In theory, IKAROS can be steered by manipulating the photon pressure on its sail. When electric current is shut off, part of the sail becomes opaque, reducing the amount of photon pressure on the solar sail and allowing the craft to change directions. This attitude control system has already been activated as planned.

Researchers plan to observe space dust using the craft. By the time IKAROS has approached Venus in six months, all the necessary experiments will have been completed, and the spacecraft will start orbiting between Earth and Venus without need for refueling.

The small craft will continue its cosmic journey, opening a new page to the history of space exploration.

## **'Sharp' Rocket Set To Revolutionise Space Travel (LOCAL)**

[The Local](#), July 19, 2010

German scientists unveiled on Friday the key part of a flat-sided, re-usable space rocket they say would be much cheaper and easier to build than NASA's space shuttles.

Part-time space racers shoot for Lunar X Prize - Science & Technology (21 Apr 10) The German Aerospace Centre (DLR) is developing the cutting-edge rocket that can re-enter Earth's atmosphere without breaking up or suffering much damage, making it an affordable and easy-to-build alternative to than NASA's ageing space shuttles.

DLR scientists on Friday unveiled the 2.5-metre nose cone for the SHEFEX II program, short for "sharp-edged test flight," at the DLR headquarters in Oberpfaffenhofen near Munich.

It will take its first test flight next March from Australia's Woomera rocket launch site. A smaller and slower prototype, SHEFEX I, had a successful test flight from Norway in 2005.

"Our goal is to create step-by-step a re-useable space glider," said project leader Hendrik Weihs from the DLR's Institute for Design and Construction Research in Stuttgart.

The new model will be more heat-resistant, cheaper and, most importantly, easier to control in landing than any other type of launchable space craft.

The distinct angular nose cone has eight flat faces, which provide better aerodynamics and cheaper construction than the traditional round cone.

"The rocket therefore has nearly the aerodynamic qualities of a space shuttle, but it's smaller and doesn't need wings," said Weihs.

The ?12.5 million-program, funded entirely by Germany, is the only one of its kind - a rocket that can automatically guide itself back to Earth.

"We're a pretty long way ahead," said Weihs, adding that he hoped the project would father "a new generation" of rocket science.

NASA has decided to discontinue its space shuttle fleet, sparking a search for a replacement.

"But that system is very elaborate and very expensive," Weihs said.

Normally, with ballistic capsules such as rockets, which are also used by Russian cosmonauts and Chinese taikonauts, the catch is that they cannot be controlled when they re-enter the atmosphere.

The DLR model, on the other hand, can be guided to a very precise point on Earth's surface. That will be tested in Australia. The tricky part is controlling the craft as it descends from about 100km to roughly 20km altitude, after which it can be brought down by parachute to land in the desert.

"When the space craft enters Earth's atmosphere, the air is very strongly compressed and grinds against the body of the craft."

That can raise the temperature to as high as 10,000 degrees Celsius. The flat planes of the nose cone are specially prepared to deal with this, Weihs explained.

"With the new model, the heat on the planes is reduced. Only the apex will get extremely hot."

To counter that heat, gas will be pushed through the porous material of the apex, acting as a buffer against the hot, compressed air.

Next year's test flight will be unmanned, but with further funding, a manned flight is possible. Such progress could be made with co-operation from other members of the European Union or with the United States, Weihs said.

"First, the will has to be there," he said.

## **For MDA, Space Pays (GLOBMAIL)**

By David Ebner

[Globe and Mail \(Toronot, CA\)](#), July 19, 2010

In his cramped office, Daniel Friedmann spends a lot of time working on gas stations in space.

The CEO of MacDonald Dettwiler and Associates Ltd. wants to build the high-tech equivalent of a service station, load it up with fuel and spare parts, and launch it into orbit to come to the aid of aging satellites.

It's an audacious idea that has the potential to revolutionize the space industry by allowing companies to squeeze extra years of life out of hugely expensive satellites. The bold concept is even more remarkable considering that just two years ago MDA was trying to get out of the space business.

In 2008, Mr. Friedmann struck a deal to sell MDA's space division to a U.S. firm. Ottawa, fearing a loss of sovereignty, spiked the sale. He still maintains the sale would have been the best deal for shareholders, but he quickly accepted the government's decision. "I just got on with life," he said.

In fact, he did far better than that. The veto turned out to be the boost that MDA's space business needed. Following the decision, Ottawa began to provide more support to space-related projects while MDA searched for ways to break into new markets.

It has scored a string of successes. Among the company's new projects is a satellite for Ukraine and unmanned surveillance planes for the Canadian military in Afghanistan. What really gets Mr. Friedmann excited, though, is the idea of building refuelling stations for satellites, a business that could deliver a revenue boost of \$100-million a year to MDA.

"This is the last human infrastructure that has no service industry," Mr. Friedmann said in a rare interview at the company's spartan suburban Vancouver headquarters. Satellites provide vital services, from broadcasting television

signals to providing online maps, but there is, as yet, no way to repair the orbiting devices, which cost hundreds of millions of dollars. "It's like getting some potholes in the road and abandoning the road."

If MDA succeeds in fixing those potholes, it will prove that a small Canadian firm can blaze a pioneering path in space, against competition from much larger rivals. In an unusual display of confidence, MDA told a major industry conference in March in Dubai that it wants to demonstrate the refuelling technology in space in 2013 and commence a commercial service immediately thereafter.

"It's real daring," said Peter de Selding of the industry journal Space News. "It does sound like they've got something, like they've gone further than anybody else. But things that take a lot of guts can fail as well. That's why they call it daring."

An earthbound direction

Confronted with an obstacle, Mr. Friedmann finds a way around it. Back in 1979, fresh out of the University of British Columbia with a master's degree in engineering physics, he interviewed for a job with MDA. He was rejected. He pestered the firm for another interview. He struck out again. Finally, desperate, he wrote a letter to John MacDonald, the company's co-founder. Impressed with Mr. Friedmann's academic work, Mr. MacDonald told the head of engineering to hire the 22-year-old kid.

"I think they may have been a little afraid of Dan," laughs Mr. MacDonald, who stepped down as MDA chairman in 1998. "He's got a mind like a steel trap. And he has a business mind - it's intuitive, he doesn't have to puzzle, he just knows what to do."

The company, described in an online job forum as an "interesting, challenging, low-paying" place to work, reflects Mr. Friedmann's austere style. He works in a modest office, a smidgen smaller, by design, than everyone else's. Around him is a rabbit warren of other offices, where engineers toil on space robotics and satellite projects. The few frills seem out of place. A volleyball net sags, unused, in a grassy courtyard; a lone foosball table sits idle in a drab cafeteria.

When it comes to compensation, Mr. Friedmann leads by example: His base salary has remained fixed at \$435,000 during the past six years.

"It's the way it should be," he said in his first in-depth interview in almost a decade. "Our customers don't want to walk into the Taj Mahal - and our investors don't want to pay executives ridiculously. I'm pretty serious about treating the company's money as if it was my money."

MDA began life in 1969 as an electronics company that specialized in processing information relayed from space satellites. When Mr. Friedmann became CEO of MDA in 1995, he told Mr. MacDonald his goal was to drive the company to \$1-billion in annual revenue, a tenfold increase from the \$100-million or so it was doing at the time.

Mr. Friedmann knew that MDA needed something more than the space business to reach that goal. So he turned his sights to earth.

Building on the company's expertise in developing advanced software applications, Mr. Friedmann scored a deal to take over BC Online, a system previously run by the British Columbia government, which provided data such as land titles and property information. Other acquisitions followed. While the space business had once been MDA's jet fuel, the earthbound business of delivering property information quickly became the firm's primary propellant - and, just as Mr. Friedmann promised, sales hit \$1-billion in 2006.

Meanwhile, after years of rapid growth, MDA's space business sputtered earlier this decade. The primary culprit was Ottawa's tight-fisted approach to space. In an industry where most participants depend heavily upon government projects and contracts are usually doled out on nationalistic grounds, government spending is crucial.

Seeing no great upside in the business without additional spending from Ottawa, Mr. Friedmann decided in 2008 to sell the space division to Alliant Techsystems Inc. of Minnesota for \$1.3-billion.

That's when Ottawa stepped in. MDA owned Radarsat-2, a surveillance satellite built for \$600-million, mostly with funds provided by the federal government. Selling its space division would mean handing ownership of Radarsat-2 to a U.S. firm. Prime Minister Stephen Harper feared a gaping hole in Canadian sovereignty if the country lost its prime surveillance vehicle for regions such as the Arctic, and he blocked the deal.

Implicit in the blocked sale was a promise by Ottawa to put more dollars into space projects. The money quickly began to flow. MDA won a deal to provide unmanned aerial vehicles to the Canadian military in Afghanistan, a victory the company then repeated with the Royal Australian Air Force.

This year, Ottawa backed Radarsat Constellation, the successor to Radarsat-2, bolstering the proposed \$870-million project by putting \$400-million of new cash into it. MDA is the lead designer.

Ottawa is helping in other ways too. Late last year, Export Development Canada, a financing arm of the federal government, provided a \$254-million (U.S.) loan to the Ukraine government so it could buy a communications satellite from MDA. The loan was essential for MDA to beat out Thales, a much-larger French rival, and the deal was made official Friday.

As a result of the new government support as well as its own initiatives, MDA is punching well above its weight. "Size-wise, MDA's going up against juggernauts [like] Boeing, Lockheed," said Steven Li, an analyst with Raymond James. "They're winning more than their fair share, for the size of the company."

#### A complex operation

Mr. Friedmann wants even more, especially in space. "The Canadian space budget is the PR budget of NASA," he said. "We have no long-term space plan. China's going to space, India's going to space. It's where the action is, where new stuff gets developed, unless you want to be a military power. Every day we're slipping back."

A gas station in space would give MDA a cornerstone business, with revenues that would recur year after year, no matter who is in power in Ottawa.

The concept sounds simple. A satellite holds a constant orbit around Earth by firing a booster rocket to adjust its course, using a propellant called hydrazine. Once the hydrazine is gone, even if everything else is still working, the satellite's useful life is finished. But if MDA can design and launch a refuelling station, the life of the satellite could be extended, perhaps by years.

To actually do the refuelling, though, requires feats of technology. Picture a satellite hurtling through space at 11,000 kilometres an hour. The gas station would have to spot it, manoeuvre alongside, and connect to it by a probe or robotic arm. Then the robotic arm would have to open up the fuel valve to pump in hydrazine - that is, presuming the door isn't seared shut after a decade or more in space.

"It's a complex operation," Mr. Friedmann said. "It's not welding car doors."

Refuelling a satellite in space has been done only twice before, in tightly controlled experiments, both times using new satellites launched as part of the test, not ones that had spent years in orbit. The Japanese space agency accomplished a space refuelling in the late 1990s. In 2007, the Pentagon hired Boeing Co. - with MDA aboard as a subcontractor - and repeated the deed.

No one has ever captured a satellite already in orbit. Assuming it is technically possible, the next question is whether it is economically attractive. The possibility of a collision between the refuelling station and a satellite could wipe out any



potential profits. Then there's the broader question of whether it's worth refuelling old satellites, given the possibility that other equipment might fail a year or two later.

"Satellite servicing is very much one of a kind," said Dominique Rora, a senior space underwriter at Axa Corporate Solutions, a specialty insurer in Paris. "We are all very much interested." But he cautions that making the technology work will require deep pockets and persistence.

MDA's great advantage is its mix of proven technologies. In addition to its long experience with satellites, it owns the robotics technology made famous in the Canadarm, as well as systems that allow a mobile service station to track and approach a target satellite. Putting these pieces together in a full satellite-servicing system is the trick.

According to analyst Paul Steep of Scotia Capital, MDA will soon make a decision on whether to proceed with the project. What it needs is a lead customer, probably in the communications satellite business, to help back the costs of a first mission. The all-in bill is likely to be several hundred million dollars.

One encouraging sign for the project is the frequent and enthusiastic mentions it earns from the normally reserved Mr. Friedmann. "It's a project that if you don't have a good shot, you probably don't talk about it," said Mr. Li, of Raymond James. "The fact Dan does talk about it, and spends a lot of time on it, tells me it's moving forward."

MDA will have to move quickly if it wants to stay ahead of state-backed competitors. Earlier this year, the German space agency awarded contracts to companies led by OHB Technology AG for preliminary work on a project similar to MDA's, with an estimated cost of about \$260-million.

MDA hasn't yet talked about how much it might spend. Without any backing from the Canadian government - though using technology developed with government support - it would be the first public company to ever embark on such an ambitious mission.

For Mr. Friedmann, limited government support is just one more obstacle to overcome. Two years after being rejected in his bid to exit the space business, he is embracing its new possibilities. "Having had [the sale] blocked, my job is to do the best within the constraints - and we've done a good job of that."

## **Bangalore To Host Space Expo In August (ENS)**

[Express News Service](#), July 19, 2010

BANGALORE: After the biennial defence aviation exposition, Aero India, Bangalore will get to host another international expo which is touted to be Asia's only focused exhibition on space technologies.

Antrix Corporation of India, the commercial arm of Indian Space Research Organisation (ISRO) and the Confederation of Indian Industry (CII), are jointly organising the second Bengaluru Space Expo 2010 - an international exhibition and conference on space technologies, equipments, products and services from August 25 to 28 at the Bangalore International Exhibition Centre.

The second edition of the expo comes at a time when there is a spurt in space launches across the world and with space agencies looking to cut costs of commercial space launches.

For ISRO, the expo is important following the successful launch of Chandrayaan- 1 in 2008. It is now planning to launch Chandrayaan- 2, along with various other space missions including the manned and inter- planetary missions.

Space tourism which is arousing a lot of interest will be another subject to be touched during the expo.

"With growing need of the use of space technology in the fields of infrastructure, weather forecasting, disaster management, telecommunications and agricultural guidance services, the expo aims at developing a strong base to meet these demands," state the organisers.

A concurrent international conference 'World Space Biz' would be organised to deliberate primarily on commercialisation of space.

Speakers from global space agencies and industry would discuss issues like access to space, space commercialisation, role of small satellites, space adventure and exploration, space vendors and suppliers and risk management.

An online B-to-B facility will also be part of the expo to enable the participants to fix their business meetings with stakeholders (industry and government).

## **IIT-K's Jugnu Satellite To Take Off In Two Months (INEXPRES)**

[Indian Express](#), July 19, 2010

Jugnu, the nano satellite developed by the Indian Institute of Technology-Kanpur (IIT-K), will be launched in a polar orbit from Satish Dhawan Space Centre at Sriharikota in the September-October period. This was conveyed to the institute by the Indian Space Research Organisation (ISRO).

The final flight model of the 3.5-kg satellite is ready and it will be handed over to the ISRO by the end of July.

"Through video conferencing, a team from ISRO had checked the progress of the flight model on July 11," said Nalinaksh S Vyas, who led the team of 12 IIT-K teachers and 45 students that worked on the project since December 2007.

He added that the ISRO scientists were satisfied with the project and its preparations.

The IIT-K team has also developed the ejection mechanism, which will be used to separate Jugnu from the main satellite in the polar orbit. "After the main satellite is launched in the polar orbit, Jugnu will be separated by using this ejection mechanism," he added.

## **One Tiny Satellite In Space, Whiz Kids Plan Two More (IANS)**

By IANS/Bangalore

[IANS](#), July 19, 2010

Driven by their maiden success in placing a tiny satellite in polar orbit early this week, the young pioneers are raring to launch two more satellites.

"The successful launch and placing of our first pico-satellite (StudSat) in the earth's lower orbit has inspired us to build two similar satellites for the next launch," the project's core member G Kartik said here.

Riding piggy back on India's advanced remote sensing satellite Cartosat-2B and three other satellites, the 850gm cubical StudSat was launched onboard the polar satellite launch vehicle (PSLV-C15) on Monday by the Indian Space Research Organisation (ISRO) from its spaceport Sriharikota in Andhra Pradesh, about 80km northeast of Chennai.

"We were thrilled to see the 44m tall rocket soaring into a clear sky with our first experimental satellite as the smallest payload and were excited when we learnt that it was successfully placed in the designated polar sun synchronous orbit 630km away from the earth, 22 minutes after a perfect lift-off," Kartik said.

Kartik, who graduated in BE (mechanical) this year from Nitte Meenakshi Institute of Technology (NMIT) in this tech hub, is part of the 14-member core team, which designed and built the satellite with a CMOS camera installed inside and four small solar panels mounted on to generate energy for orbiting over the next 12 months.

The complementary metal oxide semiconductor (CMOS) is a chip that holds data without need for a external power source.

"Our joy knew no bounds when we received the first signal from StudSat at 11.02am, about 70 minutes after the launch, at the ground station we have set up in the institute campus. Since then, we have been getting the beacon signal indicating that the satellite's health parameters are normal," project leader Chetan Angadi said.

The country's first pico-satellite project team was formed in January 2009 as a consortium with about 40 undergraduates from four engineering colleges from Karnataka and three from Andhra Pradesh under the aegis of the state-run Indian space agency.

"The objective of the project was to educate college students about space technology and encourage them to build mini satellites with the required infrastructure, including a communication link and a ground station to capture images of the earth with a 90m resolution and receive the telemetry data," Kartik said.

Though StudSat is orbiting over the earth's twin polar regions (north and south) and crosses Bangalore four-five times a day, emitting the signal at a frequency of 437.05 megahertz (MHz), it is yet to stabilise in sun synchronous orbit to switch on its camera.

"When the camera is switched on after the satellite's solar panels are fully charged by next week, it will perform remote sensing and capture images of the surface of the earth with a 90m resolution, which will be the best achieved by any pico-satellite in the world," said Angadi, a BE graduate in electronics.

## **Hopes Fly High For National Aviation Research Center (DAYTBNJ)**

By Bob Koslow

[Daytona Beach News-Journal](#), July 19, 2010

DAYTONA BEACH -- Could a proposed research park here turn into a national aviation research and development center and an economic development engine?

Some officials think so after attending an aviation forum last week at Embry-Riddle Aeronautical University.

Executives from influential aviation and space companies like Boeing, Gulfstream, Harris, HEICO, Honeywell, ITT Corp. and Lockheed Martin were joined by elected officials and local business leaders from International Speedway Corp., Team Volusia, Halifax Health and Consolidated-Tomoka Land Co.

"I came to the school to see what Embry-Riddle did outside academia," said Bob Galligani, vice president of civil aviation strategy for Massachusetts-based Raytheon. "They just blew me away. What the college is doing is incredible. I was very impressed."

So impressed, Galligani plans to return in the fall with more company executives for a closer look.

Marion Blakey, a former administrator at the Federal Aviation Administration and CEO of the Aviation Industries Association, stayed at the forum longer than anticipated and missed a flight home.

That's exactly the reaction and interest ERAU and U.S. Rep. John Mica, R-Winter Park, wanted to create when they organized the forum.

"We wanted to build relationships and we did that. Now we want to follow up and try and expand on that," Mica said of the forum. "I feel pretty confident if we get our act together that we could make Embry-Riddle a center for aviation technology R&D programs in the future."

He also noted the need to create aviation and space jobs in light of reductions in the NASA programs at the Kennedy Space Center in Brevard County.

Forum attendees took a tour of the university that included the 90-acre research park site along Clyde Morris Boulevard. The center could be home to a dozen buildings with 800,000 square feet of space employing 2,000 engineers

and researchers with salaries in excess of \$45,000, said Tina Recascino, Embry-Riddle's vice president for research and assistant to the president. The park could generate numerous associated businesses.

Several research programs were showcased to provide examples of the university's commitment.

ERAU is part of a team, with Lockheed Martin, developing a new national air traffic control system at the Florida NextGen Testbed in the old Daytona Beach International Airport terminal. The testbed's size is being doubled to 10,000 square feet this fall.

ERAU also is a leader in testing unmanned aerial vehicle technology for military, civilian and commercial uses.

"We're unique in that we are interested in research and development, but more and more companies are interested in our students. We produce engineers and aviation graduates and this country is not producing enough," Recascino said. "It's best to be close to us if you want to grab the best we have."

Boeing employs about 3,500 ERAU graduates and is building an assembly plant in Charleston, S.C., and could be looking to partner with ERAU, said Matt Ganz, the company's vice president and general manager/research and technology.

"I was impressed with the quality of the people and the shape of the facilities," Ganz said. "The potential is there. They have the key elements to success, a good university, it's at the airport and has the total commitment of local, state and federal leaders."

ERAU is so well-regarded that it's the only university Boeing is partnering with to work on a maximum \$1.7 billion federal government contract to develop new aviation technology.

Victor Mendelson, co-president of HEICO, a large maker of aircraft parts in South Florida, was also impressed with the people, facilities and unified commitment.

"We are seriously looking at what we could do, but we need to learn and understand more," he said. "If this happens, it will be slow. The aviation industry has long lead-in times."

ERAU and Volusia County Economic Development officials are meeting in the coming weeks to discuss options to secure grants for roads, utilities and one or two building pads at the research park.

"If we can get one or two businesses in there in five years, that would please me," Recascino said.

Securing economic development funds would be "the easy part" if there were partners lined up to take advantage of the talent and resources, Mica said.

The area near Embry-Riddle has space for additional business development. Volusia County has 95 acres on the south side of the airport, not far from the ERAU park, set aside as the Daytona Beach International Airport Corporate Park. There are no tenants, yet, but it would target offices and light industrial tenants and would not compete with the university's plan, said Phil Ehlinger, director of Volusia County Economic Development.

Volusia County officials also pointed out the new business incubator program being set up at the airport.

The incubator could help start-up companies get a local foothold and grow into spaces in the research park, Volusia County Chairman Frank Bruno said.

"We want to partner with companies and be on the cutting edge of the space industry. We are all excited about the potential here," he said.

## **Russian Relaunch Rocket Business Hopes To Take Off After Bankruptcy (LABJ)**

By David Haldane

[Los Angeles Business Journal](#), July 19, 2010

The directional signs aboard the odd-looking platform docked at the Port of Long Beach are in both Russian and English.

That's because the rockets that are hurtled into space from the converted oil rig and a companion command ship are designed and manufactured in the former Soviet Union.

These days those signs are looking to be handier than ever.

Sea Launch Co. LLC, a joint venture started by Boeing Co. that launches commercial satellites from the middle of the Pacific Ocean, is expected to emerge next week almost wholly owned by Russians after 15 months of bankruptcy.

The company, which has launched satellites for El Segundo-based DirecTV and other telecommunications firms, went into a financial tailspin last year after failed and scrapped launches and a slowdown in the satellite business.

But a Delaware bankruptcy judge is expected to approve its reorganization plan July 27, and the company is poised to blast off again.

"We are very eager to move forward," said Sea Launch President Kjell Karlsen in an interview at his Long Beach headquarters alongside the ported ships. "This last year has been difficult. Now we're looking toward the future."

The company hasn't launched a rocket from sea since April 2009, a month before it declared bankruptcy. Since then, the Odyssey launch platform and Sea Launch Commander ship have been idle, and a Long Beach work force that numbered 175 has been reduced to about 50.

Under the reorganization plan, a subsidiary of Russian aerospace giant Energia, which owned 25 percent of the company and manufactures its Zenit rockets, will increase its ownership stake to 95 percent in exchange for \$140 million in cash. In addition, the company will kick in \$200 million in working capital.

Boeing, which owned 40 percent of the venture and built a rocket component that holds the satellite payload, will share the remaining ownership with the other founding partners: Norway's Aker, which engineered the launch platform and command ship, and Yuzhmash/Yuzhnoye Sdo, a Ukraine company that designed other rocket components.

The good news for Los Angeles County, Karlsen said, is that despite the ownership change and some industry doubts about the company's future, Sea Launch will remain headquartered in Long Beach and continue to launch from the Pacific. (The company also launches from the Central Asian country of Kazakhstan.)

Assuming the reorganization plan is approved, the company will spend most of August and September transferring its licenses to the new legal ownership entity, with the next launch scheduled for the third quarter of 2011. Sea Launch hopes to begin hiring local engineers, technicians and other workers early next year.

The company's creditors - including satellite operators Sirius XM Satellite Radio, SkyTerra and Hughes Communications, which lost millions due to unfulfilled contracts - are taking settlements of roughly 18 cents on the dollar. Sea Launch plans to court them to continue launching.

"We're trying to bring them back as customers," Karlsen said.

Rockets away

Sea Launch was founded in 1995 by Boeing as a way to get the geostationary satellites it manufactures for clients at its nearby El Segundo plant into orbit more cost-effectively. The satellites orbit the Earth 22,300 miles above the equator, remaining in a fixed position relative to Earth, where they relay television, radio and other signals during their expected 15-year orbits.

By launching the 13,000-pound satellites from a spot along the equator south of Hawaii, Sea Launch saves millions of pounds of rocket fuel compared with satellites launched on land away from the equator.

The first launch took place in 1999, followed by nearly 30 successful launches for DirecTV, EchoStar, Telstar, Intelsat and other customers. However, the operation has significant costs.

First, the three-stage rockets are manufactured in Russia and the Ukraine before being flown in a cargo plane to Long Beach Airport, where they are taken for final assembly to the hold of the 667-foot-long Sea Launch Commander ship. The rockets are then transferred to the launch pad prior to departure from Long Beach, with each vessel manned by separate crews powering their way to the South Pacific.

Three hours before launch time, the 70-member Odyssey crew is transferred by helicopter to the commander ship stationed two miles away in the open sea. Russian and American operators monitor the launch from a control room aboard the ship.

"It's always tense and it's tenser if you're the one who has to give the final go," says Daniel Dubbs, 59, the company's vice president of operations who has overseen many launches.

(There are some oddities. Nearly two decades after the end of the Cold War, federal regulations still require that citizens of the former enemy nations be kept on separate sides of the room during countdowns to avoid sharing some of the U.S. high technology that has not been approved for transfer.)

"The tension comes because you know the consequences of failure," Dubbs said of the launches. "You're not delivering 10,000 cars, you're delivering a single rocket. While you can afford to lose a car, you can't afford to lose the rocket."

In fact, that's exactly what happened Jan. 30, 2007, when a Zenit-3SI rocket lost power just seconds after ignition, exploding on the launch pad, destroying a satellite owned by a Dutch telecommunications firm and causing damage to the platform.

"Everything had progressed normally," recalled Dubbs, who was in the control room at the time. "We had a call for liftoff, and then things didn't go so well. The rocket went up about 18 inches, lost thrust almost immediately and descended."

The company, which had a backlog of three launches at the time, suspended operations for seven months to conduct an investigation that eventually blamed the mishap on a faulty engine pump. Another attempted launch the same year had to be put off due to strong ocean currents. Then the recession hit, causing telecommunications firms to pull back.

'Perfect storm'

"It was like the perfect storm," said Paula Korn, a Sea Launch spokeswoman. "The economic situation evolved to where customers had to delay their launches due to funding."

Despite its successful launches, some in the industry question whether the company's business model - which requires millions to be spent shipping the rockets and steaming to the equator - is viable. Some say it would be easier - with Moscow-based Energia soon to own 95 percent of the company - for launches to take place in Kazakhstan.

Boeing, in giving up its dominant stake in the venture, has publicly acknowledged Sea Launch was never profitable, though it has committed as part of the reorganization to continue to use it to launch satellites it makes for telecommunications customers.

Keith Volkert, chief executive of Satellite Consulting Inc. in Palos Verdes Peninsula, is not one of the doubters. He believes that Sea Launch is a viable enterprise as structured.

"They'll leave things as they are," he predicted of the ownership transfer. "I'm optimistic. I think they're going to be back in the game, and competition in launch services is good for everyone."

Among its competitors is International Launch Services of Reston, Va., which has been majority owned by a Russian company since 2006; it launches from Kazakhstan. Its other major competitor is Arianespace, a European consortium headquartered in France that launches near the equator from French Guiana in South America.

A third company, Space Exploration Technologies, or SpaceX, is a startup based in Hawthorne and owned by PayPal entrepreneur Elon Musk. The company only recently recorded its first successful test launch.

While Sea Launch is not a huge revenue generator for the Port of Long Beach, port spokesman Art Wong said he would hate to see the operation leave its base of operations on Nimitz Road at the far reaches of the port.

"It's important in that it supports the aerospace industry in this region. In terms of telecommunication, it's important that we have this resource here," he said.

The newly constituted company, according to Karlsen, already has about \$1 billion worth of backlogged orders, including one signed this month with Hong Kong-based Asia Satellite Telecommunications Co., Asia's leading satellite operator.

In addition, he said, the company is holding "high-level discussions" with NASA regarding possible U.S. government contracts. The company's goal is to launch four to five satellites per year by 2012, generating \$400 million to \$500 million in annual revenue.

"We're excited," he said. "We look forward to the coming years."

## **Microsoft's Terapixel Project Creates Clearest, Biggest Night Sky Map Yet, Using More Than 3,400 Telescope Photos (POPSCI)**

By Rebecca Boyle

[Popular Science](#), July 19, 2010

Terapixel Night Sky Microsoft's Terapixel project, part of Microsoft Research, stitched together more than 1,700 pairs of photographic plates from two powerful telescopes to create the clearest, largest night sky map yet. Microsoft

First they gave us a high-res tour of Mars -- now Microsoft has made the largest and clearest night-sky map ever. It's a terapixel image: 1,000 000,000,000 pixels.

The software giant's Terapixel project stitched together 1,791 pairs of red-light and blue-light plates from telescopes in California and Australia. The result is the map above, which covers the night sky of the northern and southern hemispheres.

Using WorldWide Telescope and Bing maps, you can zoom in on the cosmos, peering through the dust of the Milky Way to distant galaxies. Microsoft announced Terapixel July 13 at its annual Research Faculty Summit.

To view every pixel of the image, you'd need a half-million high-definition televisions. If you tried to print it, the document would extend the length of a football field, Microsoft says.

The project required re-computing all the image data collected by the Digitized Sky Survey during the past 50 years. The images, produced by the Palomar telescope in California and the Schmidt telescope in Australia, each cover an area of the cosmos six and a half degrees square.

The map's quality and clarity stems from computerized changes to the original images, which have varying levels of brightness, color saturation, noise and vignetting, which is darkening of the corners.

## **New Private Spacesuit Unveiled With New York Flair (SPACE)**

By Jeremy Hsu, Space.com Senior Writer

[SPACE.com](#), July 17, 2010

NEW YORK - Two private spacesuit designers unveiled their first steps toward serious attire for future space travelers Friday night in front of a young, hip crowd of artists and tech geeks in Manhattan.

A spacesuit model arched his back experimentally, flashed the thumbs up and struck other poses that drew chuckles from the crowd gathered inside the Eyebeam Art and Technology Center. He showed off a bright yellow pressure suit topped by the dome of a roomy space helmet, with a blue glove on the right hand and a black glove on the left hand. [Photo of the new private spacesuit.]

The blue glove was designed by Moscow-based spacesuit engineer Nikolay Moiseev, who built in unprecedented flexibility at the metacarpal knuckles of the hand. The black glove represented a single-layer design made from urethane by Brooklyn-based inventor and artist Ted Southern, which reduced the torque required to move the fingers to practically nothing.

### **Astrium, Cisco To Study Space Router (AVIATION)**

By Michael A. Taverna

[Aviation Week](#), July 19, 2010

PARIS - Astrium Services and Cisco have concluded an agreement to jointly study future space Internet protocol (IP) router applications.

Space routers act as computers in the sky, permitting large blocks of data in various frequency bands to be merged and transferred to multiple terrestrial receivers in a single step, based on instructions in the uplink. Their use obviates the need to rely on teleports to route the data and considerably augments data, voice and video download rates.

Initially, the two companies will study a hosted router payload supplied by Cisco for Intelsat 14 under a U.S. Defense Department joint capability demonstration project, and how the satcom expertise of Astrium and its Paradigm military secure communications affiliate could improve this capability.

The Internet Routing in Space (Iris) payload on Intelsat 14, which was launched in November 2009, will interconnect one C- and two Ku-band coverage areas. It will transition to commercial use once the 15-month demonstration has been completed.

Astrium says the study, one of a series planned through January 2011, will seek to identify a more diversified range of service offerings for remote areas, for example, for crisis management, emergency medical care or mobile military operations.

Later, the cooperation could be extended to other space router applications.

### **Astrium Services Testing Cisco's IRIS Payload (SPCENWS)**

By Peter B. De Selding

[Space News](#), July 16, 2010

PARIS - Military telecommunications services provider Paradigm Secure Communications of Britain and its owner, Astrium Services, will test an Internet router aboard the Intelsat 14 satellite under a partnership agreement with router manufacturer Cisco, Astrium Services announced July 15.

The Cisco-built Internet Router in Space (IRIS), which in May completed four months of tests overseen by the U.S. Defense Information Systems Agency (DISA), will be used by Paradigm and Cisco for a series of tests to be concluded in January, Astrium said. Paradigm is under a contract with the British Defence Ministry to provide all beyond-line-of-sight



communications to British deployed forces, including satellite links provided by the Astrium-owned Skynet military communications satellites.

San Jose, Calif.-based Cisco has leased three transponders aboard the Intelsat 14 satellite for a 12-month period that began in May to continue demonstrating the router's uses to prospective government and commercial customers, Cisco spokeswoman Jennifer Greeson said July 16.

Cisco has said that the router, by taking signals received in one frequency and transferring them to recipients in another frequency, could speed communications for U.S. defense forces and make coalition operations, which sometimes feature diverse types of satellite communications equipment, more efficient.

Astrium Services said it is interested in the router's applications in providing "a more diverse range of telecommunication services in remote areas that require rapid data transfers. These would include crisis management situations, remote medical emergencies and mobile military operations," the company said in a July 15 statement.

Luxembourg- and Washington-based Intelsat, which operates the C- and Ku-band Intelsat 14 at 45 degrees west longitude, said the testing done with the U.S. Defense Department has validated the use of the Cisco hardware, which uses commercial Cisco IOS Software but adds radiation hardening to survive the space environment.

"We are confident that Cisco and Astrium's work will continue to reveal the advantages of this technology, and Intelsat will continue to look for opportunities to create customer value by hosting IRIS payloads as we replenish our 50-plus satellite fleet," Kay Sears, president of Intelsat General Corp., said in a July 15 statement. Intelsat General is the Intelsat division handling government business.

## **Moon Day, On A Sunday: Local Spaceniks Meet Up For Apollo Anniversary At Frontiers Of Flight (DALLASOB)**

By Patrick Michels

[Dallas Observer](#), July 19, 2010

Armadillo Aerospace co-founder Neil Milburn, left, will be one of the speakers at Moon Day, Sunday's big gathering of Dallas space nuts. Last year, the anniversary was a big one: 40 years since Neil Armstrong set foot on the moon, and for Dallas's sizable network space industry alums, Moon Day was a reunion of sorts at Love Field's Frontiers of Flight Museum.

The turnout was so good, in fact, museum director Bruce Bleakly invited its organizer Ken Murphy, who runs the National Space Society's local chapter, to come back and celebrate lucky number 41. This year's lineup of speakers (PDF) includes Neil Milburn, one of the career-engineers-turned-space-racers featured in our May cover story on Caddo Mills' Armadillo Aerospace, and Ron Dilulio, the meteorite chaser who tracked down pieces of a fireball that landed in West last February. Dilulio runs the University of North Texas's planetarium and astronomy lab.

It's the year's biggest space-related event around Dallas, Murphy told Unfair Park earlier this week. "It's almost entirely home-grown, all local stuff. I try to avoid going to NASA for stuff," he said. "Dallas is not a NASA community, but there's still a lot of space industry influence here."

Along with Armadillo, Murphy is a major local proponent of the business prospects in the NewSpace movement -- he'll be giving a talk about the moon's untapped industrial possibilities. (Murphy's got a longer look at Moon Day plans on his own site.)

With cheaper access to space, manufacturers can take advantage of the micro-gravity environment, Murphy said, to make things with real applications: lightweight building materials like foam-metal and ceramic metal hybrids, or giant protein crystals that couldn't grow in gravity. "There's just so much potential, we just haven't been able to tap it," he said.

Murphy completed a master's degree at the International Space University in France, the brainchild of X-Prize founder Peter Diamandis, and a school Murphy says is slowly populating space-minded companies with graduates. "I've been trying to do what I can to advance the commercial aspects of the space industry," he told us, which has included organizing events for space enthusiasts around Dallas. For now, he says there isn't much of a market for folks whose strength is an equal grounding in business and space issues, but he says that's changing.

Moon Day is, most of all, a family event, Murphy told us, aimed at kids and folks who've worked in the aerospace industry, but ought to attract all sorts of space nuts. Last year's party drew about 600, he said, and he wouldn't be surprised to see it top 1,000 this time around. "Space is one of those weird things here in the Metroplex where either a lot of people will show up, or no one does." Murphy stressed that there will be free tote bags.

## 500 Attend Moon Day Event In Dallas (DMN)

By David Flick

[Dallas Morning News](#), July 19, 2010

More than four decades after man first walked on the moon, the space shuttle program is winding down. A Senate committee last week killed a plan to return to the lunar surface, and attendance at Sunday's second annual Moon Day event in Dallas fell from last year.

But Dr. Moonwalker has not lost faith.

"We'll be back, the lure is still there," he said. "As human beings, we need a vision. There's something deep in us that needs that adventure."

Dr. Moonwalker, a.k.a. William McMillin, is a docent at the Apollo 7 command module exhibit at the Frontiers of Flight Museum at Love Field, which co-hosted Moon Day with the National Space Society of North Texas.

The event commemorates the first manned moon landing on July 20, 1969, with model-rocket building, lectures and exhibits. The first Moon Day, held last year on the 40th anniversary of the moon landing, received extensive media attention and attracted 600 visitors.

By midafternoon Sunday, Bruce Bleakley, Frontier of Flights director, estimated attendance at this year's event would be a bit down from that figure, perhaps about 500.

Visitors who did attend said they were still in awe of the idea of human footprints on the moon, and found it puzzling that much of the public takes the event for granted.

"What have we done since then that was exciting as landing a man on the moon? Nothing," said Robert Kennedy, 71, of Katy, Texas.

The younger generation is more fascinated by iPhones than space exploration, he concedes, "but what they don't realize is that the technology for that began with the space program."

Ken Murphy, president of the local space society, has a few theories about why the public witnessed one of the great events in human exploration - and then moved on.

The 1960s space race was a political objective of the Cold War, and when the objective was met, attention turned elsewhere, he said. Then again, a younger generation doesn't equate manned spaceflight with the triumph of the Apollo mission, but with the 1986 explosion of the shuttle Challenger.

"And for people who came of age in the 1980s, the opportunity in new technology wasn't in space exploration, it was in computers," Murphy said.

Last week, a U.S. Senate committee unanimously authorized long-range plans for NASA that canceled a program that would have put human beings back on the moon. The committee also voted to encourage commercial companies to build heavier rockets that could take mankind to Mars and the asteroid belt.

Murphy believes that asteroids - and privatization - are both worthy goals.

"History has shown that when the federal government works with the private sector they can do enormous things," he said.

Awakening the public to the economic benefits of spaceflight is a key to reigniting its interest, he said.

Developing solar power using orbiting satellites not only taps into unlimited energy, but - unlike offshore drilling - "it's unspillable," he said.

Relegating polluting industries to the infinity of space will make the earth greener, he said. Exploiting minerals in asteroids could also save the planet - literally.

"If we mine an asteroid, it won't be around to hit the Earth," Murphy said.

## **Intelsat Again Averts Interference From Wayward Satellite (SPCENWS)**

By Peter B. De Selding

[Space News](#), July 16, 2010

PARIS - Satellite fleet operator Intelsat has successfully negotiated the passage of its out-of-control Galaxy 15 satellite across the path of its Galaxy 13 spacecraft with no signal interruption for Galaxy 13 customers in the second of what likely will be at least four such maneuvers before Galaxy 15 shuts down on its own in August, Intelsat said.

Galaxy 15 stopped responding to commands in April and has since been drifting eastward along the geostationary arc 36,000 kilometers above the equator. Industry officials say it is the first time an uncontrolled satellite has remained electronically active, its transponders still looking for signals to rebroadcast even as it strays far from its assigned orbital position.

Galaxy 15 traveled through the orbital slot of Luxembourg-based SES's AMC-11 satellite in mid-May. That event caused no service disruptions as Intelsat and SES took measures that included routing some AMC-11 traffic through a 19-meter-diameter antenna at Intelsat's Clarksburg, Md., teleport.

Unable to shut the satellite down, Intelsat officials then prepared for the Galaxy 13 fly-by July 12-13, using some of the same interference-avoidance techniques developed for the AMC-11 encounter.

The procedure was completed "without incident," Intelsat Chief Technical Officer Thierry Guillemin said in a July 15 statement. "We will now be implementing the interference-mitigation plan for the fly-by of Galaxy 14, expected to occur at the end of July."

Luxembourg- and Washington-based Intelsat said that at one point during the Galaxy 15 transit through the Galaxy 13 orbital slot, the two satellites were within 0.05 degrees of separation. Some customers continued to use the Galaxy 13 and were able to do so because the satellite's signal reception had been reset as low as possible to permit signals to be sent without attracting Galaxy 15's interest.

Unlike AMC-11, Galaxy 13 also carries Ku-band transponders in addition to its C-band payload, meaning Intelsat was limited in its ability to move the satellite to the extreme eastern edge of its orbital slot to avoid Galaxy 15 before performing a "leapfrog" maneuver back westward as Galaxy 15 continued its eastward move.

Galaxy 15 is on course to enter the Galaxy 14 orbital neighborhood in late July, with a peak interference threat expected July 30, according to Intelsat. In mid-August, it will be Galaxy 18's turn to avoid Galaxy 15.

Intelsat officials are hopeful that sometime in mid-August, Galaxy 15, whose attitude control mechanism is slowly degrading, will lose its lock on the sun. Its power will then drain and the satellite will shut down on its own.

Intelsat is already preparing customers using Galaxy 23 for a similar avoidance procedure in late August in the event Galaxy 15 is still active by then. The company has also begun coordinating with satellite fleet operator Telesat of Canada, whose Anik F3 satellite will have to contend with Galaxy 15 in mid-September.

Galaxy 15 occupied the 133 degrees west orbital slot before it stopped obeying commands April 5. Its encounter with AMC-11 was at 131 degrees west, and the Galaxy 13 fly-by was at 127 degrees west. Galaxy 14 is at 125 degrees, and Galaxy 18 at 123 degrees.

## Spaceport Working On Water Problem (KOAT)

[KOAT-TV Albuquerque \(NM\)](#), July 19, 2010

LAS CRUCES, N.M. -- New Mexico spaceport officials say they're taking steps to solve problems for ranchers who saw their water supplies cut off or curtailed because of heavy pumping tied to spaceport construction.

Terminal Hangar Concept. Spaceport America Conceptual Images URS/Foster + Partners More

The four households, located about seven miles north of the spaceport site, reported declining water supplies in April, after a contractor acquired access to a nearby private well and began using it to supply water for construction.

Spaceport director Rick Homans said a new well was drilled for one family that initially experienced an outage. The construction contractor has been delivering water to residents and livestock tanks.

Resident Jim Smith said state officials told him they'd fix the water problem, but that hasn't happened. He says his landscaping and garden have suffered.

Homans called it "a tough situation for everybody."

## Graham Teacher To Take Part In Mars Program (SPRINGOH)

**The Mars camp will be free for children.**

By Matt Sanctis

[Springfield \(OH\) News Sun](#), July 19, 2010

It's shaping up to be a busy summer for a local high school teacher who also has been trained for flights in space.

Chantelle Rose, a science instructor at Graham High School, recently took a flight with the U.S. Navy Blue Angels in preparation for the Vectren Dayton Air Show. In August, she's also expected to speak to students at a local space expo designed to get them interested in science.

Ann Black, a local spokeswoman for the International Mars Society Convention, said the camp is a one-day event that is included in the convention.

The four-day convention will be in Dayton for the first time this year. It will include speakers, panels and workshops designed to focus on exploring Mars.

The free Mars Camp was a new addition to the convention this year and is designed to promote space exploration and science for a younger generation.

Rose, who participated in the Teachers in Space program, trained in the Mojave Desert in California and in Florida. Eventually, she is expected to take a half-hour flight into space.

As a teacher who's been trained for a flight in space, Rose was an excellent candidate to take part in the camp for students, Black said. Steve Heck, a teacher from Milford who's also trained for space flight, will be another participant.

Rose said she will likely discuss the Teachers in Space program during the camp, as well as talk to the students about engineering and design challenges with spacecraft. Participating in these kinds of activities also helps make her a better teacher, Rose said.

"These are the kinds of questions my kids have in class," she said.

Other activities at the camp will include flight simulations, display tables and exhibitions.

"There will be things for advanced kids as well as younger kids," Black said.

Despite her busy schedule, Rose isn't getting a break any time soon. As soon as the camp is over, she said she'll devote extra attention to her own children, who are participating in several activities in the Champaign County Fair.

## Space Society Store Shoots For The Moon (SDUT)

By Robert Hawkins

[San Diego Union-Tribune](#), July 19, 2010

The San Diego Space Society's meeting room in the new Space Traveler's Emporium in South Park. The shop and workspace is owned and operated by the society, a group dedicated to promoting human space travel and exploration.

Details

Who: San Diego Space Society

What: Space Traveler's Emporium, 1947 30th St., San Diego 92102

When: Grand opening, 5 p.m. today.

Related news:

Virgin Galactic completes flight with crew of 2

Suppose you had a free week and wanted to get away from it all. To the moon, perhaps.

Couldn't happen. Not just yet, anyway.

But if you're just that kind of dreamer, we have a store for you.

The Space Traveler's Emporium opens today at Grape and 30th streets in South Park. And if it can stay in business long enough, the proprietors - The San Diego Space Society - would love to be able to sell you a ticket to the moon. And your own space suit. And, maybe some day even sooner, a round-trip ride to the International Space Station.

Just not right now.

At the Space Traveler's Emporium today, you can buy space-oriented T-shirts, books, patches, posters, postcards and the like. You can buy a blue jumpsuit like astronauts wear. Soon you may be able to buy a functioning \$80,000 flight suit.

Just no trips to outer space.

That's OK with the two-year-old Space Society's founder, Jesse Clark. He sees the storefront as one small step for space travel, one great leap for the society's mission: get the public excited and educated about space travel.

And it's already working.

"We've gotten a great reception from the public just walking by and noticing the storefront," says Clark who was 3 years old when Neil Armstrong walked on the moon in 1969.

"They say things like, 'You guys are going into space!' but really it is 'No, it's for you to go there!' "

In fact, two-thirds of the emporium is a clubhouse-salon-library-workshop for society members and the public. "This space represents the next surge for the Space Society," Clark says.

Two huge lockers ("pods" in society-speak) on one side hold projects of members - miniature terrain rovers, bottle rockets and the like. Shelves on the other side hold the beginnings of a space library. At the back of the emporium is a flat-screen TV ("Mission Control Center") on which the society tonight will show an Apollo 11 documentary, "Moon Beat," followed by a Q&A with the director/producer. The program and discussion are free.

Clark envisions regular workshops and lectures open to the public and members. The society has a mailing list of about 120 and a membership that is "somewhat less," says Clark, a graduate of Embry-Riddle Aeronautical University who works as a computer systems administrator.

Revenue from the store will help fund society activities, like a recent free-form SpaceUp "unconference" that drew about 120 participants and was partially sponsored by NASA.

Setting up the emporium has been an all-volunteer, after-work labor of love, says Clark. Even staffing of the store will be dependent on the devotion of the membership. Clark says the society is applying for nonprofit status.

But let's just say the San Diego Space Society is positioning itself to one day be the ticketing agents to the stars - and we don't mean George Clooney and Angelina Jolie.

Listen to Clark for a while and it becomes apparent that the space flight brokerage may not be so far out there. And actually, quite down to earth.

With NASA and the government losing interest in exploring space, entrepreneurs all over the country have begun developing the flight technology to send people and cargo into space - or near space. Clark enthusiastically ticks off a list of "participatory exploration" companies which he hopes the society will represent as a space excursion agent.

## IN THIS WEEK'S WEEKLIES

### Obama's Economic Dilemma: To Spend Or Not To Spend (TIME)

By Michael Crowley

[Time](#), July 16, 2010

Imagine the desktop of White House economic adviser Larry Summers. There he sits, reams of data piling up around him, all presenting a confounding picture. Half of his inbox features good news: Manufacturing is up. The private sector has added jobs for six consecutive months. Corporate earnings are rising, and CEOs are reporting greater confidence. Inflation is almost nonexistent. Even Wall Street (where big profits are back) is hiring again in anticipation of a coming recovery.

But the rest of Summers' stack stinks of depressing, and even alarming, news. Job growth has been anemic. Unemployment is hovering just below 10%. The number of people who have been unemployed for more than six months is approaching 7 million, and millions more are believed to have stopped looking. Foreclosures and bank closings are exceeding last year's levels, while home sales have slumped. And the \$787 billion stimulus (now revised up to cost \$862 billion) passed by Congress last year to kick-start the economy will soon run down, shutting off the cash spigot just as states compound the dampening economic effect with severe budget cuts and layoffs of their own. And that low inflation may be veering toward unwanted deflation. "We had a major economic acceleration coming out of the economic crisis, and it was very impressive," former Federal Reserve Chairman Alan Greenspan said in a July 9 public appearance. "And then it's like we've hit an invisible wall." (See TIME's special report "After One Year, A Stimulus Report Card.")

That strangely mixed picture leaves Summers and every other Obama adviser with an excruciating call to make the next time they head into the Oval Office. Is the U.S. on a firm path to recovery - one that just needs more time to play out? Or are we trapped in the doldrums, perhaps en route to a lost decade like the one Japan had in the 1990s? Worst of all, could we be headed for a terrifying reprise of 1937, when a U.S. economy fighting its way out of the Great Depression crashed a second time, requiring the massive industrial effort of World War II to rejuvenate it? (Comment on this story.)

For the moment, senior Obama advisers tend toward the doldrums theory. They foresee a long and slow recovery, one they would like to speed up with the fuel of more government stimulus to get money into the pockets of consumers who will spend it fast. They don't expect another economic crash - but they also know it's possible, and would sleep better if a new wave of cash were headed into the system. And they are quick to note that despite what their critics may say, this is not an excuse to promote a loony-left tax-and-spend agenda, although even a recent Goldman Sachs analysis recommended that D.C. policymakers consider more stimulus spending. (Watch a video "TIME Polls America: Spend or Cut?")

But Obama and his advisers know their hands are tied. Polls show that voters either don't understand - or don't buy - the long-established economic theory of John Maynard Keynes, which calls for more government spending (even if it means running up deficits) to help the economy through hard times. Instead, the public is in the mood to smack big Washington spenders hard this November. White House officials say Obama's economic team is resigned to the granite-hard public resistance to more bold action as laid out by political advisers. "The arithmetic is simple, but it's been very, very hard to convince people," says Jared Bernstein, chief economic adviser to Vice President Joe Biden. (See TIME's special report "Lobbyists and Their Return on Investment.")

A new Time poll reveals just how hard the task is: Two-thirds of respondents say they oppose a second government stimulus package. And 53% say the country would have been better off without the first one.

The result is a White House pulled in three directions at once as it tries to repair the economy - and ensure that Obama and the Democrats can survive a rising tide of public anger. First, the Obama team is improvising ways to pass piecemeal spending items through a Congress where stimulus has become a toxic word. At the same time, the White House is signaling its concern about that budget deficit that has Tea Partiers raging - both through token gestures, like a White House contest that lets the public vote on cost-cutting ideas submitted by federal employees (the winner gets to meet Obama and see his or her idea go in the President's next budget), and through Obama's support for the work of a bipartisan deficit commission. And finally, the White House is trying to explain to angry liberals that it's doing everything possible to keep the economy moving and fight Republican resistance to new spending. (See pictures of the tea party movement.)

It's a delicate balancing act, on a par with Obama's effort to pass health care reform without appearing to get too involved in the details. And just as it did in the health care battle, the future of Obama's presidency - as well as the fate of the American economy - may hang on the outcome.

## **Afghan About-Face: An Emerging GOP Schism (NSWK)**

By Michael Hirsh

[Newsweek](#), July 19, 2010

No one doubts that Michael Steele suffers from chronic foot-in-mouth disease. So when Steele, the chairman of the Republican National Committee, declared recently that Afghanistan was a war that Obama had chosen, and that America shouldn't get bogged down in a place where "everyone who has tried over a thousand years of history has failed," he

initially encountered the usual reaction from conservatives leery of his leadership: derision and calls to resign. Not only were his facts wrong, he seemed to be muddling a key GOP message. One does not allow Democrats to out-hawk Republicans.

Then a funny thing happened on the way to the chopping block. The controversy quickly died. Steele retracted part of his statement, and other leading Republicans and conservatives stepped up, if not always to Steele's defense, at least to second his skepticism about Afghanistan. Fiery pundit Ann Coulter called Steele "absolutely right" and laced into neocon hawks Bill Kristol and Liz Cheney, who were among those who had called for Steele to resign. Some GOP legislators, like Rep. Tim Johnson of Illinois—who has long opposed funding for both Afghanistan and Iraq—even wrote notes of support to Steele. "Since March our office has gotten 450 e-mails on Afghanistan," an aide to Johnson told NEWSWEEK, "and only three have said 'send more troops.' "

Some newer GOP members of Congress allied with the Tea Party, like Rep. Jason Chaffetz of Utah, say doubts about the endless drain of Afghanistan are beginning to penetrate a movement that has, until now, been obsessed with the domestic aspects of big government. "America is weary," says Chaffetz. "We're fast approaching a decade [of war] and no end in sight. And I think you have a lot of people who have less and less confidence in the president." Chaffetz, like other congressmen who have voted against Afghan funding, says more of his House colleagues are quietly cheering him on. "I had a number of members say 'I wish I had the political guts to do what you did, because I think it's right.' " Chip Hanlon of RedCounty.com, a California-based blogger and Tea Party activist, says the issue resonates with the "true libertarians" in the movement. While they remain a minority, they're usually the loudest and angriest at meetings, says Hanlon. "They saw Michael Steele's comments as the first right thing he said."

Now some leading conservative politicians—especially those thinking about presidential politics—are jumping in to question Obama's Afghan policy from a very different tack. Among them is Newt Gingrich, who is considering a 2012 run. In a speech he plans for the end of July, the former House speaker will hit the president hard, siding with hawks like Kristol. Gingrich thinks the U.S. can't afford to fail in Afghanistan, but it certainly will unless Obama's July 2011 deadline to begin withdrawing troops is dropped. "The morning we collapse in Afghanistan, the energy level of our enemies will quadruple," Gingrich told NEWSWEEK. "This is not a war of choice." The problem, he added, is that "the president's current strategy is hopeless . If you have a commander in chief that no one believes, and a strategy that can't succeed, then I think it becomes very difficult to get people to carry water for him."

Obama still has to worry more about keeping the support of his own Democratic base on Afghanistan than the GOP. Only seven Republican House members voted for a recent bill restricting funding, compared with 93 Democrats. And while the president has been attacked by Republicans on almost every front—health care, stimulus spending, financial reform—for most of his 18 months in office, he's mostly gotten a pass from the GOP on the conduct of America's two wars.

But Obama's poll numbers have been plummeting, especially since the controversy in late June over critical comments by then-Afghanistan commander Gen. Stanley McChrystal and his staff, and Republicans doubtless want to capitalize on that. For those on both sides of the emerging GOP divide—the stick-it-out hawks and the shut-it-down skeptics—the only unifying theme seems to be a lack of faith in the president and his ability to explain what success in Afghanistan will look like. Among those who have recently chimed in are Richard Lugar, the former head of the Senate Foreign Relations Committee. "Absent a major realignment on the ground, it's unrealistic to expect that a significant downsizing of U.S. forces could occur" by Obama's deadline, Lugar said last week.

Obama still has the House and Senate leadership from both parties mostly with him. "I don't think anybody [significant] is ready to jump ship yet," says Republican consultant Vin Weber. Democrats, moreover, may be able to take



advantage of the radically mixed messages from the GOP. But if Steele, in his fumbling way, is a harbinger of things to come, time is beginning to run out for the president. And he needs a great deal more of it if he's ever to succeed in Afghanistan.

## **We're Not Winning. It's Not Worth It. (NSWK)**

### **Here's how to draw down in Afghanistan.**

By Richard N. Haass

[Newsweek](#), July 19, 2010

GOP chairman Michael Steele was blasted by fellow Republicans recently for describing Afghanistan as "a war of Obama's choosing," and suggesting that the United States would fail there as had many other outside powers. Some critics berated Steele for his pessimism, others for getting his facts wrong, given that President George W. Bush ordered the invasion of Afghanistan soon after 9/11. But Steele's critics are the ones who are wrong: the RNC chair was more correct than not on the substance of his statement, if not the politics.

The war being waged by the United States in Afghanistan today is fundamentally different and more ambitious than anything carried out by the Bush administration. Afghanistan is very much Barack Obama's war of choice, a point that the president underscored recently by picking Gen. David Petraeus to lead an intensified counterinsurgency effort there. After nearly nine years of war, however, continued or increased U.S. involvement in Afghanistan isn't likely to yield lasting improvements that would be commensurate in any way with the investment of American blood and treasure. It is time to scale down our ambitions there and both reduce and redirect what we do.

The first thing we need to recognize is that fighting this kind of war is in fact a choice, not a necessity. The United States went to war in October 2001 to oust the Taliban government, which had allowed Al Qaeda to operate freely out of Afghanistan and mount the 9/11 attacks. The Taliban were routed; members of Al Qaeda were captured or killed, or escaped to Pakistan. But that was a very different war, a necessary one carried out in self-defense. It was essential that Afghanistan not continue to be a sanctuary for terrorists who could again attack the American homeland or U.S. interests around the world.

The Bush administration was less clear on what to do next. Working in the State Department at the time, I was appointed by President Bush as the U.S. government's coordinator for the future of Afghanistan. At a National Security Council meeting chaired by the president in October 2001, I was the one arguing that once the Taliban were removed from power there might be a short-lived opportunity to help establish a weak but functional Afghan state. There and at subsequent meetings I pressed for a U.S. military presence of some 25,000-30,000 troops (matched by an equal number from NATO countries) to be part of an international force that would help maintain order after the invasion and train Afghans until they could protect themselves.

My colleagues in the Bush administration had no interest in my proposal. The consensus was that little could be accomplished in Afghanistan given its history, culture, and composition, and that there would be little payoff beyond Afghanistan even if things there went better than expected. They had no appetite for on-the-ground nation building. The contrast with subsequent policy toward Iraq, where officials were prepared to do a great deal because they hoped to create a potential model for change throughout the Middle East, could hardly be more stark.

As a result, the United States decided not to follow up its ouster of the Taliban with anything ambitious. U.S. troop levels did top out at about 30,000, but most of those just hunted the handful of Al Qaeda who remained. The United States never joined the international force sent to stabilize Afghanistan and in fact limited its size and role.

By the time Obama became president in 2009, the situation inside Afghanistan was fast deteriorating. The Taliban were regaining a foothold. There was concern in Washington that if left unchecked they could soon threaten the existence of the elected government in Kabul headed by Hamid Karzai. Trends were judged to be so bad that the president ordered 17,000 more American combat troops to Afghanistan even before the first review he'd ordered up was finished.

Since then Obama has had several opportunities to reassess U.S. goals and interests in Afghanistan, and in each instance he has chosen to escalate. Upon completion of that first review in March 2009, he declared that the U.S. mission would henceforth be "to disrupt, dismantle, and defeat Al Qaeda in Pakistan and Afghanistan, and to prevent their return to either country in the future." But in reality the U.S. objective went beyond taking on Al Qaeda; the president announced in those same remarks that the additional U.S. troops being sent to Afghanistan would "take the fight to the Taliban in the south and the east, and give us a greater capacity to partner with Afghan security forces and to go after insurgents along the border." In short, the return of the Taliban was equated with the return of Al Qaeda, and the United States became a full protagonist in Afghanistan's civil war, supporting a weak and corrupt central government against the Taliban. Another 4,000 U.S. troops were sent, to train Afghan soldiers.

Just five months later, a second, more extensive policy review was initiated. This time the president again described U.S. goals in terms of denying Al Qaeda a safe haven in Afghanistan, but again he committed the United States to something much more: "We must reverse the Taliban's momentum and deny it the ability to overthrow the government. And we must strengthen the capacity of Afghanistan's security forces and government so that they can take lead responsibility for Afghanistan's future."

The decisions that flowed from this were equally contradictory. On the one hand, another 30,000 U.S. troops were pledged, both to warn the Taliban and to reassure the shaky government in Kabul. Yet the president also promised that "our troops will begin to come home" by the summer of 2011-to light a fire under that same government, as well as to placate antiwar sentiment at home.

Today the counterinsurgency strategy that demanded all those troops is clearly not working. The August 2009 election that gave Karzai a second term as president was marred by pervasive fraud and left him with less legitimacy than ever. While the surge of U.S. forces has pushed back the Taliban in certain districts, the Karzai government has been unable to fill the vacuum with effective governance and security forces that could prevent the Taliban's return. So far the Obama administration is sticking with its strategy; indeed, the president went to great lengths to underscore this when he turned to Petraeus to replace Gen. Stanley McChrystal in Kabul. No course change is likely until at least December, when the president will find himself enmeshed in yet another review of his Afghan policy.

This will be Obama's third chance to decide what kind of war he wants to fight in Afghanistan, and he will have several options to choose from, even if none is terribly promising. The first is to stay the course: to spend the next year attacking the Taliban and training the Afghan Army and police, and to begin reducing the number of U.S. troops in July 2011 only to the extent that conditions on the ground allow. Presumably, if conditions are not conducive, Petraeus will try to limit any reduction in the number of U.S. troops and their role to a minimum.

This approach is hugely expensive, however, and is highly unlikely to succeed. The Afghan government shows little sign of being prepared to deliver either clean administration or effective security at the local level. While a small number of Taliban might choose to "reintegrate"-i.e., opt out of the fight-the vast majority will not. And why should they? The Taliban are resilient and enjoy sanctuary in neighboring Pakistan, whose government tends to view the militants as an instrument for influencing Afghanistan's future (something Pakistan cares a great deal about, given its fear of Indian designs there).

The economic costs to the United States of sticking to the current policy are on the order of \$100 billion a year, a hefty price to pay when the pressure to cut federal spending is becoming acute. The military price is also great, not just in lives and material but also in distraction at a time when the United States could well face crises with Iran and North Korea. And the domestic political costs would be considerable if the president were seen as going back on the spirit if not the letter of his commitment to begin to bring troops home next year.

At the other end of the policy spectrum would be a decision to walk away from Afghanistan—to complete as quickly as possible a full U.S. military withdrawal. Doing so would almost certainly result in the collapse of the Karzai government and a Taliban takeover of much of the country. Afghanistan could become another Lebanon, where the civil war blends into a regional war involving multiple neighboring states. Such an outcome triggered by U.S. military withdrawal would be seen as a major strategic setback to the United States in its global struggle with terrorists. It would also be a disaster for NATO in what in many ways is its first attempt at being a global security organization.

There are, however, other options. One is reconciliation, a fancy word for negotiating a ceasefire with those Taliban leaders willing to stop fighting in exchange for the chance to join Afghanistan's government. It is impossible, though, to be confident that many Taliban leaders would be prepared to reconcile; they might decide that time is on their side if they only wait and fight. Nor is it likely that the terms they would accept would in turn be acceptable to many Afghans, who remember all too well what it was like to live under the Taliban. A national-unity government is farfetched.

One new idea put forward by Robert Blackwill, a former U.S. ambassador to India, is for a de facto partition of Afghanistan. Under this approach, the United States would accept Taliban control of the Pashtun-dominated south so long as the Taliban did not welcome back Al Qaeda and did not seek to undermine stability in non-Pashtun areas of the country. If the Taliban violated these rules, the United States would attack them with bombers, drones, and Special Forces. U.S. economic and military support would continue to flow to non-Pashtun Afghans in the north and west of the country.

This idea has its drawbacks as well as appeal. A self-governing "Pashtunistan" inside Afghanistan could become a threat to the integrity of Pakistan, whose own 25 million Pashtuns might seek to break free to form a larger Pashtunistan. Any partition would also be resisted by many Afghans, including those Tajik, Baluchi, and Hazara minorities living in demographic "islands" within the mostly Pashtun south, as well as the Tajiks, Uzbeks, and others elsewhere in the country who want to keep Afghanistan free of Taliban influence. And even many Pashtuns would resist for fear of the harsh, intolerant rule the Taliban would impose if given the chance.

Another approach, best termed "decentralization," bears resemblance to partition but also is different in important ways. Under this approach, the United States would provide arms and training to those local Afghan leaders throughout the country who reject Al Qaeda and who do not seek to undermine Pakistan. Economic aid could be provided to increase respect for human rights and to decrease poppy cultivation. There would be less emphasis on building up a national Army and police force.

The advantage of this option is that it works with and not against the Afghan tradition of a weak ruling center and a strong periphery. It would require revision of the Afghan Constitution, which as it stands places too much power in the hands of the president. The United States could leave it to local forces to prevent Taliban inroads, allowing most U.S. troops to return home. Leaders of non-Pashtun minorities (as well as anti-Taliban Pashtuns) would receive military aid and training. The result would be less a partition than a patchwork quilt. Petraeus took a step in this direction last week by gaining Karzai's approval for the creation of new uniformed local security forces who will be paid to fight the insurgents in their communities.

Under this scenario, the Taliban would likely return to positions of power in a good many parts of the south. The Taliban would know, however, that they would be challenged by U.S. air power and Special Forces (and by U.S.-supported Afghans) if they attacked non-Pashtun areas, if they allowed the areas under their control to be used to supply antigovernment forces in Pakistan, or if they worked in any way with Al Qaeda. There is reason to believe that the Taliban might not repeat their historic error of inviting Al Qaeda back into areas under their control. Indeed, the United States should stop assuming that the two groups are one and the same and instead start talking to the Taliban to underscore how their interests differ from Al Qaeda's.

Again, there are drawbacks. This approach would be resisted by some Afghans who fear giving away too much to the Taliban, and by some Taliban who don't think it gives enough. The Karzai government would oppose any shift in U.S. support away from the central government and toward village and local leaders. Fighting would likely continue inside Afghanistan for years. And again, areas reclaimed by the Taliban would almost certainly reintroduce laws that would be antithetical to global norms for human rights.

So what should the president decide? The best way to answer this question is to return to what the United States seeks to accomplish in Afghanistan and why. The two main American goals are to prevent Al Qaeda from reestablishing a safe haven and to make sure that Afghanistan does not undermine the stability of Pakistan.

We are closer to accomplishing both goals than most people realize. CIA Director Leon Panetta recently estimated the number of Al Qaeda in Afghanistan to be "60 to 100, maybe less." It makes no sense to maintain 100,000 troops to go after so small an adversary, especially when Al Qaeda operates on this scale in a number of countries. Such situations call for more modest and focused policies of counterterrorism along the lines of those being applied in Yemen and Somalia, rather than a full-fledged counterinsurgency effort.

Pakistan is much more important than Afghanistan given its nuclear arsenal, its much larger population, the many terrorists on its soil, and its history of wars with India. But Pakistan's future will be determined far more by events within its borders than those to its west. The good news is that the Army shows some signs of understanding that Pakistan's own Taliban are a danger to the country's future, and has begun to take them on.

All this argues for reorienting U.S. Afghan policy toward decentralization-providing greater support for local leaders and establishing a new approach to the Taliban. The war the United States is now fighting in Afghanistan is not succeeding and is not worth waging in this way. The time has come to scale back U.S. objectives and sharply reduce U.S. involvement on the ground. Afghanistan is claiming too many American lives, requiring too much attention, and absorbing too many resources. The sooner we accept that Afghanistan is less a problem to be fixed than a situation to be managed, the better.

Haass, president of the Council on Foreign Relations, is the author of *War of Necessity, War of Choice: A Memoir of Two Iraq Wars*.

### **John Kerry's Fulbright Moment (NSWK)**

By Jon Meacham

[Newsweek](#), July 16, 2010

It had been, Sen. John Sparkman of Alabama said, a "rocky road." The year was 1968—one of those years that ranks with A.D. 33, 1066, and 1776 as an inarguable landmark—and the Senate Foreign Relations Committee had spent hours in executive session struggling with the Vietnam War. Sen. Albert Gore Sr. of Tennessee dismissed concerns that holding public debates about the war would be divisive and undercut America's chances of victory. "What kind of victory? Will it be Pyrrhic?" Gore asked. His view: "This Congress either ought to declare war or undeclare war" in Southeast Asia. Another

senator, Joseph Clark of Pennsylvania, reported that he had asked the U.S. commander, William Westmoreland, "if there would be a military victory in this war, and he said no."

These details come from Sen. John Kerry's new release of 1,000 pages of Foreign Relations Committee documents from the Vietnam era. The report, which was prepared by Senate historian Donald A. Ritchie, covers 1964 and 1968. Strikingly, the most substantive public hearings on the war did not begin until the spring of 1971, when Sen. J. William Fulbright announced that the committee would meet to "develop the best advice and greater public understanding of the policy alternatives available and positive congressional action to end American participation in the war."

We need a Fulbright moment on Afghanistan, a war which is, as Kerry says, much more directly related to our safety than Vietnam ever was. "The underlying tragedy of Vietnam was that there was no compelling national-security interest at stake there," Kerry told me last week. "There just wasn't. But there is such an interest in Afghanistan. There would be a huge price to be paid if we were to allow the Taliban free rein to create more capacity for the planning of terror and the training of terrorists."

Granted, but the central policy question-counterinsurgency, with its relatively heavy troop presence, versus counterterror, which would emphasize tactical strikes against Al Qaeda while providing some support to anti-Taliban forces-has not been thoroughly debated by a public that sometimes seems only vaguely aware that our military is fighting a war that is about to enter its 10th year. "It is fair, in my judgment, to say that there has not been sufficient attention given in public-or, to be frank, in private, either-to the ways we might achieve our goals in Afghanistan," Kerry said.

Our cover story this week, by Richard N. Haass, the president of the Council on Foreign Relations, lays out a strategy for an aggressive antiterror campaign with a reduced American presence. There is nothing simple about a problem like Afghanistan, and if there were a straightforward, uncontroversial path to take, we would have already taken it. It is often a useful exercise, though, to ask why something is the way it is, or whether something we have come to take for granted-in this case, the counterinsurgency, nation-building strategy in Afghanistan-makes sense.

At one point Fulbright said that if lawmakers fail to weigh in "about matters as important as declaring war," then "I do not see how we have any real function." Not taking a stand, he said, would mean "we are just a useless appendix on the governmental structure."

There, perhaps, is the most applicable lesson from the documents. There would be a certain elegant historical symmetry if Kerry, who testified before the committee in 1971, were to convene a public-policy review of the war in Afghanistan. Kerry has already held 11 hearings, issued a lengthy report, and has a report on corruption and threat finance pending. Counterinsurgency will also be discussed in hearings scheduled for the week of July 26. But just as Fulbright did not find his opening until 1971, Kerry may be only beginning to find his own.

The obstacles are clear, and real. "As you know, it's never been more difficult to achieve a level of public concentration to sustain a debate-and facts and truth have never had so little apparent role to play in any debate," Kerry said. All true. But isn't it worth trying in any event?

I asked if he had considered reprising the Fulbright role. "I have never thought about it in those terms," he said. There was a pause. "Part of the reason that would be practically difficult is the speed with which things move" and a fragmented culture's short attention span. He went on: "But we do have the obligation to explore these issues in public. Part of what I bring to the chair is the awareness, a very real awareness, of my culpability if we were to fail to ask the right questions." If anyone can do this, John Kerry can. Here's hoping he will.

Jon Meacham is editor of NEWSWEEK and author of American Lion: Andrew Jackson in the White House and American Gospel: God, the Founding Fathers, and the Making of a Nation.

## A Health-Care Showdown In Massachusetts (NSWK)

By Kevin Robillard

[Newsweek](#), July 19, 2010

Under President Obama's new health-care law, regulators gained a radical power: the ability to define "unreasonable" premiums and reject them on state-level insurance exchanges. Because more than 24 million people nationwide are expected to depend on these markets for coverage by the end of the decade, Obama recently gave states \$250 million to beef up their review efforts ahead of 2014, when the law goes into effect. But a major question remains: what's a fair definition of "unreasonable"-and will the health-care industry accept the government's math?

Don't bet on it. Massachusetts, which has already been the model for the national health-care overhaul, recently gave its regulators the authority to strike down excessive rate hikes-and the result was a nearly 90 percent rejection rate when insurance companies pitched their new premiums for the second quarter. At a time when the average national rate hike for individual insurance plans is 20 percent, the Bay State tabled everything above 7.7 percent. Earlier this month insurers made their cases to the state for third-quarter increases. But again the state mostly said no, rejecting about 70 percent of 200 proposals and approving only a handful of single-digit bumps.

Many a freelancer is cheering for now (the rejections saved consumers as much as \$8 million). And the promise of 24 million new customers should be enough to keep insurers from leaving the exchanges in protest. But if the same blunt approach is applied nationally, insurers may pull out to focus on more profitable market segments-and the promise of universal access could crumble.

## Can The Chevy Volt Recharge General Motors? (TIME)

By Brian Dumaine

[Time](#), July 15, 2010

The following is an abridged version of an article that appears in the July 26, 2010, print and iPad editions of TIME magazine.

The documentary Who Killed the Electric Car? accused General Motors of conspiring with the oil industry and politicians to shelve its popular and promising EV1 in the 1990s. How things have changed. On Wednesday GM unveiled its long-awaited and much-hyped electric Chevy Volt, just one of a fleet of electric cars that will soon be whirring through your neighborhood. (See five new electric cars.)

These battery-powered vehicles, charged in your wall outlet like some oversized cordless power tool, will revolutionize not only the auto industry but also the way Americans live and drive. At least that's what major automakers are betting billions on. Tesla's high performance \$101,000 roadster is already the must-have toy for Silicon Valley boys. This fall, more-affordable cars will roll out. GM's Volt will sell for about \$40,000, with federal tax rebates that knock the price down to \$32,500. Around the same time, Nissan will begin selling its all-electric Leaf, a \$32,780 compact that the Japanese carmaker says will average 100 miles on a charge, and Daimler will lease an all-electric version of its Smart Car. Not to be outdone, BMW, Chrysler, Ford and Mitsubishi, among others, will have electric models within a year or so. Even Toyota, long a proponent of hybrids, announced in May a venture with Tesla to develop electric-car technology in California. (See the 50 worst cars of all time.)

Huge roadblocks remain. How many drivers will be willing, or able, to charge their cars seven or eight hours a day for only 100 or so miles of driving? More than a few will surely suffer from the dreaded "range anxiety" - worrying that they'll

run out of juice in the middle of nowhere. Price is an issue too. Electrics cost considerably more than comparable gasoline-powered cars and are too expensive for the average buyer.

The good news is that, unlike in the mechanical world, where improvements are incremental, electric-car technology is advancing quickly, and the price is dropping as it does. (Comment on this story.)

Introducing the Volt today, for instance, GM announced an industry best for an electric car battery warranty. For drivers who worry that the Volt's expensive batteries, which will drive the car 40 miles on a charge, won't last, the company is offering an eight-year or 100,000 miles guarantee. That's important because American drivers have become used to starting and driving their cars in all sorts of bad weather. Will a battery powered car start in Minnesota when it's 30 degrees below zero? Extreme temperature is the enemy of battery power. Most batteries like to operate around 70 degrees. If it gets much colder or hotter the car could be hard to start and the range of a battery could drop by as much as a third. Nissan, which is launching its all-electric Leaf in the fall, says the car has a 100-mile range, but that's on cool, sunny days and on flat roads. In fact, the Japanese carmaker recently announced that the range could actually vary between 47 and 138 miles. Drive the Leaf on a hot day in heavy, stop-and-go traffic, and its range drops to 47 miles, says Nissan. (See the history of the electric car.)

GM's Andrew Farah says the Volt's 40-mile electric range will drop too if, say, climbing Pike's Peak, but the car's design will make sure it will start in most conditions. The 288 lithium ion cells that make up the 400-pound T-shaped battery unit are kept at a comfortable temperature range by an elaborate liquid cooling system. When the car is charging, the heating system will warm up the battery enough to start on cold mornings. One quality challenge: The cooling system has hundreds of small seals that must be manufactured perfectly to avoid leakage.

## Chicago's Lesson In Layoffs (NSWK)

### Should the newest teachers go?

By Pat Wingert And Evan Thomas

[Newsweek](#), July 17, 2010

Education reformers were feeling optimistic. With President Obama's Race to the Top competition, which offers financial rewards to states willing to hold teachers accountable for their students' performance, they've made real progress in weeding out poor teachers.

But now the reformers have spotted a dark cloud on the horizon. State budgets, particularly in badly managed big states like California, New York, and New Jersey, are out of control. Although Congress managed to avoid massive teacher layoffs last year with federal aid, the stimulus money is running out, and congressmen do not appear to be in the mood for more deficit spending. That means teacher layoffs are coming-perhaps more than 100,000 nationwide. In most states, union contracts or state law requires they be done by seniority, so the newest teachers are pink-slipped, no matter how good they are. " 'Last in, first out' virtually guarantees that all our great, young teachers will be out of a job, and some of the least effective will stay in the classroom," says Tim Knowles, director of the Urban Education Institute at the University of Chicago.

Such layoffs disproportionately hurt students attending the lowest-performing schools, because they tend to have the highest proportion of new teachers. In some Los Angeles schools last year, such cuts wiped out 50 to 70 percent of the faculty.

One surprising solution may come from Knowles's home city of Chicago. The state of Illinois is one of the worst-run in the country, rivaling even California for its unwillingness to take the steps necessary to stanch the flow of red ink. As a

result, Chicago is facing pressure to cut 900 teacher jobs. Under the usual union contract, the last hired were to be the first fired, competent or not.

But the Chicago School Board, handpicked by the Windy City's tough-minded Mayor Richard M. Daley, has interpreted a new state law as giving it the power to fire the city's 200 most incompetent teachers first.

While this might seem like common sense, it's heresy to Karen Lewis, the newly elected head of the Chicago teachers' union, who is considering going to court to fight the attack on seniority. "I admit, this is a great PR tool. Why not lay off the bad teachers first?" she conceded in an interview with NEWSWEEK. But on closer inspection, she says, there is no way of doing it fairly. In Chicago's troubled urban school district, 99 percent of the 23,000 or so teachers are rated "excellent" or "superior," while less than 0.1 percent are rated "unsatisfactory." Employing some creative logic, Lewis asks: "Why are the worst evaluations believable, but the best are not?"

Reformers scoff at the union boss's arguments. "While principals may not be consistently evaluating their teachers to the extent that they should, they certainly know who the worst teachers are in their buildings and have been using all sorts of tricks of the trade over the years to get these teachers to move to other schools," says Kate Walsh of the National Council on Teacher Quality, a reform advocacy group.

Largely because of the carrots dangled by Race to the Top, a growing number of states, including Colorado, Tennessee, Delaware, and Oklahoma, have changed their laws to make teacher performance a factor in tenure and firing decisions, but very few can use it to make layoff decisions. The District of Columbia's public-school system is one place that can. Arizona has gone the furthest, making it illegal to consider seniority in layoff, tenure, and even rehiring decisions. But defying the unions is hard going. In New York, Mayor Michael Bloomberg had to back away from layoffs based on performance and shoot for an across-the-board pay freeze.

Analysts say that states' money troubles will continue to shrink budgets over the next year, and school districts that have already cut to the bone will have to find new ways to make less go further. Weeding out the weakest teachers and keeping the most effective "is the only policy that makes sense for districts to implement in tough times," says Walsh. After all, when student needs bump up against adult needs, is there any question whose should come first?

## **Does Sarah Palin Really Have A Chance? (TIME)**

By Mark Halperin

[Time](#), July 15, 2010

The music swells and then picks up tempo. Sarah Palin is talking about how 2010 will be the year that "commonsense conservative women get things done for our country." She's worried about "these policies coming out of D.C. right now, this fundamental transformation of America," and reports that she is not alone. "Moms kinda just know when something's wrong," she says. "You thought pit bulls were tough? Well, you don't wanna mess with the mama grizzlies!"

Can a two-minute Internet video reshuffle a Republican presidential race before it has even started? Palin's glossy yet authentic clip, released without any fanfare July 8, did just that. It was the surest sign yet that she means to be an energizing factor in this year's midterm elections and will mount a real bid for the White House in 2012. Most compelling is the way the video targets women, specifically moms, whom Palin exhorts to vote in the midterms and halt the Obama agenda. The video features image after image of everyday, determined, smiling, patriotic mothers and grandmothers, all keen to join her army of supporters. Palin calls it a "mom awakening." If Palin can inspire GOP and independent women to



turn out for the party's candidates in November, she could decisively influence the outcome of the midterms. (See TIME's special on After Alaska: Sarah Palin's Year of Living Large.)

Palin doesn't need specific policies to crank up the energy - or even specific criticisms of Obama. She knows that injecting emotion into the conversation is the most efficient way to spark a movement. Her charming if idiosyncratic way with words may also be an asset: "Look out, Washington, because there's a whole stampede of pink elephants crossing the line, and the ETA stampeding through is November 2, 2010. Lotta women comin' together." (See photos of Sarah Palin's life since the 2008 election.)

John McCain saw this inspirational side of Palin when he named her his running mate in 2008. Ultimately, that move did him no good, but Palin's video proves that she is savvy and sophisticated enough to harness her star power for political effect, shrugging off the cartoonish taint that has clung to her since she and McCain lost. Many GOP insiders and consultants, some of whom had dismissed Palin's chances as a presidential contender and written her off as a political flameout, say they are impressed by the competence and impact of Palin's new approach. Says veteran Republican strategist Greg Muller, "She's set herself up very, very well. She is only going to get stronger." The majority of voters are still skeptical. A new TIME poll shows Palin losing to Obama 55% to 34%, a lopsided margin that leads some Republican strategists to predict a wipeout if Palin is eventually chosen as the party's nominee.

But that might not matter. Palin has stayed busy endorsing candidates in competitive Republican primaries, picking her share of winners and losers and, in some contests, helping determine the outcome. Her political-action committee raised more than \$865,000 in the past three months and has beefed up its staff. Palin has enjoyed some personal victories too: Levi Johnston, the father of her grandchild, made a public apology to Palin on July 6, complete with a retraction of past damaging allegations he made about her family. This week Johnston and Palin's daughter Bristol reannounced their engagement after months of estrangement, removing - with apparent serendipity - a blemish from her wholesome narrative. (See photos of the fashion looks of Sarah Palin.)

The question for Palin now: Can she build on this moment? Although she has taken few steps to prepare for a presidential contest, her path is becoming clearer. It starts with a big advantage: She would be the only woman against a half-dozen or more Republican men. As long as she leaves the door to a race open, she can freeze the field, prevent other GOP hopefuls from gaining much traction, keep the media in a perpetual will-she-or-won't-she frenzy and jump into the race whenever she likes. That would be impossible for an ordinary candidate, but Palin could splash in as late as November 2011, just a few months before the voting begins. There is no deadline for signing up for the Iowa caucuses, and when it comes to competing in early-state contests, she will have a far easier time than any previous insurgent. Her candidacy would require almost none of the usual time sinks that force politicians to jump in early: power-broker schmoozing, schedule-intensive fundraising, competitive recruitment of experienced strategists, careful policy development. She would have immediate access to cash, with even small Internet donations likely bringing in millions.

Already the most arresting political figure other than the President, Palin will be even more visible in the coming months. After a year of profitable speaking, bookselling and punditry on Fox, she will do some promotion in August for the paperback release of her best-selling *Going Rogue*. When it airs in the fall, her documentary series about Alaska on TLC will attract both curiosity and viewers. And after the midterms, her second book, *America by Heart: Reflections on Family, Faith, and Flag*, will hit stores in time to rack up millions in Christmas sales. She keeps in touch with her fans via Twitter and Facebook; on July 13 she pushed back hard after the NAACP criticized the Tea Party.

Palin thrives on the unpredictable, and as her new video shows, she can adapt quickly. "What she knows, you can't teach," says Mark McKinnon, a top strategist for George W. Bush and McCain. "And what she doesn't know she can learn - and she's learning fast."

See TIME's Pictures of the Week.

See the Cartoons of the Week.

## The Resurrection Of Charlie Crist (NSWK)

**Written off as out of step with the times, he's back—and out to show that centrists can win.**

By Arian Campo-flores

[Newsweek](#), July 19, 2010

Not long ago, Florida Gov. Charlie Crist seemed like a dead pol walking. Tea Party favorite Marco Rubio was thrashing him in the Republican primary for the U.S. Senate. Crist's 30-point lead had swung to a 30-point deficit; funding was drying up, as were endorsements. "He's deader than the day before yesterday," former state GOP chair Tom Slade told the St. Petersburg Times in late April. "I don't think there's any way in the world he can rehabilitate himself." Crist's collegial centrism, the conventional wisdom held, had become anachronistic at a time when angry right-wing populism had overtaken his party.

Yet here we are, less than three months later: Crist, now running as an independent, leads Rubio by almost 5 points, and he's ahead of potential Democratic opponents by much more, according to a Real Clear Politics average of polls. The stunning reversal raises a possibility with wider implications: "In this national environment of very polarized politics," says Daniel Smith, a political-science professor at the University of Florida, "voters may be interested in more moderate candidates."

It's still a long way to November, of course. Rubio remains a formidable challenger-and, given his announcement last week that he had raised a record-setting \$4.5 million in the second quarter, a well-financed one. But through a mixture of deft maneuvering and plain good luck, Crist has somehow seized the momentum. During the spring legislative session, he vetoed two controversial bills pushed by overzealous Republican leaders-one dealing with teacher tenure, the other with abortion-thereby positioning himself as a bulwark against extremism. He has benefited from disarray in the Democratic primary, as the lackluster establishment candidate, U.S. Rep. Kendrick Meek, fends off a challenge from a billionaire, Jeff Greene, who earned the nickname "meltdown mogul" by profiting from bets against the housing market. And Crist has gotten a lot of positive press-as well as an uptick in approval ratings-for his energetic response to the BP oil disaster that has gunked up Florida beaches with tar balls. In contrast to Rubio, who still supports offshore drilling, Crist has called the legislature to a special session this week to promote a constitutional ban against the practice.

Crist's resurgence also stems in part from his shift back to where he's always seemed most comfortable: the political center. That's where he's largely governed as the state's chief executive-pursuing a Republican agenda of low taxes and limited government, but also collaborating with Democrats on environmental issues and judicial appointments. The approach made him one of the most popular governors in the country. "He's got almost extraterrestrial instincts about the political pulse," says Mac Stipanovich, a Republican lobbyist and Crist supporter. "All he has to figure out is what you want to hear, and as long as it doesn't contradict something he said yesterday, you will probably hear it."

That trait has prompted criticism that Crist is a shape-shifter, with no firm convictions. It's not too far off the mark: his recent reversals on some matters (veering liberal on abortion, gay adoption, and "don't ask, don't tell") have been dizzying.

But while political elites may get agitated over such slipperiness, average voters don't seem to care much. They "want someone who's a pragmatist," says Smith, adding that if Crist stands for anything, he "stands for the median voter."

Moderate candidates are particularly valued in Florida, where the electorate favors fiscal conservatism and social moderation. Campaigns are won along the state's midriff, from Tampa to Orlando, where swing voters reside in abundance. Florida is "generally a centrist place," says Steve Schale, a Democratic consultant based in Tallahassee. "When either party pushes out one way or another, voters tend to whack them back to the middle."

Crist will try to defend the middle as his home turf. A June Quinnipiac poll shows him garnering 51 percent of independents, 28 percent of Republicans, and 37 percent of Democrats. According to Thomas Eldon of SEA Polling and Strategic Design, who has studied the Florida electorate extensively, Crist's backers mainly include moderate GOPers alarmed about their party's move to the right-many of them Midwestern migrants who settled in southwest Florida-and Democrats who appreciate Crist's bipartisanship and worry about Meek's viability.

In recent weeks, a host of high-profile Democratic donors have lined up behind the governor. Among them: Lance Block, a Tallahassee attorney who hosted a June fundraiser at his home for contributors from across the political spectrum, including lawyers who fought on opposite sides of the 2000 Florida recount battle. The influx of cash helped Crist defy predictions that his funding would evaporate after he bolted from the GOP; last week his campaign reported it had taken in \$1.8 million in the second quarter, far less than Rubio's haul, but an improvement over the \$1.1 million it raised in the first quarter.

While Crist has incurred the wrath of the far right-particularly the Tea Partiers-such opposition could work in his favor in some ways. Conservatives are galvanized and may well turn out in force. But the way they've commandeered the GOP has also yielded a candidate-Rubio-who may appear too far from the center for mainstream voters. (He backs a flat tax, questions whether climate change is man-made, and supports legislation requiring doctors to perform ultrasounds before administering abortions.) "Now that [Rubio] has painted himself into that conservative corner, he's having difficulty getting out," says Smith. Given Rubio's need to keep the right wing riled up, he has so far avoided tacking toward the middle in preparation for the general election. Perhaps as a result, his candidacy appears to be provoking and solidifying an anyone-but-Rubio vote behind Crist-one that could grow if Meek fails to win his primary or never becomes a serious contender.

If Crist ends up winning by staking out the middle ground, it will surely enliven the debate over just how polarized the American electorate really is. This has been a subject of heated argument among academics in recent years. No one disputes that elected officials have become more polarized. But have average voters?

In his recent book *The Disappearing Center*, Alan Abramowitz, a professor at Emory University, argues that the public is more divided than ever. And since those who are more engaged tend to be more ideological, they're pushing the parties to their outer limits. Yet Stanford University professor Morris Fiorina, author of *Culture War?*, thinks that's largely nonsense. According to his analysis, the electorate is no more polarized than in decades past. Voters have simply sorted themselves more neatly into political parties that are more ideological. Republicans have shed Northern liberals, while Democrats have lost Southern conservatives. In Fiorina's view, the citizenry is craving moderate candidates. "There's a big underserved market out there," he says.

Few politicians around the country, however, are aiming to supply it. In particular, the Republican contenders in upcoming elections often seem to be trying to outdo one another in a rush to the fringe. Senate candidates like Sharron Angle in Nevada, Rand Paul in Kentucky, and Ken Buck in Colorado are mounting hard-right challenges, fueled by Tea Party fervor. Yet, like Rubio, they risk alienating middle-of-the-road voters and imperiling what should be dependable GOP gains in an election cycle that favors the opposition party.

Crist's approach may be hard to replicate, though. Florida is as purple a state as they come, and even so, no independent has ever succeeded in a statewide run. Yet Crist—who so far hasn't said which party he'd caucus with if he reaches the Senate—"is the perfect candidate to pull this off," says Block, the Democratic fundraiser. "I hope it sends a message to Republicans and Democrats that people are beginning to look for non-party-affiliated candidates who just want to get the job done." For a country split into ever more bitterly opposed camps, it would signify a triumph of the center.

## Is The White House Rolling Out Its Secret Weapon? (TIME)

By Jay Newton-small

[Time](#), July 19, 2010

The following is an abridged version of an article that appears in the July 26, 2010, print and iPad editions of TIME magazine.

Michelle Obama may be about to get her political toes wet. In May, she headlined the Democratic Party's annual women's conference; in early June, she made an appearance in Nevada with Senate majority leader Harry Reid. She also recently took her husband's place in Kansas City, Mo., at the annual NAACP convention.

More outings could be in the offing. Dozens of Democratic congressional candidates, including Ohio's Steve Driehaus, Illinois's Debbie Halvorson and Mississippi's Travis Childers, have asked the White House for her to appear in their districts this fall, according to a senior party official. "I'd love to have Michelle Obama...

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## Dodd-Frank Dissonance (NSWK)

### **Voter beliefs and actions are at odds.**

By Jonathan Alter

[Newsweek](#), July 17, 2010

With Wall Street reform added to health care, President Obama is now two-for-two on his major domestic initiatives. If you include big bills expanding college loans and cracking down on credit-card companies (further strengthened in the new Dodd-Frank financial legislation), he's four-for-four. Throw in the Recovery Act, which included more public investment than even Franklin Roosevelt managed in his first year, and a half dozen other meaty bills and you've got a legislative record that's already historic. Oh, and Obama (with Ben Bernanke) prevented another Great Depression, then got almost all the bailout money back.

But no good deed goes unpunished, and the GOP seems headed for a takeover of the House of Representatives in November. (The Senate is out of reach.) When Robert Gibbs said last week the GOP might seize the House, Nancy Pelosi was furious; she thought Gibbs's comment will hurt fundraising. Gibbs was right to say it. Raising the stakes concentrates the mind on the cognitive dissonance of the American voter—and on Obama's own failure to get his act together politically.

Cognitive dissonance is the anxiety caused by an inconsistency between one's beliefs and actions. The beliefs of American voters are clear: they overwhelmingly favor more regulation of Wall Street, which means they simply won't support the repeal of Dodd-Frank that House Minority Leader John Boehner called for before the ink was even dry on the new law. They strongly support the extension of unemployment benefits, now being blocked by Boehner & Co. More than 60 percent, according to a recent Bloomberg survey, oppose Boehner's idea of repealing health-care reform. And you can

practically count on one hand the number who agree with Boehner's main man on energy, Joe Barton, that making BP pay to clean up the oil spill and compensate gulf locals was a "shakedown."

So why are so many of these same voters poised to make Boehner the House speaker? Because they aren't rationally aligning belief and action; they're tempted to lose their spleens in the polling place without fully grasping the consequences. With 10 percent unemployment and credit still tight, it's understandable why they aren't as cool, calm, and collected as the president. They don't see the changes yet in their own lives.

And voters rightly sense that financial reform doesn't address the problem of "too big to fail." The Volcker rule, which tried to force banks to give up propriety trading (i.e., gambling), was amended to allow banks to invest up to 3 percent of their assets in hedge funds. With leverage, that's more than \$1 trillion in potential exposure. So when the next crisis comes, the government will still be backstopping a gigantic casino, the very outcome Volcker told me last year that he was trying to avoid.

When Obama says the bill means "No more taxpayer-funded bailouts-period," he lessens his credibility. It's true that the new "resolution authority" is a big advance in giving Washington the tools it needs to avert a depression. But winding down the AIGs and Lehmans of the future isn't free. It's just free of meddling from Congress. The Fed will use guarantees and other instruments to create the funds out of thin air, as it did last year.

The bill's creation of a Consumer Financial Protection Bureau is a big step forward. But it requires a kick-ass director like Elizabeth Warren, who has carved out a reputation as a fierce consumer advocate. Some Democrats prefer a more easily confirmable nominee who knows the scams from the inside, like Wall Street veteran and former SEC chairman William Donaldson. But Donaldson, like other SEC chairs, missed Bernie Madoff. And Obama should welcome a big Senate fight over Warren.

Above all, the Obama team needs to get creative. Remember when Al Gore smashed an ashtray on David Letterman's show in 1993 to draw attention to the Clinton-Gore "reinventing government" initiative? Well, maybe Joe Biden could use a Magic Marker to cross out impenetrable loan and credit-card fine print on TV. (You get the idea.) In his speech after the vote last week, Obama once again failed to use vivid metaphors or turns of phrase to imprint the plan on the public consciousness. "But the crisis came" (an echo of "And the war came," from Lincoln's second inaugural) doesn't cut it. So far, Obama has uttered only one memorable political line this year, and it was a good one: "After they [Republicans] drove the car into the ditch, now they want the keys back. No!" If he repeats it 50 times between now and Election Day, maybe the dissonance will dissipate.

Jonathan Alter is also the author of *The Promise: President Obama, Year One* and *The Defining Moment: FDR's Hundred Days and the Triumph of Hope*.

## **Judge A Presidency By Its Crises Avoided (TIME)**

By Nancy Gibbs

[Time](#), July 19, 2010

I don't think I'd want to visit, much less live in, the parallel universe that hosts a President. That's the universe where if he makes the wrong call on fiscal policy, a million more people lose their jobs, or the wrong judgment about an enemy, and thousands lose their lives. Presidents rise or fall according to how they handle a crisis - an invasion, a depression, a massive oil spill - but they seldom get credit for the crisis they prevent, especially since they can't prove it would have happened in the first place. As Barack Obama weighs his options in Afghanistan or where and how hard to shock the economy in hopes of finding a pulse, as he watches poll numbers slip and confidence slide and 7 in 10 people say his

economic rescue attempt has made no difference, there's a shadow President over in the alternative reality who is wondering, Just where would we be now had I not administered CPR when I walked in the door?

Scratch a President's skin and you'll find someone who is nearly as proud of what doesn't happen as what does. Sometimes the biggest part of the job is foreseeing and forestalling, or keeping bad things from being worse; not much in the way of credit for that, but a lot of time spent and sleep lost. When the weight of office is finally off their shoulders, this is often what former Presidents remember. Though eternally popular personally, Eisenhower endured the condescension of some in even his party who dismissed him as the custodial President of a sedated country. He knew otherwise: knew how many times in the course of his two terms his advisers urged him to dispatch the Marines, whether to Vietnam, Suez, Hungary, Quemoy and Matsu - advice he resolutely resisted in his hunt for a better way. "The United States never lost a soldier or a foot of ground in my Administration," he argued in retirement. "We kept the peace. People asked how it happened. By God, it didn't just happen, I'll tell you that." (See pictures of Obama's first year in the White House.)

In a President's parallel universe, even normal calculations collapse under pressure. Risk is supposed to equal probability times consequences. Do I dare leave home without an umbrella? There's a less than even chance it will rain, the umbrella is heavy, it doesn't really matter if I end up getting wet, so I leave it at home. But now imagine you are in the White House, weighing the risk of confronting your enemy over Cuba or Vietnam, wondering if that would unleash a nuclear holocaust that would mean the end of civilization as we know it. Now the math goes out the window: no risk could be worth an infinitely bad outcome. But Presidents can't think that way, or they would be held hostage by fear. So they have to pick their way toward solutions, commuting back and forth to the alternative reality where they glimpse what could happen if things don't go as planned. (Comment on this story.)

Thus did Lyndon Johnson, retired to his ranch in Texas, brush back his aide and later biographer Doris Kearns Goodwin when she suggested there might have been some other road to peace in Southeast Asia. "I will not let you take me backward in time in Vietnam," he growled. "Fifty thousand American boys are dead. Nothing we can say will change that fact. Your idea that I could have chosen otherwise rests upon complete ignorance. For if I had chosen otherwise, I would have been responsible for starting World War III." He knew the price he was paying, personally and politically, including the cost to the Great Society vision he cherished. "Do you know what it's like to feel responsible for the deaths of men you love? Well, all that horror was acceptable if it prevented the far worse horror of World War III. For that would have meant the end of everything we know." (See if Obama's immigration push is hurting Democrats.)

Every President lives with his own version of this. Gerald Ford's aides sat mute as he explained his plan to pardon Richard Nixon and spare the country prolonged agony. "The President's logic was unassailable," one adviser recalled, "yet I felt as if I was watching someone commit hara-kiri." George W. Bush lives with the legacy of Abu Ghraib and waterboarding and the costs of making "hard calls" but left office able to say, we were not successfully attacked a second time on my watch, and who in the fall of 2001 would have predicted that?

This may be one reason Bush has said many times that President Obama "deserves my silence." Every President will have his critics, but in the modern age, they seldom include his predecessors. All Presidents are fellow travelers in the parallel universe, where the terrain of regret looks very different and where there is hardly ever such thing as a perfect outcome.

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## **An Attack On Iran: Back On The Table (TIME)**

By Joe Klein

[Time](#), July 16, 2010

In late 2006, George W. Bush met with the Joint Chiefs of Staff at the Pentagon and asked if military action against Iran's nuclear program was feasible. The unanimous answer was no. Air strikes could take out some of Iran's nuclear facilities, but there was no way to eliminate all of them. Some of the nuclear labs were located in heavily populated areas; others were deep underground. And Iran's ability to strike back by unconventional means, especially through its Hizballah terrorist network, was formidable. The military option was never officially taken off the table. At least, that's what U.S. officials always said. But the emphasis was on the implausibility of a military strike. "Another war in the Middle East is the last thing we need," Secretary of Defense Robert Gates wrote in 2008. It would be "disastrous on a number of levels."

Gates is sounding more belligerent these days. "I don't think we're prepared to even talk about containing a nuclear Iran," he told Fox News on June 20. "We do not accept the idea of Iran having nuclear weapons." In fact, Gates was reflecting a new reality in the military and intelligence communities. Diplomacy and economic pressure remain the preferred means to force Iran to negotiate a nuclear deal, but there isn't much hope that's going to happen. "Will [sanctions] deter them from their ambitions with regards to nuclear capability?" CIA Director Leon Panetta told ABC News on June 27. "Probably not." So the military option is very much back on the table.

What has changed? "I started to rethink this last November," a recently retired U.S. official with extensive knowledge of the issue told me. "We offered the Iranians a really generous deal, which their negotiators accepted," he went on, referring to the offer to exchange Iran's 1.2 tons of low-enriched uranium (3.5% pure) for higher-enriched (20%) uranium for medical research and use. "When the leadership shot that down, I began to think, Well, we made the good-faith effort to engage. What do we do now?"

Other intelligence sources say that the U.S. Army's Central Command, which is in charge of organizing military operations in the Middle East, has made some real progress in planning targeted air strikes - aided, in large part, by the vastly improved human-intelligence operations in the region. "There really wasn't a military option a year ago," an Israeli military source told me. "But they've gotten serious about the planning, and the option is real now." Israel has been brought into the planning process, I'm told, because U.S. officials are frightened by the possibility that the right-wing Netanyahu government might go rogue and try to whack the Iranians on its own.

One other factor has brought the military option to a low boil: Iran's Sunni neighbors really want the U.S. to do it. When United Arab Emirates Ambassador Yousef al-Otaiba said on July 6 that he favored a military strike against Iran despite the economic and military consequences to his country, he was reflecting an increasingly adamant attitude in the region. Senior American officials who travel to the Gulf frequently say the Saudis, in particular, raise the issue with surprising ardor. Everyone from the Turks to the Egyptians to the Jordanians are threatening to go nuclear if Iran does. That is seen as a real problem in the most volatile region in the world: What happens, for example, if Saudi Arabia gets a bomb, and the deathless monarchy there is overthrown by Islamist radicals?

For the moment, the White House remains as skeptical as ever about a military strike. Most senior military leaders also believe Gates got it right the first time - even a targeted attack on Iran would be "disastrous on a number of levels." It would unify the Iranian people against the latest in a long series of foreign interventions. It would also unify much of the world - including countries like Russia and China that we've worked hard to cultivate - against a recowboyfied U.S. There would certainly be an Iranian reaction - in Iraq, in Afghanistan, by Lebanese Hizballah against Israel and by the Hizballah network against the U.S. and Saudi homelands. A catastrophic regional war is not impossible.

Of course, it is also possible that this low-key saber-rattling is simply a message the U.S. is trying to send the Iranians: it's time to deal. There have been rumblings from Tehran about resuming negotiations, although the regime has very little credibility right now. The assumption - shared even by some of Iran's former friends, like the Russians - is that any Iranian offer to talk is really an offer to stall. A specific, plausible Iranian concession may be needed to get the process back on track. But it is also possible that the saber-rattling is not a bluff, that the U.S. really won't tolerate a nuclear Iran and is prepared to do something awful to stop it.

## Iran Closes Shop (NSWK)

By Maziar Bahari

[Newsweek](#), July 19, 2010

Iran's president Mahmoud Ahmadinejad may have hoped to close his yawning deficit-and advance other goals-with a big tax increase on the merchants and shopkeepers in the country's bazaars. But the bazaaris declared a strike for only the second time since they helped bring down the shah in 1979. (The first time was in 2008, when Ahmadinejad made another attempt to raise their taxes.) Within three days the tax boost dropped from 70 percent to 15 percent.

Someone must have told the government to back off-and "someone" would be Ahmadinejad's patron, Ayatollah Ali Khamenei. His fellow religious leaders rely on devout Shia bazaaris who give one fifth of their disposable income to the clergy. It was the merchants and shopkeepers who funded Ayatollah Ruhollah Khomeini's triumphant return from exile. Now the bazaaris are convinced that Ahmadinejad and his pals in the Revolutionary Guard Corps want to take over their business. The ayatollahs are worried that their source of funding will be cut. That's the last thing the Supreme Leader wants; he's been fending off a clerical revolt ever since Ahmadinejad's disputed reelection a year ago.

## No Place Like Iran (NSWK)

By Mark Hosenball

[Newsweek](#), July 18, 2010

Until he flew home to Iran last week, claiming to have been kidnapped and tortured by American agents, Shahram Amiri was a client of the CIA's National Resettlement Operations Center (NROC). That experience may not have improved his attitude toward America. The NROC, an office in the agency's National Clandestine Service, is supposed to keep foreign defectors as happy and comfortable as possible-a frequently thankless task, since they tend to be a stressed-out lot. What makes the center's task even tougher is that it's widely dismissed by high-flying CIA officers as little more than baby-sitting emotionally fragile foreigners. Former intelligence officials say the NROC's ranks are often populated by retirees, contractors, and spies who have seen better days.

For the record, national-security officials emphatically deny the Iranian's allegations. "Amiri wasn't kidnapped and he wasn't coerced," insisted one U.S. official familiar with Amiri's case, asking not to be named discussing sensitive information. No one is saying why the alleged nuclear researcher left his wife and child behind when he vanished while on pilgrimage in Saudi Arabia a year ago, only to reappear in America months later. But an Iranian official, requesting anonymity for obvious reasons, says Amiri's family was warned that they would suffer unless he went home-and last week he made a very public redefection back to Iran. "He chose a stupid way to do it, lying about what happened to him here to try to build up his credibility back home," the American official says.

To put Amiri on trial for spilling nuclear secrets would be to admit that Iran has a nuclear program. Still, his best hope of protecting himself and his family against reprisals-perhaps death-may well be to attract as much publicity as possible



with allegations of CIA mistreatment. "His safety depends on him sticking to that fairy tale about pressure and torture," the U.S. official said. "His challenge is to try to convince the Iranian security forces that he never cooperated with the United States. It's a tall order. He's gambling on them being dumb."

But officials in Washington aren't helping Amiri's odds. They confirm that he began supplying information to U.S. intelligence even before he was brought to America a year ago. Another American official (also asking for anonymity) says Amiri may well have been a significant source for a controversial 2007 U.S. National Intelligence Estimate saying Iran had quit working on nuclear weapons in 2003. An update to that assessment, also likely to rely on Amiri's input, is expected to say Iran has resumed research on designing nuclear bombs, but hasn't made a final decision to build them. Although the Iranian official tells NEWSWEEK that Amiri oversold himself to the CIA, the agency checked out his information and began paying compensation to him to the eventual tune of \$5 million. But Amiri left it all behind to go home. "Anything he got is now beyond his reach, thanks to the financial sanctions on Iran," says one of the U.S. officials. "He's gone, but the money's still here."

With Maziar Bahari

### **David Cameron: Here Comes The Junior Partner (TIME)**

By Catherine Mayer

[Time](#), July 17, 2010

Britons - disinclined to trust their politicians farther than they can throw them - are beginning to realize that their new Prime Minister is a man of his word. David Cameron's austerity program is every bit as beastly as he promised. Before May's general election, Cameron warned the voters of "economic pain" in the shape of swift and eye-watering cuts to Britain's public expenditure. He made good on that pledge a mere 42 days after taking office, proposing to cut spending by £30 billion (\$45.5 billion) a year, freeze public-sector pay, hack back the welfare bill and increase value-added tax on all but essential goods and services. As controversy roils and amid threats of strikes by public-sector workers, who would blame Cameron if he extended his forthcoming two-day jaunt to the U.S. by a week, perhaps two?

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### **How Legal Pot Could Harm The Cartels (NSWK)**

By R. M. Schneiderman

[Newsweek](#), July 18, 2010

So far, no modern country has ever legalized marijuana production-not even the Netherlands. Yet with heavy drug-related violence plaguing the U.S.-Mexican border, some analysts and policymakers now say that America should legalize weed in order to reduce the power of Mexico's drug cartels.

Marijuana carries the least amount of overhead cost for many of the cartels and provides some of their cash flow for buying guns and influence. Estimates vary, but analysts say pot accounts for somewhere in the range of 20 to 50 percent of the cartels' profits. But that could soon change with competition from El Norte: California has a proposition set for the November ballot-on which voters are roughly split-that would legalize the drug's domestic production and sale. If the measure passes, says a recent analysis by the RAND Corporation, California could become a major supplier of the drug to the rest of the U.S. That, according to George W. Grayson, a professor of government at William & Mary, "would hurt the cartels badly." RAND estimates that it could reduce the drug's pretax price by more than 80 percent.

Of course, whether legalization has any real effect depends on the rate at which the drug is taxed. A tax rate of \$50 per ounce, for example, would generally not make high-grade California cannabis cost-competitive with less potent Mexican imports. Yet a lower tax rate could significantly decrease the cartels' market share. That wouldn't put them out of business-they'd still be major players in the markets for cocaine, heroin, and meth-but it could reduce their power.

## Oil's Shame In Africa (NSWK)

### **In Nigeria, spills are weekly events.**

By Julia Baird

[Newsweek](#), July 19, 2010

It was hard to believe BP when it announced oil had stopped gushing into the Gulf of Mexico on Thursday, July 15. It had taken 87 days. There was relief but little jubilation: it will take many years to clean the shores and the birds, and for the sea to begin to repair itself from the onslaught of poisonous oil. Surely we can no longer call it a "spill"-it seems too light and trite a word.

What's even more troubling is that in Nigeria, the country that has arguably suffered most from oil drilling, oil "accidents"-large and small-occur almost weekly, and we hear little about it. A lethal combination of sloppiness, corruption, weak regulation, and lack of accountability has meant that each year since the 1960s, there has been a spill the size of the Exxon Valdez's into the Niger Delta. Large purple slicks cover once fertile fields, and rivers are clogged with oil leaked decades ago. It has been called the "black tide": a stain of thick, gooey oil that has oozed over vast tracts of land and poisoned the air for millions of Africans. In some areas fish and birds have disappeared: the swamps are silent.

Americans consume a quarter of the world's oil-and 10 percent of the oil we consume comes from Nigeria. Why are we not worried and angry about this? Or at least demanding global accountability from companies we support? Especially now that we can see how destructive it is for those who depend on the sea for their livelihood, how foul the impact is, and how devastating the results of poor decisions and ill-equipped response teams are.

Many Nigerians watched, amazed, as Americans berated BP for the Deepwater Horizon spill, then saw progress: our president visited the site and demanded immediate action and compensation. Not so in Africa. According to a group of independent experts, between 9 million and 13 million barrels of oil have been spilled in the Niger Delta since drilling began in 1958. Cleanups have been halfhearted, and compensation has been paltry. The Nigerian government estimates that 7,000 "spills," large and small, occurred between 1970 and 2000. Locals complain of sore eyes, breathing problems, and lesions on their skin. It's sickening stuff: a 2009 Amnesty International report found many have lost basic human rights-health, access to food, clean water, and an ability to work. Today about 2,000 oil-polluted sites still need cleaning up.

There are many reasons this has occurred: sabotage, faulty equipment, corroded infrastructure. The regulations are weak, rarely enforced, and there are few punitive measures to ensure that spills are managed, monitored, and cleaned up. The oil companies are, effectively, asked to self-regulate. The new Nigerian president, aptly named Goodluck Jonathan, has promised to hold them accountable, but the regulatory agencies are toothless, weakened by decades of rule by corrupt dictators who acted in concert with oil companies and siphoned off much of the oil wealth (80 percent of the state's revenue comes from oil). The money that has come from oil drilling in Nigeria-\$600 billion so far-has gone to very few; most Nigerians live in extreme poverty.

So this has been happening, in Africa, for decades, as our motors purr and air conditioners hum, and we have barely blinked. As Prof. Rebecca Bratspies from CUNY School of Law says, "Problems associated with oil production are usually invisible to those of us who consume vast quantities. We don't see how dirty it is. [The gulf] is a more extreme version of

daily events in Nigeria, where the oil companies have had a complete and total disregard for the environmental implications of their actions."

Obama asked that \$20 billion be set aside to cover cleanup costs in the gulf. Will it be enough? How much would companies like Shell and ExxonMobil have to pay if Africa were well regulated and proper compensation demanded for the loss of livelihoods, illness, and damage to the environment?

This is the perfect time to assess oil-industry practices. America should lead a push to ensure global scrutiny and monitoring of oil drilling, on- and offshore. It's messy and will never be entirely safe, but why should we accept different standards for countries with less money and clout? Global companies should develop adequate global response and compensation mechanisms.

One simple but clever idea from Bratspies is that we, through worldwide coordination, ensure that oil companies cannot drill unless they have the proven technology and capacity to respond to leaks, saboteurs, and explosions. If we made it a requirement, it would lead to a "tremendous spur in innovation in clean-up technology." That's something every country would benefit from, rich or poor.

Julia Baird is a Deputy Editor of Newsweek. Follow her on Twitter at <http://twitter.com/bairdnewsweek>.

## **Ignore The Kashmir Hawks (NSWK)**

**Singh can make peace in the valley.**

By Jeremy Kahn

[Newsweek](#), July 18, 2010

The Kashmir valley has been convulsed by a series of violent protests since June. Demon-strations that began over alleged extra-judicial killings by Indian security forces quickly spiraled out of control, claiming at least 15 civilian lives-with each new death leading to another round of protest marches and more deaths as paramilitary police met rock-hurling demonstrators with tear gas, rubber bullets, and live ammunition. To break the cycle, the Indian Army has been deployed on the streets of Srinagar, the summer capital of the state of Jammu and Kashmir, for the first time in 15 years. Officials imposed a 24-hour curfew in parts of the city and in several smaller towns where demonstrations took place, and banned public gatherings of more than four people.

The civil unrest threatens the gains that have been made in Kashmir. Over the last few years, the insurgency that sought to wrest Kashmir from Indian control appeared to be petering out. Pakistani-based terrorist groups such as Lashkar-e-Taiba (LeT) continued to send militants across the border to attack Indian troops in Kashmir, but increasingly they were killed before inflicting much damage. Fewer and fewer local Kashmiris joined the fight. The number of violent incidents dropped below 500 in 2009, the lowest level in the history of the conflict, according to Indian government statistics. Tourists returned to the region in record numbers. And in June, New Delhi resumed peace talks with Islamabad, raising hopes that their dispute over Kashmir might soon be settled.

For Indian Prime Minister Manmohan Singh, the spate of violence presents a difficult challenge. He needs to resist hawks in his government, like his home minister, P. Chidambaram, who justify the heavy-handed tactics of the security forces by conflating the recent protests with the long-running insurgency and accusing, without much evidence, Pakistan and LeT of orchestrating the demonstrations. Instead, Singh should recognize this protest movement for what it is: an expression of pent-up anger and frustration by young Kashmiris who feel alienated from the rest of India. They are frustrated with the lack of economic opportunity in the state, and they are fed up with living like an occupied people:

hundreds of thousands of Indian soldiers and police are stationed in Kashmir, their presence visible throughout the valley. These security forces have been granted legal immunity, a situation that has only invited abuses.

What's more, Kashmiris fret they are being treated as pawns by both New Delhi and Islamabad, which have negotiated over Kashmir's fate without any substantive input from the Kashmiris themselves. Young men participating in the demonstrations say they want an independent Kashmir. But this is largely because, in their experience, the Indian state has offered little but repression. It is up to New Delhi to change this perception.

With a few important gestures, Singh could defuse some of the anger on the streets and buy important support for a lasting peace with Pakistan. First, Singh should repeal the Armed Forces Special Powers Act, the law that gives Indian troops in Kashmir carte blanche to use deadly force and make warrantless arrests and searches. New Delhi should also move to prosecute members of the security forces implicated in extrajudicial killings. Singh has repeatedly promised "zero tolerance for human-rights abuses." But that pledge has yet to be backed by concrete action.

Singh should also reach out again to the All Parties Hurriyat Conference, the umbrella group of Kashmiri separatists. The Hurriyat, bowing to its hardline faction, has rejected Singh's previous offers of dialogue for two reasons: the continued extension of the Armed Forces Special Powers Act to Kashmir and the separatists' insistence that they have a seat at the table in negotiations between New Delhi and Islamabad on Kashmir's final status. Lifting the act, however, might provide enough political cover for moderates, such as Hurriyat leader Omar Farooq, to enter into talks.

In 2007 India and Pakistan were reportedly close to reaching a deal that would have frozen Kashmir's borders but allowed people and goods to flow freely across the Kashmir Valley. The teetering political authority of then-Pakistani president Pervez Musharraf, followed by the Mumbai terrorist attacks in November 2008, scuttled that possibility. The two sides may now be groping their way back toward a resolution. But unless Singh addresses the concerns of disaffected Kashmiris about human rights, economic development, and political autonomy, he may find he has brokered a historic peace without bringing peace to the valley.

Kahn is a NEWSWEEK contributor based in New Delhi.

## **Ozawa: 'The Destroyer' Is Back In The Fray (NSWK)**

By Takashi Yokota

[Newsweek](#), July 17, 2010

Just a month and a half into his term, Naoto Kan's tenure as Japan's prime minister appears to have an expiration date. Members of his Democratic Party of Japan are blaming Kan for losing control of the Upper House in the July 11 elections, and several DPJ politicians have called for him to step down. The party may well toss Kan out in September, when he faces reelection as its leader.

The man likely to be at the center of the overthrow? Ichiro Ozawa, the most powerful political operator in Tokyo. Ozawa, who commands the largest faction within the DPJ, certainly has an ax to grind with Kan. When the controversial politician stepped down in June to improve the party's chances, Kan installed an Ozawa rival as his replacement and said Ozawa should "stay quiet." Ozawa, for his part, is said to be furious with Kan's half-baked plan to raise taxes, which reversed DPJ campaign pledges and ultimately cost the party the election.

At the moment, the most plausible scenario is that Ozawa or one of his lieutenants will run against Kan to oust him. A more frightening outcome for the DPJ is that Ozawa and his underlings could bolt the party out of frustration. The chances of that happening are remote, but Ozawa is still known as "the destroyer" for founding and wrecking three parties in the

past two decades. Regardless of whether he goes or stays, Tokyo will now be preoccupied with political infighting rather than working to fix the nation's problems.