Calendar of Events
PUBLIC OBSERVING
Prairie Park Nature Center
SUNDAY—December 7
8:00 - 9:30 PM

MONTHLY MEETINGS
2001 Malott
7:30 PM

FRIDAY—DECEMBER 05
FILM—A Sidewalk Astronomer
HOLIDAY CELEBRATION
Door Prizes!

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Volume 34 Number 12
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Report from the Officers:
With the election now over, this edition includes a relatively long article looking at some of the issues facing President-elect Obama with regard to the future of NASA in an era of very tight budgets. It represents one perspective of many, but it does touch on the type of questions that will determine what happens in ground-based and space-based astronomy. As we close in on the annual end-of-year celebration - with door prizes and a DVD about John Dobson (see the review below), a quick summary of the last event. On Friday, Nov. 21, the Astronomy Associates of Lawrence held its annual Cub Scout Astronomy event at Wescoe Hall on the KU campus. About 281 scouts along with their parents attended the event. From 7 to 8 PM Rick Heschmeyer gave a presentation to the scouts in 3139 Wescoe. From 8 to 9 PM the scouts observed through a number of telescopes. Several members of the club brought telescopes ranging in aperture from 5 inches to 13 inches. Unfortunately, the weather did not cooperate. It was

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Of Local Interest—Review of A SIDEWALK ASTRONOMER
Dana Stevens - NY Times

A Stargazer Who Exhorts the World to Gaze With Him

"Come see the moon," John Dobson entreats passers-by on the streets of San Francisco as he encourages them to peer into his telescope in the opening frames of "A Sidewalk Astronomer." "Come see the moon!" With similarly passionate enthusiasm, this digital-video documentary, directed by Jeffrey Fox Jacobs invites viewers to pause for a moment and consider their place in the solar system, the galaxy and the universe.

Mr. Dobson is the inventor of the Dobsonian telescope mount, which revolutionized astronomy by making powerful and inexpensive telescopes available to amateur stargazers. At 89, he spends his days traveling from college lecture halls to astronomy clubs to a convention of telescope makers in Vermont, spreading his gospel of curiosity about the stars.

Mr. Dobson defines himself as a cosmologist rather than an astronomer, noting that he is interested not only in the stars but also in "the whole ball of wax." He is also a kind of spiritual teacher, having spent more than two decades as a monk in a Vedanta monastery of the Ramakrishna order in San Francisco before leaving to start the Sidewalk Astronomers, a worldwide group of hobbyists who build their own telescopes and congregate for "star parties."

Mr. Dobson has a gift for explaining scientific concepts in the form of wry

(Continued on page 2)
cloudy at first and then it cleared off for a little while. Half way through the observing the clouds came back. Dave Kolb had his 8-inch Criterion set up, with a Watec 120N integrating CCD camera, trained on M31. Large numbers of scouts were able to see M31 at the same time. Bill Winkler showed a few scouts how to locate Polaris and Rex Powell showed a number of scouts close up views of windows in the library. Many thanks to all of you who donated their time and/or expertise on a cold Nov. evening.

In addition to the meeting on Friday, Dec. 5 and the DVD on Dobson, the final public observing session of the year occurs Sunday, Dec. 7 at Prairie Park Nature Center. Please contact Rick Heschmeyer if you are planning on attending, with or without scope.

If anyone has any ideas, suggestions, or input on how we can make the club better, please contact Rick. Look forward to seeing everyone at the December Open House and/or the December meeting (2001 Malott—7:30 PM).

one-liners. Noting that our bodies contain the dust of exploded stars, he points to a photograph of a nebula, saying, "If you give this cloud another 10 billion years, it will go to school and chew gum." Mr. Dobson also holds some beliefs that are unconventional in the astronomy community. He rejects the Big Bang theory, for example, sneering: "You try to persuade some little kid that something came out of nothing. There's no way. He has to graduate from high school before he can possibly be stupid enough to think like that."

As Mr. Dobson philosophizes in voice-over, we see stunningly beautiful images of the planets, stars and galaxies he describes. Unfortunately, the film fails to make clear which of these images come directly from satellite or spacecraft photographs, and which have been enhanced by computer animation. But this quibble aside, "A Sidewalk Astronomer" is an inspiring film about an inspired teacher. It should leave all viewers with an ounce of curiosity eager to hit the streets with Dobsonian telescopes of their own.

(Continued from page 1)

Pace, meanwhile, said Obama could do much worse than asking Griffin to stay on. Such a move would not be unprecedented. Dan Goldin came in toward the tail end of the first President Bush’s term, served eight years under Clinton, and most of the current President Bush’s first year before Sean O’Keefe was drafted for the job.

“Personally, it would make sense to keep Mike Griffin on for a smooth transition while more immediate matters are dealt with,” said Pace, who worked for Griffin at NASA. "It might also make sense to keep him through the completion of the remaining shuttle flights given technical risks and challenges of each mission. Shuttle flight safety will likely remain the number one issue for any NASA administrator." Whether Griffin would be asked to stay given the number of other people said to be interested in the job this time around remains to be seen.

About the Astronomy Associates of Lawrence

The club is open to all people interested in sharing their love for astronomy. Monthly meetings are typically on the second Friday of each month and often feature guest speakers, presentations by club members, and a chance to exchange amateur astronomy tips. Approximately the last Sunday of each month we have an open house on Memorial Stadium. Periodic star parties are scheduled as well. For more information, please contact the club officers: Luis Vargas at lcvargas@ku.edu, Gary Webber at gwebber@ku.edu, our faculty advisor, Prof. Bruce Twarog at btwarog@ku.edu, our events coordinator, Rick Heschmeyer at rcjbm@sbcglobal.net. Because of the flexibility of the schedule due to holidays and alternate events, it is always best to check the Web site for the exact Fridays and Sundays when events are scheduled. The information about AAL can be found at http://www.ku.edu/~aal.

Copies of the Celestial Mechanic can also be found on the web at http://www.ku.edu/~aal/celestialmechanic.
from Earth.

Previous estimates of the galaxy's distance made with ground-based telescopes were unreliable because they looked at the galaxy's crowded core and were unable to resolve individual red giant stars. The Hubble study observed both the galaxy's cluttered core and its sparsely populated outer fringes. The sharpness of Hubble's Advanced Camera pinpointed individual red giants, which led to a precise distance to the galaxy. Astronomers measured the galaxy's distance at nearly 11 million light-years away, about 4 million light-years farther than the old distance.

"This was a serendipitous discovery," Aloisi said. "Hubble didn't go deep enough to see the faintest red giant stars we were hunting for because the galaxy is farther away than we thought. However, by capturing the entire population of the brightest red giant stars, we were able to calculate a precise distance to NGC 1569 and resolve the puzzle about the galaxy's extreme starburst activity."

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New Planet Discovered Orbiting Dangerously Close To Giant Star

A team of astronomers from Penn State and Nicolaus Copernicus University in Poland has discovered a new planet that is closely orbiting a red-giant star, HD 102272, which is much older than our own Sun. The planet has a mass that is nearly six times that of Jupiter, the largest planet in our solar system.

The team includes Alexander Wolszczan, the discoverer of the first planets ever found outside our solar system, who is an Evan Pugh Professor of Astronomy and Astrophysics and the director of the Center for Exoplanets and Habitable Worlds at Penn State; and Andrzej Niedzielski, who leads his collaborators in Poland. The team suspects that a second planet may be orbiting HD 102272, as well.

The findings, which will be published in a future issue of The Astrophysical Journal, shed light on the ways in which aging stars can influence nearby planets.

Scientists already know that stars expand as they age and that they eventually may gobble up adjacent planets. In fact, scientists expect our own planet to be swallowed up by the Sun in about a billion years. But what scientists don't yet understand fully is how aging stars influence nearby planets before they are destroyed. The team's newly discovered planet is interesting because it is located closer to a red-giant star than any other known planet.

"When red-giant stars expand, they tend to eat up the nearby planets," said Wolszczan. "Although the planet we discovered conceivably could be closer to the star without being harmed by it, there appears to be a zone of avoidance around such stars. Our discovery pushes it back to about 0.6 astronomical units, which is the size of the new planet's orbit. It is important to find out why planets don't want to get any closer to stars, so one of our next steps is to try to figure out why this zone of avoidance exists and whether it occurs around all red-giant stars."

The team used the Hobby-Eberly Telescope of McDonald Observatory in south-western Texas to make its discovery. Through the telescope, which is equipped with a precise spectrograph, the scientists observed a pattern of alternating shifts of spectral lines in the light coming from the star, which is located 1,200 light-years from the Earth in the constellation Leo. These tiny, alternating shifts represent the fingerprint of a star that is moving alternately toward and away from Earth as it wobbles in space responding to the gravitational pull of an orbiting planet.

Because of the Doppler effect, the light from the star becomes bluer as it moves toward the Earth and then redder as it recedes from it, which is reflected by the measured shifts of the spectral lines. The specific pattern of these shifts, which the research team observed, allowed the scientists to determine that one planet -- and possibly two planets -- orbit the star. If the second planet exists, the system would become the first multiplanet system discovered around a red-giant star.

Wolszczan said that he is particularly interested in applying to our own solar system the knowledge he gains about the effects of aging stars on planets orbiting other stars. "Our own Sun one day will become a red giant and it is interesting to think about what will happen to the outer planets of our solar system as the Sun expands," he said. "For example, Europa, one of Jupiter's moons, is covered by ice, but if it were to exist closer to the Sun, it might become a warm ocean world that could possibly support life."

In 1992, Wolszczan became the first person to discover planets outside our solar system when he used the 1,000-foot Arecibo radiotelescope to detect three planets orbiting a rapidly spinning neutron star. The discovery opened the door to the current intense era of planet hunting by suggesting that planet formation could be quite common throughout the universe and that planets can form around different types of stellar objects.

The researchers received support from the Polish Ministry of Science and Higher Education, the NASA Astrobiology Program, the Foundation for Polish Science, and the Polish Academy of Sciences.
One year after Comet 17P/Holmes shocked onlookers by exploding in the night sky, researchers are beginning to understand what happened.

“We believe that a cavern full of ice, located as much as 100 meters beneath the crust of the comet’s nucleus, underwent a change of phase,” says Bill Reach of NASA’s Spitzer Science Center at the California Institute of Technology. “Amorphous ice turned into crystalline ice” and, in the transition, released enough heat to cause Holmes to blow its top.

Anyone watching the sky in October 2007 will remember how the comet brightened a million-fold to naked-eye visibility. It looked more like a planet than a comet—strangely spherical and utterly lacking a tail. By November 2007, the expanding dust cloud was larger than Jupiter itself, and people were noticing it from brightly-lit cities. Knowing that infrared telescopes are particularly sensitive to the warm glow of comet dust, Reach and colleague Jeremie Vaubaillon, also of Caltech, applied for observing time on the Spitzer Space Telescope—and they got it. “We used Spitzer to observe Comet Holmes in November and again in February and March 2008,” says Reach.

The infrared glow of the expanding dust cloud told the investigators how much mass was involved and how fast the material was moving. “The energy of the blast was about $10^{14}$ joules and the total mass was of order $10^{10}$ kg.” In other words, Holmes exploded like 24 kilotons of TNT and ejected 10 million metric tons of dust and gas into space. These astonishing numbers are best explained by a subterranean cavern of phase-changing ice, Reach believes. “The mass and energy are in the right ballpark,” he says, and it also explains why Comet Holmes is a “repeat exploder.”

Another explosion was observed in 1892. It was a lesser blast than the 2007 event, but enough to attract the attention of American astronomer Edwin Holmes, who discovered the comet when it suddenly brightened. Two explosions (1892, 2007) would require two caverns. That’s no problem because comets are notoriously porous and lumpy. In fact, there are probably more than two caverns, which would mean Comet Holmes is poised to explode again.

When?

“The astronomer who can answer that question will be famous!” laughs Vaubaillon.

“No one knows what triggered the phase change,” says Reach. He speculates that maybe a comet-quake sent seismic waves echoing through the comet’s caverns, compressing the ice and changing its form. Or a meteoroid might have penetrated the comet’s crust and set events in motion that way. “It’s still a mystery.”

But not as much as it used to be.

See more Spitzer images of comets and other heavenly objects at www.spitzer.caltech.edu. Kids and grownups can challenge their spatial reasoning powers by solving Spitzer infrared “Slyder” puzzles at http://spaceplace.nasa.gov/en/kids/spitzer/slyder. This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.
Hubble Resolves Puzzle About Loner Starburst Galaxy
HST Press Release

Astronomers have long puzzled over why a small, nearby, isolated galaxy is pumping out new stars faster than any galaxy in our local neighborhood.

Now NASA's Hubble Space Telescope has helped astronomers solve the mystery of the loner starburst galaxy, called NGC 1569, by showing that it is one and a half times farther away than astronomers thought.

The extra distance places the galaxy in the middle of a group of about 10 galaxies centered on the spiral galaxy IC 342. Gravitational interactions among the group's galaxies may be compressing gas in NGC 1569 and igniting the star-birthing frenzy.

"Now the starburst activity seen in NGC 1569 makes sense, because the galaxy is probably interacting with other galaxies in the group," said the study's leader, Alessandra Aloisi of the Space Telescope Science Institute in Baltimore, Md., and the European Space Agency. "Those interactions are probably fueling the star birth."

The farther distance not only means that the galaxy is intrinsically brighter, but also that it is producing stars two times faster than first thought. The galaxy is forming stars at a rate more than 100 times higher than the rate in the Milky Way. This high star-formation rate has been almost continuous for the past 100 million years.

Discovered by William Herschel in 1788, NGC 1569 is home to three of the most massive star clusters ever discovered in the local universe. Each cluster contains more than a million stars.

"This is a prime example of the type of massive starbursts that drive the evolution of galaxies in the distant and young universe," said team member Roeland van der Marel of the Space Telescope Science Institute. "Starburst galaxies can only be studied in detail in the nearby universe, where they are much rarer. Hubble observations of our galactic neighborhood, including this study, are helping astronomers put together a complete picture of the galaxies in our local universe. Put the puzzle pieces in the right place, as for NGC 1569, and the picture makes much more sense."

Aloisi and her team actually discovered the new distance by accident. They were using Hubble's Advanced Camera for Surveys to hunt in NGC 1569 for the kind of red giant stars (stars near the ends of their lives) that shine because of fusion of helium nuclei in their cores. These stars are dimmer than bright red giants without helium burning, but when detected, they can be used to estimate the galaxy's age.

"When we found no obvious trace of them, we suspected that the galaxy was farther away than originally believed," said Aaron Grocholski of the Space Telescope Science Institute and the lead author on a paper describing the results. "We could only see the brightest red giant stars, but we were able to use these stars to recalibrate the galaxy's distance." Bright red giants are reliable "standard candles" for measuring distance because they all shine at the same brightness. Once astronomers know a star's true brightness, they can calculate its distance.

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2001 Malott Hall
University of Kansas
FREE AND
OPEN TO THE PUBLIC

FRIDAY
DECEMBER 05,
2008
7:30 PM

A SIDEWALK ASTRONOMER

FEATURING

JOHN DOBSON

A Film by Jeffrey Fox Jacoby
Black Holes Burp Big Bubbles
By Jeanna Bryner, Space.com

Like cosmic bubble makers, some black holes spew out behemoth blobs of hot gas into their home galaxies.

The bubbles ultimately pop, and their gassy contents keep both the black hole and its galaxy from ballooning to mega sizes, a new study finds. The results apply to elliptical galaxies and their supermassive black holes, which can weigh as much as a billion suns or more. Our galaxy, the Milky Way, is a spiral galaxy. And while it houses a supermassive black hole, the researchers say the same process might not apply to it.

The researchers focused on the supermassive black hole at the center of the elliptical galaxy M84, which is about 55 million light-years from Earth. (A light-year is the distance light will travel in a year, or about 6 trillion miles, or 10 trillion km.) They combined data collected by NASA's Chandra X-Ray Observatory and results from a black-hole computer simulation.

They noticed huge bubbles, or cavities, of hot plasma (ionized gas) rising up from the tips of the black hole's pair of laser-like jets. (As material falls into the gravitational clutches of a black hole, the energy can be spit out as jets of radiation and high-speed particles.) They estimate the bubbles are about 13,000 light-years across and they are launched from jets about every 10 million years.

The X-ray images showed that, like Russian dolls, each bubble has a smaller bubble tucked inside of it and so on. When the outer bubble bursts, spilling its gaseous guts, there's another inside waiting to pop as well. That continuous bubble-popping provides a constant input of heat into the surrounding interstellar gas.

"We think certain instabilities are formed on the interface between the bubble and the surrounding medium and these instabilities shred and puncture this bubble, and the stuff that is inside them, this hot plasma, is spilling out and mixing with the surrounding gas," said researcher Mateusz Ruszkowski, an astronomer at the University of Michigan.

The jolts of heat stem the food supply to the central black hole and slow down star formation nearby. Over time, black holes grow in heft as their gravity pulls in surrounding gases. Because cool gas is denser, it sinks to the center of galaxies — and toward the black hole — faster. If the gas around the black hole is kept warm, it sinks toward the black hole at a slower rate.

"In this way, you can feed the black hole and add more and more mass to it," Ruszkowski told SPACE.com. "If there's no mechanism to prevent the cooling that is essentially triggering this feeding process then the black hole would grow in an uncontrollable fashion."

But, he added, "nobody in the field thinks this is happening," he said. The new results, which are detailed in the Oct. 20 issue of Astrophysical Journal, reveal a mechanism for continuous heating of the interstellar material, he said.

A similar mechanism keeps star formation in check and in turn the mass of the home galaxy. Stars are thought to form as dense clouds of gas and dust collapse under their gravity. Over time, the material heats up and ultimately the tight bundle becomes a full-fledged star powered by thermonuclear fusion of hydrogen and other light elements in its core. The cooler the material, the more likely the clumps of gas and dust will succumb to the force of gravity and collapse into luminous stars.

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Space Shock Waves May Help Create Planets

United Press International

Data from the U.S. space agency's Spitzer Space Telescope suggests shock waves around dusty, young stars might be creating raw materials for planets. National Aeronautics and Space Administration scientists said the evidence comes in the form of tiny crystals called cristobalite and tridymite that are known to reside in comets, in volcanic lava flows on Earth and in some meteorites that land on Earth. Astronomers already knew crystallized dust grains stick together to form larger particles, which later lump together to form planets. But what they found surprising about the discovery is that those particular crystals require flash heating events, such as shock waves, to form.

NASA said the finding suggests the same kinds of shock waves that cause sonic booms from jets are responsible for creating the stuff of planets throughout the universe. "By studying these other star systems, we can learn about the very beginnings of our own planets 4.6 billion years ago," said William Forrest of the University of Rochester. "Spitzer has given us a better idea of how the raw materials of planets are produced very early on."
pares to take the oath of office Jan. 20.

Among those urging the president-elect not to lose sight of the challenges NASA faces includes the usual array of space advocacy groups and the nonpartisan investigative arm of Congress, the U.S. Government Accountability Office. The GAO identified shuttle retirement Nov. 6 as one of the "13 urgent issues". Obama and Congress face during the transition and first year of his administration.

"The administration needs to move quickly to nominate and fill key leadership positions within NASA because the decision on whether to retire or continue operating the space shuttle will need to be made soon," the GAO urged in a special section of its Web site devoted to the presidential transition. The GAO estimated that the cost of keeping shuttle flying past 2010 will be $2.5 billion to $4 billion and warns that it likely would be a "logistically difficult" undertaking since it would require restarting productions lines and recertifying suppliers and possibly the shuttles themselves. "On the other hand, the new administration may well decide to extend the shuttle and defer development of new transportation vehicles in light of budgetary constraints, as the new vehicles are expected to cost more than $230 billion to develop and deploy," the GAO wrote.

Scott Pace, the executive director of the Space Policy Institute at George Washington University and one of the leaders of the Bush-Cheney transition team for NASA, said space advocates would be wise to think in terms of how space can support Obama's agenda, not the other way around.

"The first question is not what will Obama do for space, but how can space contribute to the priorities of an Obama administration," Pace said. "In this regard, there are reasons for optimism on substance and reasons for caution with regard to ability to implement given many external constraints."

Pace said he could see the Obama administration using the space program, combined with international cooperation and additional funding, to enhance the U.S. image abroad, improve the nation's economic competitiveness through innovation, and help improve national infrastructure, namely through NASA's role in modernizing air traffic management. He said any such efforts, however, would be challenged by "already tight pressure" on all discretionary spending and the United States' aging science and technology workforce.

Despite these realities, Pace, who held a senior NASA post before returning to academia this year, said he would like to see Obama give NASA an additional $2 billion per year to make up for what it lost since Bush set a course for the moon in the wake of the 2003 Space Shuttle Columbia accident. Bill Adkins, a Washington aerospace consultant who worked on space policy in the U.S. House of Representatives and Senate, said Obama probably could get an extra $2 billion from Congress for NASA if he asks for it.

"I think there will be a premium on the new Congress and the new president to show they can govern and not start off bickering about issues," Adkins said. "If Obama actually puts the $2 billion in [his budget request] that he promised in his campaign, I think Congress is likely to go along with it because it's not big enough to have a fight over. If Obama doesn't, I don't see the mood in Congress to add the money."

Other sources who follow NASA's prospects on Capitol Hill said Obama might be able to get an additional $2 billion for the space agency without having to make a formal budget request. Democrats are working on a $100 billion economic stimulus package that could be taken up this month and sent to Bush to be signed into law before the end of the year. Lawmakers also are talking about assembling a separate, possibly bigger stimulus package early next year after Obama takes office. Legislative strategists said NASA money plausibly could be added to one or both of the proposed bills.

Albrecht said personnel choices, along with top-level announcements and other action, will offer some of the earliest clues about Obama's direction on space. He said he will be watching to see whether Obama makes good on his commitment to re-establish a White House Space Council, how it is chartered and where it resides in the White House organization chart. "Next, I will look at appointments, especially to head the council and [the Defense Department] and eventually, NASA," Albrecht said. "I suspect that many of us will know these people, their styles, their agendas and their taste for change pretty well."

(Continued on page 2)
On Heels of Campaign Promises, Obama Faces Big NASA Decisions
By Brian Berger, Space News Staff Writer

As U.S. President-elect Barack Obama prepares to take office in January, he does so having offered more specifics about his plans for NASA than any U.S. presidential candidate in history.

First and foremost, Obama pledged during the closing months of the campaign to add $2 billion to the U.S. space agency's budget to narrow the gap between the space shuttle's retirement and the first flight of its successor.

The pledge, which he made for the first time in August and repeated in recent weeks as he and his Republican opponent Sen. John McCain of Arizona, courted Space Coast voters in the swing state of Florida, was a far cry from Obama's first public position on the U.S. space program.

Obama gave NASA's Orion and Ares contractors plenty of cause for concern in November 2007 when he proposed paying for an $18 billion education plan in part by "delaying the NASA Constellation Program or five years." By January, however, Obama's space policy had evolved. The campaign released a position paper pledging Obama's support for completing the International Space Station, retiring the space shuttle and replacing it with Orion and Ares sooner than later. The move put Obama's space policy in sync with the exploration blueprint unveiled four years earlier by President George Bush and subsequently endorsed by Congress.

Obama continued to hone his space policy over the course of the campaign, finally releasing, in August, a seven-page plan for "Advancing the Frontiers of Space Exploration" explicitly endorsing sending human missions to the Moon by 2020.

Obama's plan also called for "expedit[ing] the development of the shuttle's successor systems" without mentioning Ares or Orion by name; endorsed NASA's efforts to spur development of commercial space station resupply services and backed congressional efforts to add at least one additional shuttle flight to the remaining manifest. Obama also said he would re-establish a White House space council. The last such council last convened under the first President Bush.

The plan was released close on the heels of Russia's invasion of neighboring Georgia, an incident that helped highlight U.S. political concerns about NASA's request to keep buying Russian-built Soyuz spacecraft until Orion and Ares, or some commercial alternative, proved ready to take over crew transport duties to and from the space station.

McCain joined two other senators in calling on Bush to put shuttle retirement on hold - at least temporarily - in light of Russia's aggression; Obama wrote Congress to urge the same. But the Illinois senator also called on lawmakers to grant NASA the legislative relief it needed from the Iran, North Korea, Syria Nonproliferation Act (INKSNA) to keep buying Soyuz beyond 2011 to ensure uninterrupted access to the space station.

He then encouraged lawmakers to pay for the additional shuttle flight they were poised to authorize and his personal intervention got INKSNA relief moving again and earned him the personal thanks of NASA Administrator Mike Griffin.

"During the campaign [Obama] said many encouraging things and made important commitments about space," said Mark Albrecht, a former top aerospace executive who helped advise McCain on space issues. "Unfortunately, some of these commitments could potentially yield to other commitments made regarding new fiscal realities and timing."

Focus on the Economy

With the U.S. economy in the midst of its worst crisis since the Great Depression and an unpopular war in Iraq driving the nation deeper into debt, Obama's focus is on the economy and national security as he pre-