CALENDAR 2011

INTERNATIONAL | SPACE | STATION

National Aeronautics and Space Administration

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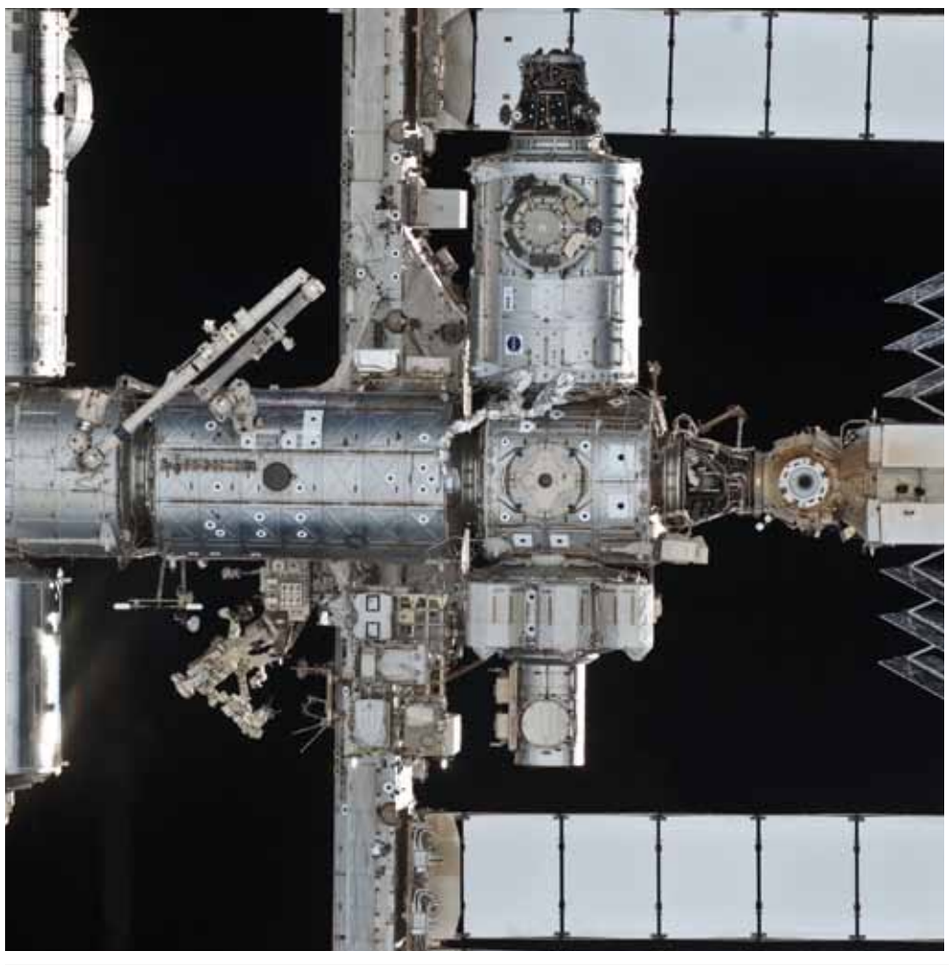


A MESSAGE FROM THE PROGRAM MANAGER

2011

The International Space Station (ISS) is one of the greatest technological, geopolitical and engineering accomplishments in human history. The completion of the ISS on-orbit assembly allows for a focus on the multifaceted purpose of the ISS, one of scientific research, technology development, exploration and education.

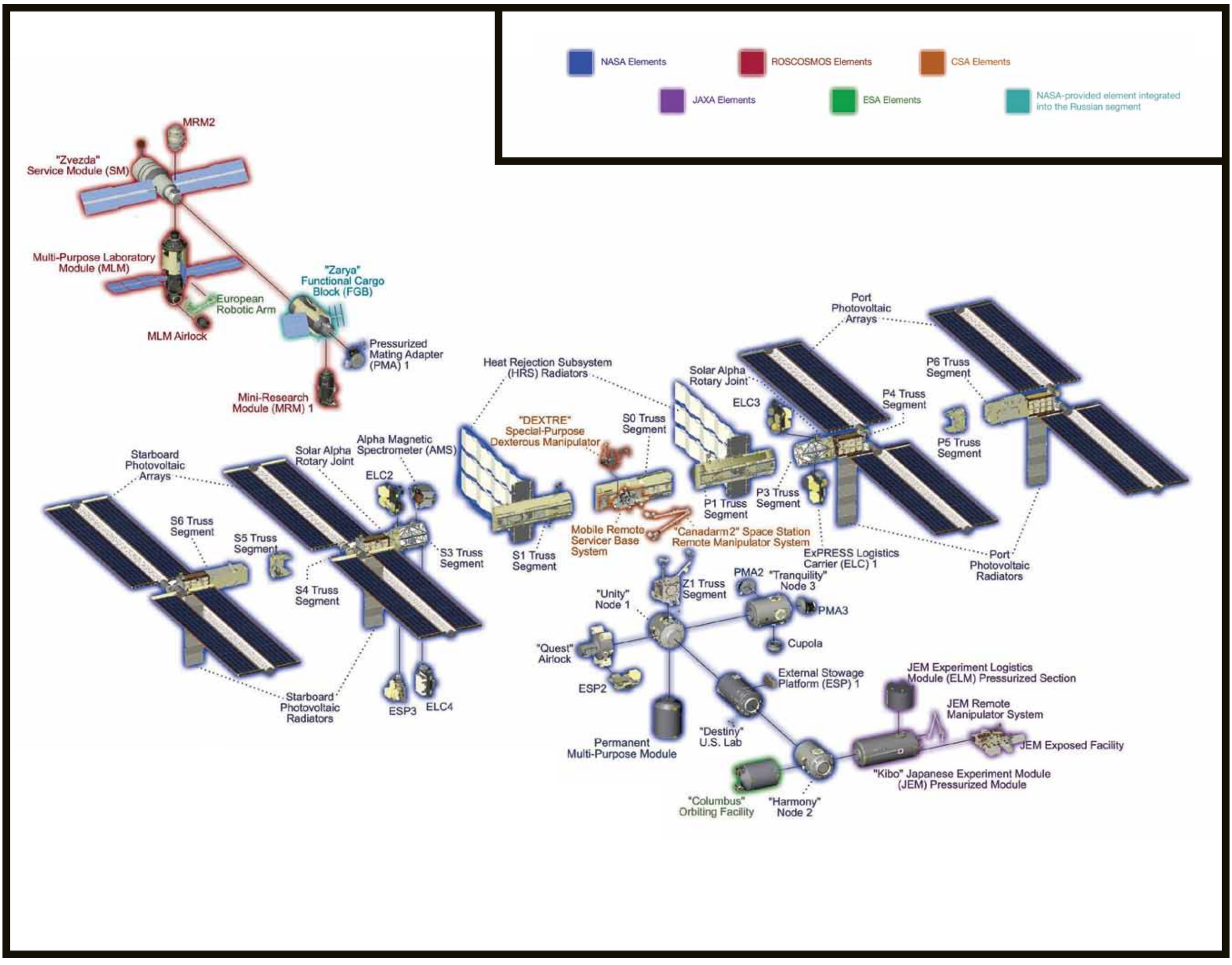
As a National Laboratory, the ISS will provide opportunities beyond NASA to academia, commercial entities and other government agencies to pursue their research and development needs in science, technology development and education. With everyone working together, we look forward to extending human presence beyond and improving life here on Earth.

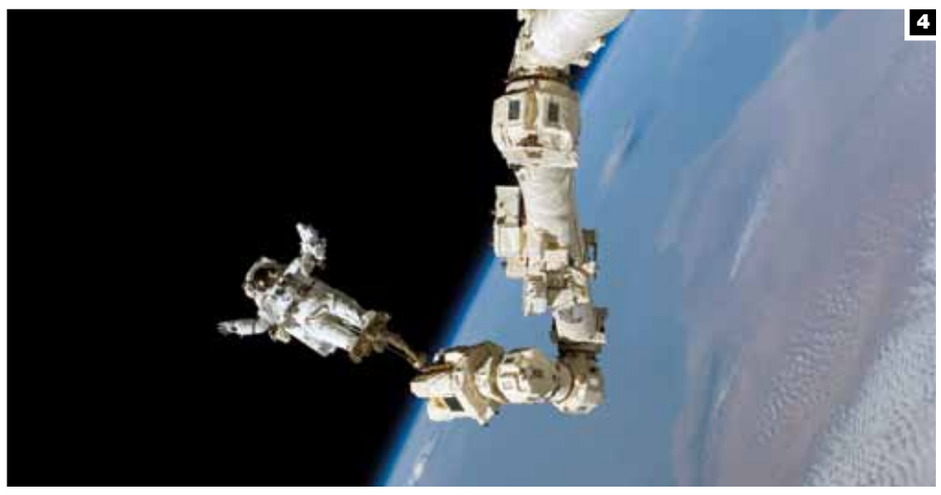
This calendar is designed to show all facets of the ISS using displays of astounding imagery and providing significant historical events with the hope of inspiring the next generation. NASA is appreciative of the commitment that America's educators demonstrate each and every day as they instruct and shape the young students who will be tomorrow's explorers and leaders. I hope you enjoy the calendar and are encouraged to learn new and exciting aspects about NASA and the ISS throughout the year.

Regards,

MICHAEL T. SUFFREDINI

ISS Program Manager





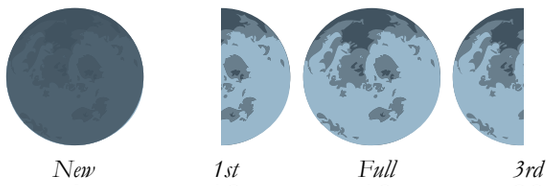
LOOK HOW FAR WE'VE COME

JANUARY 2011

NASA has powered us into the 21st century through signature accomplishments that are enduring icons of human achievement. Among these accomplishments are technological innovations and scientific discoveries that have improved and shaped our lives on Earth in myriad ways.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1 New Year's Day
2 **1959 –** Luna 1, first spacecraft to reach escape velocity and orbit the sun	3 **2004 –** Spirit lands on Mars	4	5	6	7	8
9	10	11	12 **1997 –** STS-81, Shuttle - *Mir*	13	14	15
16 **2003 –** STS-107, Inaugural Spacehab flight	17 Martin Luther King, Jr. Day	18	19	20	21	22 **1998 –** STS-89 Shuttle - *Mir*
23	24 **1958 –** Explorer 1, first U.S. satellite **1986 –** Voyager 2, first spacecraft to observe Uranus **2004 –** Opportunity lands on Mars	25 **1984 –** President Ronald Reagan announces U.S. plans to build a space station	26	27 **1967 –** Apollo 1 fire	28 **1986 –** STS-51L, Space Shuttle *Challenger* accident	29 **1998 –** Intergovernmental Agreement on Space Station Cooperation signed
30	31					

1 An overhead view of the Skylab space station cluster in Earth orbit as photographed from the Skylab 4 command and service modules (CSM) during the final fly-around by the CSM before returning home. **2** A view of the space station after the crew of STS-130 undocked. **3** Astronaut Edward White II, pilot on the Gemini-Titan 4 spaceflight, is shown during his egress from the spacecraft. White became the first American astronaut to walk in space. **4** Astronaut Steve Robinson, STS-114 mission specialist, anchored to a foot restraint on the station Canadarm2 during the mission's third spacewalk. **5** Astronaut Edwin Aldrin, Jr., lunar module pilot, walks on the surface of the moon during the Apollo 11 extravehicular activity. Astronaut Neil Armstrong, commander, took this photograph and can be seen in Aldrin's visor. **6** STS-130 Space Shuttle *Endeavour* after departure from the ISS. **7** The Gemini-3 spacecraft "Molly Brown" carrying astronauts Virgil Grissom, command pilot, and John Young, pilot, on the first crewed mission of Project Gemini. **8** A spectacular picture of a space shuttle night launch.



DECEMBER

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FEBRUARY

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VIEW FROM THE TOP

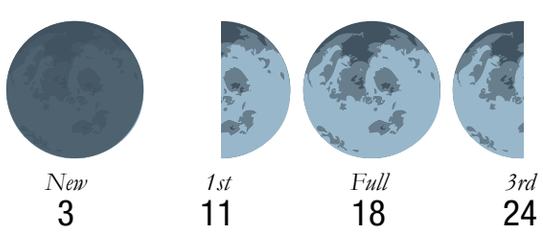
FEBRUARY

2011

For nearly a decade, crew members on board the space station have taken thousands of photos of the Earth below. From fiery volcanoes spewing smoke and lava to icy lakes and glaciers in the coldest environments of our planet, crews have given humankind views of these natural phenomena from one of the most unusual perspectives available.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1 **2003 –** STS-107, Space Shuttle *Columbia* accident	2	3 **1995 –** STS-63, Eileen Collins first female space shuttle pilot	4	5
6	7 **1984 –** STS-41B, first untethered spacewalks **2001 –** STS-98/5A, U.S.-Destiny Laboratory **2008 –** STS-122/1E, ESA-Columbus	8 **2010 –** STS-130/20A, U.S.-Tranquility Connecting Module and ESA-Cupola	9	10	11	12
13	14	15	16	17	18 **1977 –** Space Shuttle *Enterprise* first flight test	19
20 **1962 –** *Friendship 7*, John Glenn first American to orbit Earth	Presidents' Day 21	22	23	24	25	26 **1966 –** Apollo/Saturn 201, first flight of the Saturn 1B launch vehicle with an Apollo command and service module attached
27	28					

1 Photo of the Grand Canyon South Rim. The vertical drop is 7,000 feet plus the station's altitude of 200 nautical miles. **2** The mighty Brahmaputra River carves a narrow west-east valley between the Tibetan Plateau to the north and the Himalaya Mountains to the south as it rushes eastward for more than 932 miles in southwestern China. **3** Aurora Australis photo taken by an Expedition 23 crew member. **4** Japanese Aerospace Exploration Agency (JAXA) astronaut Soichi Noguchi takes Earth observation pictures from the Cupola. **5** Wide-angle view of Italy. **6** This image featuring Mt. Everest and Makalu was taken by an Expedition 8 crew member on the station.



JANUARY

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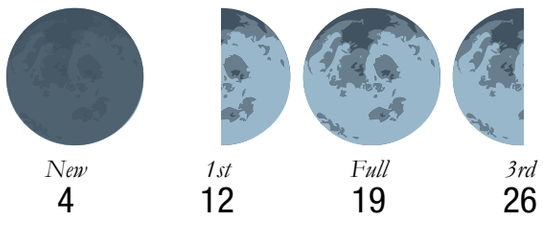
HOME AWAY FROM HOME

MARCH 2011

Living aboard the space station presents some unique challenges for the astronauts. Sleeping, eating and exercising are just as critical in space as they are on Earth, but all have to be done in an almost weightless environment. Astronauts have to strap in to sleep and/or take a jog. They also have to remember to attach their food to something when they are not holding it so it doesn't float away. While living in space takes a bit of adjusting, working to help improve life on Earth makes it all worthwhile.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2	3 **1959 –** Pioneer 4, first successful lunar mission by U.S. spacecraft **1969 –** Apollo 9, first crewed flight of the command and service module along with the lunar module	4	5
6	7	8 **2001 –** STS-102/5A.1, first MPLM flight and ESP-1; ISS Expedition 2, first crew rotation	9 **2008 –** First ESA Automated Transfer Vehicle	10	11 **2008 –** STS-123/1JA, JAXA-ELM-PS	12
13	14	15 **2009 –** STS-119/15A, S6 truss and solar arrays	16 **1926 –** First liquid-fueled rocket **1966 –** Gemini VIII, first docking of two spacecraft in orbit	17	18 **1965 –** Cosmonaut Alexei Leonov, first person to spacewalk	19
Spring Begins 20	21	22	23 **1965 –** Gemini III, first crewed mission of Project Gemini	24	25	26 **2009 –** ISS Expedition 19
27	28	29 **2006 –** ISS Expedition 13	30	31		

1 Tucked away in a sleeping bag, astronaut Daniel Tani poses for a photo near two extravehicular mobility unit (EMU) spacesuits in the Quest Airlock of the station. **2** Astronaut Steve Robinson plays a guitar in the Cupola of the International Space Station. **3** Expedition 21 and STS-129 crew members gather for a meal at the galley table in the Unity node of the International Space Station. **4** Astronaut Jeffrey Williams exercises on the Cycle Ergometer with Vibration Isolation System (CEVIS) in the Destiny laboratory of the station. **5** JAXA astronaut Soichi Noguchi, Expedition 22 flight engineer, uses a vacuum cleaner during housekeeping operations in the Kibo laboratory of the International Space Station.



FEBRUARY

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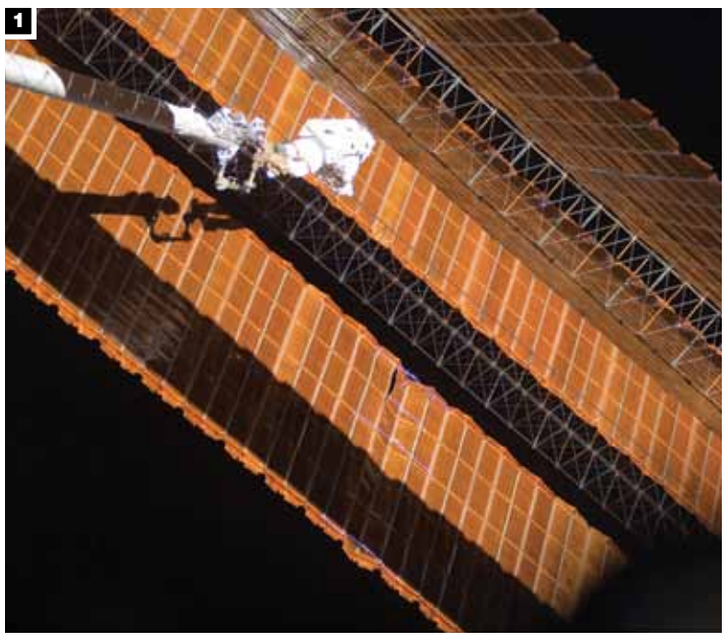


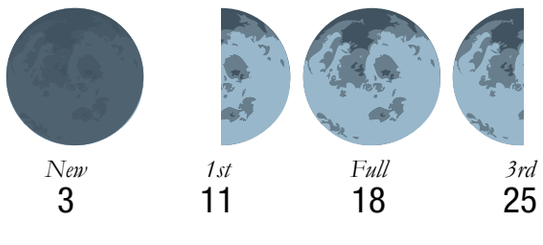
GOING GREEN: THE ULTIMATE RECYCLING EXPERIENCE

APRIL 2011

Rationing and recycling are essential parts of life on the station. For power, light from the sun is converted into electricity through the use of solar arrays. Wastewater is collected, processed and stored from the space shuttle's fuel cells as well as from urine, oral hygiene and hand washing, and by condensing humidity from the air. Careful water recycling reduces the amount required from Earth to resupply the station by 60 percent.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1 **2010 –** ISS Expedition 23	2
3	4	5 **2010 –** STS-131/19A, MPLM	6 **1984 –** STS-41C, first orbital satellite repair mission	7 **2007 –** ISS Expedition 15	8 **1964 –** Gemini I test flight **2002 –** STS-110/8A, S0 truss **2008 –** ISS Expedition 17	9 **1959 –** NASA announces the seven Mercury astronauts, NASA's first astronaut class
10	11	12 **1961 –** Cosmonaut Yuri Gagarin, first human in space **1981 –** STS-1, first space shuttle *(Columbia)* mission	13	14 **2005 –** ISS Expedition 11	15	16
17	18 **2004 –** ISS Expedition 9	19 **2001 –** STS-100/6A, CSA-Canadarm2 and MPLM	20	21	22	23
24 **1967 –** Soyuz 1 accident **1990 –** STS-31, Hubble Space Telescope launched	25 **2003 –** ISS Expedition 7	26	27	28	29	30

1 While anchored to a foot restraint on the end of the Orbiter Boom Sensor System, astronaut Scott Parazynski, STS-120 mission specialist, assesses his repair work as the solar array is fully deployed during the mission's fourth spacewalk. **2** Russian cosmonaut Valery Tokarev holds a full Russian water (EDV) container as he conducts a water transfer from Progress water tanks. **3** NASA astronaut Jeffrey Williams installs a Urine Processor Assembly/Distillation Assembly (UPA DA) in the Water Recovery System (WRS) rack in the Destiny laboratory of the station. **4** Astronaut Donald Pettit holds a Grab Sample Container (GSC) used for collecting air samples as part of station environmental monitoring. **5** The Expedition 19 crew celebrates the station's recycled water system with a "toast." **6** Russian cosmonaut Fyodor Yurchikhin conducts a session for Russia's Environmental Safety Agency (EKON), making observations and taking aerial photography of environmental conditions on Earth.



MARCH

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MAY

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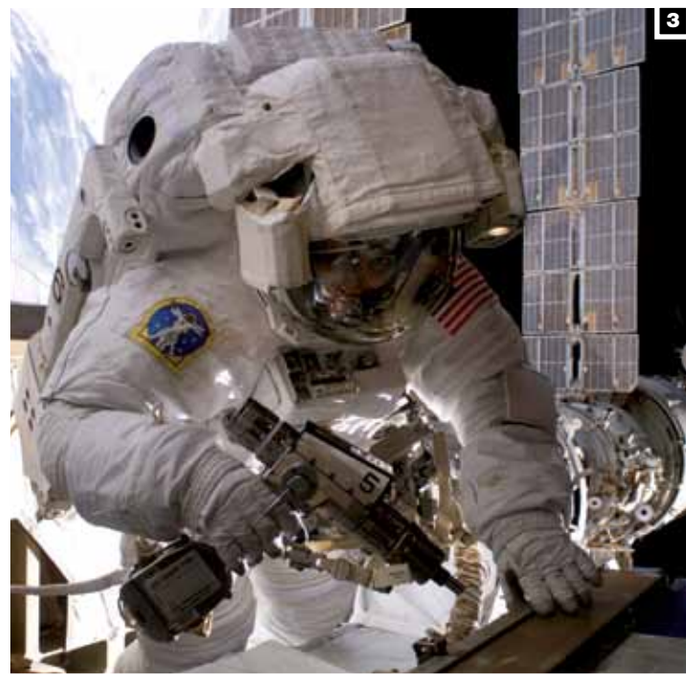
NOT YOUR AVERAGE DAY JOB

MAY 2011

Spacewalks, global photography, scientific research, robotics – it's just another day at the office for space station crew members. Add to that the maintenance of a spaceship the size of a football field and it's easy to see how busy life on orbit can be for the space station's international crew. Inside the station, astronauts prepare for spacewalks, perform important science experiments and maintain equipment. All of these tasks keep the station an exciting place to live and work in, one that benefits people here on Earth.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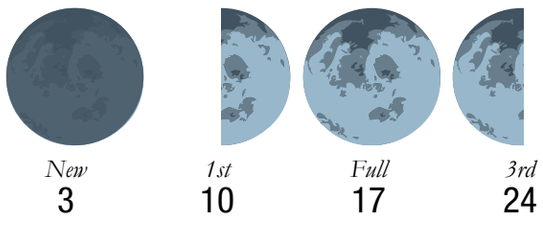
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5 **1961 –** *Freedom 7*. Alan Shepard Jr., first American in space	6	7
8	9	10	11	12	13	14 **1973 –** Skylab space station launched **2010 –** STS-132/ULF4, MRM1
15	16	17	18	19 **2000 –** STS-101/2A.2a, Spacehab	20	21
22	23	24	25 **1973 –** Skylab 2, first U.S. space station crew	26	27 **1999 –** STS-96/2A-1, first space shuttle to dock with ISS **2009 –** ISS Expedition 20	28
29	**Memorial Day** 30	31 **2008 –** STS-124/1JA, JAXA-JEM-PM, JEM-RMS				

1 Astronaut Sunita Williams uses the Lab-on-a-Chip Application Development-Portable Test System (LOCAD-PTS) to test for biological and chemical substances from surfaces on board the station. **2** European Space Agency astronaut Thomas Reiter works with the Passive Observatories for Experimental Microbial Systems (POEMS) payload in the Minus Eighty Degree Laboratory Freezer for ISS (MELFI). **3** Astronaut Sunita Williams uses a pistol grip tool (PGT) as she participates in a spacewalk. **4** JAXA astronaut Soichi Noguchi, Expedition 22 flight engineer, uses a still camera to photograph Earth from a window in the Cupola. **5** Thanks to the weightlessness of space, astronaut Greg Chamitoff isn't toting the excessive weight load he appears to be while moving an experiment rack. **6** Astronauts Julie Payette and Tim Kopra work the controls of the Space Station Remote Manipulator System (SSRMS) or Canadarm2.



APRIL

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JUNE

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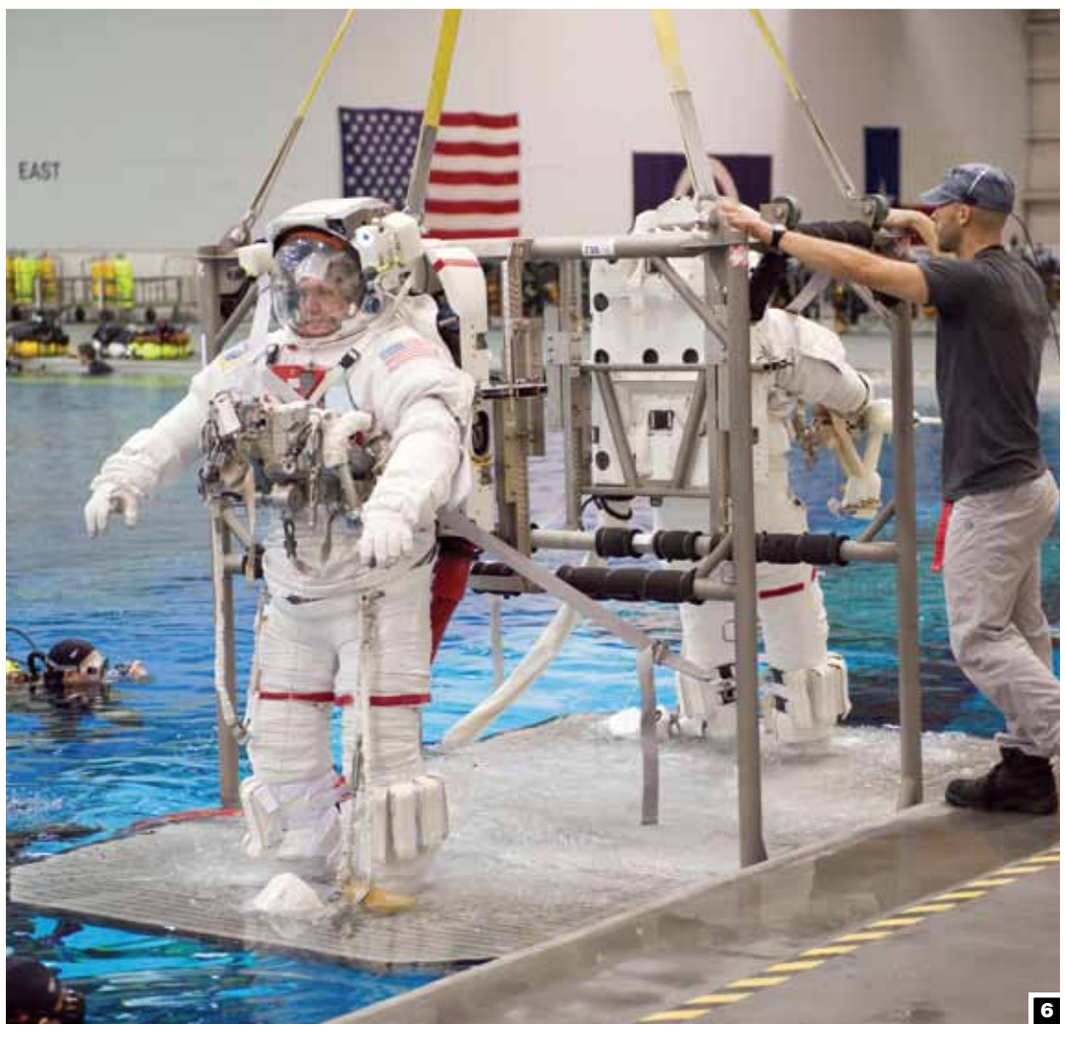
FROM THE GROUND UP

JUNE 2011

From astronaut trainers, food scientists and scuba divers to the men and women of Mission Control, it takes more than a village to support the International Space Station. Ground support for the station involves more than 100,000 people in space agencies at 500 contractor facilities in 37 U.S. states.



SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1	2 **1966 –** Surveyor I, first U.S. spacecraft to soft land on the moon	3	4 **2010 –** SpaceX Falcon 9 Block 1, first successful flight
5 **2002 –** STS-111/UF-2, MBS (Mobile Base System) and MPLM: ISS Expedition 5	6	7	8 **2007 –** STS-117/13A, S3/S4 truss and solar arrays	9	10	11
12	13	14	15 **2010 –** ISS Expedition 24	16 **1963 –** Cosmonaut Valentina Tereshkova, first female in space	17	18 **1983 –** STS-7, Sally Ride, first U.S. female in space
19	20	**Summer Begins** 21	22	23	24	25
26	27	28	29 **1995 –** STS-71 *Atlantis*, first shuttle to dock with Russian *Mir* space station	30 **1971 –** Soyuz 11 accident		

1 European Space Agency astronaut Frank De Winne participates in a training session in the Cupola module mock-up at NASA's Johnson Space Center. Crew trainer Elizabeth Horton assists De Winne. **2** Spacewalkers on the STS-131 crew training in the Virtual Reality Lab. **3** STS-131 crew during deorbit prep training in the Fixed Base Trainer. **4** Astronaut Cady Coleman performs a test of her extravehicular activity suit in the Space Station Airlock Test Article (SSATA) Chamber at NASA's Johnson Space Center. **5** Leland Melvin trains at a console in the simulation control area in the Neutral Buoyancy Laboratory. **6** Astronauts Mike Foreman and Randy Bresnik, STS-129 mission specialists, in training versions of their spacesuits, are about to be submerged in the water of the Neutral Buoyancy Laboratory.

MAY

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JULY

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INTERNATIONAL COLLABORATION

2011

JULY

It takes an enormous effort from people around the world to construct and maintain the International Space Station. Across borders, people from a variety of professions work together, meet challenges and collaborate down to the last detail to achieve one of the greatest technological, geopolitical and engineering accomplishments in human history. Fifteen nations have contributed to the building of the station with over 40 missions and more than 140 spacewalks.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1 **1962 –** Cape Canaveral, Fla., established as NASA Launch Operations Center	2
3	4 **Independence Day** **1997 –** Pathfinder lands on Mars **2006 –** STS-121/ULF1-1, MPLM	5	6	7	8	9
10 **1962 –** Telstar-1, first commercial communications satellite	11 **1979 –** Skylab reenters Earth's atmosphere	12 **2001 –** STS-104/7A, U.S.-Quest Airlock **2000 –** Proton/1R, Russia-Zvezda Service Module	13	14 **1965 –** Mariner 4 takes first close-up pictures of Mars	15 **1975 –** Apollo-Soyuz, first joint Russia-U.S./Soyuz spaceflight **2009 –** STS-127/2JA, JAXA-JEM-EF and ELM-ES	16
17	18	19	20 **1969 –** Apollo 11, first crewed lunar landing **1976 –** Viking 1, first U.S. spacecraft to land on Mars	21	22	23 **1999 –** STS-93, Eileen Collins, first female space shuttle commander
24 31	25	26 **1963 –** Syncom 2, world's first geosynchronous communications satellite **2005 –** STS-114, first shuttle flight following the Space Shuttle *Columbia* accident	27	28 **1973 –** Skylab 3	29 **1958 –** NASA established	30

1 JAXA astronaut Naoko Yamazaki lifts Soichi Noguchi as they pose for a group photo in the Japanese Experiment Module (JEM). **2** A group photo with Expedition 23 and STS-131 crew members representing Japan, Russia and the U.S. **3** Astronaut Bill McArthur and Cosmonaut Valery Tokarev pose with their respective extravehicular mobility units (EMUs); McArthur with the U.S. EMU and Tokarev with the Orlan suit. **4** European Space Agency astronaut Frank De Winne (right) along with Canadian Space Agency astronaut Robert Thirsk (bottom right) and NASA astronauts Jeffrey Williams and Nicole Stott during an educational event. **5** Astronauts Stephanie Wilson, Naoko Yamazaki, Dorothy Metcalf-Lindenburger and Tracy Caldwell Dyson (top right) as they work at the Robotics Workstation during STS-131/Expedition 23 joint docked operations. **6** The crew members aboard the station give a unified "thumbs up" signal following the Changing-of-Command ceremony from Expedition 10 to Expedition 11. **7** Astronaut Jeffrey Williams and Cosmonaut Maxim Suraev hold a plastic inflatable globe used to select locations for CBS's "Everyone in the World Has a Story."

JUNE

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AUGUST

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VISITING VEHICLES

AUGUST 2011

Orbiting about 240 statute miles (386.24 km) above the Earth at 17,500 mph (32,410 kph) creates a challenge when it comes to getting supplies. The station depends on regular deliveries of experiment equipment and spare parts as well as food, air and water for its crew. The U.S., Russia, Japan and Europe all have vehicles that make deliveries and the commercial sector is developing spacecraft to help keep the station "stocked."

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
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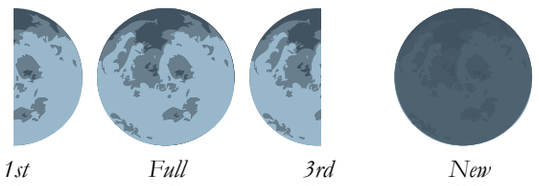
7	8 **1978 –** Pioneer 13-Venus, first U.S. spacecraft to study Venus in detail **2007 –** STS-118/13A.1, S5 truss, Spacehab and ESP-3	9	10 **2001 –** STS-105/7A.1, MPLM; ISS Expedition 3	11	12 **1977 –** Space Shuttle *Enterprise*, first free-flight test	13
14	15	16	17	18	19	20
21	22	23	24	25 **1989 –** Voyager 2, first spacecraft to observe Neptune	26	27
28 **2009 –** STS-128/17A, MPLM	29	30	31			

1 The Progress is the Russian automated resupply vehicle. **2** The Japanese uncrewed resupply craft HII-Transfer Vehicle. **3** The first flight of SpaceX's Falcon 9. **4** The Soyuz TMA-12 spacecraft, with Expedition 17 crew members, approaches the International Space Station. **5** Space Shuttle *Discovery* and its seven-member STS-131 crew head toward Earth orbit and rendezvous with the ISS. **6** ATV, the European Space Agency's Automated Transfer Vehicle, is also used to resupply the ISS.



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JULY

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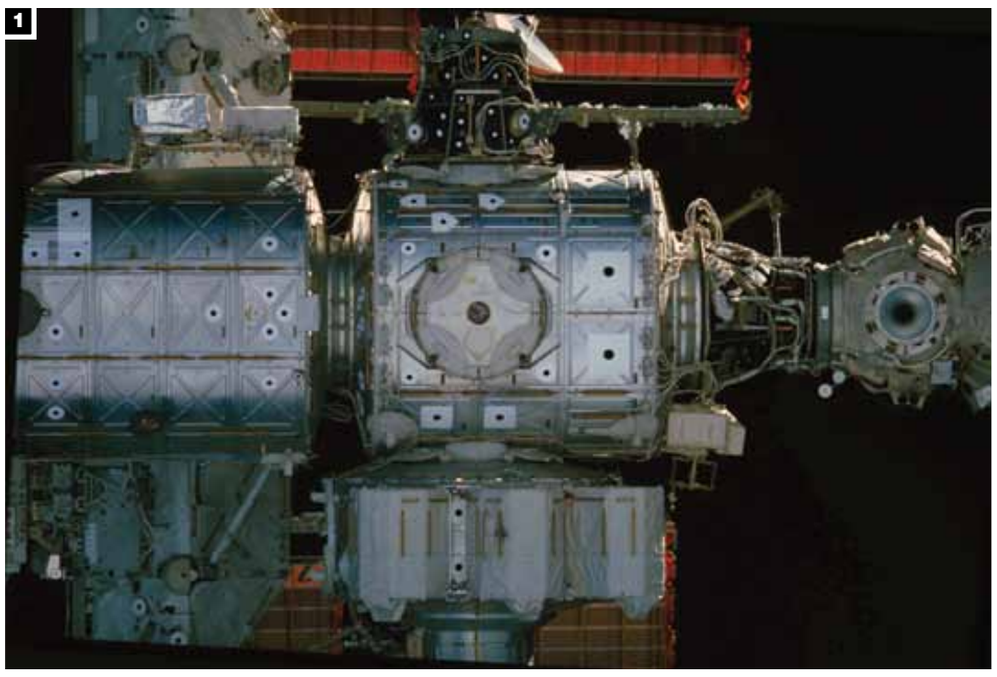

IN THE ZONE

SEPTEMBER 2011

The station is the largest human-made structure to be placed in orbit. The truss, or backbone, is the length of a football field, including end zones, and the solar arrays are 1.5 times the width, which makes the station about 170 ft. long and 360 ft. wide. It was assembled in space like building blocks, demonstrating human capability to perform construction in space. It can be seen from the ground with the naked eye (go to http://spaceflight.nasa.gov/realdatasightings/index.html for sighting opportunities).

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
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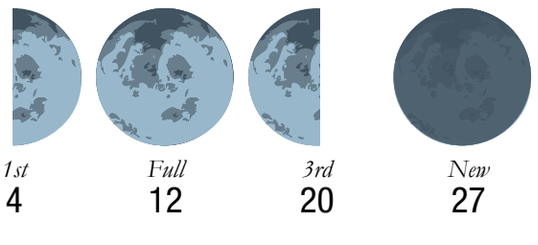
4	**Labor Day** 5 **1977 –** Voyager 1, first spacecraft to return a photo of Earth and moon	6	7	8 **2000 –** STS-106/2A.2b, Spacehab	9 **1975 –** Viking 2, first spacecraft to successfully land on Mars **2006 –** STS-115/12A, P3/P4 truss	10 **2009 –** First JAXA HII-Transfer Vehicle
11	12	13	14 **2001 –** Soyuz/4R, Pirs docking compartment	15	16	17
18 **2007 –** ISS Expedition 14	19	20	21 **2003 –** Galileo, first spacecraft to enter Jupiter's atmosphere	22	**Autumn Begins** 23	24
25	26	27	28	29 **1988 –** STS-26, first shuttle flight following the Space Shuttle *Challenger* accident	30 **2005 –** ISS Expedition 12	

1 The Unity node (connecting module) is shown with the Russian segment Zarya to the right (aft), the U.S. Laboratory Destiny to the left (fore), the Quest Airlock at the bottom (starboard), and the PMA-3 at the top (port). **2** Set against the blackness of space, the various elements visible, from top to bottom, are the Unity node, Zarya, Zvezda and a Progress cargo supply vehicle. Photo taken during STS-92. **3** Destiny is the primary U.S. payloads research laboratory, supporting a wide range of experiments and studies contributing to health, safety and quality of life for people all over the world. **4** This football field-sized machine flies about 230 miles above the Earth, going 17,500 mph. **5** Astronaut Robert Curbeam, Jr. (left) and European Space Agency (ESA) astronaut Christer Fuglesang, both STS-116 mission specialists, participate in the mission's first of three planned sessions of extravehicular activity (EVA). **6** View of the Japanese Experiment Module (JEM) Pressurized Module (JPM), Japanese Experiment Logistics Module-Pressurized Section (ELM-PS), mounted on top, and JEM Exposed Facility (EF), mounted to the right.



AUGUST

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OCTOBER

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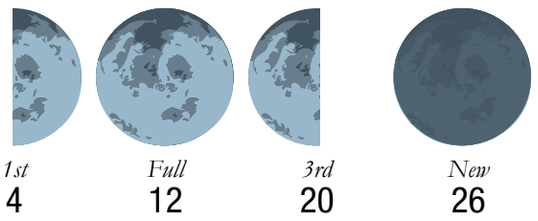
HEALTH BENEFITS
FOR ALL HUMANKIND

OCTOBER 2011

The techniques addressing astronaut health risks on long missions will benefit patients suffering from similar conditions on Earth, such as bone loss, muscle wasting, shift-related sleep disturbances and balance disorders.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1 **1958 –** NASA officially begins operations
2	3	4 **1957 –** Sputnik 1 (U.S.S.R.), first satellite	5	6	7 **2002 –** STS-112/9A, S1 truss	8
9	10 **Columbus Day** **2007 –** ISS Expedition 16, Peggy Whitson, first female ISS commander	11 **1958 –** Pioneer 1, first NASA launch **1968 –** Apollo 7, first crewed Apollo mission **2000 –** STS-92/3A, Z1 truss **2009 –** ISS Expedition 21	12 **1964 –** Voskhod 1 (U.S.S.R.), first flight with multiple crew members **2008 –** ISS Expedition 18	13	14	15
16	17	18 **2003 –** ISS Expedition 8	19	20	21	22
23 **2007 –** STS-120/10A, ESA-Harmony Connecting Module 30	24 31 **2000 –** Expedition 1, start of permanent human presence on the ISS	25	26	27	28	29 **2009 –** Ares-1X launch

1 Astronaut Peggy Whitson, Expedition 16 commander, exercises on the Cycle Ergometer with Vibration Isolation System (CEVIS) in the Destiny laboratory of the International Space Station. **2** Astronaut Sunita Williams prepares a laptop in the Human Research Facility-2 (HRF-2) for data entry during a blood draw as part of the Nutritional Status Assessment (Nutrition) study. **3** Russian cosmonaut Yury Lonchakov works with the Phantom Torso, which was designed to help scientists more accurately predict the radiation exposure astronauts receive inside their bodies, especially to blood-forming organs. **4** Astronaut Garrett Reisman measures his body mass, a basic index of nourishment, using the Body Mass Measurement Device (BMMD) on the station. **5** Astronaut Sunita Williams receives assistance from astronaut Michael Lopez-Alegria in donning a sensor-studded cap as she prepares equipment for the Anomalous Long Term Effects on Astronauts (ALTEA) experiment. **6** Astronaut Nicole Stott, equipped with a bungee harness, exercises on the Combined Operational Load Bearing External Resistance Treadmill (COLBERT) on board the station.



SEPTEMBER

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NOVEMBER

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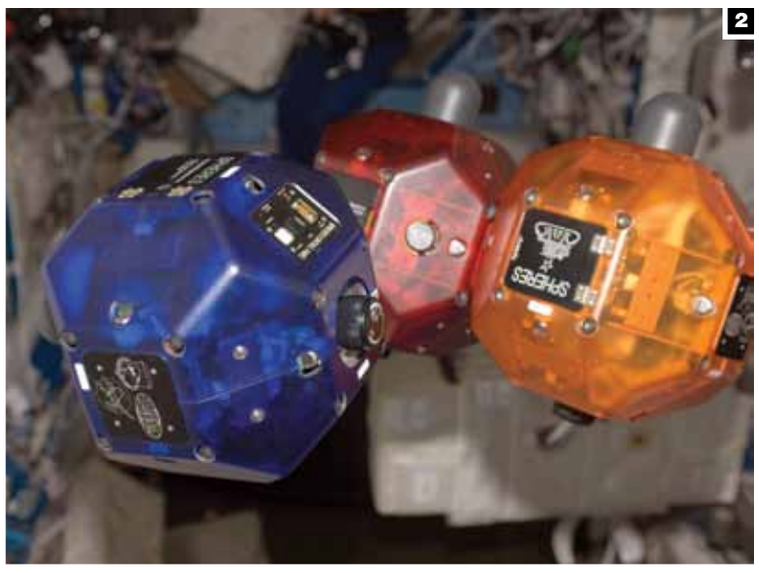
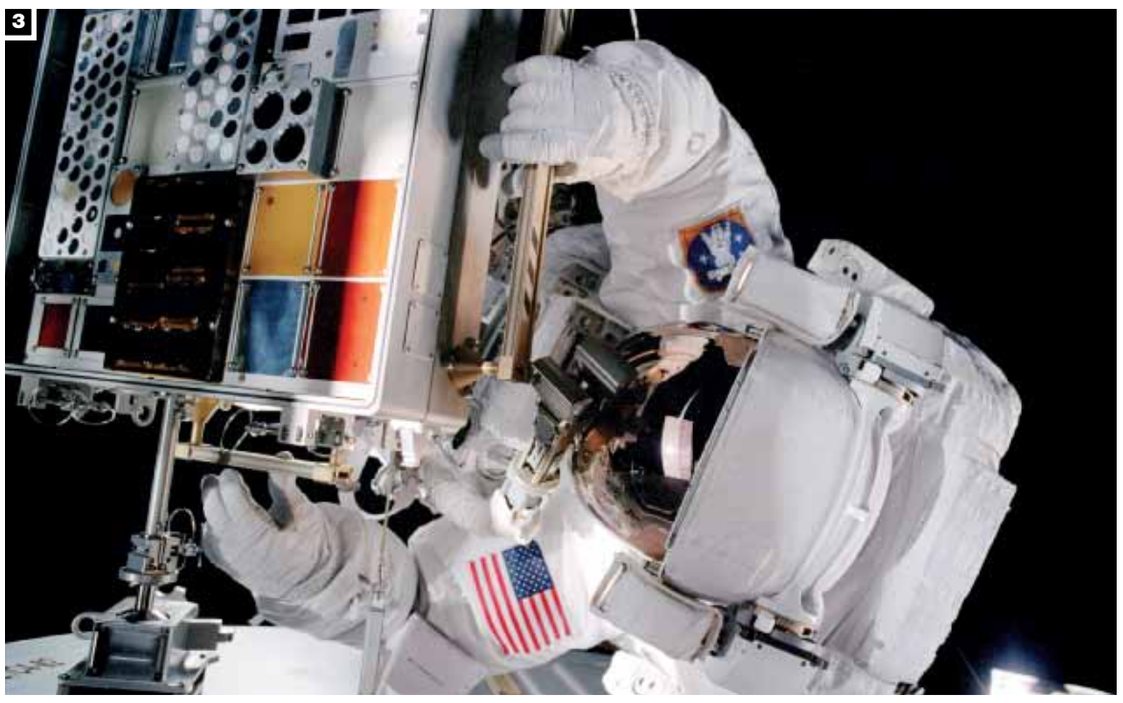
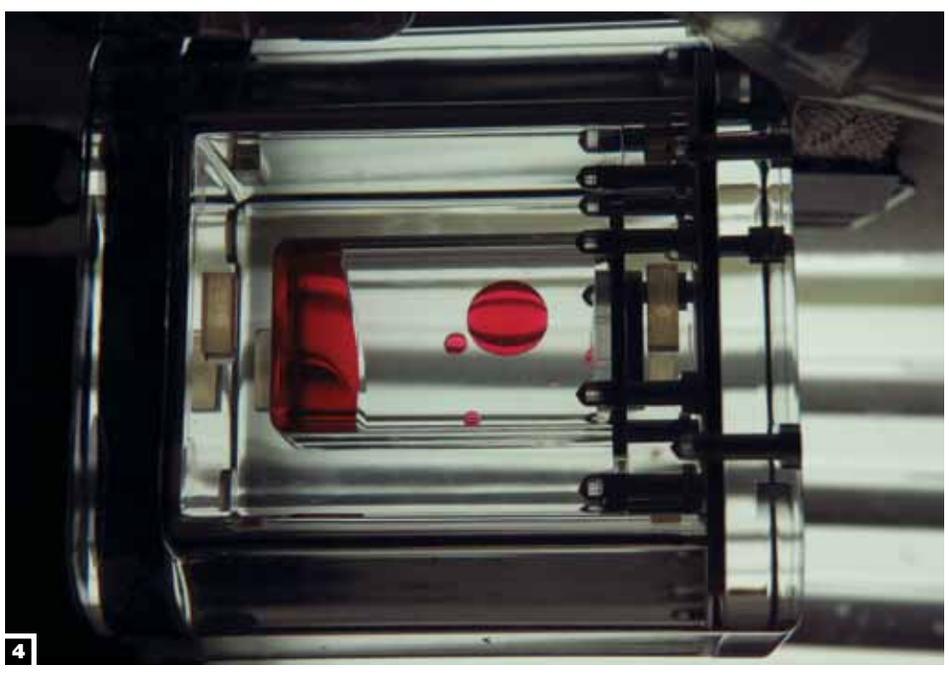


INTERNATIONAL HOUSE OF SCIENCE

NOVEMBER 2011

This orbiting international laboratory is a technologically sophisticated facility that supports a wide range of scientific inquiry in biology, human physiology, physical and materials sciences, and Earth and space science. Scientists from all over the world are already using ISS facilities, putting their talents to work in almost all areas of science and technology, and sharing their knowledge to make life on Earth better for people of all nations.





SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2 **2000 –** Expedition 1 arrives at ISS; continuous human occupation of ISS begins	3 **1973 –** Mariner 10, first spacecraft to explore Mercury	4	5
6	7	8	9	10	**Veterans Day** 11 **1982 –** STS-5, first space shuttle operational mission	12
13 **1971 –** Mariner 9-Mars, first spacecraft to orbit another planet	14 **2008 –** STS-126/ULF2, MPLM	15	16 **1973 –** Skylab 4 **2009 –** STS-129/ULF3, ELC1 and ELC2	17	18	19
20 **1998 –** Proton – Russia, Zarya Control Module, ISS first element launch	21	22	23 **2002 –** STS-113/11A, P1 truss; ISS Expedition 6	**Thanksgiving Day** 24	25	26
27	28 **1983 –** STS-9, first international agency participates in U.S. mission	29	30 **2000 –** STS-97/4A, P6 truss, first set of solar arrays			

1 Astronaut Jeffrey Williams conducts the first run of the Pore Formation and Mobility Investigation (PFMI) in the station's Microgravity Science Glovebox (MSG). **2** This close-up view shows three bowling-ball-sized free-flying satellites called Synchronized Position Hold, Engage, Reorient, Experimental Satellites (SPHERES). **3** Materials International Space Station Experiment (MISSE) is a series of external exchangeable test beds for studying the durability of materials such as optics, sensors, electronics, communications devices, coatings and structural materials. **4** View of the station's Oil Emulsion Experiment (OEE) that will be used to teach students basic principles of fluid physics. **5** Saibo Experiment Rack is a multipurpose payload rack system that sustains life science experiment units inside and supplies resources to them. The first use of Saibo was for studies of the effects of radiation on immature immune cells. **6** Advanced Biological Research System (ABRS) is a single locker system with two growth chambers. Each growth chamber is a closed system capable of independently controlling temperature, illumination and atmospheric composition to grow a variety of biological organisms.

OCTOBER

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DECEMBER

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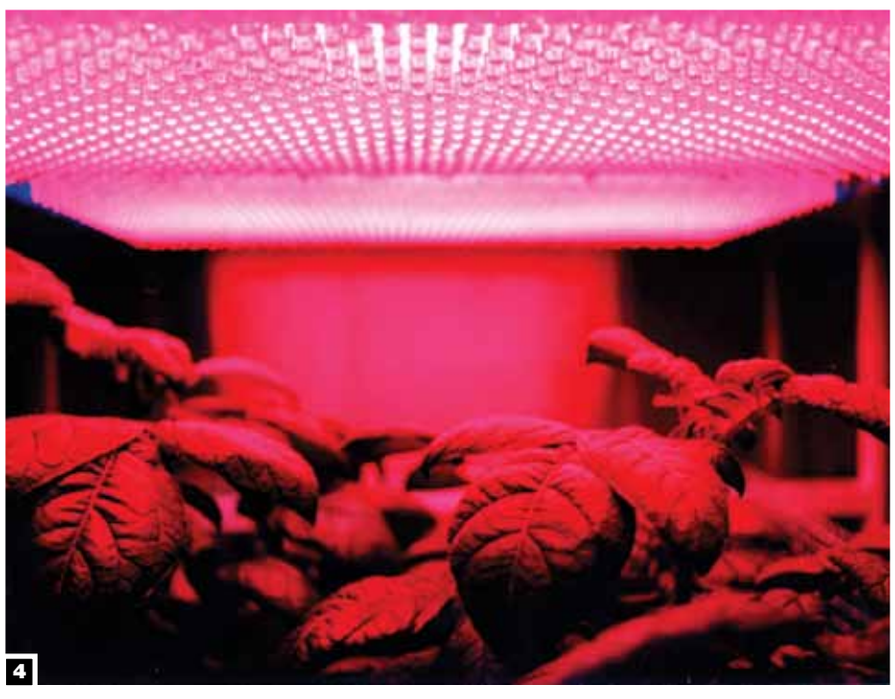
SPACE IN
YOUR LIFE

DECEMBER 2011

In the 20th century, space exploration has profoundly impacted the way we view ourselves, our world and the way we live. Our nation's investment in space has resulted in numerous services and products that affect our everyday lives. Whether we are making a trans-Pacific telephone call, creating with a computer-aided design tool, using our mobile phone, wearing a pacemaker, or undergoing an MRI, we are using technology that space exploration either developed or improved.



SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	2	3 **1973 –** Pioneer 10, first flyby of outer planet (Jupiter)
4 **1998 –** STS-88/2A, Unity Connecting Module, first U.S. component	5 **2001 –** STS-108/UF-1, MPLM; ISS Expedition 4	6	7 **1972 –** Apollo 17, final Apollo mission	8	9 **2006 –** STS-116/12A.1, Spacehab and P5 truss	10
11	12	13	14 **1962 –** Mariner 2, first flyby of Venus	15 **1965 –** Gemini VI-A and VII, first crewed rendezvous between two spacecrafts **1970 –** Venera 7 (U.S.S.R.), first human-made spacecraft to successfully land on another planet (Venus) and to transmit data from there back to Earth	16	17
18	19	20 **2009 –** ISS Expedition 22	21	**Winter Begins** 22	23	24 **1968 –** Apollo 8, first crewed mission to orbit the moon
Christmas Day 25	26	27	28	29	30	31

1 Using the Advanced Diagnostic Ultrasound in Microgravity protocols, astronaut Leroy Chiao performs an ultrasound examination of the eye on cosmonaut Salizhan Sharipov. This technology enables users with little training to send diagnostic-quality ultrasound images to medical professionals remotely. **2** NASA helped industry leaders develop cool, lightweight, aerodynamic biking helmets and special bike wheels using NASA research in airfoils (wings) and design software. **3** Astronaut Mike Fincke narrates during a Capillary Flow Experiment (CFE) that investigates capillary flows and flows of fluids. **4** The ADVANCED ASTROCULTURE™ (ADVASC) examines the effects of microgravity on gene expression levels and the seed-to-seed life cycle in microgravity. **5** Dr. Lewis Nashner's computerized dynamic posturography, derived from NASA-funded research on human movement and balance, is now a standard noninvasive clinical technique for assessing the systems that allow the body to balance. **6** View of Astronaut Peggy Whitson looking at the ADVASC Soybean plant growth experiment located in the U.S. Laboratory. **7** The MARCbot (Multi-function Agile Remote Control Robot) received multiple upgrades from engineers at NASA's Marshall Space Flight Center, and hundreds have now been deployed by the U.S. military overseas to help soldiers identify IEDs (improvised explosive devices).

1st	*Full*	*3rd*	*New*
2	10	18	24

NOVEMBER

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JANUARY

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