

## 2009 Mission Overviews

### STS-119 / ISS 15A

Vehicle: Discovery - 36th Flight

Launch: March 15, 2009 at 7:43 pm EDT from Pad 39A, KSC

Landing: March 28, 2009 at 3:13 pm EDT on Runway 15, KSC

### Crew

Commander: Lee Archambault

Pilot: Dominic A. Antonelli

Mission Specialist 1: Joseph M. Acaba

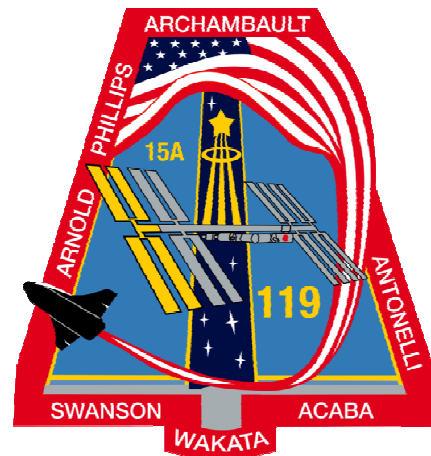
Mission Specialist 2: Steven R. Swanson

Mission Specialist 3: Richard R. Arnold

Mission Specialist 4: John L. Phillips

Mission Specialist 5 (UP): Koichi Wakata (JAXA)

Mission Specialist 5 (DOWN): Sandra H. Magnus



### ISS Crew

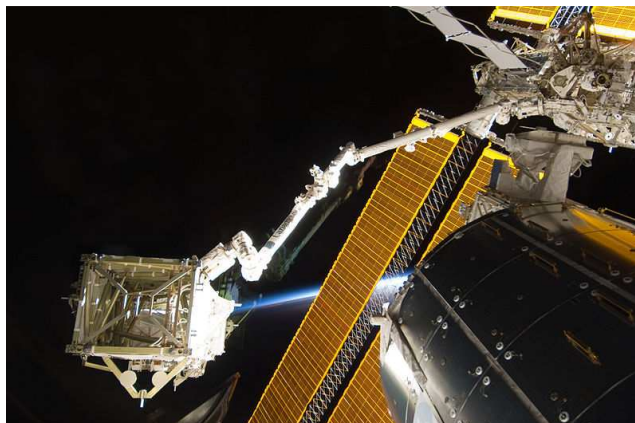
Michael Fincke

Yuri Lonchakov

Sandra H. Magnus / Koichi Wakata

### Mission Overview

STS-119 delivered the S6 Truss segment, containing the final set of solar arrays for the ISS. This mission also brought home astronaut ISS Expedition 18 Flight Engineer Sandy Magnus, leaving JAXA astronaut Koichi Wakata in her place. Koichi was the first astronaut from JAXA to be a long term station crew member and would be a part of Expeditions 18, 19, and 20. Three EVAs were completed by the STS-119 crew, in which the tasks necessary to install S6 and its requisite support hardware were performed. A total of 19 hours and 4 minutes were spent EVA. This mission completed the power system for the ISS in preparation for 6 crew operations and was the 28th Shuttle mission to the ISS.



View of the S6 Truss segment grappled by the ISS robotic arm

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## 2009 Mission Overviews

### STS-125 / HST-SM4

Vehicle: Atlantis - 30th Flight

Launch: May 11, 2009 at 2:01 pm EDT from Pad 39A, KSC

Landing: May 24, 2009 at 11:39 am EDT on Runway 22, EDW

### Crew

Commander: Scott Altman

Pilot: Gregory C. Johnson

Mission Specialist 1: Michael T. Good

Mission Specialist 2: Megan McArthur

Mission Specialist 3: John M. Grunsfeld

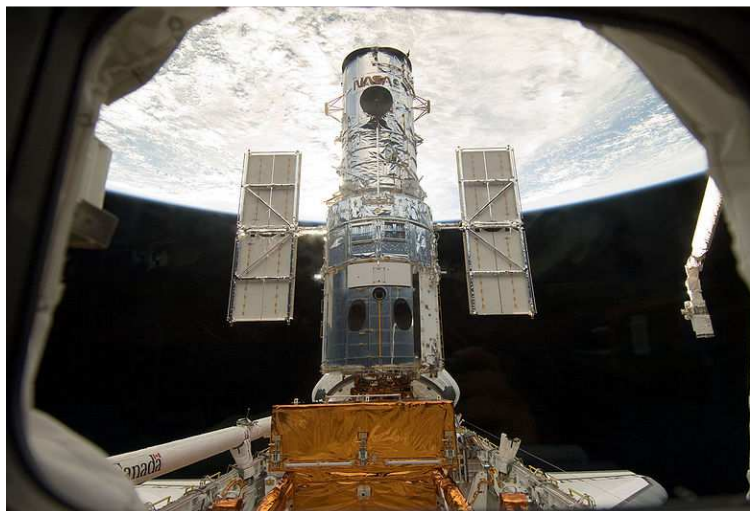
Mission Specialist 4: Michael J. Massimino

Mission Specialist 5: Andrew J. Feustel



### Mission Overview

STS-125 is also known as Hubble Space Telescope Servicing Mission 4 (HST-SM4) and was the final planned servicing mission to the Hubble Space Telescope. The goal was to repair and upgrade Hubble, thus allowing it to continue its science and exploration endeavors well into the 2010 decade. This was accomplished by replacing multiple sensors, gyroscopes and batteries, while also installing new equipment. The Cosmic Origins Spectrograph and the Wide Field Camera 3 were added to Hubble's collection of scientific assets. Five EVAs were completed by the STS-125 crew, with a total time of 36 hours and 56 minutes spent EVA. In addition, this mission was a partnership with IMAX and contained an IMAX camera mounted in the Payload Bay in support of the Hubble 3-D IMAX movie.



View of Hubble docked in the payload bay of the Shuttle

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## 2009 Mission Overviews

### STS-127 / ISS 2J/A

Vehicle: Endeavour - 23rd Flight

Launch: July 15, 2009 at 6:03 am EDT from Pad 39A, KSC

Landing: July 31, 2009 at 10:48 am EDT on Runway 15, KSC

### Crew

Commander: Mark Polansky

Pilot: Douglas G. Hurley

Mission Specialist 1: Christopher J. Cassidy

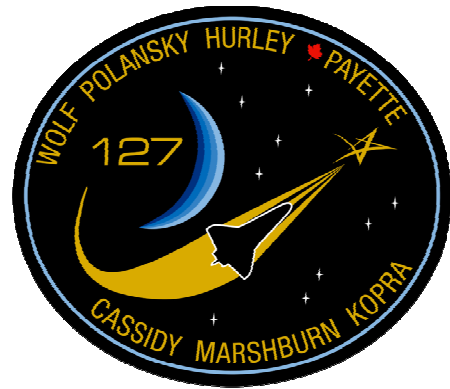
Mission Specialist 2: Julie Payette (CSA)

Mission Specialist 3: Thomas H. Marshburn

Mission Specialist 4: David Wolf

Mission Specialist 5 (UP): Timothy Kopra

Mission Specialist 5 (DOWN): Koichi Wakata (JAXA)



### ISS Crew

Gennady Padalka

Michael Barratt

Frank De Winne

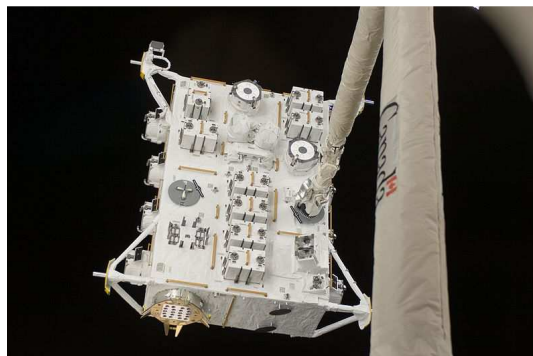
Roman Romanenko

Robert Thirsk

Koichi Wakata / Timothy Kopra

### Mission Overview

STS-127's main mission was to deliver the final components to the Japanese Experiment Module (JEM), completing JAXA's contribution to the ISS. With the addition of the Exposed Facility and the Exposed Section of the Experiment Logistics Module, the JEM could now be used to conduct active research at vacuum with exposed payloads. Additionally, STS-127 brought up an Integrated Cargo Carrier containing spare parts for the ISS, brought up Timothy Kopra to replace Koichi Wakata, and two satellite payloads that were deployed prior to the end of the mission. Five EVAs were completed on STS-127, with a total time of 30 hours and 30 minutes spent EVA. STS-127 was the first Shuttle mission to happen while six crew were on the ISS, resulting in the first time thirteen people were in space at one time aboard the ISS and was the 29th Shuttle mission to the ISS.



The Japanese Exposed Facility (JEF) on the arm of the ISS

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## 2009 Mission Overviews

### STS-128 / ISS 17A

Vehicle: Discovery - 37th Flight

Launch: August 28, 2009 at 11:59 pm EDT from Pad 39A, KSC

Landing: September 11, 2009 at 8:53 pm EDT on Runway 22, EDW

#### Crew

Commander: Frederick W. Sturckow

Pilot: Kevin A. Ford

Mission Specialist 1: Patrick G. Forrester

Mission Specialist 2: Jose M. Hernandez

Mission Specialist 3: Christer Fuglesang (ESA)

Mission Specialist 4: John D. Olivas

Mission Specialist 5 (UP): Nicole Stott

Mission Specialist 5 (DOWN): Timothy Kopra



#### ISS Crew

Gennady Padalka

Michael Barratt

Frank De Winne

Roman Romanenko

Robert Thirsk

Timothy Kopra/Nicole Stott

#### Mission Overview

STS-128 delivered a Multi-Purpose Logistics Module (MPLM) and various external spares to the ISS as part of the nominal resupply necessary to keep the station functioning. This mission was the last time an ISS crew member was rotated using a Shuttle. The MPLM contained various components for the Life Support systems, in addition to exercise equipment and crew sleeping quarters, all of which were being pre-staged to go into Node 3 when it arrived on the ISS on STS-130. Three EVAs were completed on STS-128, resulting in 20 hours and 15 minutes total time spent EVA. STS-128 was the 30th Shuttle mission to the ISS.



View of the MPLM inside the payload bay of the Shuttle during Rendezvous

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## 2009 Mission Overviews

### STS-129 / ISS ULF3

Vehicle: Atlantis - 31st Flight

Launch: November 16, 2009 at 2:28 pm EST from Pad 39A, KSC

Landing: November 27, 2009 at 9:44 am EST on Runway 33, KSC

#### Crew

Commander: Charles O. Hobaugh

Pilot: Barry E. Wilmore

Mission Specialist 1: Leland D. Melvin

Mission Specialist 2: Randolph Bresnik

Mission Specialist 3: Michael Foreman

Mission Specialist 4: Robert Satcher

Mission Specialist 5 (DOWN): Nicole Stott

#### ISS Crew

Frank De Winne

Roman Romanenko

Robert Thirsk

Jeffrey Williams

Maksim Surayev

Nicole Stott



#### Mission Overview

STS-129 was primarily a resupply flight of external spares to the ISS to better position it for the end of the Shuttle program in 2010. The Shuttle carried up two EXPRESS Logistics Carriers (ELC) which contained spare gyroscopes, extra nitrogen tanks, pump modules, an ammonia tank, and parts for the station robotic arm and Mobile Transporter. This was the first flight of the ELC design. Three EVAs were completed on STS-129, with a total time of 18 hours and 27 minutes spent EVA. Following STS-129, the ISS was left with five crew members. This was the 31st Shuttle flight to ISS. There are five more Shuttle flights planned following STS-129.



View of the ISS as the Shuttle departs

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## 2009 Mission Overviews

### Ares I-X

Vehicle: Ares I-X

Launch: October 28, 2009 at 11:30 am EDT from Pad 39B, KSC

Length of mission: 2 minutes powered flight

Max Altitude: 28 miles (45km)



### Mission Overview

The Ares I-X mission was the first in the series of planned tests to validate the underlying design concepts of the Ares family of rockets. Derived partially from existing Space Shuttle hardware, the Ares family incorporates a solid rocket first stage with a cryogenic upper stage. The Ares I-X rocket consisted of a modified five-segment Shuttle SRB, with a simulated upper stage and was launched from Pad 39B at Kennedy Space Center. The Ares family is planned to be used as the prime set of launch vehicles for the Constellation program.



Ares 1-X as it rolls out to Pad 39B

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## 2009 Mission Overviews

### International Space Station Overview

#### Major Milestones for 2009

The ISS saw many firsts in 2009. It was the first time a JAXA astronaut took part as an Expedition crewmember. Full assembly of JAXA's Kibo module was also completed with the addition of its Exposed Facility, the first on orbit research platform of its kind. The H-II Transfer Vehicle (HTV-1) made its first flight to the ISS, demonstrating a new method of cargo delivery. The final solar array and truss segment were brought to the station early in the year, and a large portion of the Regen Environmental Control and Life Support Systems were brought to full operation. 2009 saw the first time the ISS was fully crewed with six crew members, starting with Expedition 20.

#### ISS Crew Members for 2009

Expeditions 18, 19, 20, 21, and 22 flew in 2009. Listed below are those crew members who spent time on the station during the 2009 Calendar year.

**Expedition 18:** Michael Fincke (NASA); Yuri Lonchakov (RUS); Sandra Magnus (NASA); Koichi Wakata (JAXA)

**Expedition 19:** Gennady Padalka (RUS); Michael Barratt (NASA); Koichi Wakata (JAXA)

**Expedition 20:** Gennady Padalka (RUS); Michael Barratt (NASA); Koichi Wakata (JAXA); Timothy Kopra (NASA); Frank De Winne (ESA); Roman Romanenko (RUS); Robert Thirsk (CSA); Nicole Stott (NASA)

**Expedition 21:** Frank De Winne (ESA); Roman Romanenko (RUS); Robert Thirsk (CSA); Nicole Stott (NASA); Jeffrey Williams (NASA); Maksim Surayev (RUS)

**Expedition 22:** Jeffrey Williams (NASA); Maksim Surayev (RUS); Oleg Kotov (RUS); Soichi Noguchi (JAXA); Timothy Creamer (NASA)



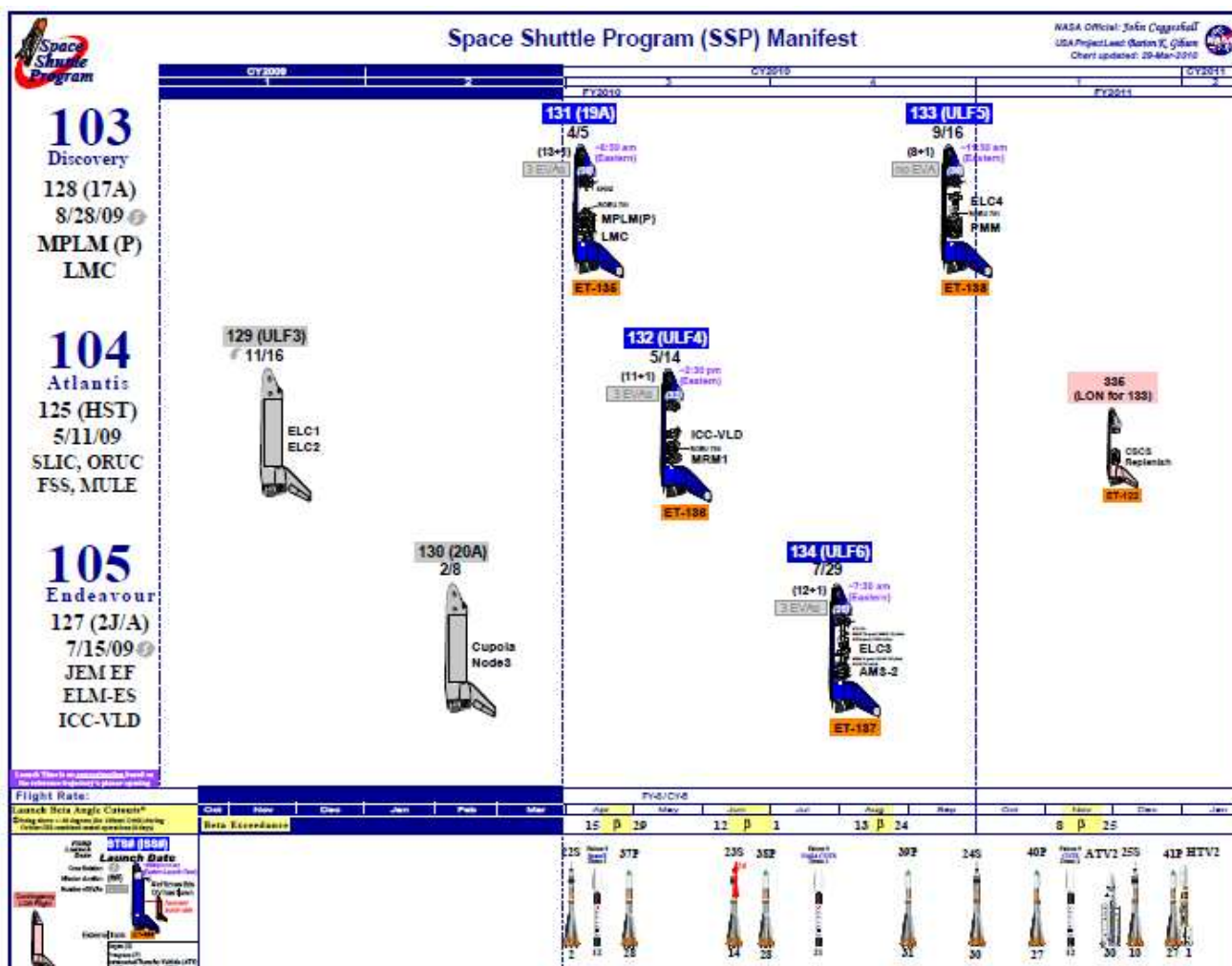
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<http://spaceflight1.nasa.gov/gallery/images/shuttle/>

[http://www.nasa.gov/mission\\_pages/shuttle/shuttlemissions/list\\_2009.html](http://www.nasa.gov/mission_pages/shuttle/shuttlemissions/list_2009.html)







For current baseline refer to  
SSP 64100 IDRD Flight Program

# Flight Program Working Group (FPWG) Crew Rotation and Port Utilization Graphic – For Reference Only

NASA Official: Sean Fuller  
Prepared by: Scott Paul  
Chart Updated: March 30<sup>th</sup>, 2010  
SSCN/CR: 12192

