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NZP-BR549



PROJECT BAMBOO

A STUDY OF THE SUITABILITY OF GIANT PANDAS AS ASTRONAUTS FOR CRITICAL SPACE MISSIONS

FEBRUARY, 2010

THIS DOCUMENT CONTAINS SENSITIVE SPACEFLIGHT TECHNOLOGY
INFORMATION AND RELEASE TO OTHER THAN US SPACE PROGRAM
OR ZOO OFFICIALS IS ON A NEED-TO-KNOW BASIS



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, DC

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PROJECT BAMBOO

This report covers the spaceflight activities of (redacted), a male giant panda born at the (redacted) Zoo in 2005. This giant panda will be referred to by his code name, Sooperpanna, in this report. All spaceflight activities will be covered, up to and including the STS-130 space shuttle mission.

Sooperpanna started astronaut training in 2007 following his successful weaning at the (redacted) Zoo. In order to maintain secrecy, during his many absences for training and actual space missions a stand-in giant panda was obtained on a contract basis from the Panda Temporary Agency. Transportation for Sooperpanna between the zoo and various NASA facilities was accomplished using a T-38N aircraft staged at an undisclosed location convenient to the zoo.

Astronaut training was completed in 2008, and Sooperpanna was immediately assigned to the next space shuttle flight as a mission specialist to obtain data on giant panda reaction to launch, orbit, and landing. No information on these activities was released through the Public Affairs Office, and the general public was only informed of the human crew members and their activities.

It was discovered that giant pandas possess superior strength, problem solving skills, and intelligence. Of particular note were Sooperpanna's communication skills – up until this point it was not known that giant pandas are able to read, write, and speak English. **THIS IS A CLOSELY GUARDED SECRET, AND IS NOT TO BE DISCUSSED WITH THE GENERAL PUBLIC AT ANY TIME.**



Sooperpanna's official NASA photo

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Sooperpanna gives a pseudo thumbs-up as he prepares to depart on a training flight in a NASA T-38N Talon training aircraft at an undisclosed location.

The first flight of PROJECT BAMBOO was the STS-122 mission aboard the Space Shuttle Atlantis. STS-122 was the 24th shuttle mission to the International Space Station, and delivered the Columbus Experiment module for the European space Agency. Sooperpanna was instrumental in the successful installation of this module, participating in three spacewalks and using his superior strength to overcome balky launch fasteners. This mission launched on Feb. 7, 2008 from the Kennedy Space Center, and landed on Feb. 20, 2008.



Sooperpanna waves to the assembled crowd at the O&C Building at the Kennedy Space Center before boarding the Astrovan before his first spaceflight.

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After the success of the first mission of PROJECT BAMBOO, Sooperpanna was immediately assigned to the next scheduled space shuttle mission as the pilot. Special modifications had to be made to the control systems on all three remaining space shuttles due to Sooperpanna's short stature, and incredible strength.

Sooperpanna returned to space aboard Endeavour on mission STS-123 which launched from Pad 39-A at the Kennedy Space Center on March 11, 2008. This flight carried a Japanese Experiment Logistics Module, Pressurized Section called the JLP to the International Space Station. Sooperpanna flew the Rendezvous Pitch Maneuver (RPM), which is a back flip to expose the underside of the space shuttle for high resolution photography to detect any launch damage to the thermal protection system.

At the end of the mission Sooperpanna also flew Endeavour around a portion of the Heading Alignment Circle (HAC) just before landing on March 26, 2008.

Although Sooperpanna participated in all crew activities with the exception of press conferences for obvious security reasons, every effort was made to keep his participation in the space shuttle program hidden from the general public.

The third space shuttle mission featured Sooperpanna as the Commander, the first time a space shuttle had been commanded by a non-human astronaut. Mission STS-124 with the Space Shuttle Discovery carried the Japanese Kibo Experiment module to the International Space Station. The bus-sized module is the station's largest laboratory and was the second component of Japan's laboratory complex to fly to the station. The first, the Japanese Experiment Logistics Module, was launched on the previous flight, shuttle mission STS-123. Launch from the Kennedy Space Center was on May 31, 2008, and landing was on June 14, 2008.



Sooperpanna and the STS-124 crew wave to well wishers before boarding the Astrovan for the trip to Launch Pad 39-A at the Kennedy Space Center.

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Sooperpanna poses with the other astronauts at Launch Pad 39-A before the STS-124 flight for Space Shuttle Discovery. This mission was a total success, and all subsequent space shuttle flights to date have had Sooperpanna as the Commander.

The next mission in PROJECT BAMBOO, STS-126, was flown out of mission sequence, and was the last mission flown in 2008. Sooperpanna flew the Space Shuttle Endeavour carrying a solar array spacer truss assembly and other components that would allow the International Space Station crew to double. One of the more controversial items delivered was a device to convert waste water and urine into drinking water. Endeavour launched on November 14, 2008, and landed on November 30, 2008.

Few astronauts get to fly five missions in their careers, but Sooperpanna launched on his fifth consecutive mission on March 15, 2009. Space Shuttle Discovery carried the final set of solar arrays to the International Space Station on mission STS-119. Landing was at the Kennedy Space Center on March 28, 2009.



Sooperpanna glides through the Destiny Module of the International Space Station during the STS-119 mission of the Space Shuttle Discovery.

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PROJECT BAMBOO mission six was a high profile mission, and extra precautions were made to keep Sooperpanna's involvement hidden from the general public. A special panda from the Panda Temporary agency was briefed on specific behaviors to mimic while he stood in for Sooperpanna at the (redacted) Zoo. No one outside of the zookeepers and the NASA support personnel directly involved in the mission had any knowledge of the switch.

Sooperpanna flew the Space Shuttle Atlantis to a rendezvous with the Hubble Space Telescope on May 11, 2009. The STS-125 mission returned the space shuttle to the Hubble Space Telescope for one last visit before the shuttle fleet retires in 2010. Over 11 days and five spacewalks, the shuttle Atlantis' crew made repairs and upgrades to the telescope, leaving it better than ever and ready for at least another five years of research.

Sooperpanna brought Atlantis in for a landing on the main runway at Edwards Air Force Base at 11:39 a.m. National Zoo Time on May 24, 2009.



Sooperpanna and crew posing in front of a NASA T-38N Talon training jet at the Shuttle Landing Facility at the Kennedy Space Center after their arrival from Houston before the STS-125 launch.

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Sooperpanna and crew preparing for launch on the flight deck of the Space Shuttle Endeavour on mission STS-127 to install the Japanese Kibo Japanese Experiment Module Exposed Facility and Experiment Logistics Module.

Immediately after landing in California, Sooperpanna had little time to relax before launching Endeavour on STS-127. The early evening launch on July 15, 2009 made Sooperpanna the most experienced astronaut in history, with seven spaceflights. The main event of the mission was the installation of the new Japanese Kibo Japanese Experiment Module Exposed Facility and Experiment Logistics Module Exposed Section. Sooperpanna brought Endeavour in for a night landing at the Kennedy space Center on July 31, 2009. This 16 day mission was the longest space shuttle mission flown, and the longest time Sooperpanna had been away from the (redacted) Zoo at one time.



Sooperpanna gives a "thumbs-up" after strapping into the commander's seat on the flight deck of the space shuttle Discovery for a night launch at one minute before midnight on August 28, 2009.

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PROJECT BAMBOO mission eight featured a night launch of Discovery at one minute before midnight on August 28, 2009. Sooperpanna and crew lifted off Pad 39-A on mission STS-128 with the Leonardo Multipurpose Logistics Module for the International Space Station onboard. There was some confusion during training when Sooperpanna thought the payload was named after the Teenage Mutant Ninja Turtles, and not the famous artist and inventor. The mission ended with a night landing at the Kennedy Space Center on September 11, 2009.

Sooperpanna's ninth flight of PROJECT BAMBOO was the flight of Space Shuttle Atlantis, which launched on November 16, 2009. The mission returned station crew member Nicole Stott to Earth. STS-129 was the final space shuttle crew rotation flight to or from the space station.

Atlantis delivered parts to the space station, including a spare gyroscope. The mission featured three spacewalks.

STS-129 was the 31st shuttle mission to the station. Sooperpanna landed Atlantis at the Kennedy Space Center on November 27, 2009



Sooperpanna participates in a post-landing photo-op with the STS-129 crew in front of the Space Shuttle Atlantis on the runway at the Shuttle Landing Facility at the Kennedy Space Center.

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PROJECT BAMBOO'S tenth and final flight for phase one was the first mission that Sooperpanna flew after being transferred to the Bifengxia Panda Base in China. Extra special security measures had to be taken to sneak Sooperpanna out of quarantine and smuggle him to halfway around the world to the Kennedy Space Center to fly this mission without the Chinese government uncovering this TOP SECRET program. The logistics for the panda from the Panda Temporary Agency were less complicated – he just had to walk a few hundred yards from one enclosure to the other.

Endeavour's 13-day STS-130 mission launched at 04:14:27 AM National Zoo time on February 8, 2010. The flight included three spacewalks and the delivery of a connecting module that increased the International Space Station's interior space. Node 3, known as Tranquility, provided additional room for crew members and many of the space station's life support and environmental control systems. Attached to the node is a cupola, which is a robotic control station with six windows around its sides and another in the center that provides a panoramic view of Earth, celestial objects and visiting spacecraft. After the node and cupola were added, the space station was about 90 percent complete.



Sooperpanna glances at the camera as he participates in a giant panda vision experiment in the Tranquility Node of the International Space Station.

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Sooperpanna talks to an off-camera spacesuit technician as he suits up before the STS-125 mission aboard the Space Shuttle Atlantis to the Hubble Space Telescope in 2009.



Sooperpanna is shown suiting up and in training with the Tranquility Node before the STS-130 mission.

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Sooperpanna working outside the International Space Station in the vacuum of Space.



Sooperpanna chases after his favorite floating snack aboard the International Space Station.

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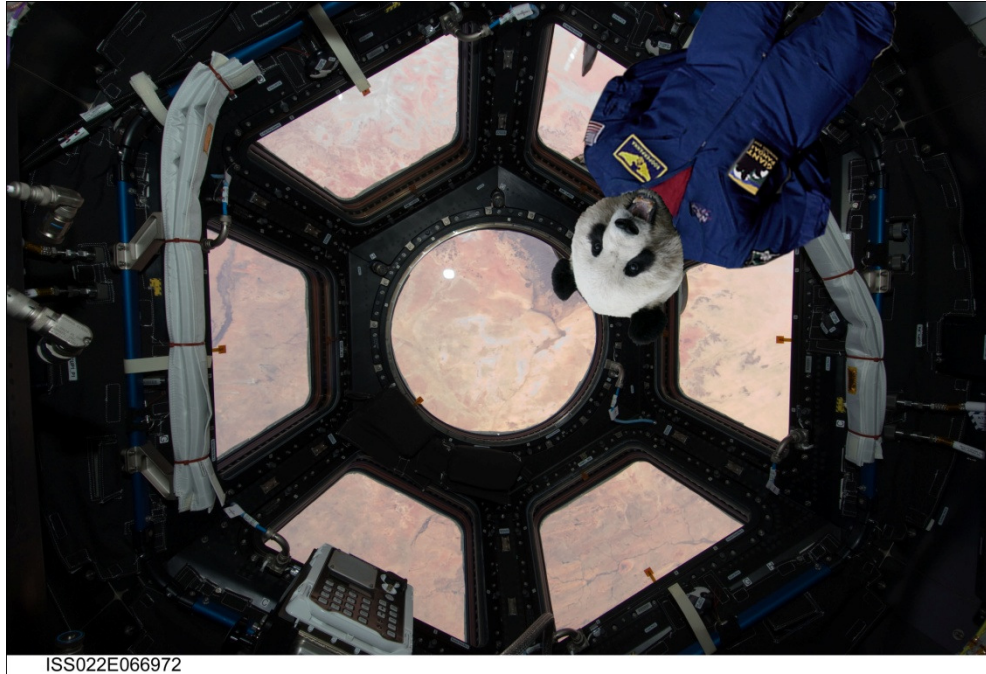
Sooperpanna smiles as he prepares for the second launch attempt of the Space Shuttle Endeavour on mission STS-130.



Sooperpanna chases some of his favorite treats in zero gravity aboard the International Space Station.

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A very proud Sooperpanna poses for a photo in the newly activated Cupola in the Tranquility Node of the International space Station.



Sooperpanna looks out of the window from the pilot's seat of the space shuttle Endeavour after landing at the Kennedy Space Center. Sooperpanna had switched seats in order to make some last minute switch position checks before exiting the spacecraft.

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The first Phase of PROJECT BAMBOO is now complete, and the second phase will begin with the STS-131 mission on April 5, 2010. Another giant panda from Zoo (redacted) has entered training, and will be flying as the pilot on that mission.



(Redacted), better known as X-Man, watches his cousin Sooperpanna streak past Zoo (redacted) on Endeavour minutes after the launch of STS-130. X-man is entering the astronaut training program full time as soon as he is weaned.



Astronaut X-Man's official Project bamboo Portrait.

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X-Man enjoys the joys of microgravity training aboard the NASA "Vomit Comet" a modified DC-9 that flies parabolic arcs above the Gulf of Mexico to induce weightlessness.

Shortly after the Phase One missions of Project Bamboo were complete, the crews and manifests for Phase Two were announced. America's newest astronaut, X-Man, will fly with his cousin Sooperpanna on mission STS-131 / Bamboo Eleven, scheduled for launch in the pre-dawn hours of April 5, 2010. This will be the first Project Bamboo mission to feature two giant pandas on the crew. Sooperpanna will be the commander and occupy the left seat on the flight deck, and X-Man will be the pilot, sitting in the right seat. The other two flight deck seats and of the m-deck seats will be occupied by the human astronauts. Launch of the Space Shuttle Discovery is scheduled for 6:21 AM National Zoo time. There will be three additional missions as part of Phase Two.



As part of his astronaut training Xi Lan learned how to drive a tank - but not just any tank. The X-Man is shown standing up in the driver's hatch of the NASA M-113 Crew Rescue Vehicle, which would be used to make a quick escape from the launch pad 39-A area in the event of a catastrophe.

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Training for mission STS-131 / Bamboo 11 continues with the Terminal countdown Demonstration Test, a dress rehearsal of launch day. This mission will be the first to have not one, but TWO pandas aboard! Commander Sooperpanna will be making his 11th consecutive flight, while Pilot X-Man is making his first trip into space.

History was made in the pre-dawn hours of April 5, 2010 as the space shuttle Discovery roared aloft from launch pad 39-A with two pandas at the controls. STS-131 / Bamboo 11 had mission commander Sooperpanna in the left seat, and first-time flier X-Man in the right-hand pilot's seat. Never before had a space mission been completely controlled and piloted by two pandas and cousins as well. Sooperpanna had to contend with a non-working kU band radar as he brought the space shuttle to dock with the International Space Station. After several days of docked operations, X-Man flew the shuttle around the station just before the shuttle departed the area.



Project Bamboo astronauts "Sooperpanna" Tai Shan & "X-Man" Xi Lan are shown in the Quest Airlock of the International Space Station. X-Man is trying on a human extravehicular mobility unit, more commonly known as a spacesuit. To no one's surprise, his little arms and legs do not even begin to reach to the gloves and boots. Special EMU's are being manufactured to accommodate the spacewalking pandas that will fly on STS-145 / Bamboo 15.

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Japan Aerospace Exploration Agency (JAXA) astronaut Naoko Yamazaki, STS-131 mission specialist, is pictured with space shuttle pilot "X-Man" Xi Lan on the flight deck of space shuttle Discovery during post launch activities. Not only is the X-Man still wearing his orange launch and entry suit, but is sporting a new set of bunny ears as well!



Sooperpanna checks out the commander's cockpit setup of the Space Shuttle Atlantis during the Crew Interface Equipment test for mission STS-132 / Bamboo 12. Sooperpanna is dressed in clean room attire, known as a bunny suit. CEIT provides the crew with hands-on training and observation of shuttle and flight hardware.

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With the runaway success that Project Bamboo has been up till now, it has been decided to add a third phase. Project Bamboo has obtained permission and resources to add additional space shuttle flights after the public program is ended, and the three space shuttles “retired”. Four more giant pandas have been added to the program, three American born, and one European born. Two of these pandas reside in an American zoo on the west coast, and the remaining two live in China at two conservation and breeding centers. As a result, the Panda Temporary Agency has had to vastly increase their staff to cover for all training and spaceflight absences by all six panda astronauts.

The first mission of Phase Three will be STS-145 / Bamboo 15. This will be the first flight with an all panda team of astronauts. The number of flights and crew selections for additional Phase Three missions has yet to be determined.



The crew portrait for STS-145 / Bamboo 15. From L to R the astronauts are Mission Specialist Lani, Commander Sooperpanna, Mission Specialist Su Lin, Pilot X-Man, Mission Specialist Zoomie, and European astronaut Mission Specialist Fooey.

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Problems for Project Bamboo developed when news of Phase Three was leaked to the news media. The FBI, CIA, Zoo Police, and other agencies are investigating to find the source of this leak. The leaker, if found, faces severe penalties.



The leaked story as seen in the April 1st edition of The Daily Examiner.

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This is the official mission patch for STS-145 / Bamboo 15, the first all-panda space mission. The patch features a space shuttle in flight, and six stars for the six giant pandas. The Project Bamboo motto is at the bottom of the patch, and it translates as "Giant Pandas to the Stars" The all panda crew consists of shuttle commander Sooperpanna; shuttle pilot X-Man; mission specialists Zoomie, Lanibear, Fooley, and Honeybear.

Now that the cat (panda?) is out of the bag about Phase Three of Project Bamboo, program management decided to commemorate the historic nature of the STS-145 / Bamboo 15 mission by applying special graphics to various pieces of program apparatus, including the Space shuttle Discovery. Special heat resistant graphics have been applied to both sides of the fuselage, similar to those used by overnight shipper FedEx on the Boeing 777 aircraft that carried commander Sooperpanna and mission specialist Lani to China.



NASA has rolled the Space Shuttle Discovery to the Vehicle Assembly Building for mating with the external fuel tank and solid rocket boosters that will launch the all-panda crew on Project Bamboo's STS-145 / bamboo 15 mission. In keeping with the historic nature of this flight, special panda and Project Bamboo graphics have been applied to both sides of the orbiter. Ironically, the panda image used is that of the mission's commander, Sooperpanna.

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The tradition continues! The all-panda crew of STS-145 / Bamboo 15 poses for the assembled Kennedy Space Center workers before boarding the Astrovan for the trip to launch pad 39-A. and into history.



The NASA Astrovan drives to launch pad 39A with the crew of Project Bamboo mission STS-145/ Bamboo 15 for the Terminal Countdown Demonstration Test, a dress rehearsal of launch day. Special panda graphics have been applied to the Astrovan, similar to the giant image applied to both sides of the Space Shuttle Discovery. Visible peering out the windows are mission specialist LanI and her brother, Pilot X-Man.

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Space Shuttle Discovery is bathed in spotlights as she sits on Launch Pad 39-A at the Kennedy Space Center. Discovery is being prepared for the Top Secret and historic Project Bamboo mission STS-145 / Bamboo 15, which will be flown by an all panda crew. In honor of this historic event, Discovery has been painted with special temperature resistant panda graphics.

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Sunset at launch pad 39-A, and the space shuttle Discovery with special Project Bamboo graphics is prepared for fueling, and the arrival of her all-panda crew.

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