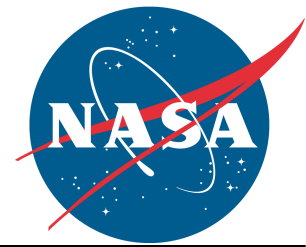


# NASA Mission Summary

National Aeronautics and  
Space Administration  
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## STS-124 MISSION SUMMARY

MAY 2008

### SPACE SHUTTLE DISCOVERY (STS-124)

Space shuttle Discovery's upcoming STS-124 mission is the second of three flights that will launch components to complete the Japan Aerospace Exploration Agency's Kibo laboratory. The shuttle crew will install Kibo's large Japanese Pressurized Module, or JPM, and its remote manipulator system, or RMS. The RMS consists of two robotic arms that support operations outside of Kibo. The lab's logistics module, or JLM, which was installed in a temporary location during STS-123 in March, will be attached to the new lab. Discovery's 14-day flight carries the largest payload to the station and will include three spacewalks. The shuttle also will deliver a new crew member and bring back another one after a three-month mission.

### CREW

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|--|---|
|  <p><b>Mark Kelly</b><br/>Commander (Commander, U.S. Navy)</p> <ul style="list-style-type: none"> <li>• Veteran of two spaceflights</li> <li>• Age: 44, Hometown: West Orange, N.J.</li> <li>• Married with two children</li> <li>• Patent on oxygen mask for combat aircraft</li> <li>• Enjoys cycling, weight-lifting and golf</li> </ul>                        |  <p><b>Ken Ham</b><br/>Pilot (Commander, U.S. Navy)</p> <ul style="list-style-type: none"> <li>• First spaceflight</li> <li>• Age: 43, Born: Plainfield, N.J.</li> <li>• Married with two children</li> <li>• Logged 3,700+ hours in 40 different aircraft</li> <li>• Enjoys snow &amp; water skiing, sky &amp; scuba diving</li> </ul>                                     |
|  <p><b>Karen Nyberg</b> (NYE-berg)<br/>Mission Specialist-1</p> <ul style="list-style-type: none"> <li>• First spaceflight</li> <li>• Age: 38, Hometown: Vining, Minn.</li> <li>• Ph.D. mechanical engineering, UT Austin, 1998</li> <li>• Patent on "friendly" robot probe &amp; socket</li> <li>• Enjoys art, sewing, piano &amp; time with her dogs</li> </ul> |  <p><b>Ron Garan</b> (GEH-rin)<br/>Mission Specialist-2 (Colonel, U.S. Air Force)</p> <ul style="list-style-type: none"> <li>• First spaceflight</li> <li>• Will conduct three spacewalks</li> <li>• Age: 46, Born: Yonkers, N.Y.</li> <li>• Married with three children</li> <li>• Enjoys coaching &amp; teaching Sunday School</li> </ul>                                |
|  <p><b>Mike Fossum</b><br/>Mission Specialist-3</p> <ul style="list-style-type: none"> <li>• Veteran of one spaceflight</li> <li>• Lead STS-124 spacewalker, will conduct three</li> <li>• Age: 50, Hometown: McAllen, Texas</li> <li>• Married with four children</li> <li>• Eagle Scout and a Boy Scout Scoutmaster</li> </ul>                                  |  <p><b>Akihiko Hoshide</b> (ah-kee-he-ko ho-she-day)<br/>Mission Specialist-4</p> <ul style="list-style-type: none"> <li>• Japan Aerospace Exploration Agency astronaut</li> <li>• First spaceflight</li> <li>• Born in 1968 in Tokyo, Japan</li> <li>• Completed Soyuz training in Star City, Russia</li> <li>• Enjoys flying, rugby, swimming and snow skiing</li> </ul> |
|  <p><b>Greg Chamitoff</b> (SHAM-eh-tawf)<br/>Mission Specialist-5<br/>Expedition 17 Flight Engineer</p> <ul style="list-style-type: none"> <li>• First spaceflight</li> <li>• Ph.D. aeronautic &amp; astronautic, MIT, 1992</li> <li>• Age: 45, Born: Montreal, Canada</li> <li>• Returns on STS-126, targeted November 2008</li> </ul>                           |  <p><b>Garrett Reisman</b> (REESE-man)<br/>Expedition 17 Flight Engineer<br/>Mission Specialist-5</p> <ul style="list-style-type: none"> <li>• Launched to the station on STS-123 in March</li> <li>• Age: 40, Hometown: Parsippany, N.J.</li> <li>• Returns to Earth on STS-124</li> <li>• Enjoys flying, mountaineering &amp; canyoneering</li> </ul>                    |
|  | <p>The STS-124 patch depicts the shuttle docked with the space station. The significance of the mission and the Japanese contribution to the station is recognized by the Japanese flag depicted on the Pressurized Module and the word Kibo written in Japanese at the bottom of the patch. The view of the sun shining down upon the Earth represents the increased "hope" that the entire world will benefit from the module's scientific discoveries.</p> |

**SPACEWALKS** Each will last approximately 6.5 hours.

- On flight day 4, Garan and Fossum will transfer the Orbiter Boom Sensor System back to the shuttle from its temporary location of the station’s truss, or backbone. The crew will then prepare the JPM for its removal from the shuttle’s payload bay. Later that day, the JPM will be installed on the port side of Harmony. The spacewalkers also will do some work on the starboard Solar Alpha Rotary Joint, which has had limited ability for several months. Garan will install a replacement trundle bearing assembly, while Fossum inspects a potentially damaged area on the joint. Fossum also will test techniques to clean the surface of the joint's race ring.
- On flight day 6, Garan and Fossum will install covers and external television equipment on the JPM and remove covers on the RMS, which will be deployed on flight day 8. The spacewalkers also will prepare for the flight day 7 relocation of the JLM.
- On flight day 9, Garan and Fossum will primarily work to replace a failed nitrogen tank assembly on the station’s truss with a spare that was temporarily stored on one of the station external stowage platforms. They also will retrieve a failed camera system on the truss.

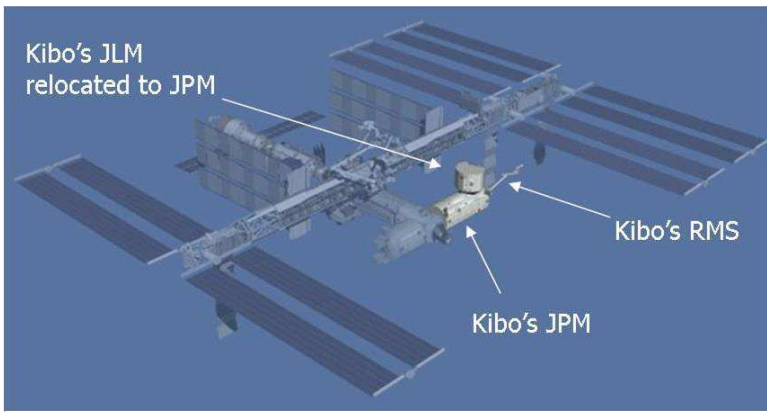


Figure 1: Space station configuration after STS-124

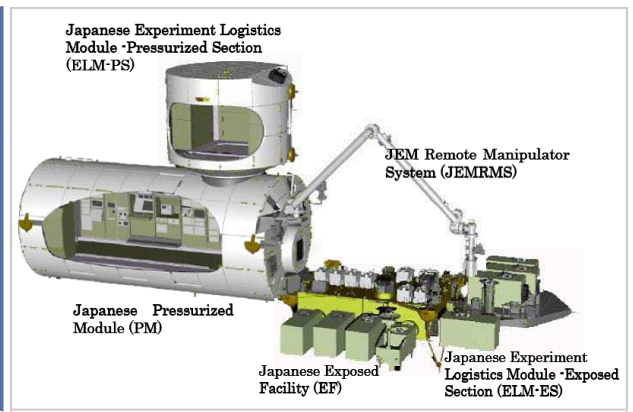


Figure 2: Kibo and its components

**FACTS & FIGURES**

- STS-124 is the 123rd space shuttle flight, the 26th flight to the station, the 35th flight for Discovery and the third flight in 2008.
- The Kibo laboratory—which means “hope” in Japanese—is the country’s major contribution to the station and will enhance the research capabilities of the space station.
- The JPM will be the largest habitable module on the space station and is equipped with its own airlock and robotic arm for external experiments.
  - The final components of Kibo will be assembled in space on shuttle mission STS-127.
- The RMS main arm can handle up to 14,000 pounds of hardware. The small fine arm, when attached to the main arm, handles more delicate operations. Each arm has six joints that mimic the movements of a human arm.
  - The JPM is 36.7 feet long and 14.4 feet in diameter, about the size of a large tour bus.
  - The main arm measures 32.5 feet long, and the small fine arm measures 6.2 feet.
  - Kibo experiments and systems are operated from the Japan Aerospace Exploration Agency's control center called the Space Station Integration and Promotion Center, just north of Tokyo.
- Experiments in Kibo focus on space medicine, biology, Earth observations, material production, biotechnology and communications research.
- To help prevent the glove cuts seen in recent missions from recurring, both spacewalkers will wear gloves with special patches on the thumb and index finger for the first time. The patches are made of the same protective vectran material already used in the palm of the gloves, but in a much tighter weave. In this form, the fabric is called TurtleSkin. It is up to four times more resistant to damage.