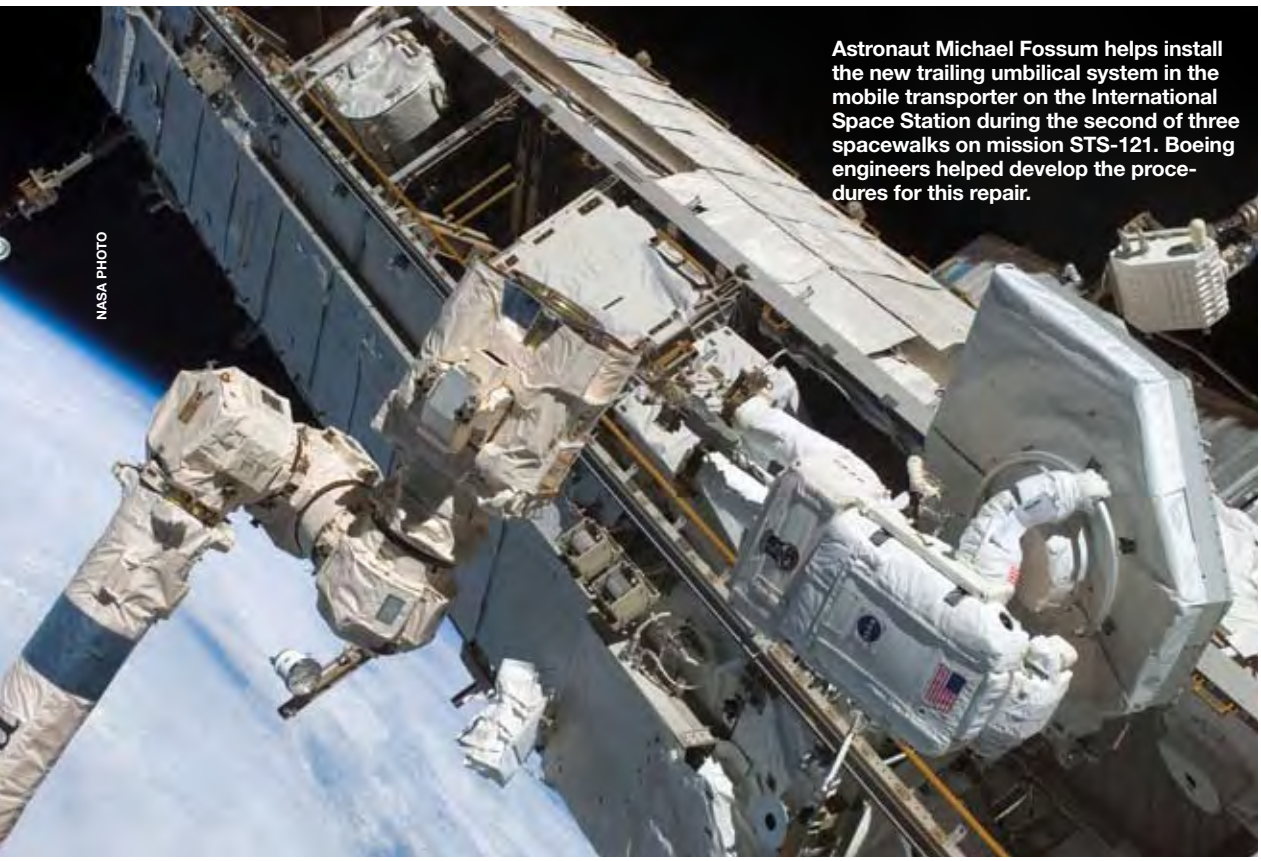

NASA PHOTO

Astronaut Michael Fossum helps install the new trailing umbilical system in the mobile transporter on the International Space Station during the second of three spacewalks on mission STS-121. Boeing engineers helped develop the procedures for this repair.

Gold-medal performance

Boeing employees help make sure STS-121 is safe and successful

By Ed Memi

Like a gold-medal Olympic gymnast, Space Shuttle *Discovery* launched, did a back flip in orbit and landed with picture-perfect precision.

Mission STS-121 began with a July 4 launch and ended 13 days later with a safe landing at Kennedy Space Center, Fla. *Discovery's* mission to repair and resupply the International Space Station (ISS) was a success, with only a few minor anomalies during the flight.

For Boeing Space Shuttle engineers, perhaps the biggest cause to celebrate came from what did not happen: The orbiter sustained virtually no debris impact damage or other serious problems. The Shuttle External Tank lost much less insulating foam than on previous flights. Prior to launch, Boeing played a key role in analyzing the aerodynamic effects of removing about 37 pounds of foam from a wind deflector on the shuttle's External Tank.

Focusing on safety, the shuttle team continued to check the orbiter for damage all through the flight. Part of that checkout involved the shuttle performing an on-orbit 360-degree back flip—only the second time in shuttle history this maneuver was performed. The back flip, coupled with a boom inspection of the shuttle's underside, confirmed that there was no significant damage to the heat shield.

Some minor anomalies did occur, however, which Boeing engineers helped NASA and the United Space Alliance—a Boeing–Lockheed Martin joint venture that's the NASA prime contractor for Space Shuttle operations—to resolve. Boeing employees helped to assess and clear as problems two protruding heat-resistant gap fillers and two thermal blanket patches that had lifted up during launch, as well as a potential fuel leak in the auxiliary power unit. Refined analysis procedures from the last shuttle mission helped engineers complete analyses in only 24 hours.

"The team's performance has been exceptional," said Dan Bell, Boeing's Thermal Protection System subsystem manager.

The shuttle docked with the ISS on the third day of the mission. Aboard *Discovery* was a cargo module for ISS, along with more than 7,400 pounds of new space station equipment and crew supplies. Boeing payload processing personnel played a key role in preparing the cargo for the mission as well as unloading it after landing. "We unloaded a lot of excess parts, old clothes and other items that freed up room in the Space Station," said Ken Koby, a Boeing senior systems payload engineer who works in the payload processing facility at Kennedy Space Center.

"The Boeing team did a tremendous job working with our NASA and United Space Alliance customers to prepare *Discovery* and ensure the safe and successful mission of STS-121," said Brewster Shaw, Boeing Space Exploration vice president and general manager. "We are now positioned to fly out the remaining shuttle missions, complete International Space Station assembly, and are prepared to take the next big steps to explore the moon, Mars and beyond."

On the next Space Shuttle mission, STS-115, scheduled for launch no earlier than Aug. 28, the orbiter *Atlantis* will carry the Boeing-built P3/P4 truss assembly and solar array to the ISS. ■

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