We've only just b

Boeing delivers its last major element for International Space Station, but continues to support the orbiting outpost

By Diane Stratman

Look in the sky on a clear night at the right time, and you can see the most ambitious engineering project in world history. The International Space Station shines like a bright star now, and if all goes as planned, in about a year and a half it will be what NASA envisioned decades ago: the most capable space laboratory ever constructed. Once complete, the station will be home to as many as six astronauts at a time, who will work on experiments that run the gamut of scientific disciplines.

With the station assembly scheduled to finish in mid-2010, Boeing completed its part last month, with Space Shuttle *Discovery*'s delivery of the Starboard 6 truss segment, solar arrays and fresh batteries. The truss will support a pair of solar arrays whose power-generating capability will allow the ISS to reach its full capacity of enabling six astronauts to live and work on station.

"It's bittersweet," said Dave Cormack regarding closeout of station assembly. As Boeing's flow manager for last month's mission, Cormack has been responsible over the past eight years for ensuring that everything flows smoothly with assembly scheduling and testing. "I always get a thrill watching the station fly over; once it's complete, it'll be brighter than ever," he said.

But the last delivery of Boeing-built elements doesn't mean Boeing's work is done. ISS engineer Bob Levy has worked on the station's solar array modules and helped figure out how to initially power them up in space. In 1989, he was one of more than 1,000 people working on the design details of the station's power modules. "That was nearly 20 years ago; now we're finally transitioning from assembling the station to operating it as NASA envisioned," he said. In the future, Levy and others will focus on keeping the station's electrical generation system operational.

With six or possibly seven remaining missions to the ISS through spring 2010, future deliveries will include the remaining portions of the Japanese Experiment Module, with its exposed experiment platform; a Russian miniature research module; and Node 3 and Cupola, which will give astronauts a better look outside the ISS. As the prime contractor and integrator, Boeing ensures all station elements properly mate with their connecting counterparts.

Once station assembly is complete, Boeing will continue to

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sustain, operate and maintain the station with its full crew living and working on board. Boeing will provide the integration support as NASA launches the remaining payload racks intended to outfit the ISS in preparation for its full utilization as a National Laboratory. These science racks contain the equipment necessary to conduct important research that could lead to a better understanding of the human condition when exposed to long periods of time in microgravity, as well as scientific findings important to man's existence on Earth.

What will occur on board the International Space Station once it's fully operational? NASA envisions at least a decade of routine research operations; multiply that by the number of astronauts, and the ISS will provide well over 25,000 crew-days in orbit. This uninterrupted, long-term access to space will allow researchers to rapidly acquire the large data sets needed to validate new concepts and confirm previously unobserved phenomena. Scientists will be able to make multiple experiment runs in succession, obtaining statistically significant results in a manner of weeks or days instead of years. Research aboard the station will span bioastronautics, earth science, fundamental biology, physical sciences and space product development.

Levy's been enthusiastic about space exploration since the fourth grade, when he dragged a television to school so that he and his classmates wouldn't miss a moment of an Apollo launch. Now, he can look up into the skies and know that he and many Boeing employees have been an important part of not only building and assembling the space station but of achieving its marvelous potential. ■

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PHOTO: (FAR LEFT) Boeing technicians install new batteries on the Boeing-built Starboard 6 truss element, launched on Space Shuttle *Discovery* last month. DAVE BRINKO/INDYNE **(LEFT, ABOVE)** During a spacewalk in March, astronaut Richard Arnold, a crewmember of space shuttle mission STS-119 (flown on *Discovery*), works to permanently attach the S6 segment to the International Space Station. NASA **(LEFT, BELOW)** In this image taken last month by a STS-119 crewmember, the S6 segment is held by the International Space Station's robotic Canadarm2. NASA