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SPACE STATION

Impact of the Grounding of the Shuttle Fleet

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Highlights

Highlights of GAO-03-1107 a report to Chairman, Committee on Commerce, Science, and Transportation, U.S. Senate

Why GAO Did This Study

In 1998, the National Aeronautics and Space Administration (NASA) and its international partners—Canada, Europe, Japan, and Russia—began on-orbit assembly of the International Space Station, envisioned as a permanently orbiting laboratory for conducting scientific research under nearly weightless conditions. Since its inception, the program has experienced numerous problems, resulting in significant cost growth and assembly schedule slippages.

Following the loss of Columbia in February 2003, NASA grounded the U.S. shuttle fleet, putting the immediate future of the space station in doubt, as the fleet, with its payload capacity, has been key to the station's development. If recent discoveries about the cause of the Columbia's disintegration require that the remaining shuttles be redesigned or modified, delays in the fleet's return to flight could be lengthy. In light of these uncertainties, concerns about the space station's cost and progress have grown.

This report highlights the current status of the program in terms of on-orbit assembly and research; the cost implications for the program with the grounding of the shuttle fleet; and identifying significant program management challenges, especially as they relate to reaching agreements with the international partners.

www.gao.gov/cgi-bin/getrpt?GAO-03-1107.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Allen Li (202) 512-4841 or LiA@gao.gov.

What GAO Found

Although the effects of the Columbia accident on the space station are still being explored, it is clear that the station will cost more, take longer to complete, and have further delay in the achievement of key research objectives. Due to the limited payload capacity of Russia's Soyuz and Progress vehicles—which the program must now rely on to rotate crew and provide logistics support—the station is currently in a survival mode. On-orbit assembly is at a standstill, and the on-board crew has been reduced from three to two members. NASA officials maintain that delays in on-orbit assembly will be at least a "month for month" slip from the previous schedule. However, these delays have presented a number of operational challenges. For example, several key components that were ready for launch when the Columbia accident occurred have been idle at Kennedy Space Center and now require additional maintenance or recertification before they can be launched. Moreover, certain safety concerns on-board the station cannot be addressed until the shuttle fleet's return to flight. The grounding of the shuttle fleet has also further impeded the advancement of the program's science investigations. Specifically, the limited availability of research facilities and new science materials has constrained on-board research.

NASA has yet to estimate the potential costs and future budget impacts that will result from the grounding of the shuttle fleet. Throughout the life of the program, however, maintaining goals and objectives for the space station has been a challenge for NASA. NASA has analyzed anticipated costs that the program will incur to keep a limited crew on board the station until the U.S. shuttles resume flight, and officials have stated that there would not be significant changes to the execution of the current budget and that the fiscal year 2004 budget request would remain at current levels. NASA plans to continue to develop hardware and deliver station elements to Kennedy Space Center to be prepared for launch as previously scheduled. However, a number of factors will likely result in increased costs, including costs to maintain and store station components and costs for extending contracts.

Important decisions regarding funding and partner agreements still need to be made. For example, agreements that cover the partners' responsibility for shared common operations costs may need to be adjusted, an adjustment that could result in NASA's paying a larger share of these costs. In addition, logistics flights using Russian vehicles may need to be accelerated to ensure continued operations on-board the station. Russia has stated that additional flights are possible, but it could need additional funding from the other partners. However, the United States may be prohibited from providing certain payments due to a statutory restriction. NASA and its partners must also develop a plan for assembling the partners' modules and reaching agreement on the final station configuration. The partners were on a path to agree on final configuration by December 2003, but this process has been delayed by the Columbia accident.