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INTERNATIONAL SPACE STATION

Significant Challenges May Limit Onboard Research

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Highlights

Highlights of GAO-10-9, a report to congressional requesters

Why GAO Did This Study

In 2010, after about 25 years of work and the expenditure of billions of dollars, the International Space Station (ISS) will be completed. According to the National Aeronautics and Space Administration (NASA), the ISS crew will then be able to redirect its efforts from assembling the station to conducting research.

In 2005, Congress designated the ISS as a national laboratory; in addition, the NASA Authorization Act of 2008 required NASA to provide a research management plan for the ISS National Laboratory. In light of these developments, GAO was asked to review the research use of the ISS. Specifically, GAO (1) identified how the ISS is being used for research and how it is expected to be used once completed, (2) identified challenges to maximizing ISS research; and (3) identified common management practices at other national laboratories and large science programs that could be applicable to the management of the ISS. To accomplish this, GAO interviewed NASA officials and reviewed key documents related to the ISS. GAO also studied two ground-based national laboratories and several large science institutions.

What GAO Recommends

GAO recommends that the NASA Administrator implement actions, such as increasing user outreach and centralizing decision making to enhance use of the ISS. NASA concurred with the recommendations.

View GAO-10-9 or key components.

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What GAO Found

The ISS has been continuously staffed since 2000 and now has a six-member crew. The primary objective for the ISS through 2010 is construction, so research utilization has not been the priority. Some research has been and is being conducted as time and resources permit while the crew on board performs assembly tasks, but research will is expected to begin in earnest in 2010. NASA projects that it will utilize approximately 50 percent of the U.S. ISS research facilities for its own research, including the Human Research Program, opening the remaining facilities to U.S. ISS National Laboratory researchers.

NASA faces several significant challenges that may impede efforts to maximize utilization of all ISS research facilities, including:

- the impending retirement of the Space Shuttle in 2010 and reduced launch capabilities for transporting ISS research cargo once the shuttle retires,
- high costs for launches and no dedicated funding to support research,
- limited time available for research due to the fixed size of crew and competing demands for the crew's time, and
- an uncertain future for the ISS beyond 2015.

NASA is researching the possibility of developing a management body—including internal and external elements—to manage ISS research, which would make the ISS National Laboratory similar to other national laboratories. Though there is no existing direct analogue to the ISS, GAO studied two national laboratories and several other large science institutions and identified three common practices that these institutions employ that could benefit the management of ISS research.

- **Centralized management body**: At each of the institutions GAO studied, there is a central body responsible for prioritizing and selecting research, even if there are different funding agencies. NASA's ISS managers are currently not responsible for evaluating and selecting all research that will be conducted on the ISS, leaving this to the research sponsor.
- **In-house scientific and technical expertise**: The institutions GAO studied have large staffs of in-house experts that can provide technical and engineering support to users. NASA's staff members in ISS fundamental science research areas have been decentralized or reassigned, limiting its capability to provide user support.
- **Robust user outreach:** The laboratories and institutes GAO studied place a high priority on user outreach and are actively involved in educating and recruiting users. NASA has conducted outreach to potential users in the public and private sectors, but its outreach is limited in comparison.