

Space Flight Operations Contract between NASA and United Space Alliance

Background

Headquartered in Houston, United Space Alliance was established in 1995 as a Limited Liability Company. United Space Alliance is equally owned by The Boeing Company and Lockheed Martin Corporation and currently has 8,800 employees working at sites in Texas, Florida, and Alabama. NASA and United Space Alliance formally signed the Space Flight Operations Contract on October 1, 1996. The initial contractual period was six years, from October 1996 to September 2002. NASA exercised an option for a two-year extension in 2002, and another two-year extension option existed in 2003. The total value of the contract until 2003 was estimated at \$12.8 billion.

Content and Features of the Space Flight Operations Contract

Under the Space Flight Operations Contract, United Space Alliance had overall responsibility for processing selected Shuttle hardware, including:

- Inspecting and modifying the Orbiters
- Installing the Space Shuttle Main Engines on the Orbiters
- Assembling the sections that make up the Solid Rocket Boosters
- Attaching the External Tank to the Solid Rocket Boosters, and then the Orbiter to the External Tank
- Recovering expended Solid Rocket boosters

In addition to processing Shuttle hardware, United Space Alliance is responsible for mission design and planning, astronaut and flight controller training, design and integration of flight software, payload integration, flight operations, launch and recovery operations, vehicle-sustaining engineering, flight crew equipment processing, and operation and maintenance of Shuttle-specific facilities such as the Vehicle Assembly Building, the Orbiter Processing Facility, and the launch pads. United Space Alliance also provides spare parts for the Orbiters, maintains Shuttle flight simulators, and provides tools and supplies, including consumables such as food, for Shuttle missions.

Under the Space Flight Operations Contract, NASA has the following responsibilities and roles:

- Maintaining ownership of the Shuttles and all other assets of the Shuttle program;
- Providing to United Space Alliance the Space Shuttle Main Engines, the External Tanks, and the Redesigned Solid Rocket Motor segments for assembly into the Solid Rocket Boosters;
- Managing the overall process of ensuring Shuttle safety;
- Developing requirements for major upgrades to all assets;
- Participating in the planning of Shuttle missions, the directing of launches, and the execution of flights;
- Performing surveillance and audits and obtaining technical insight into contractor activities; and
- Deciding if and when to “commit to flight” for each mission.

The Space Flight Operations Contract has two major areas of innovation:

- It replaced the previous “cost-plus” contracts (in which a firm was paid for the costs of its activity plus a negotiated profit) with a complex contract structure that included performance-based and cost reduction incentives. Performance measures include safety, launch readiness, on-time launch, Solid Rocket Booster recovery, proper orbital insertion, and successful landing.
- It gave additional responsibilities for Shuttle operation, including safety and other inspections and integration of the various elements of the Shuttle system, to United Space Alliance. Many of those responsibilities were previously within the purview of NASA employees.

Implementation Results

The contract provided for additional consolidation and then privatization, when all remaining Shuttle operations would be transferred from NASA. Phase 2, scheduled for 1998-2000, called for the transfer of Johnson Space Center-managed flight software and

flight crew equipment contracts and the Marshall Space Center-managed contracts for the External Tank, Space Shuttle Main Engine, Reusable Solid Rocket Motor, and Solid Rocket Booster.

However, Marshall and its contractors, with the concurrence of the Space Shuttle Program Office at Johnson Space Center, successfully resisted the transfer of its contracts. Therefore, the Space Flight Operations Contract's initial efficiency and integrated management goals have not been achieved.

The major annual savings resulting from the Space Flight Operations Contract, which in 1996 were touted to be some \$500 million to \$1 billion per year by the early 2000s, have not materialized. These projections assumed that by 2002, NASA would have put all Shuttle contracts under the auspices of United Space Alliance, and would be moving toward Shuttle privatization. Although the Space Flight Operations Contract has not been as successful in achieving cost efficiencies as its proponents hoped, it has reduced some Shuttle operating costs and other expenses. By one estimate, in its first six years the contract has saved NASA a total of more than \$1 billion.

Declaration:

This case was developed based on the first volume of the Final Report of the Columbia Accident Investigation Board. All content was retrieved from the report.