



X PRIZE Team Summary Sheet

AMERICAN ASTRONAUTICS



All the information given in this document has been cleared for official release by the X PRIZE Foundation and the American Astronautics Corporation (AAC). Quotes provided by the AAC team leader are shown in italics. For more information about AAC, please visit their web site at www.AmericanAstronautics.com/Projects/X-Prize/.

TEAM OVERVIEW



The American Astronautics Corporation team is comprised of a group of seasoned "low cost launch vehicle" designers, builders, testers and launchers of simple, pressure fed, reusable space launch vehicles which follows the Minimum-Cost-To-Flight philosophy.

TEAM LEADER BACKGROUND

Robert C. Truax, Captain USN, Ret. is a pioneer in the rocket, missile and space fields. He was the first to perform rocket thrust chamber tests using compressed air and gasoline in 1937. Billy M. Sprague is a seasoned engineering R&D and aerospace management professional with over 30 years experience in the industry, spanning virtually all areas of rocket propulsion and launch vehicle development from concept through engineering development, testing, deployment, and operation.

DATA AT-A-GLANCE

TEAM SPECIFICATIONS

- Name: American Astronautics Corporation
- Leader: Bill Sprague and Bob Truax
- Place: Oceanside, California, USA
- Registered with X PRIZE: 17 January 2003
- Web:
www.AmericanAstronautics.com/Projects/X-Prize

VEHICLE SPECIFICATIONS

- Name: The Spirit of Liberty
- Length: 42 feet
- Diameter: 3 feet
- GTOW: Not yet disclosed.
- Dry Weight: 10,000 lbm

- Crew Environment: Pressurized cabin, crew seated in tandem configuration.
- Payload Capacity: 3 passengers
- No. of Engines: 1
- Propulsion System: Pressure fed liquid bi-propellant.
- Fuel: Hydrazine/UDMH
- Oxidizer: Nitrogen Tetroxide
- Total Thrust: Not yet disclosed
- Reaction Control System: Not yet disclosed. Computer controlled.

MISSION SPECIFICATIONS

- Ascent Method: Launch from coastal regions
- Max. Accel. Force on Ascent: Not yet disclosed
- Alt. at Engine Cut-off: 115,000 feet
- Time at Engine Cut-off: 73 seconds
- Max. Speed: Not yet disclosed
- Max. Altitude: >100 km
- Time in Weightless Conditions: Not yet disclosed
- Reentry Method: Ballistic reentry with controlled aerobraking
- Accel. Forces on Descent: Not yet disclosed
- Landing Method: Parachute descent from 10,000 into water
- Total Duration: Not yet disclosed.
- Landing Distance from Take-off Location: A few miles
- Time Between Missions: Hours (to re-pack the parachute, re-erect and refuel the rocket)



VEHICLE/LAUNCH SYSTEM DESCRIPTION

The Spirit of Liberty is the logical step leading from



the X-3 (also known as the Sea Horse or the Volksrocket), designed by Truax in the mid-1960s to take a single person to an altitude of 100 km, to the currently in-work commercial space tourism vehicle designed by Sprague, capable of carrying 30 passengers. The Spirit of Liberty will weigh about 10,000 pounds and have an engine producing some 20,000 pounds of thrust. The rocket is 3 feet in diameter and some 42 feet long.

PROPULSION SYSTEM

Guidance of The Spirit of Liberty is by a simple autopilot that steers the rocket through a gimbaled engine.



MISSION DESCRIPTION

The American Astronautics Corporation approach is the essence of simplicity. The passengers are seated in tandem in the sealed and pressurized forward portion of the rocket. No artificial life support is required for so short a flight. All flight functions are automatic. The passengers have no duties except to enjoy the ride.

VEHICLE ASCENT

The Spirit of Liberty is a single-stage vehicle that will take off vertically from the Pacific coast or a coastal island, be powered for 73 seconds and bum out at an altitude of about 115,000 ft.

WEIGHTLESSNESS

The Spirit of Liberty will coast to an altitude of well over 100 km (63 miles), then fall back into the atmosphere.

VEHICLE DESCENT AND LANDING

Under the action of aerodynamic forces, The Spirit of Liberty will enter a controlled slow flat spin for aerobraking, its velocity being reduced to sub-sonic at about 20,000 feet. A parachute will be deployed at 10,000 ft. to slow its descent to under 50 feet per second, and it will splash down in the ocean a few miles at sea. A waiting boat will take the rocket in tow and return it to shore where the passengers will disembark. To repeat the flight, it will only be necessary to re-pack the parachute, re-erect and refuel The Spirit of Liberty, and launch again.

HARDWARE & TESTS

The X-3, the single person precursor to The Spirit of Liberty, was built and flown on numerous occasions under contract with the U.S. Navy.

The American Astronautics Corporation has invested approximately \$2.5 million in flight hardware to date. The basic frame of The Spirit of Liberty will be readied for sub-system and vehicle, ground and flight testing.

PUBLICITY

PERSONAL APPEARANCES

- None yet disclosed.

TELEVISION AND RADIO

- None yet disclosed.

PRINT MEDIA

- None yet disclosed.

TEAM BACKGROUND

TEAM MEMBERS

- Not yet disclosed

X PRIZE QUOTE

“The X Prize evidences that the spirit of exploration and that of competition originate from the same root



– it draws upon the fundamental element of mankind, to further that which separates us from all other elements; that unnatural selection which draws us out to all reaches of the imagination. Indeed, as a species, we are driven to understand, to know, to touch all that we define as Universe. And such as that is, we must reach the stars and possess them. So early in process, this must ultimately be effort of not governments, but as mankind’s common goal of existence. The X Prize Foundation serves as the single Center of Gravity with focus on these ends.” – Bill Sprague

PHILOSOPHY

“Adopting a Minimum-Cost-To-Flight philosophy, we leverage existing and well-established technologies and industry-proven approaches towards development and operation of affordable and reliable commercial space launch systems” – Bill Sprague

MISSION AND GOALS

“American Astronautics is actively developing a phased series of launch vehicles and support infrastructure towards meeting the needs of the emerging commercial space tourism market.” – Bill Sprague

X PRIZE FOUNDATION

Below is contact information for the X PRIZE Foundation.

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