Panel Session V - X-Prize & Zero-G Briefing to the 4F1 Space Congress

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X PRIZE & ZERO-G Briefing to the 41st Space Congress

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WHAT IS THE X PRIZE?

An international competition that will award a $10 Million cash prize to the first team to:

- Privately finance, build & launch a ship
- Carry 3 people to 62 miles (100 km)
- Two flights within 2 weeks (same ship)

The X PRIZE is:

- The largest cash prize ever;
- The NASCAR of space;
- Speed, innovation, performance; and,
- A high profile, global event.
- The Ultimate drama...

Aviation History

1903 - 1908
- Wright Brothers flew in 1903
- By 1908 only ten pilots had flown

1909 - 1912
- Diverse concepts tried, ‘nonsense’ became ‘breakthroughs’
- Entrepreneurs drove development
- Belief, in 1909: “I can do that.”
- Thousands of pilots were trained
- Hundreds of aircraft types in 31 countries
- Not risk adverse
  - 35 of first 1000 pilots died in accidents (3.5%)
  - 50 MS industry in Europe (nearly a billion $yr2003$)
- More than 40 cash prizes, some for “impossible feats”
- Major Air shows
- Applications, and safety came later

1927 Orteig Prize: New York - Paris

- 1919 Orteig puts up a $25,000 challenge.
- 9 Teams register to compete
- They spend $400,000 to win the prize
- Underdog, 25 year old Lindbergh wins!
- 30x increase in passenger traffic
- 4x aircraft... 3x pilots...
- Aviation stocks skyrocket!

Presented by Champ Car

X PRIZE MEDIA REPORT

Total Print Impressions:
May’96 - Jan’04 >2.0 Billion

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Numerous studies have sought to forecast or measure market demand for space tourism.

**SPACE TOURISM MARKET ELASTICITY**

Including implied trends

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**Study Name**

- COLLABORATIVE EU
- CANADA
- FUTURE
- MONDON
- VANDERBILT
- BAY LOW
- CITY STUDY MEDIUM
- CITY STUDY HIGH
- BURLINGTON
- MOUNTAIN SPACETREK
- S.A.T. VIA 2000
- S.A.T. VIA 2001

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**Canadian Arrow**

**Canada**

**LAUNCH METHOD:** Vertical takeoff from coastal launch site

**PROPULSION:** First Stage: Alcohol and liquid rocket engine

**Second Stage:** Solid Rocket Propulsion

**LANDING METHOD:** Parachute Landing

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**Pablo DeLeon & Associates**

**Argentina**

**LAUNCH METHOD:** Vertical launch

**PROPULSION:** Hybrid (Liquid/solid) rockets

**LANDING METHOD:** Parachute landing system

**Half-scale Vehicle Test scheduled for December 2002**

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**Starchaser Industries, Ltd.**

**United Kingdom**

**LAUNCH METHOD:** Rocket Powered Vertical Takeoff

**PROPULSION:** Hybrid Rocket Motors

**LANDING METHOD:** Parachute

**Team Leader:** Steve Bennett

**Britain's #1 Rocket Developer**

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>20 teams, from 7 countries, have thus far registered to compete. More teams are expected. Each team is spending $2M - $20M to win the coveted X PRIZE.
Armadillo Aerospace
Dallas, Texas, USA

LAUNCH METHOD: Vertical Takeoff
PROPULSION: Hydrogen Peroxide Engines
LANDING METHOD: Parachute/Crushable Nose

Leader: John Carmack - Software Guru, creator of Quake and Doom leads technical design and funding of Armadillo.

What is the X PRIZE CUP?

After the X PRIZE is won...

- Each year, X PRIZE Teams from around the World are invited to a single location to race and set new records.
- During a 14 day period, teams launch as often as they can...
- Teams are scored in 5 categories:
  - Category 1: Turn Around Time
  - Category 2: Max PAX
  - Category 3: Total PAX
  - Category 4: Max Altitude
  - Category 5: Fastest Flight Time
- Combined Category Score = X PRIZE CUP Champion
X PRIZE CUP VENUE - RFP

- X PRIZE has issued an RFP to U.S. spaceports.
- Four spaceports have provided proposals:
  - California
  - Florida
  - New Mexico
  - Oklahoma
- One Location will be selected by May’04
- First CUP planned for Summer 2005 (exhibition) & 2006 (competition)

Company Overview

An overnight success after 11 years of hard work...

ZERO-G has already obtained Patents (#5,971,319), Trademarks and FAA Supplemental Type Certificates (#ST01051LA) to protect its leadership position.

ZERO-G’s goal: Make the excitement and unique environment of space accessible to the general public and the commercial marketplace in a safe and cost-effective fashion.

Key Management, Directors & Advisors

- Alan Ladwig - (COO) – Previous NASA Associate Administrator of Policy & Plans.
- Noah McMahon - Chief Marketing Officer
- Robert Ward - Director, Aircraft Operations
- Mike McDowell - (Director) - Co-Founder. Space Adventures; Quark Expeditions. Leading adventure travel entrepreneur.
- Gloria Bohan - President, Omega World Travel a $500M/year leisure travel company.
- Ted Ellett - Hogan & Hartson, FAA General Counsel under President Reagan & Bush.
- Astronaut Advisors - ZERO-G has numerous Astronaut Advisors who will fly with the Customers.

Executive Management

ZERO-G management includes a world-class team of professionals from NASA, the FAA, and executives from the aerospace, tourism and educational arenas.

Peter H. Diamandis
Chairman/CEO & Founder
B.S., M.S., M.I.T., Aerospace Engineering.
M.D., Harvard Medical School
Founder, Managing Director, Int’l Space University
Chairman & President, X PRIZE Foundation
Co-Founder, Space Adventures.

Byron K. Lichtenberg
President & Founder
B.S., Aerospace Engineering, Brown University
M.S. Sc.D. Bio/Mechanical Engineering, M.I.T.
Space Shuttle Astronaut: STS-9, STS-45
3000 hrs in military jets; 8000+ hrs in 737 type rating
Pilot for major U.S. Airlines
Founder, President, Payload Systems, Inc.

Parabolic (Zero-G) Flight

- Only method to create weightlessness on Earth.
- 25-30 seconds of zero gravity during each parabola.
- NASA has flown over 140,000 parabolas over the past 30 years without incident.
- NASA uses a 45 year old Air Force KC-135 aircraft.
- Before ZERO-G, parabolic experiences were not available to the General Public in the U.S.
ZERO-G's Boeing 727

ZERO-G uses a specially modified B-727
Aircraft mods have been approved by FAA
Same body size as NASA's Parabolic aircraft.
B-727 offers a better quality parabola than NASA's aircraft.
Large fleet of 727 and easy access to maintenance facilities offers high assurance of aircraft availability.
Operated under Part-121 of the Federal Aviation Regulations, the highest standard for aircraft safety.

Mechanical STC

ZERO-G was required by the FAA to demonstrate the normal operations of every subsystem, or to modify systems for normal ops in parabolic flight.
ZERO-G conducted extensive engineering and verification work, including the creation of a 60,000 node FEM (Finite Element Model) in conjunction with strain-gage measurements during flights.
The following systems were in flight and data obtained to demonstrate normal operations:
- Fuel Systems and fuel procedures
- JT3D Engines
- Constant Speed Drives
- Air Cycle Machines
- Structures Analysis
- Flight Operations Procedures
The following modifications were made as part of the "Mechanical STC" to allow for safe operations during flight:
- Avionics/Gauges
- Hydraulic System
- Continued Airworthiness Program
- Approved interior

Interior Configuration

- Pallets and large cargo door allow rapid configuration between 'Cargo' and 'Zero-G' operations.
- Clients can pre-configure their experiments, film sets, etc. on pallets for easy loading onboard.
- 12 Pallets — 3 Pallets holding 30 seats; 9 Pallets for foam padding.

AMERIJET INT'L AIRLINES

ZERO-G has selected Amerijet Intl Airlines, a Florida-based, Part-121 Boeing 727-200 operators. Amerijet provides:
- AIRCRAFT: Access to one or more specially modified Boeing 727-200 cargo aircraft.
- MAINTENANCE: In strict adherence of the FAA's Continued Airworthiness Program.
- CREWS: Experienced & specially trained Flight & Ground Crews
- PRICING: Fixed Charter/ACMI price/hr

Operations Plan

ZERO-G and its aircraft are based in Miami, Florida. Regular operations will take place from there, but ZERO-G is able to relocate the aircraft anywhere a client wishes to fly with the addition of a ferry charge.
Future plans include using Las Vegas, Nevada as an additional base in order to capture more of the individual adventure market.

Barriers & Competition

Multiple Effective Barriers to Entry
(1) Patent (#5,871,319)
  - Business Model (the use of a cargo aircraft)
  - Engineering modifications
(2) Trademarks
  - ZERO-G®
  - Question Gravity®
(3) FAA Approvals — Supplemental Type Certificate (#ST01051LA).

Competition — No U.S. competition
- NASA KC-135 — not allowed to compete with ZERO-G (by law).
- CNES Airbus 300 — costs >$150,000 per flight (can not fly public).
- Russian IL-76 — military aircraft located in Russia/not FAA certified.
Pricing Strategy

Corporate and Individual Pricing:
- Retail Ticket Price $2,950
- Full Flight Price (27 flyers) $79,500

Entertainment Flight Price $65,000
Research/Education Flight Price $59,500
Government Flight Price TBD

NOTES: Current price for ZERO-G Flights in Russia is $7,000 (excluding travel and hotel).

Markets

ZERO-G has identified five robust markets for its services:

1. Entertainment / Film Production
2. Individual Adventure Travel
3. Corporate / Incentive
4. Research/Education
5. Government

THANK YOU!
www.xprize.org

"The best way to predict the future is to create it yourself."

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