X PRIZE Team Summary Sheet
DE LEÓN & ASSOCIATES

All the information given in this document has been cleared for official release by the X PRIZE Foundation and the de León team. Quotes provided by the de León team are shown in italics. For more information about Pablo de León and Associates, please visit their web site at www.pablodeleon.com.

TEAM OVERVIEW

Pablo de León and Associates is an Argentine company formed to design, build and operate a space suborbital transportation system, and for competing to the X Prize. Pablo de León and Associates is formed by Argentine aerospace specialists in the branches of propulsion, mechanical design, thermal systems, and life support and computer systems among other disciplines. The company is based in Buenos Aires, Argentina, but also has an office in Cape Canaveral, Florida.

TEAM LEADER BACKGROUND

Mr. Pablo de León is an aerospace engineer with extensive experience in space project management. He is co-founder and President of the Argentine Association for Space Technology (AATE), a non-profit, non-governmental organization based in Buenos Aires, Argentina. He designed and constructed several pressure suits for use in EVA underwater simulation procedures. Mr. de León worked for two years at Kennedy Space Center, Florida USA, on behalf of the Argentine Association for Space Technology. Mr. de León flew 80 weightless parabolas aboard the NASA KC-135 airplane completing and testing experiments in Zero-G environment. He was also, Payload Manager of the Project PADE, the first Argentine-made payload to fly in the Space Shuttle.

DATA AT-A-GLANCE

TEAM SPECIFICATIONS

- Name: Pablo de León and Associates
- Leader: Pablo de León
- Place: Buenos Aires, Argentina
- Registered with X PRIZE: 10 February 1997
- Web: www.pablodeleon.com

VEHICLE SPECIFICATIONS

- Name: Gauchito (non-official name, each experimental flight will have an official name)
- Length: 12 m [39.37 ft] (not including escape tower)
- Diameter: 2.20 m [7.28 ft] (Body), 6.60 m [21.65 ft] Total (Including Fins)
- GTOW: 8000 Kg [17,637 lb]
- Dry Weight: 2400 Kg [5,291 lb]
- Crew Environment: Nitrogen-Oxygen environment. Crewmembers will use pressurized suits at pure oxygen atmosphere during all the flight duration.
- Payload Capacity: 3 crewmembers, or 300 kg of payload.
- No. of Engines: 4
- Propulsion System: Throttleable, pressure fed
- Fuel: Hybrid Solid (Polyester Resin)
- Oxidizer: Liquid Oxygen (LOX)
- Total Thrust: 250,000 N [52,910 lb]
- Reaction Control System: Aerodynamic and micro jet (monopropulsion)

MISSION SPECIFICATIONS

- Launch Method: Vertical take-off from ground
- Max. Accel. Force on Ascent: 3 Gs
- Time and Alt. at 1st Stage Engine Cut-off: 60 seconds at 36 kilometers altitude
- Max. Speed: 1200 m/sec
- Max. Altitude: 108 kilometers
- Time in Weightless Conditions: 240 seconds
- Reentry Method: Ballistic reentry with parachute landing system
- Accel. Forces on Descent: 4 Gs (peaks)
- Landing Method: Parachute landing into water
- Total Duration: 17 minutes
- Landing Distance from Take-off Location: 80 km (approx.)
- Time Between Missions: Less than 2 weeks

VEHICLE/LAUNCH SYSTEM DESCRIPTION

The Gauchito vehicle will consist of a small three seat capsule atop a hybrid reusable rocket. The capsule and the rocket will each descend with their own separate parachutes and be recovered after a soft landing in the sea. The rocket will be recovered in the same way the solid rocket boosters of the Space Shuttle are presently recovered from the Atlantic Ocean and reused.

The capsule is an Apollo-type ballistic spacecraft designed to assure reusability for a minimum of 12 flights with a refurbishment time of less than two weeks. The main structure of the capsule will be manufactured using composite materials and lightweight metal alloy honeycomb construction.

The total weight of the rocket and capsule will is less than eight tons.

PROPULSION SYSTEM

The rocket itself will be made up of 4 separate hybrid engines clustered together.

MISSION DESCRIPTION

VEHICLE ASCENT

The flight will start with the liftoff of the rocket, a clustered unit made up of 4 hybrid engines producing a maximum acceleration of 3 Gs. The engines will burn until the vehicle has reached an altitude of 36 km where the engines will stop. Then the vehicle will coast to 108 kilometers. During the coasting phase the crew will experience zero G and the pilot will control the capsule (already separated from the booster) to obtain the best possible views of the Earth from that altitude.

A team will be waiting in the recovery ship for the capsule to retrieve the crew and return the spaceship for the next flight. Another ship will recover the rocket.

WEIGHTLESSNESS

After four minutes of weightlessness, the pilot will orient the thermal shield for descent into the atmosphere. The crew will again experience G forces and after a few moments the pilot will launch the drogue parachute to stabilize the capsule.

VEHICLE DESCENT AND LANDING

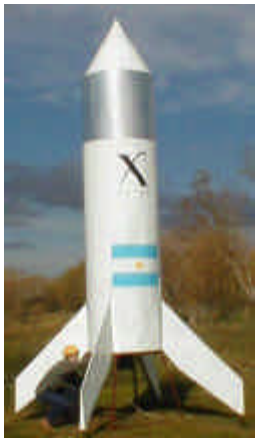
At about 3 kilometers of altitude the main parachutes will open to reduce the speed of the capsule for water recovery.

The rocket will descend using its own parachute system to the sea, for recovery and refurbishment.

HARDWARE & TESTS

Pablo de León and Associates has flown several reduced scale capsules using high altitude balloons to achieve near space environment. The capsules had electronics systems, GPS and video capability, so they obtained an important amount of data very useful for the upcoming flights. All recovery operations were conducted as a full scale test and validated the parachute deployment system.

- March 2001 – Capsule drop test performed from 54,000 feet.
- May 2002 – Capsule drop test performed from 96,000 feet.
- Currently, most of the capsule design is completed.
- Several hybrid propulsion tests have been performed and the actual propulsion system is currently under construction.



- The life support system has already been fully developed and tested, including the full pressure suits.
- A flight test of a half scale vehicle was performed in June 2003. Results of that test are resulting in substantial design changes that will require a repeat of the same flight test.

PUBLICITY

PERSONAL APPEARANCES

World Space Congress, Houston, 2002.

TELEVISION

- Discovery Channel
- CNN

PRINT MEDIA

- BBC Tomorrow World (U.K.)
- ISTOE Magazine (Brazil)
- Diario El Mercurio (Chile)
- Space.com (USA)

TEAM BACKGROUND

TEAM MEMBERS

- Jorge Lassig: Propulsion Systems Leader and Hybrid Rocket Systems Designer.
- Alejandro Alvarez: Electronics, Telemetry, and Telecommunications Systems Leader.
- Martin Demonte: General Operations and Internal Vehicle Design Manager.
- Diego Rocco: Structural Technician.
- Sebastian Delnero: Structural Designer Engineer.
- Ricardo Messina: Ground Systems and Machining
- Jorge Marchese: Ground Operations

X PRIZE QUOTE

“I believe the X-Prize is the most important and original idea to make space available for everyone in the near future. Although the impact the X-Prize will have in opening access to space cannot be predicted right now, I am sure in a very few years, at least one of the competitors will be able to make suborbital manned flights and from them rapidly move to the space tourism area. I don't see any of the major aerospace companies interested in this kind of business, so it will be an arena for new companies and space-entrepreneurs who really believe that space is for everybody. We in Argentina have been considering the idea of making a human-rated suborbital flight since 1984, and we had some plans developed to make it possible, but now the X-Prize gives as an extra incentive to do it, not only because of the cash prize, but because the world attention will be there, an attention which will also nurture the space tourism business." – Pablo de León

PHILOSOPHY

“We can use well-proven technology to cross the bridge to more challenging concepts, but we have to begin now even with the simplest forms of space tourism. The interest in space tourism is growing all over the world, and as soon as a company can offer suborbital space flights, I have no doubt it will be a complete success and all the seats will be filled for long time. Affordable space flight will be a reality in the very near future and a new era will begin. We cannot now quantify the incredible growth that space tourism and other space-related business will have once private industry shows that costs can be reduced." – Pablo de León

MISSION AND GOALS

“We want to provide a reliable and vehicle to cross the bridge and start space tourism flights since we are convinced our approach is one of the most feasible for the next years and can be accomplished inside a timeframe and with a realistic cost approach. Many space vehicles can be more advanced technologically, but ours is possible now. Our goal is to become a first class operator of safe and reliable suborbital space flights for all the world " – Pablo de León

X PRIZE FOUNDATION

Below is contact information for the X PRIZE Foundation.

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