

62nd International Astronautical Congress 2011

15th SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
12th UN/IAA Workshop on Small Satellite Programmes at the Service of Developing Countries (1)

Author: Mr. Ronnie Nader
Ecuadorian Civilian Space Agency (EXA), Guayaquil, Ecuador, rnader@exa.ec

Mr. Hector Carrion
Ecuadorian Civilian Space Agency (EXA), Guayaquil, Ecuador, cda@exa.ec

Mr. Sidney Drouet
Ecuadorian Civilian Space Agency (EXA), Guayaquil, Ecuador, is@exa.ec

Mr. Manuel Uriguen
Ecuadorian Civilian Space Agency (EXA), Guayaquil, Ecuador, ingenieria@exa.ec

Mr. Ricardo Allu
Ecuadorian Civilian Space Agency (EXA), Guayaquil, Ecuador, ec@exa.ec

NEE-01 PEGASUS: THE FIRST ECUADORIAN SATELLITE

Abstract

On April 2010 the Ecuadorian Civilian Space Agency – EXA started the project PEGASUS, the building of the very first Ecuadorian satellite. This project was undertaken by Ecuadorian personnel only, funded by the EXA and the local industry, launch operations and testing facility development funds are provided by the Ecuadorian Defense Ministry, while space operations are to be conducted jointly between EXA and Ecuadorian Air Force personnel.

The satellite was designed as a 1U cubesat, primary objective is to serve as technology and capability demonstrator while secondary objective is to serve the elementary schools of Ecuador with an space-based learning tool platform which will inspire the next generation of domestic engineers. Launch is schedule on board a Russian launch vehicle for a 450 to 550 km orbit, 78 degrees inclination, non sun synchronous, for the first half of year 2012.

Primary mission is to transmit a continuous, real time video feed from orbit, while displaying on-screen telemetry and an audio beacon carrying both human voice and digital data signal, secondary mission is to test various techniques, devices and capabilities, like the SEAM/NEMEA Space Environment Attenuation Manifold that allows the spacecraft COTS electronics to survive the harsh space conditions, the testing of a very high energy density power supply management system, coupled with the use of 2 ultrathin deployable multi panel solar arrays, an unpowered, self deploying antenna system based on the use of shape memory alloys, a high power, micro booster for low noise amplification of the satellite's transceiver, an internal thermal distribution system based on carbon nanotubes and many other innovative techniques, all product of in house development.