

20th SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Generic Technologies for Nano/Pico Platforms (6B)

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PREPARING SMALL SATELLITES FOR BIG OPERATIONS

Abstract

This paper presents an overview of the preparations for and execution of a typical nanosatellite mission in orbit. The example of the ISIS Triton-1 mission will be used as reference. At the time of the conference this satellite should be operational in orbit.

In starting out with a new Cubesat mission a lot of attention is often given to defining the hardware that needs to be used for implementing the satellite bus and payload respectively. This is usually also an area of focus for presentation during conferences. With the standardisation of components and designs nanosatellites missions are however much more focussed on Assembly Integration and Verification activities. This paper will discuss what considerations are made and what AIV approach should be taken to ensure consistent, reliable in orbit performance while trying to contain schedule and cost of missions and hence maintaining the nanosatellite development 'edge'.

While a lot of effort is needed to design, build, integrate and test satellite hardware to the point that it is operational on a lab table there are still a lot of engineering and testing required until it is ready to be launched and operated from space. For the Triton-1 mission a mix of NASA, ESA and CubeSat 'standards' have been merged into a consistent AIV philosophy for nanosatellite systems. This approach will be presented.

The steps taken in this exciting phase in a satellite lifetime is discussed by using the ISIS Triton-1 mission as a real life example from the time of a completed system design to its current state of completed spacecraft waiting to be launched on the next Dnepr cluster launch from Kosmotras in Yasny Russia (scheduled for Q2 2013). If available at the time of the symposium the first operational results from space will also be discussed.