

SMALLSAT LAB

Steven Stochaj

**New Mexico State University
1620 Standley Dr Academic Rm 110
Las Cruces, NM 88003-1239**

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Technical Memo

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CASEY A. DERAAD, DR-IV
Chief, Outreach Technology Branch

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KEITH A. SHROCK, DR-IV, DAF
Acting Chief, Laser Division

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14. ABSTRACT This award seeded the establishment of the SmallSat Lab at NMSU. It greatly enhanced NMSU's capability to produce graduates with experience in satellite design and the ability to develop the next-generation of spacecraft bus and design spaced-based instrumentation for the study of space weather.						
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Research ID: 23359

Title: *SmallSat Lab*

PI: Stochaj, Steven

Status: Funded

US Air Force / Award No. FA9453-12-1-0139 / Index 119927

Final Performance Report

This report covers the entire period of this award, from February 2012 through August 2013. Note: Permission to spend against the award was not granted to the PI until May 2012.

Technical Staff Members R. Hull and L. Alvarez were partially supported by this grant during the months of May, June and July of 2012. During this time Mr. Hull and Mr. Alvarez successfully filed the space request forms to secure lab space for the SmallSat Laboratory. Once the space was granted, the materials from the prior project were moved to the surplus office. Then equipment beneficial to the SmallSat project was moved to the new lab space. This included the installation of two large workbenches and anti-static mats for the protection of electronics. Mr. Hull and Mr. Alvarez re-purposed the lab over the first three months of the project. Mr. Hull worked with three students on the initial design for the NMSU CubeSat. Mr. Alvarez worked with four students on the PCB layout for the solar panels and the construction of the 6U CubeSat mockup. Support for Mr. Hull and Mr. Alvarez was \$49k including fringe benefits.

Purchases: During this time period a license for MatLab software and the Princeton Satellite ToolBox was purchased using funds from this award. This software adds tremendous capability to the SmallSat Lab by enabling students to analyze data, develop algorithms, and create models and applications for the design of small satellite systems. The ability to model and simulate space missions is a critical element in the effort to reduce mission costs. The cost of the Princeton Satellite Toolbox is \$1995.00 and the price of the MatLab license is \$1250.00. Note: NMSU has an instructional license for MatLab, however this does not cover *academic research* projects.

This grant supported the travel for four students to attend the Student Hands-On Training (SHOT) workshop run by Colorado Space Grants. The workshop provided the students with basic space hardware hands-on training in addition to inflight training. The cost of the travel was \$1111.28.

Long Term Impact: This award seeded the establishment of the SmallSat Lab at NMSU. It greatly enhanced NMSU's capability to produce graduates with experience in satellite design and the ability to develop the next-generation of spacecraft bus and design space-based instrumentation for the study of space weather. In addition, students touched by this program are aware of the importance of reducing cost and improving performance for new space missions.

This year, NMSU has pledged \$87K to support further development of the SmallSat Lab. These funds will support the construction of an ISO 5 / Class 100 cleanroom and several antistatic workbenches for satellite assembly.

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