Thesis Portfolio

CECIL, 1U Amateur Radio CubeSat
(Technical Report)

Grandmother's Recipe for Zoning and Land Use Planning
(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science
University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree
Bachelor of Science, School of Engineering

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Spring, 2020

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Sociotechnical Synthesis

The technical portion of this thesis is the Preliminary Design Review (PDR) for a 1U cubesat being designed by a student team at UVA. This cubesat, the Communication Enabling Cubesat In LEO (CECIL), is design to act as a radio forwarder for amateur radio user, as well as to produce reasonably high resolution images of the Earth. There are several goals behind these design features: to provide experience designing, building, and operating a cubesat to UVA students, to provide practical knowledge of how to communicate with satellites for future teams and project at UVA, and to engage the public in STEM activities. This report covers the initial design of this spacecraft, the reasoning behind it, the intended operation of it, the requirements and constraints affecting it, risks that it faces (risks both to the spacecraft and to the project), and the planned schedule for its completion.

The STS portion of this thesis looks at the strategies used in deciding land use (or zoning) in Shenzhen, China and their effects, intended and otherwise, across the forty years since it was declared China's first Special Economic Zone (SEZ). It seeks to combine the frameworks of Social Construction Of Technology (SCOT) with Social Construction of Target Populations (SCTP) to produce an analysis that looks at the various groups impacted by and influencing land use laws and regulations, a subset of their relevant concerns, and whether each policy impacts them positively or negatively. This analysis was done for four ten year periods, starting with 1980 to 1990 and going up to 2010 to 2020.

The technical and STS theses are not related.