INTRODUCTION

Unmanned Aerial Vehicles (UAV, UAS, Drones) will soon be flying all around us for enjoyment, film making, mapping, and performing tasks deemed dangerous or impossible to achieve previously. With the release of the Federal Aviation Administration (FAA) Part 107 rules for small UAS, the use of commercial drones will rapidly increase in the fall of 2016 through 2017. The massive number of UAVs and sensors currently available and soon to be released will help drive down prices for high quality vehicles and sensors. In 2015, Forbes reported that the economic impact of the commercial UAS sector on the US to be $2.3 billion in 2015 and will rise to over $5 billion by 2016 (McCarthy, 2015). Much of this will be seen in the sale of UAV and sensors for UAVs.

In May of 2016, the NPD Group, Inc. reported that sales through April of 2016 had tripled for the same period the previous year. The group estimated $200 million in sales for the period (Shen, 2016). With the introduction of the new Part 107 rule, the sales totals are sure to expand even further. The FAA forecasts that the number of commercial drones will increase from 0.6 million to 2.7 million by 2020 with the markets of Aerial Photography, Inspection and Agriculture accounting for 83% of the commercial space (Federal Aviation Administration, 2016). These are all markets that include geospatial services.

With the likelihood of products and services, which in the past have been performed by photogrammetrists, surveyors, or engineers now being performed by end users, an evaluation of the threat to the industry and currently accepted conventions should be performed by each institution. For Keystone Aerial Surveys, Inc. (Keystone), this effort led to a determination that there is a need to differentiate its services by its professionalism (i.e., insurance, training, etc.), safety, knowledge of ever changing rules, and the ability to create products with assured accuracy. In pursuit of consistently providing accurate products, Keystone embarked on an ambitious project to obtain multiple datasets from several sensors of the same location for comparison and study. The following document details the planning, execution and findings of this testing.