

TESTIMONY

OF

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Director of Business Development
INTERMAP TECHNOLOGIES, INC.

BEFORE THE

SUBCOMMITTEE ON SPACE AND AERONAUTICS
COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

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*REMOTE SENSING DATA:
APPLICATIONS AND BENEFITS*

CENTENNIAL HALL
200 S. Cascade Avenue,
COLORADO SPRINGS, COLORADO

Mr. Chairman and Members of the Subcommittee on Space and Aeronautics, Intermap appreciates the opportunity to testify before you today on:

Remote Sensing Data: Application and Benefits

Our CEO, Brian Bullock, extends his regrets in that he cannot attend this session, but wishes to convey his appreciation for the invitation to testify.

I am Kevin Little, Director of Strategic Business Development and Government Relations for Intermap Federal Services Inc., a Colorado company, and Director of Business Development for Intermap Technologies, Inc., both of which are headquartered in Englewood, Colorado.

Intermap is a remote sensing firm that creates and sells digital elevation models (DEMs) and value-added mapping products derived from our proprietary airborne Interferometric Synthetic Aperture Radar (IFSAR). Intermap operates its IFSAR systems throughout the world for various domestic and international customers, including the U.S. government's defense and intelligence interests.

Intermap Technologies Inc. is a commercial, publicly traded remote sensing company with its global headquarters in Englewood, Colorado, with international offices in Europe, Asia, and Canada.

Intermap currently employs approximately 145 people in our Denver office and continues to increase the number of this high-tech workforce. Our total number of global employees exceeds 650 and also continues to grow.

Intermap Technologies was one of the first remote sensing companies to realize the value of collecting and archiving geospatial data for large geographies, and the first and only to collect country-wide elevation data on a global scale.

1) Please describe the ways that remote sensing data can assist public and private sector users in Colorado and provide benefits to state and local governments.

In the broadest sense, remote sensing is the acquisition of information of an object or phenomenon, by the use of either recording or real-time sensing devices that are not in physical or intimate contact with the object (such as aircraft, spacecraft, satellite, ship, buoy, or in-situ).

Intermap's technology is airborne specific and we work in a very complementary and synergistic manner with the commercial satellite companies. Satellite systems are easily deployed in areas where access is denied to commercial aircraft; however, technical capabilities allow IFSAR to be used in areas of extreme cloud cover and are able to accomplish their collection mission even at night.

Though the technology behind the manner in which satellites and airborne remote sensing companies gather their data are very dissimilar the "fused" product generated by orthorectifying satellite imagery with IFSAR DEMs produces a product unparalleled in its usefulness to the end user, both civilian and defense related.

Remote sensing and the technology that is fit for purpose allows for the most rapid and accurate terrain mapping for country-sized areas. **(See poster: NEXTMap® Britain)** Utilization of these combined technologies provide substantial benefit for a wide range of real-world applications that may utilize the data for not only x and y position coordinates, but for the z – or elevation – coordinates as well.

Specific to the question of ways that remote sensing data can assist public and private sector users in Colorado and provide benefits to state and local governments, we offer the following real-world application:

The Hayman Fire Area: (See Poster)

The Hayman Fire in June, 2002, was the largest in Colorado's recorded history, destroying over 600 structures and burning 137,000 acres. Soon after containment of the fire, Intermap Technologies, in collaboration with Space Imaging (now GeoEye) and USGS, acquired IFSAR elevation data and radar intensity imagery of 22 7.5' quadrangles encompassing the Hayman Fire burn and surrounding areas while the fire was still active.

Intermap collected and provided reflective surface and bald-earth IFSAR DEM and Digital Orthophoto Quadrangle (DOQ) radar magnitude image data using single-pass X-band IFSAR for the Morrison and Cheesman Lake Quadrangles.

The USGS Rocky Mountain Mapping Center made the Intermap IFSAR data available to federal, state, and local agencies for use in post-fire recovery, remediation planning, and training.

Subsequent to the delivery of elevation and imagery data by Intermap, the USGS Rocky Mountain Mapping Center held workshops for stakeholders and users to illustrate the applications of the data sets.

Individuals representing 14 federal, state, and local agencies with interests in the Front Range and the Hayman Fire area attended these workshops.

The Hayman Fire Area: Flood Plain Mapping

USGS, Rocky Mountain Geographic Science Center, used the IFSAR dataset to update the South Platte 100-Year Flood Plain Maps. "The Hayman Post Hazard Mitigation Maps" were produced for FEMA for flood risk assessment purposes.

The revised 100-Year Flood Plain of the South Platte takes into account the Hayman Wildfire incident, and assumes worst-case scenarios (lakes at full capacity level). These maps were also distributed to the Colorado Water Board and local county managers.

Alaska Aviation Safety Project (see Merrill Pass, AK fly-through video)

Another effort that combined commercial and government expertise to satisfy a real-world issue was the Alaska Aviation Safety Project (AASP), which moved from developmental stage to public participation. The Alaska Department of Military & Veterans Affairs (DMVA), NASA, the FAA, Anchorage-based E-Terra LLC, and Colorado-based Space Imaging and Intermap Technologies joined forces to provide Alaska aviators with the latest technology in flight simulation using Alaska's unique and challenging terrain. The program was designed to help lower the number of aircraft accidents in Alaska.

Address Specific Flood Risk Assessment: (see PowerPoint slides)

With the use of various remote sensing products including elevation data and aerial imagery, as well as utilization of existing building models, vector data and a proprietary storm-surge algorithm, individual buildings in the Commercial Business District of Miami, Florida were modeled on an address-specific basis.

The storm surge algorithm mimicked a Katrina-like event, with a 3-meter storm surge with the duration of approximately three hours.

2) What role can remote sensing data play in homeland security and national defense?

Homeland Security & National Defense –

With the increasing awareness of Homeland Security issues, agencies that control and manage border areas, critical infrastructure, coastlines, and transportation “choke-points” are in need of an accurate, consistent topographic

base map and corresponding high-resolution images.

The current maps and imagery available to agencies concerned about Homeland Security issues do not provide an appropriate level of situational awareness for policy development, planning, operational organization, and action.

Security decisions need to be made with the most accurate and current information available.

Among other considerations, IFSAR allows for better terrain mapping that leads to a greater knowledge and capabilities for all areas of mid-continent, coastal, and border areas of the United States, and has a unique value to Department of Homeland Security, state, county, and local authorities. Intermap is currently partnered on the Secure Border Initiative (SBI), a comprehensive multi-year plan to secure America's borders. **(See poster: Comparison of Digital Surface Models)**

High-resolution terrain data allows for better understanding of homeland security defense and planning measures (especially in rugged terrain areas that exist in states like Colorado and along the border areas), and provides a better visualization of all airport and military installation terrain issues. Following a calamitous event, whether a natural disaster or otherwise, commercial remote sensing assets can be tasked to evaluate an area and provide information concerning details of the event, magnitude of the event, evacuation planning, and plume drift and provide change detection. The responsiveness of these commercial assets was well proven following the Aceh Tsunami and Hurricane Katrina.

These remote sensing data sets are extremely synergistic and complementary.

3) *What are the main impediments to the effective use of commercial remote sensing data for public sector application and what would you recommend be done?*

The U.S. DoD has done an excellent job of tapping the commercial market to take advantage of technology advances, free market pricing and other similar opportunities. Commercial purchases afford the government better products at more competitive pricing. This is a win-win for the government and for the private sector, both contractors and end-users of the data.

FEMA has entered the final year of Congressionally appropriated funding of the Flood Map Modernization Program. Upon completion, map modernization will provide reliable digital flood hazard data and maps for 92 percent of the nation's population, and easy access and sharing of that information.

In order to leverage the successes of map modernization and further enhance the usability and value of flood hazard mapping, FEMA has developed the Risk MAP strategy, which combines flood hazard mapping, risk assessment tools, and mitigation planning into one seamless program. The intent of this integrated program is to encourage beneficial partnerships and innovative uses of flood hazard and risk assessment data in order to maximize flood loss reduction.

FEMA, which has undertaken the extremely daunting task of remapping the United States for these applications, is extremely short on resources and funding.

Wherever possible, government agencies should couple their programs with other existing programs that are currently being undertaken and have shared goals, allowing them to satisfy their requirements and accomplish their mission.

It is important that the commercial sector be allowed to drive the technology in a manner in which all government entities may take advantage of these advances.

The entire map modernization program needs to embrace many remote sensing technologies that have a reasonable currency, meet a minimum specification or standard and are fit for purpose for applications.

These technologies include satellite and aerial photography as appropriate for cities, ports, urban change detection, and border choke-points, LIDAR for at-risk coastal areas and city centers, and IFSAR for large area collection.

Thank you for your time and consideration.

I am happy to address any questions the subcommittee or guests may have.

Respectfully:

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Kevin Little is Director of Business Development for Intermap Technologies, Inc. Intermap delivers high-accuracy digital 3D terrain data and related mapping products derived from interferometric synthetic aperture radar (IFSAR) (X- and P-bands) mapping systems to a variety of international customers.

At Intermap, Little is responsible for building relationships with new business partners on an international basis and the development of value-added businesses with Intermap's present customers. Little also supports sales of products and services to markets that include the Department of Defense and other government agencies, as well as aerospace, air navigation, aviation/simulation, insurance, intelligent transportation systems and other vertical markets.

Since 1991, Little's experience in the aerospace and remote sensing industry has included delivering solutions using multispectral, hyperspectral, radar and LIDAR data from spaceborne and airborne remote sensing systems. Little's broad experience extends to derived geophysical data products, data distribution and handling systems and decision support tools.

While serving in various executive-level positions in more traditional industries, as well as geospatial information technology companies, Little has been responsible for program management, business development, marketing and sales, government relations and corporate management on an international level.

Prior to joining Intermap, Little was employed at DigitalGlobe—purveyor of the highest resolution satellite imagery in the world—during the preparation and launch of its QuickBird 1 and QuickBird 2 satellites.

Prior to joining DigitalGlobe, Little worked for the Boeing Company on their start-up, RESOURCE21 program and was involved with development of its four-satellite optical array being developed for global earth observation.