



December 16, 2014

Office of the Vice President for Research & Commercialization

Dave Navecky  
Surface Transportation Board  
395 E Street, SW  
Washington, DC 20423

Dear Mr. Navecky:

Under an agreement with the 45<sup>th</sup> Space Wing, the University of Central Florida (UCF) has acquired long-term operational control of a laser experimentation facility in the south portion of Kennedy Space Center reserve, Townes Institute Science and Technology Experimentation Facility (TISTEF). TISTEF is located at the eastern end of TEL-4 road across from the Air Force TEL-4 telemetry site. TISTEF site is a classified DoD secret facility. In addition to the labs, telescope and shops, under an agreement with KSC, TISTEF has a 1,000 meter laser range for laser experimentation and testing of high energy lasers.

There are three concerns with a rail line passing anywhere near to the TISTEF site: 1) vibrations; 2) pollution; and 3) security. The information below explains these concerns.

### **Vibrations**

The operations at TISTEF take place both during the day and at night. The night operations include laser tracking launch vehicles as well as tracking, imaging and communications with orbiting satellites and airborne platforms. This activity uses the ½ meter telescope on its tracking mount. The tracking mount sits on a base with footings 25 feet into the ground. This is to minimize minute vibrations transmitted through the ground. Even small vibrations can adversely affect the precision telescopes, optics, and lasers. We do not believe any analysis has been made of the potential impact of vibrations resulting from the placement of the proposed rail line close to the TISTEF facility.

### **Air Pollution**

Another operation conducted on the laser range at night is laser based remote sensing. Very high energy laser beam propagation through the air causes the beam to self focus. The contamination of the air with incomplete combustion of hydrocarbons from diesel-driven railway engines gives rise to copious gaseous chemicals, including nitrous-oxide and sulfur. The incomplete combustion exhaust from diesel engines also produces nano-particles of the order of 100 nanometers in size. This size of particle gives considerable scattering of laser beams and completely nullifies the types of experimentation the University of Central Florida is charged to

do. In addition, the small particulates remain in the air and eventually get into the optical laboratory and the telescope dome, causing surface contamination of optical components.

### **Security**

The location of the TISTEF facility, established in 1985, was chosen to make it as remote as possible and to provide a visibility path to the Cape launch pads for tracking and remote sensing. The facility is classified Department of Defense Secret so as keep the work there out of the public. The ability to test on a secure range is an enormous advantage, especially with high energy lasers.

### **Economic Impact**

The University of Central Florida initiated discussions on taking over operations of the TISTEF facility with Patrick Air Force Base many years ago for the express purpose of economic development of the region, bringing high-value, high-tech paying stable jobs to Brevard County and the surrounding area. At considerable expense, it only recently completed these transactions in Spring 2014. The University plans progressive expansion of the site to attract more major research funds for research. It is already bringing several \$M's research funds in areas of laser propagation, high power laser development, ultrafast laser development, advanced sensor technology (including pollution detection), and other advanced technologies required by the DoD and its contractors.

The University of Central Florida has already germinated two companies at the site, Vision Engineering Solutions, LLC and Wayne Analytics, LLC, both operating locally, as well as developed research work there with the Army's Research, Development and Engineering Command (RDECOM) and the Navy's Space and Naval Warfare Center (SPAWAR Pacific). RDECOM is including this facility in their long term testing plans, out to 2050. We are placing Masters and Ph.D. graduates in jobs locally, in the \$65K to \$85K salary range. Additionally, the University maintains joint research and development programs with local defense contractors including Harris Corp, Lockheed Martin Corp, Northrop Grumman Corp, Raytheon Corporation and others. These high-tech companies and agencies operate and test at TISTEF because of its facilities and its pristine and secure location.

### **National Asset**

The existing facilities at TISTEF, the improvements currently being implemented to its capabilities, combined with the expanding laser, optics and photonics at UCF, provide the United States with a unique national asset for advanced high-technology development for the systems vital to the nation's defense and space needs. It should not be forgotten that the State of Florida has invested many millions of dollars to ensure Florida is a leader in rapidly expanding fields of lasers and photonics. It created the academic core to this high-technology economic eco-system, the CREOL College of Optics & Photonics some 25 years ago, and its more recent attendant institutes, the Florida Photonics Center of Excellence and the Townes Laser Institute specifically to encourage long-term economic development of the region. It is now recognized worldwide that the Central Florida region is now one of the strongest economic zones in the country for

these technologies. By its take-over and expansion of the TISTEF facility, the University plans to strengthen the impact of this economic eco-system in Brevard County.

This facility is already the only facility of its kind on the East Coast possessing the range of capabilities needed to support research and development in these areas. The improvements the University plans will make this the only facility on the continent capable of the range of tests and development in the defense, environmental and space research areas.

A commercial rail line close to the facility would nullify the entire reason for the existence of the TISTEF and the effort for developing a high-tech government/industry research activity in the KSC vicinity. The proposed route of the rail road and the operation of the rail traffic, as presented in the March, 2014 report, will completely nullify the work, research, testing and experimentation being conducted at the site. While UCF understands the desire/need of Port Canaveral to expand operations, and the attendant increase in jobs and revenue for the Central Florida area, UCF would request that serious consideration be given to moving the location of the line as far away as possible from the TISTEF site and laser range.

Sincerely,

A handwritten signature in black ink, appearing to read 'M.J. Soileau', written in a cursive style.

M.J. Soileau  
Vice President for Research & Commercialization