



# Hazardous Liquids Airborne Lidar Observation Study (HALOS)

DTRS56-04-T-0012

## PHMSA ACCOMPLISHMENTS

**Pipeline and Hazardous Materials Safety Administration**

**Pipeline Safety Research and Development**

**Technology Development for Improved Leak Detection**

### Project Abstract

The ANGEL (Airborne Natural Gas Emission Lidar) system is designed to remotely detect, quantify, and map small plumes of methane and ethane, the principle constituents of natural gas. Also, ITT has developed expertise in the spectroscopy, modeling, and empirical/physical testing and validation of airborne dispersed hazardous vapors. These tests have yielded preliminary results that indicate the detection of vapors from hazardous liquids is possible with minimal changes to the existing ANGEL system.

**PHMSA Funding:** \$ 553,114

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### NET Improvement

This research enhanced the capability of the former ITT (ANGEL) technology to detect methane and liquid leaks. This technology has resulted in DIAL collection and data processing improving from 3-4 weeks to one day. In conclusion, Route Generation can now be accomplished in the field and requires only 1 hour of effort to generate 100 miles of pipeline routes. This is a 30X improvement in speed.

**US Patent under DOT Contract:**  
N/A

### Commercial Partner

**EXELIS**  
<http://www.exelisinc.com>

