

## Appendix H Example Contract - Statement of Work (SOW)

### Laser Fluorescence Oil Spill Surveillance

Statement of Work

2/14/96

To: DOE/NV Remote Sensing Laboratory  
From: RSGISC, U. S. Army Corps of Engineers

#### 1.0 Purpose

The purpose of this SOW is to demonstrate proof-of-concept of an airborne fluorescence imaging system capable of sensing oil on land and in wetlands. These are issues of concern to the Corps.

#### 2.0 Background

The U.S. Coast Guard Research and Development Center (R&D Center) and Environment Canada have sponsored experiments with a Laser Environmental Airborne Fluorimeter (LEAF) spot sensor for the detection of oil on water in land-locked pools. The tests successfully demonstrated that oils fluoresce with distinct spectral signatures when excited by a laser source.

In order to develop the fluorescence concept into a practical field instrument for supporting oil spill response operations, an upgrade to an imaging sensor is necessary. The EG&G, Santa Barbara, Special Technologies Laboratory (STL) is prototyping an airborne Laser Induced Fluorescence Imager (LIFI) which can be applied to the detection of oil spills on land and in wetlands.

#### 3.0 Objectives/ Scope

The DOE/NV Remote Sensing Laboratory (RSL) and STL will design and perform measurements to test airborne LIFI technology for the detection of oil-on-land and in wetlands.

1. Acquire laboratory and ground fluorescence spectra of several types of spilled oil on land and in wetlands in the presence of both organic and inorganic background materials. This can be used to define the source intensity needed for required signal levels and resolve major technical issues such as spatial resolution, swath width, aircraft altitude, and speed.

2. Acquire imagery from airborne LIFI over oiled targets for proof of concept.

#### 4.0 Requirements

##### Task 1

A series of laboratory measurements will be collected to measure the fundamental fluorescence properties of the oils and background materials. Optimal sensing specification for oils depend on the fluorescence efficiency of the oil as well as the spectral and spatial resolution required for the application.

#### Task 2

Outdoor laser range measurements will be made for up to 20 target/background combinations. These should include crude, diesel and home heating oils, on sand, gravel, soil and vegetation organic backgrounds. Measurements will address the fluorescence efficiency, emission spectra, duration and the effects of oil aging over a period of up to six weeks. The effects of the wetness of the backgrounds on the emission efficiency, duration and spectra will be addressed.

#### Task 3

When the STL LIFI system becomes airborne, imagery from flight tests over oil targets will be collected. It is planned to operate at an altitude of 300 ft agl and provide a swath of 60 ft., 512 pixels wide or about 1.4 in. per pixel in the cross track direction. The spectral range will be 300nm with 128 channels covering the visible portion of the spectrum. Excitation will be at 355nm.

#### 5.0 Schedule

The STL shall coordinate its airborne data collection schedule to coincide with its other sponsored flight test programs. All ground data will be collected preliminary to airborne testing. All reports and deliverables will be completed within six months of data collection.

#### 6.0 Deliverables

##### Deliverable 1 - Presentation at Oil Spill Program Review

Test planning will be presented at the Oil Spill Program review and meetings required by the Oil Spill Program Manager [FY96].

##### Deliverable 2 - Technical Report

A written summary report will be delivered to the Oil Spill Program Manager NLT six months after acquisition of the data.

##### Deliverable 3 - Distribution of Data

All laboratory, ground and airborne data will become the property of and be transmitted to the RS/GIS Center in digital computer compatible format.