FIELD TRIALS TO EVALUATE INLAND AND SHORELINE SUBSURFACE OIL DETECTION USING CANINE TEAMS

A short article contributed by Dr Ed Owens, President of Owens Coastal Consults (OCC) and the Owens Response Group (ORG) International. He has 45 years of experience in spill response and training worldwide.

Field trials to evaluate the ability of trained oil detection dogs to locate subsurface oil and clear non-oiled areas were conducted by Owens Coastal Consultants and K2 Solutions at the K2 K9 Training Center in Jackson Springs, North Carolina, USA, 1-4 June, 2015. The trials were undertaken as part of an American Petroleum Institute (API) Joint Industry Task Force (JITF) Oil Spill Preparedness and Response program to evaluate the current state-of-the-art in Subsurface Oil Detection and Delineation technologies in support of pipeline, inland and shoreline oil spill response.

Two canine teams were trained for the project by K2 Solutions using a Texas Intermediate crude oil. A total of 21 tests involved 704 targets and all tests were conducted "blind", that is; the dog handler did not know the location of the oiled targets. Two primary test types were conducted: (1) a Wide Area Search pattern for (a) detection of a single subsurface oil target in large areas; and (b) "clearance" of a non-oiled areas; and (2) delineation tests using a series of 50 prepositioned plastic tubes within a 1,250m2 area which contained either small traces of oiled sediment at a range of depths up to 90cm, unoiled sediments, or blanks.

The dog teams found every Wide Area Search target with no false alerts in 7 surveys. The average time for the Wide Area Search tests, over areas of approximately 0.5 hectare, was 3 minutes: this type of High Confidence-Low Risk survey is equivalent to 2km/hour or on the order of 15-25 linear km/day for 100% coverage of a 50-m wide shoreline or pipeline alignment.

Fourteen (14) delineation tests involved six different configurations to represent either continuous, discontinuous, isolated, or pipeline alignment subsurface oiling. Several (20) missed target or "false" hits occurred due to survey coverage or experimental procedures, but only one unexplained missed target and one unexplained false alert during the delineation tests cannot be attributed to experimental procedures or search pattern issues. In other words, 99.7 % accuracy. From an effort/benefit analysis perspective the average time for the fourteen 1,250m^2 delineation tests was eleven (11) minutes for 100% ground coverage. Typically a SCAT team would be able to complete 1 or 2 pits during that period in an area of this size.