

Oil Spill Detection Test in 'Operation Arctic Shield'



The Coast Guard Research and Development Center (RDC) led engineers and scientists from multiple Coast Guard units, other federal agencies and universities in evaluating methods to identify, track and respond to simulated oil spills off the North Slope of Alaska as part of Operation Arctic Shield 2013, from 9 to 14 September 2013.

Operating aboard Coast Guard Cutter *Healy*, the team deployed a variety of technologies that have been evaluated in temperate climates to assess their ability to perform operations under Arctic conditions. The tests included operation of two small unmanned aircraft systems (UAS), an unmanned underwater vehicle (UUV), a vessel of opportunity

skimmer system (VOSS) and a remotely operated vehicle (ROV).

Testing began 9 September 2013, when *Healy* crewmembers and the research team deployed two hand-launched UAS. Both UAS demonstrated greater than expected endurance in the cold temperatures, staying aloft for nearly two hours, providing the research team an extended opportunity to evaluate operational capabilities.

Later the same day, the team deployed a UUV to map ice floes from below and an ROV to provide video imagery to monitor simulated oil recovery.

The team followed these initial test deployments with several days of simulated oil spill operations using oranges and peat moss to imitate oil at the water-ice interface. During these trials, the UAS provided aerial surveillance and spill detection, the VOSS was employed to demonstrate skimming capabilities in cold, icy waters, and the ROV tracked the skimmer's progress in oil recovery.

During the evaluation period, the research team experienced freezing and challenging conditions, which caused several equipment problems and delays. However, the team was successful in deploying each of the five technologies to evaluate suitability for future use in the Arctic. RDC personnel are evaluating the data, and results will be released in a summary video this autumn.

Image: A view of Coast Guard Cutter Healy taken from a sUAS deployed during the Research and Development Centre's recent demonstration in the Arctic Ocean, Sept. 10, 2013. Image courtesy: University of Alaska Fairbanks.