

Date: 13 July 2015

Location: Loitering 26 nautical miles due north of Oliktok Point

Primary Activities: Search and Rescue (SAR) Exercise; Additional Puma and Aerostat Sorties

Conditions: 8/10's ice coverage and clear skies at CGC HEALY position but fog through mid-afternoon at the ScanEagle UAS launch site

Temperatures: Air temperature range 37 - 43 F; water temperature 30 F

Today, the science team and CGC HEALY executed Arctic Technology Evaluation 2015's priority test, a collaborated incidence response with manned and unmanned assets. Due to the remote, harsh conditions encountered in the Arctic, unmanned systems have the potential to enhance Coast Guard mission execution in this area. Building on lessons learned from its previous demonstrations, the Coast Guard Research & Development Center (RDC) collaborated with Conoco Phillips and a host of other entities to evaluate the following test objectives, some of which are shared interests of other government, industry, and private organizations:

- Coordinate and implement civil and federal collaboration during an incident
- Test the utility of integrating a UAS into a response incident
 - Conduct search patterns and locate targets
 - Vector manned assets to target
 - Monitor recovery efforts and provide situational awareness to decision makers
- Demonstrate interoperability between manned and unmanned aviation assets
- Demonstrate "pitch-and-catch" hand-off operations from land to ship and back
- Operate UAS beyond line of sight
- Test data relays between assets and shore
- Assess Arctic communications

ConocoPhillips, and all of the oil companies operating off the North Slope, are required to have search and rescue (SAR) and oil spill response capabilities, and therefore may have assets that the Coast Guard can leverage in an emergency or incident. Both government and industry recognize that it is imperative to work together during a response, particularly in this austere environment. The specific partnership between RDC and Conoco Phillips is a three-year initiative through a Cooperative Research and Development Agreement. This year's focus is a SAR exercise to understand logistics, communications, and basic UAS operations between government and industry partners.

The SAR scenario is that a small aircraft goes down 17 nautical miles off Oliktok Point in international waters; the survivors take refuge in a 6-man life raft. So, imagine that you are here



and in distress: (Photo by RDC)

(In fact, the raft and Thermal Oscar were deployed approximately two nautical miles away along this line.) Coast Guard District 17 (D17) Command Center receives a simulated Emergency Locator Transmitter alert and notifies closest Coast Guard assets, which include CGC HEALY and Coast Guard Forward Operating Location (FOL) Deadhorse. North Slope Borough's (NSB) closest assets are down for maintenance; they recommend that for additional support the Coast Guard contact Conoco Phillips who operates in that area. D17 Command Center contacts Conoco Phillips who offers the use of an Insitu-operated ScanEagle UAS out of Oliktok Point and a manned Era Helicopter out of Deadhorse. Air assets work with HEALY, the OnScene Coordinator, to execute the Search Action Plan (SAP) that D17 Command Center develops. Cooperative Partners for the exercise included the following:

- USCG PACAREA
- USCG District 17
- Conoco Philips
- USCG RDC
- CGC HEALY
- USCG Air Station Kodiak
- NOAA
- Insitu
- Era Helicopter
- DOE / Sandia Labs
- Priority One
- FAA

For the purposes of this exercise the teams made a number of assumptions, and the development and execution of the exercise required significant advanced planning and coordination. Additional information and exercise details are available by contacting the RDC.

Prior to execution, the team members conducted a final check of the exercise's communication plan at approximately 08:00. After the weather cleared on shore at approximately 14:00, the exercise commenced with HEALY deploying a life raft tethered to Thermal Oscar, an RDC

developed SAR training aid that generates a heat signature of a person in the water (PIW).



(Photos by RDC)

The HEALY then contacted the D17 Command Center who in turn contacted Conoco Phillips who initiated the launch of the ScanEagle from shore. The ScanEagle hand-off from shore to ship was successful, and the pilot onboard HEALY began executing the D17 SAP. Due to fuel limitations, the two helicopters simulated receiving coordinates from the ScanEagle and then vectored in to the PIWs. They completed their operations with fly-bys of the HEALY. The team successfully completed a hand-off of the ScanEagle from ship to shore, and the exercises concluded for the day with the HEALY recovering the raft and Thermal Oscar.





(Photos by RDC)

The team conducted a post-exercise evaluation via conference call and agreed that they were pleased with the overall results and achieved most of the objectives but noted some procedural shortcomings despite extensive pre-planning. The specific objectives the team did not achieve included detecting the PIWs/raft with the ScanEagle; however, as noted, it did not complete its search pattern due to helicopter fuel limitations. Tomorrow and weather permitting, the team will apply some of today's lessons learned, adjust tactics and procedures accordingly, and conduct another exercise.

Since the sun never sets, later this evening the science team and crew plan to conduct some technology integration testing between air, surface, and sub-surface assets. Stay tuned.