SAIC and ArcXeon International Unmanned Air Systems (UAS) Carrier

Peter Lobner, Updated 21 December 2020

Small, unmanned air vehicles (UAV), now commonly called unmanned air systems (UAS), can carry advanced sensors and weapons, but generally have short range. In spite of their range limitations, UASs can provide valuable and cost-effective capabilities for military planners and war fighters. At a 2018 conference is Washington D.C., DARPA Deputy Director Steve Walker asked the following question: "With the ranges we are looking at in the Pacific Theater, how do we get our small UAS to the fight?" Actually, he already knew the answer.

In March 2016, DARPA awarded the first contracts in support of its Gremlins program, which DARPA describes as:

> "Gremlins (program)…… seeks to develop innovative technologies and systems enabling aircraft to launch volleys of low-cost, reusable unmanned air systems (UASs) and safely and reliably retrieve them in mid-air. Such systems, or "gremlins," would be deployed with a mixture of mission payloads capable of generating a variety of effects in a distributed and coordinated manner, providing U.S. forces with improved operational flexibility at a lower cost than is possible with conventional, monolithic platforms."

While the primary launch / recovery vehicle for this phase of the Gremlins program is a C-130 Hercules turboprop transport aircraft, the UAS launch and recovery techniques developed by the Gremlins program may be adaptable to other types of air vehicles, such as airships. Read more on the DARPA Gremlins program at the following link:

https://www.darpa.mil/program/gremlins

SAIC and ArcXeon International, LLC teamed in 2012 to develop an airship UAS carrier. SAIC senior aerospace engineer Ron

Hochstetler stated, “The preeminent value of the UAS carrier airship is to enable long-duration access to an area sufficient to allow UAS to be inserted into airspace to conduct operations for as long as required.”

SAIC and ArcXeon International, LLC proposed a large UAS carrier airship, called the Airstation, for this type of mission. An operational UAS carrier airship would be able to automatically launch a swarm of UASs and then recover, refuel / rearm and re-launch the UASs individually or in swarms for a subsequent mission. The Airstation design concept could be scaled to carry a payload of up to 40 tons.

In support of their development of the much larger Airstation UAS carrier, SAIC and ArcXeon modified the Skybus 80K to serve as a demonstration platform carrying two small UAS.

Skybus 80K carrying two Insitu ScanEagle UAS.
Source: SAIC / ArcXeon

A concept drawing for the Airstation airship is shown below. No contract was awarded for development of this airship concept.

Airstation deploying UAS. Source: SAIC, graphics by Faisla Ali & Pat Rawlings via NAA Noon Balloon, Fall 2016

For more information:

- R. Hochstetler, J. Bosma, G. Chachad & M. Blanken, “Lighter-Than-Air (LTA) ‘Airstation’ Unmanned Aircraft System (UAS) Carrier Concept,” 16th AIAA Aviation Technology, Integration and Operations Conference, 13 – 17 June 2016: https://arc.aiaa.org/doi/abs/10.2514/6.2016-4223
- Graham Warwick, “Range Rovers – Airship carrier proposed as a way to extend reach of small USA,” Aviation Week & Space Technology magazine, August 1 – 14, 2016: https://archive.aviationweek.com/search?QueryTerm=skybus+80K