Department of the Navy SBIR/STTR Transition Program

Topic # N202-109
Launch System for Group 3-5 Unmanned Aerial Vehicles for Land- and Sea-Based Operations
Advanced Technology & Research Corp.

WHO

SYSCOM: NAVAIR

Sponsoring Program: NAVAIR PMA 251

Transition Target: USMC

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Other Transition Opportunities: INDOPACOM, EUCOM, USN, USAF, US Army

Image Courtesy of Advanced Technology & Research Corp 2024

Notes: ATR is also targeting the USMC as a transition opportunity as part of its Manned-Unmanned Teaming (MUM-T) program for both reducing testing and evaluation costs as well as fielding the system. The USAF is also a target for reducing testing and evaluation costs of high-speed UAVs that are traditionally air-launched.

ATR has demonstrated a scaled launcher system interfacing with 5 different types of UAVs and launching them successfully at different weights and release velocities while meeting the program goal of less than 2 minutes between launches. Most recently demonstrated at OUSD TREX in March 2025.

WHAT

Operational Need and Improvement: The USMC is in need of an expeditionary capability to launch large UAVs for a multitude of missions, including ISR and offensive strike capabilities. Current technology is only effective at rapidly launching small UAVs (weighing in the hundreds of pounds) with small payload capacity and range.

Specifications Required: Launch aircraft with a wingspan of 30 feet weighing up to 6,000 lb at a release velocity of 150 Knots indicated airspeed (KIA)
Rapidly and repeatedly launch aircraft at a tempo of less than 2 minutes between launch events
Interface with multiple types of Group 3-5 UAVs

Technology Developed: ATR has developed a new runway independent launcher (RIL) capable of meeting the solicitation requirements and launching large UAVs in a distance of ~200 feet. The launcher utilizes an innovative flywheel energy storage technology so that it can be charged with a relatively small motor running on a field generator or ships power. A carriage supports the UAV and is pulled along a rail to meet the acceleration requirements, and swappable cradle for each different type of aircraft allows for multiple different types of UAVs to be launched in rapid succession at different weights and release velocities. The system can launch UAVs with and without landing gear.

Warfighter Value: Efficiently launch large Group 3-5 UAVs. Significantly reduce experimentation costs for Group 5 UAVs and high-speed Group 3 UAVs. Runway independent launch without the need for pyrotechnics. Higher operational security (no observable trail) and less hazard concerns. Adaptable to multiple UAV platforms. Containerized so can be moved with maritime assets and quickly assembled/disassembled

WHEN

Contract Number: N68335-22-C-0117 **Ending on:** May 16, 2023

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Completed build and laboratory testing of Drivetrain Subassembly	Medium	Repeatable and controllable power transmission from flywheel into launch drum	4	2nd QTR FY23
Launch of a controlled deadload at 46 knots in a laboratory environment	Medium	Repeatable release velocity and power transmission to representative mass	4	3rd QTR FY24
Launch of multiple types of UAVs into flight at up to 80 knots release velocity	High	Clean separation and UAV climbout after release	6	2nd QTR FY25
If Phase II.5 awarded, launch of a fully loaded high-speed Group 3 UAV into flight at 150 knots release velocity	Medium	Clean separation and UAV climbout after release	7	1st QTR FY27

HOW

Projected Business Model: ATR will build and deliver the launcher system to larger primes for inclusion into larger systems.
ATR will also offer launch services at different test locations throughout the US, allowing companies to test experimental aircraft at a fraction of the cost of airdrop tests.

Company Objectives: Build a full scale developmental prototype for Group 5 UAVs.
Build and operate as a service a Group 3 high-speed UAV launcher for test and evaluation purposes

Potential Commercial Applications: ATR sees value in selling launch services to UAV manufacturers and operators, especially for test and evaluation.

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