Holochip's Variable Collimation Display **(VCD)** enables simulator downlook displays to provide pilots with generally the same visual depth cues as in the real world. This stimulates the eyes to naturally focus, thereby enabling accurate distance estimation.

Appropriate visual cues are created by controlling the position of the image of the ground created by the VCD. **This ensures the distance from the pilot's eyes to the image of the ground is always accurate** based on the simulated height above terrain of the helicopter.

www.holochip.com **info@holochip.com** **(424) 255-8002** **HOLOCHIP**

Department of the Navy SBIR/STTR Transition Program

Pending SYSCOM Review

Topic # N121-041

Variable Collimation Display (VCD)

Holochip Corporation

WHO

SYSCOM: NAVAIR

Sponsoring Program: NAVAL AIR WARFARE CTR AIRCRAFT DIVISION

Transition Target: CH-47F Transportable Flight Proficiency Simulator (TFPS)

TPOC: (407)380-8031

Other transition opportunities:

NAVAIR –MFS (CH-47, H-60R/S)

Notes: VCD - Variable Collimation Display

WHAT

Operational Need and Improvement: Current helicopter simulators cannot effectively train takeoff/landing, low level flight, and brownout scenarios because pilot's depth estimation doesn't match the simulated height above terrain of the helicopter.

Specifications Required: System must: 1) be light weight and thin enough to fit into existing rotary wing and VSTOL simulators; 2) display low-altitude and landing zone imagery which enables a pilot to make a depth estimation that matches the simulated height above terrain of the helicopter; and 3) exhibit full correlation with the forward field-of-view (Out-the-Window/windshield) imagery.

Technology Developed: Holochip's VCD eliminates this problem by providing generally the same visual depth cues as in the real world and stimulating natural focusing of the eye, so the pilot's depth estimation mates the simulated height above terrain of the helicopter.

Warfighter Value: Improve pilot safety by allowing the successful simulator training of dangerous flight scenarios including takeoff/landing, low level flight, and brownout scenarios., search and rescue, confined area and emergency landing, and cargo loading/unloading operations.

WHEN

Contract Number: N68335-18-C-0056 **Ending on:** December 31, 2022

Milestone	Risk	Level Measure of Success	Ending TRL	TRL Date
Demonstrate system is light weight and thin enough to fit into existing rotary wing	N/A	Install VCD system in TFPS trainer at PAX River, MD.	TRL 6	August 2021
Display low-altitude and landing zone imagery which enables a pilot to make a depth estimation that matches the simulated height above ter-	Low	Demonstrate improved pilot performance using the VCD during pilot evaluations in the TFPS trainer at PAX River, MD	TRL 7– 8	November 2022
Exhibit full correlation with the forward field-of-view (Out-the-Window/windshield) imagery.	Low	Pilot confirmation that the VCD display is fully correlated with the forward field-of-view imagery during pilot evaluations in the TFPS	TRL 7– 8	November 2022

HOW

Projected Business Model: Transition Paths:

- Provide VCD to full flight simulator (FFS) integrators
- Provide VCD as aftermarket upgrade for existing simulators
- Work toward requirement of variable accommodation for next-gen FFS

Company Objectives: Provide ground-breaking solutions for simulation systems and collaborative learning environments, which support next-generation AR/VR, light field, volumetric, holographic, variable collimation and other display technologies.

Potential Commercial Applications: - military and commercial flight simulators, driving simulators, heavy machine simulators where accurate depth estimation is critical.

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