

Conducted additional AM training sessions to educate SOF personnel

Completed one site assessment, four training instances, and Fab Lab management at different SOF sites



3D printed components from the class, capstone project output (left), and training aid (right).

PROBLEM

There is a lack of knowledge in the application of additive manufacturing (AM) processes within the Special Operations Forces (SOF) community. Many personnel is untrained and unaware of the diverse potential of these innovative manufacturing processes. To further advance and support SOF manufacturing capability, personnel and support elements must continue receiving a formal AM training process that provides the skills and capability to meet SOF mission-specific application needs that only AM can achieve.

OBJECTIVE

The goal of this program was to further develop a federalized advanced manufacturing capability for U.S. Special Operations Command (SOCOM) to enable the worldwide, distributed Special Operations Forces (SOF) mission. SOCOM's advanced manufacturing initiative centered on its most immediate and impactful application of advanced manufacturing by continuing to develop a SOF AM Enterprise, specifically surrounding computer-aided design and 3D printing. The benefits of this phase included the ability to develop rapid prototyping of operator-conceived solutions for meeting mission-tailored application sets, facilitating form and fit checks, conducting maintenance actions, producing training aids, and communicating operator-centric ideas to drive effective communication with support elements.



**AMERICA MAKES
TECHNOLOGY
DEVELOPMENT
ROADMAP**

This project aligns to:



PROCESS

**ASTM PROCESS
CATEGORY:**
Material Extrusion

EQUIPMENT:
Lulzbot TAZ 6
3D Printer

MATERIAL:
Thermoplastics

TECHNICAL APPROACH

Based on the successful development and delivery of AM training for five different SOF units during Phase I and II (years 2015-2017), this project effort delivered continued support of SOCOM SOF AT&L advanced manufacturing initiatives for both internal Fab Lab support as well as external AM training support. The first effort delivered additional Level 1 AM training sessions (both CONUS and OCONUS) for four additional SOF locations. The second effort in this project was directed to Fab Lab support of a collaborative workspace where frontline operators and industry experts could collaborate on the effective use of digitally aided additive manufacturing to push the leading edge of technology application and enhance SOF combat capability.

ACCOMPLISHMENTS

The Phase III assessments were finished upon completion of the Naval Special Warfare/WARCOM site in Coronado, CA, in October 2017. Additional training site assessments were removed from the project activities since the three additional Level 1 training events were at locations where the team previously conducted Level 1 courses. The program Point of Contact (POC) at SOCOM headquarters preferred to utilize the training team for additional training instances rather than conducting assessments at locations that have been previously assessed. Level 1 AM trainings were conducted for WARCOM Team 7 located in Coronado, CA; for NAVAIR at Ali Al Salem AB in Kuwait; for the Marine Corp at Ahmad al-Jaber AB located in Kuwait; for MARSOC at Camp Pendleton in CA; and for SDVT-1 at NS Pearl Harbor in HI. Secondary efforts were directed to the procurement, delivery, and commissioning of advanced manufacturing equipment and supplies for the support of the SOFWERX/DirtyWERX lab located in Tampa, FL, under the direction of our program POC. Our team also provided Fab Lab management at SOFWERX for daily tasks and SOF application field support. During the three phases of this program, just over 200 Special Forces operators and support elements were trained in the effective use of 3D computer-aided design and additive manufacturing.

PROJECT END DATE

November 2018

DELIVERABLES

- Procured and transported additional training hardware and equipment for conducting on-demand AM training at the Point of Need (PON)
- Assessed SOF AM requirements regarding materials, processes, quality, and limitations
- Conducted AM training at SOF locations
- Provide reach-back support from the combined advanced manufacturing network of NCDMM/America Makes
- Procurement services and lab management for SOFWERX
- Actionable site-specific Course of Action (COA) recommendations

FUNDING

\$623,192 total project budget

PROJECT PARTICIPANTS

Project Principal:

NCDMM/America Makes

Other Project Participants:

U.S. Special Operations Command (SOCOM)
University of Texas El Paso (UTEP)
Defense & Energy Systems
3D Simulations

Public Participants:

U.S. Department of Defense