Calhoun: The NPS Institutional Archive

DSpace Repository

NPS Scholarship | Publications

2019-12

Analysis of a Lightly Manned Autonomous Combat Capability (LMAAC) Concept

Gallup, Shelley P.; Trask, David M.

Monterey, California: Naval Postgraduate School

https://hdl.handle.net/10945/69914

This publication is a work of the U.S. Government as defined in Title 17, United States Code, Section 101. Copyright protection is not available for this work in the United States.

Downloaded from NPS Archive: Calhoun

http://www.nps.edu/library

Calhoun is the Naval Postgraduate School's public access digital repository for research materials and institutional publications created by the NPS community. Calhoun is named for Professor of Mathematics Guy K. Calhoun, NPS's first appointed -- and published -- scholarly author.

Dudley Knox Library / Naval Postgraduate School
411 Dyer Road / 1 University Circle
Monterey, California USA 93943

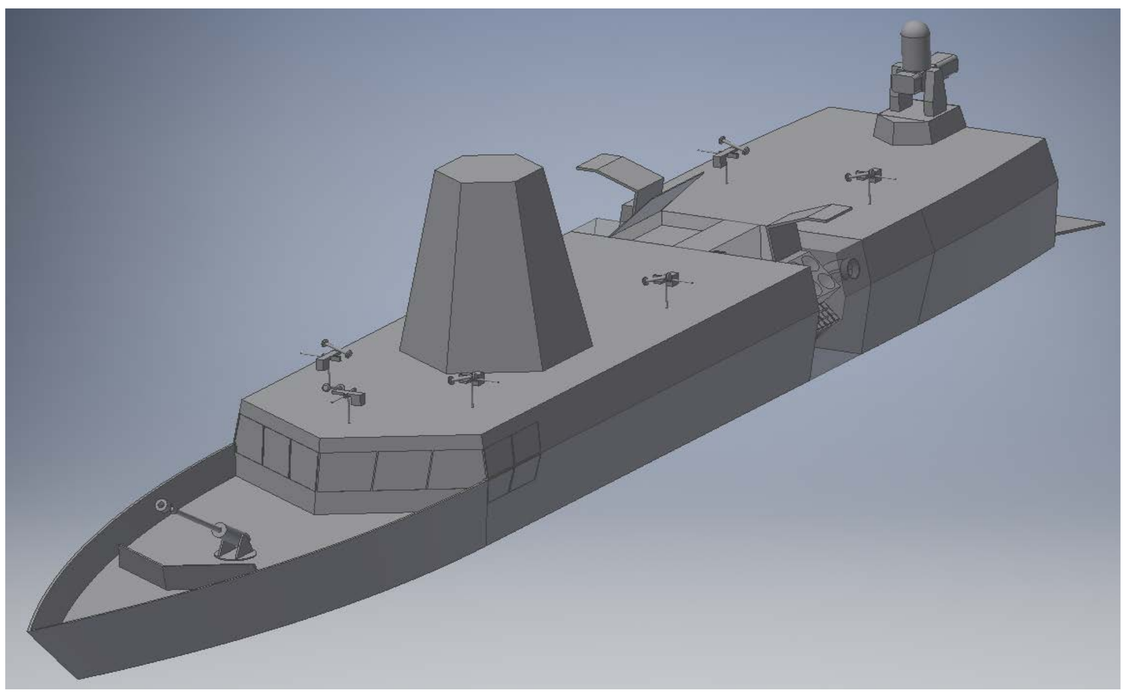
Analysis of a Lightly Manned Autonomous Combat Capability (LMACC)

Naval Postgraduate School

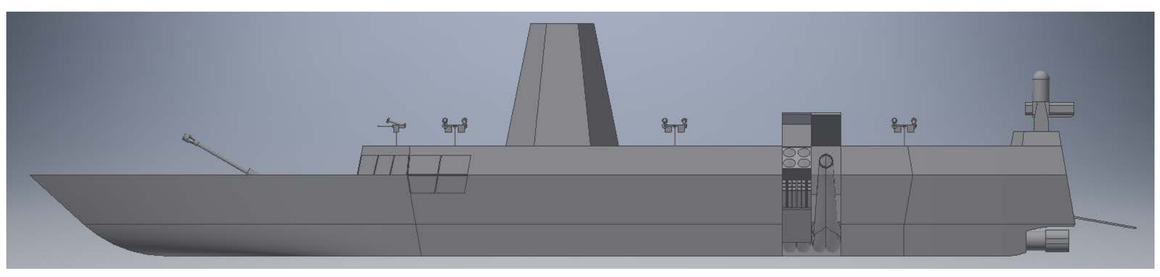
Concept and Operations

The USN is in need of a vessel that can be largely autonomous with regard to engineering and navigation but as small human crew to fight the ships weapon's systems.

Primary role is delivery of precision long range surface to surface missiles against adversary shore and surface missile batteries. Each has this priority mission plus one additional surface warfare mission. In concert with Autonomous vessels as sensors.



LMACC, 200 feet at waterline, 1000 tons loaded



Basic hull form with missile battery midships, and exhaust ports over the sides

Next Steps-Acquisition

- Discussion with shipyard candidates.
- Use of OTA or other unique acquisition methods.
- Comparison of costs in *Naval Engineers Journal* using modeling techniques of Dr. Johnathan Mun.
- Next article to focus on internal arrangement, and weapon's systems placement.
- Intention is to develop prototype for testing with MUSV

Arguments for LMACC

1. Working in "packs" of 5 LMACCs and 6 MUSV, can distribute sensors and weapons over a wide distance. The essence of DMO.
2. Addition of stealth, plus EW, hiding in the littorals and among other traffic. This confuses enemy's targeting picture and makes it much harder.
3. Cost of entire fleet of LMACC is less than the cost of 1 DDG.
4. Personnel cost: crew of 15. For entire fleet roughly personnel for 1 DDG.
5. Shipyard availability: roughly 30 yards have been identified with needed capability.

Engineering

- The vessel is designed around diesel-electric and swiveling pumpjet technology that is also hybrid capable.
- Many innovations are included in the design to make it truly a Human-Machine weapon system.
- Human systems integration a big part of the design

Researcher: Dr. Shelley Gallup
Graduate School of Operations and Information Sciences
Topic Sponsor: OPNAV 96

NRP Project ID:
NPS-19-N168-A

Approved for public release; distribution is unlimited.