



Calhoun: The NPS Institutional Archive
DSpace Repository

Faculty and Researchers

Faculty and Researchers' Publications

2022

MQ-25A Manned/Unmanned Teaming

Miller, Scot A.; McGuire, Mollie R.; Boger, Dan C.

Monterey, California: Naval Postgraduate School

<https://hdl.handle.net/10945/71887>

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



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

<http://www.nps.edu/library>

Problem Statements

- F/A-18 have short unrefueled mission ranges
- No organic tanker on CVs today
- F/A-18s are used as tankers
- Removes strike aircraft from strike mission; adds stress to aircrew
- MQ-25 designed to eliminate these issues



MQ-25A in action



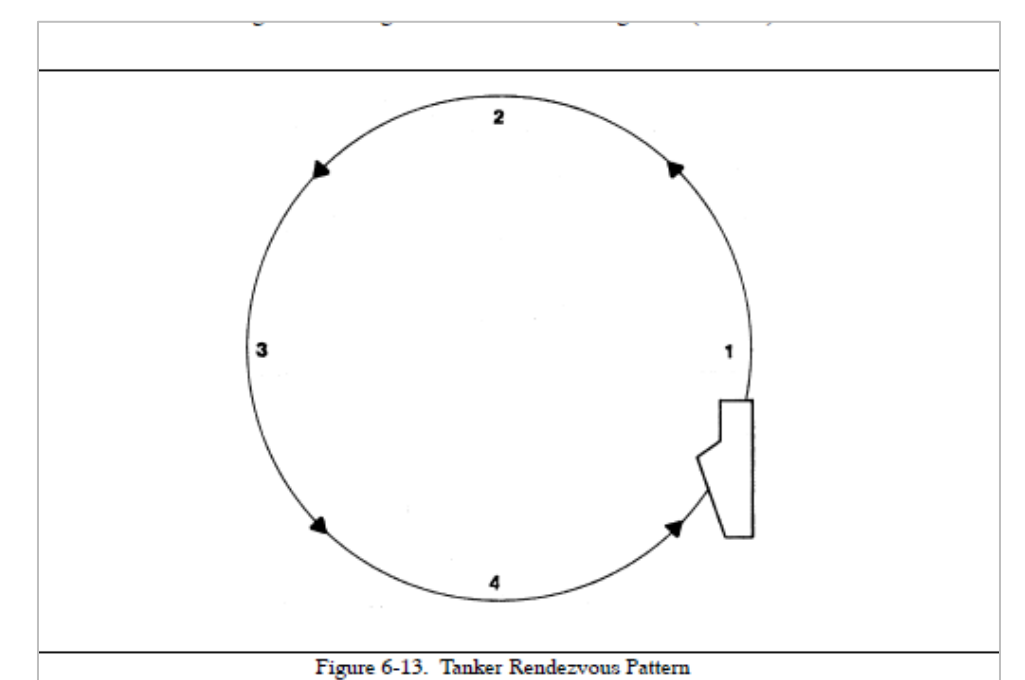
MQ-25 with F-35

MQ-25A

- First unmanned tanker; carrier based; IOC 2024
- Supports mission and recovery refueling; ISR is secondary mission
- Operates in permissive environment
- Expect operations in non permissive environments
- Operated by Air Vehicle Operators (AVOs)
- AVOs will be Warrant Officers (WO-1)

Approach and Findings

- Use Co-Active Design and Interdependence Analysis (IA) to determine observability, predictability, and directability requirements for HMT
- For operational realism, move away from assumption of permissive environment
- Give AVO's JICO like training so they are flexible across primary, alternate, contingency, and emergency comm paths
- Non permissive environments require E-2s and receiver aircraft as MQ-25 teammates
- Add digital interoperable planning and after action review systems that promote machine learning and HMT trust



CV Recovery Refueling Pattern

Next Steps

- Explore human machine teaming options which support refueling operations in non permissive environment
- Investigate human machine teaming options for an enhanced ISR capability
- Develop considerations for building trust in the human machine relationship



Researchers: CAPT Scot Miller, USN (ret), IS; Dr Dan Boger, IS
Student: Capt Andrew Benton, USMC, IS
Topic Sponsor: CAPT Greg Machi, PMA-268

NRP Project ID:
NPS-22-N200-A