



**NAVAIR UCAV ADVANCED
DEVELOPMENT PROJECT OFFICE**

**UCAV
ADPO**

Naval Uninhabited Combat Aerial Vehicle

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UCAVs at NAWCWPNS

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- **The UCAV concept has been under study at NAWCWPNS since FY95**
 - HMLV
 - JSAAWS
- **Lethal UAVs have been investigated for two years**
 - **Conventional UAVs with existing weapons**
 - **May be considered a Gen 0 UCAV**

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Joint Effort

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- **During FY97, the NAVAIR Uninhabited Combat Aerial Vehicle Advanced Project Office (UCAV ADPO) was established**
 - **Joint effort between NAWCWPNS and NAWCAD**
 - **Within the NAVSTO**
 - **CDR Osa Fitch, Head**
 - **Julieta Booz, NAWCAD Deputy**
 - **John Fischer, NAWCWPNS Deputy**



UCAV System Requirements

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- **Under investigation**
- **Mission Dependent**
- **Gathering data from the Fleet, Marine Corps, OPNAV, PMAs, etc...**
- **Office of Naval Research has identified UCAVs as a technology for investment**
- **NAWC & ADPO responsible for delivery of a UCAV S&T roadmap**



Potential Naval UCAV Missions

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- SEAD
 - CAS
 - Mobil/Relocatable targets
 - ASW
 - ASuW
 - ISR
 - Halt the invasion
 - No-fly zone enforcement
 - Mining
 - CBR
 - Fixed target
 - C&C Center attack
 - Information suppression
 - Air interdiction
 - Armed reconnaissance



Mission Analysis

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- Terry Rogers (Code 4J1200D) is performing a detailed analysis to determine the future Navy environment
 - Based upon Joint Vision 2010
 - Defense planning documents
 - Navy history since World War II
- What are the **POTENTIAL** roles for Naval UCAVs in the future?



Fleet & Potential User Perspective

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- **Extensive briefings and interviews are being conducted to a broad Navy and Marine Corps audience**
 - **Seeking potential user inputs**
 - **Informing the Fleet of this new concept**
 - **Initially not well received**
 - » **Viewed as a threat to manned aviation**
 - **Progress is being made as the Fleet is now providing ideas for CONOPS, system requirements, etc...**

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Fleet & Potential User Perspective

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- **Aviation community is slowly accepting the idea**
- **Non-aviation community agrees UCAVs are more accepting than aviators provided they have control of the system if deployed**



Naval UCAV Challenges

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- **Identify mission(s) which is (are) unique to the Navy**
 - **Air Force is aggressively pursuing SEAD mission in a \$140M program with DARPA**
 - » **An Air Force UCAV is scheduled to fly in FY01-02**
 - » **Prototype**
 - » **Why should the Navy invest in UCAVs if the Air Force is planning to develop the technology?**



Naval UCAV Challenges

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- **Situational awareness**
 - Must be as good as a human in a cockpit to be accepted
- **Blue on Blue engagements**
 - Unacceptable under any circumstances
 - How can they be prevented?
 - IFF
- **C4I**
 - Considered by everyone as the biggest challenge



UCAV Design

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- **Low and slow**
 - VTOL or VSTOL
 - VATOL
- **High, fast, and stealthy**
 - CTOL
- **Carrier based?**
- **Destroyer and Cruiser based?**
- **Rough field capable?**
- **Large or small vehicle?**



UCAV Design

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- **Should the UCAV possess high autonomy with minimum communication requirements?**
 - Artificial intelligence
 - On-board decision making
 - What are the sensor requirements?
 - **Should the UCAV possess low autonomy with high communication requirements?**
 - Probably most cost effective approach



Weapon Requirements

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- Mission dependent
- Smart weapons on a dumb UCAV?
- Dumb weapons on a smart UCAV?
- Targeting is a key issue
- Could a Navy UCAV be a two-way Tomahawk Cruise Missile?
- UCAVs are considered a **WEAPON SYSTEM**, therefore, weapons are a critical component