Terms of Reference
Role(s) of Unmanned Vehicles

Objective

Define possible Unmanned Vehicle operational concepts that will enhance warfighting effectiveness or introduce new naval capabilities. Review and assess operational concepts with respect to employment singularly or in swarms, level of autonomy, factors influencing operational capability including navigation, power, vulnerability and affordability.

Background

Over the past 20 years there has been a proliferation of unmanned vehicle research and development efforts and programs. The Department of Defense is at the leading edge of a transition to growing reliance on unmanned vehicles. Increasing demands upon operating forces in terms of tempo, increased threat capabilities, rules of engagement parameters and risk management are leading Naval forces, as well as other services, to the development of unmanned vehicles. These unmanned vehicles are envisioned to perform a variety of missions in many environments.

The most recent focus has been primarily on Unmanned Aerial Vehicles (UAVs). These early programs have focused primarily on various sensor systems hosted on a variety of different platforms (VTUAV, Globalhawk, PIONEER...) in the near term. Fleet operational integrated sensor and weapon delivery vehicles, Unmanned Combat Aerial Vehicles (UCAVs), have been deemed to be mid to far term capabilities. However, recent events in Operation Enduring Freedom, has stimulated interest in accelerating this capability.

A smaller but no less important area has been the development of Unmanned Surface and Underwater Vehicles (USVs, UUVs and UGVs). These efforts have been largely limited to primarily research and development programs with only a few maturing to potential Fleet employment, (RMS, LMRS, SAHRV). It is important to note that this form of underwater employment of unmanned vehicles is less mature and not as robust as that of their aerial counterparts.

Specific Tasking

Review and assess potential concepts of operations (CONOPs) and employment (COE) of all Naval missions with respect to unmanned vehicles. Examine the following:

- Fleet Needs (Command Capability Issues).
- Requirements (existing and perceived).
- Reconnaissance/surveillance
- Sea and land

- Engagement
- Sea and land
- Capabilities desired to meet CONOPS and COE
- Required levels to meet study group recommended Fleet requirements for:
- Autonomy
- Communication
- Navigation
- Operations and support
- Launch and recovery
- Mission risk reduction
- Personnel
- Political (Rules of Engagement)
- Discuss affordability as a function of meeting Fleet needs

Recommend which Operational Concepts and Employment Options are considered to have the greatest potential to improve warfighting capabilities and effectiveness, reduce manpower and cost of operations.