Joint Fires in Support Distributed Maritime Operations

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NPS NRP Executive Summary
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Report Date: 31 October 2019 Project Number (IREF ID): NPS-19-N191-C
Naval Postgraduate School Information Sciences Department

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Joint Fires in Support of Distributed Maritime Operations

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EXECUTIVE SUMMARY

Project Summary
Traditionally Joint Fires (JF) implied naval and air forces supporting land forces. JF in support of distributed maritime operations (DMO) turns that notion on its side, and suggests using JF to support naval forces. DMO, while not precisely defined, generally describes naval forces where firepower is distributed, making counter targeting more difficult and increasing the probability of engagement success.

This research explored considerations for such a change. First, by reviewing current tactical approaches and pondering possible changes across the doctrine, organization, training, material, leadership, personnel, and facilities (DOTMLPF) spectrum. Second, by interviewing practitioners of many of the components of what JF for DMO requires, such as networking, sensing, weapons employment, and logistical movements.

Three themes emerged. First, many weapons, platforms, sensors, and network combinations already exist that would support JF for DMO, but no cohesive approach lives. Second, numerous DOTMLPF issues require attention. Finally, JF for DMO requires diverse logistics support, probably arranged across services. While JF ISO DMO remains a viable concept, considerable work remains.

Keywords: *Joint fires; JF; distributed maritime operations; DMO; doctrine, organization, training, material, leadership, personnel, and facilities; DOTMLPF; tactics, techniques, and procedures; TTP*

Background
National strategic objectives drive naval operations. The objective may be to deny another navy water space or achieve maritime dominance. Strategic objectives are crucial in deciding the ways and means to accomplish the goals. This research was not designed to prove any particular hypothesis. Rather, because JF for DMO is a nascent concept, the objective was to survey the existing literature/information and to develop supporting ideas.

JF is simply the employment of weapons on enemy targets. Formally, "joint fires that assist air, land, maritime, and special operations forces to move, maneuver, and control territory, populations, airspace, and *key waters."* [emphasis added] (Office of the Chairman of the Joint Chiefs of Staff, 2019).

DMO is a new naval operational concept. In DMO, many smaller warships spread out and leverage distributed sensors, which increases targeting confusion to the enemy and enables the

Navy to shoot effectively first from many different directions. In the maritime realm, the Navy remains the dominant force, but peer competitors are building large fleets capable of engagements with our Navy. In maritime battle, the winner usually achieves a time-honored principle: "**Shoot effectively first"** (Hughes, 2009)**.** JF for DMO are designed to augment that tactical goal in support of broader strategic objectives. Many platforms deliver fire. Examples include Tomahawk missiles, Marine Corp rockets, Army missiles, and Air Force AC-130s gunships.

While "shoot effectively first" is a simple statement, each word implies significant meanings applicable to JF for DMO. **Shoot** signifies having the capability and permission to actually fire. It also means that you must have the ability to shoot. Today the U.S. Navy finds itself outranged by weapons deployed by several peer competitors.

The second word is **effectively**. One must ascertain where is the target, what is its identification, and what is its intent? These are non-trivial tasks. This precept also implies that it is important to not be found by the enemy. In the past, navies used weather and islands to mask themselves from an enemy. Satellites, drones, and other imaginative sensors make hiding from the enemy ever more difficult.

First is the last word of this axiom. It implies better scouting than the adversary, weapons that effectively engage the targets, and the availability of signals to communicate firing messages.

Findings and Conclusions

The literature review and discussion with subject matter experts both in person and through online naval forums concludes that JF would add value across all components of the axiom, "shoot effectively first." JF capabilities have an existing set of scouting and signaling capabilities. Employing JF to the Navy's complement of weapons, sensors, and signaling would add numbers and variety to these fires' components, complicating the enemy's defensive thinking, scouting, and fleet positioning calculus.

Significant issues exist for employing joint fires in this new way, though. There are significant DOTMLPF issues that need resolution. While doctrine supports JF for DMO, tactics, techniques and procedures (TTP) needs refinement. The Marines experimented with land-based rockets aboard ship. But who owns them aboard ship and directs their use? Also, JF for DMO requires challenging cross domain (air, sea, and land) logistics support. Much work to sort out these challenges remains.

Recommendations for Further Research

JF are one option available to the Joint Force Commander. This research is the first of a two-year effort. Below are areas for further research.

We recommend further exploration of force structure options, such as reinventing PT boats, arming merchants (Harris, 2019) with missiles, and flotillas of manned and unmanned surface vessels working as hunter killer teams (Kline and Hughes, 2013). Other ideas include thousands of unmanned surface sensors, such as Waveglider, a Venetian blind contraption that uses waves to power itself, and Saildrone, already in use in many oceanographic research capacities.

We also suggest further research into the logistical challenges of establishing JF for DMO. Sustaining forces in contested areas is hard, and the following ideas deserve more consideration: pre-positioning, contingency contracts, steady approach to exercise-related infrastructure development, and unmanned logistics support systems (Harvey, 2013). However, by embracing small sizes and distributed operations, one emerging idea is that logistics forces can be survivable because they remain aware regarding when and how long to operate within ranges of various weapons classes. Also, since the assets are small, they may be unattractive to adversaries that have limited inventories at operational ranges.

Finally, there are organizational and personnel issues needing further study. One idea is to rig vessels for unmanned operations and remove crew when hazards increase. Another observation is that the current fleet architecture induces caution in commanders. Can the Navy redesign fleets so that they unleash the aggressiveness and creativity of our commanders? Another suggestions questions whether the Navy can produce enough missiles that they become ammo instead of silver bullets. Such a result would enable designing flotillas for maximum firepower, both instantaneous and sustained.

References

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Acronyms

DMO	Distributed maritime operations
DOTMLPF	Doctrine, organization, training, material, leadership, personnel, and facilities
JF	Joint fires
TTP	Tactics, techniques, and procedures