From: Distributed Lethality Team 2017, OA4604 Wargaming Course,
        Naval Postgraduate School

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Subj: Phase 0 and Phase 1 Distributed Lethality Wargame Executive Summary

1.   Purpose. The objective of the wargame was to study the impact of
Distributed Lethality (DL) on a potential adversary's decision-making during
Phase 0 (shaping) and Phase 1 (deterrence) operations compared to more
traditional, concentrated forces. Analysis was conducted to support Surface
Warfare (OPNAV N96) in determining which elements within an Adaptive Force
Package (AFP) add the most operational flexibility and capability. Other
concepts such as near-future technologies, Joint Force capabilities, and the
impact of DL logistics were explored. This memorandum provides the
background, study methodology, key findings, and recommendations that were
derived from the wargame.

2.   Background. DL is an operational employment concept that combines
increased surface warfare striking power with increased targeting capabilities
by a geographically dispersed force. The goal of this concept is to achieve
sea control by increasing networking capabilities with a distributed and
potent offensive force. These technologically advanced assets will ''hold the
adversary at risk——at range.'' A single scenario based in the South China Sea
was used to compare the effectiveness of various DL AFP compositions. This
study consisted of three wargame plays: a tutorial game using a CSG, and two
games with different AFP compositions. Each game had two movement phases that
enabled the teams to receive information regarding the operational picture.
This information allowed the teams to develop counteraction plans and provided
data points for analysis.

3.   Study Methodology. Players were divided into two teams: Red and Blue.
Red team played the role of the adversary, and had a constant force structure
throughout all games. Blue team's force structure used a predetermined AFP
that was selected at the beginning of each game. Blue team had a player
designated to represent a regional partner nation (Green team). The Green
team played with a constant force structure. Schedule conflicts prevented an
international officer playing the role of a regional partner, and Green was
played by a retired United States Navy Captain. The Data Collection and
Management Plan (DCMP) focused data collection during three phases of the
wargame. The scenario remained constant throughout the game to allow players
to focus on DL and AFP considerations.

    a. Movement Phase. The movement phase allows players to plan the
       employment of their forces on a map graphic. This phase was composed of
       two sub-phases completed in order. The planning sub-phase utilized a
       scorecard and map graphic to document player actions. After the
       planning, the white cell adjudicated all player movements. This
       adjudication sub-phase methodically determined which objectives were
       accomplished, which units were discovered, and which units were held at
       risk by each team. Each game had two movement phases: an initial
       movement and final movement. The total number of movement phases was
       restricted by the time available to conduct the wargame.

    b. Seminar wargame. The bulk of the data collection was completed during
       the seminar wargame. Each individual team member had the opportunity to
       discuss the advantages and disadvantages of their plan, and identified
       how DL helped or hindered their planning process. The seminar was a
       dialogue centered on the research interests of the sponsor.

Conversation was directed by the analysis team's seminar facilitator to implement the DCMP.

c. <u>Final Survey</u>. The final survey was conducted to capture player inputs into questions not answered during the seminar. This survey completed the wargame data collection requirements.

4. <u>Key Findings</u>. DL concepts changed the behavior of the adversary during Phase 0 and Phase 1 operations. Red behavior varied depending on the Blue AFP force selection. Blue utilized near-future technologies to fill perceived gaps in their force capabilities.

a. DL provides more uncertainty in adversary decision making compared to a conventional, concentrated force.

b. Deterrence to Red forces relied on Blue force's strategic positioning, numerical strength, and capabilities.

c. Across all of the AFPs, the DDG component with an extended weapon strike range (Maritime Strike Tomahawk) was perceived by Blue and Red teams to be the most threatening unit.

d. Each AFP had unique advantages and shortfalls identified by the Blue team. Near-future unmanned technologies were identified as a possible solution to shortfalls.

e. Red movement and behavior was overt when facing a Blue AFP equipped with advanced air units.

f. DL fuel logistics challenge conventional replenishment of naval forces

5. <u>Recommendations</u>. This was the third wargame conducted on Phase 0 and Phase 1 DL concepts. Many of the lessons learned from previous wargames were incorporated to refine the mechanics of the game. Further wargames that improve upon the body of this work are required for a more complete understanding of DL in theater shaping and deterring activities. The following are recommendations learned from this study:

a. An adequately sized and capable force is required by Blue to effectively deter Red. Red forces outnumbered Blue's and had perfect knowledge of Blue AFP composition. During gameplay Red was able to calculate which ships were unlocated and often were undeterred by these possible threats. Removing this knowledge via refined game play which accounts for TACSIT and IPB would introduce more uncertainty into Red's decision making and potentially lead to different behavior in Phase 0 and Phase 1 operations.

b. This wargame was the first to utilize the Combat Logistics Force planning tool to explore implications of fuel logistics on Phase 0 and Phase 1 DL wargames. The feasibility of Blue force employment plans were explored after completion of the seminar game. Under favorable model assumptions, the distance between forces set by Blue players provided a logistics challenge. New resupply concepts may be needed to overcome these challenges. Future wargames should specifically address these challenges.

c. The native sea traffic to the South China Sea was not included in the wargame. Players did not have to consider the challenges to planning and associated complications to targeting solutions added by this clutter. Furthermore, potential for each force to receive intelligence about their opponents from non-military sources, such as commercial traffic, was not specifically addressed. These factors could be significant to DL concepts and should be explored.

d. Multiple movement phases (turns) were utilized within one wargame
      scenario. Time and study goals limited the number of turns to two.
      More turns could provide more information and insight into player
      decision making and logic. Smaller time increments between turns and
      more adjudications are recommended to further these findings.

6.   Conclusion. Distributed Lethality concept is a complex and capable
employment technique. During shaping and deterring phases, players must
balance exposure levels to their adversary to accomplish desired end states.
Adversary's level of deterrence depends on their ability to recognize
unfavorable conditions to their forces. DL messaging must convey these
threats and build a public understanding of this new capability. Adaptive
Force Packages must be compromised of sufficient number of units with each
providing legitimate threats to a potential adversary to be most effective.

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