

SUBJECT: CARRIER PRESENCE WARGAME EXECUTIVE SUMMARY (EXSUM)

1. Purpose: Conduct a wargame to provide analysis to inform the design of an algorithm that quantifies the deterrence value of a carrier strike group (CSG). The wargame output will be used to validate and improve the game theoretic conceptual model and provide input to the model's parameters. Issues that were examined include:

a. The interaction between the global power and the regional power in Phase 1 and any interactions that contribute to the regional situation transitioning out of Phase 1. The sponsor specifically requested to account for the transition to Phase 2 with a recognized reward structure similar to that in Phase 1; however, due to the time and scope limitations of the wargame, this transition was not accounted for in the wargame.

b. The contribution of the smaller regional nations to the interaction between the global and regional powers, and its effect on the regional environment.

c. Validation of viable courses of action for each nation player within the DIME construct.

2. Background:

a. The Design for Maritime Superiority describes the mission of the U.S. Navy as: The United States Navy will be ready to conduct prompt and sustained combat incident to operations at sea. Our Navy will protect America from attack and preserve America's strategic influence in key regions of the world. U.S. naval forces and operations – from the sea floor to space, from deep water to the littorals, and in the information domain – will deter aggression and enable peaceful resolution of crises on terms acceptable to the United States and our allies and partners. If deterrence fails, the Navy will conduct decisive combat operations to defeat any enemy.

b. In a region of increased international tension, the U.S. Navy must decide whether or not to send a CSG into the region to maintain stability. The goal of this wargame is to attempt to quantify the deterrence value of the CSG. The proposed effort will seek to represent the value of CSG presence through a risk framework complementary to current Navy combat modeling.

c. The wargaming team considered a scenario where several nations within the South China Sea (SCS) have territorial disputes which cause tensions to rise. The wargame was developed to study the actions and outcomes and to infer the deterrence value of a CSG. The game consisted of two main "players" (the United States and China) and a regional nation panel. The regional nations we considered were Vietnam, Taiwan, the Philippines, Singapore, Indonesia, and Malaysia.

3. Study Methods:

a. The wargame was designed as a hybrid game, having aspects of open, closed, and seminar style wargames. The U.S. and China "players" (each played by a three-person team), were in

closed, separate rooms while the regional nation panel was in an open room, to which all players had access. The regional nation panel, was led by a facilitator, and made decisions for each regional nation as a group.

b. The Data Collection and Management Plan (DCMP) allowed for the collection of both qualitative and quantitative data. Data collected during the wargame included:

1) Diplomatic and Military Moves. Actions, requests, and the associated costs of the two main players, as well as, responses from the targeted regional nation.

2) Measure of Regional Influence. A subjective measure of the disposition of each regional nation towards the actions and requests of the U.S. and China.

3) Regional Nation Requests. Requests and statements made to the U.S. and China.

4) Post-game survey. Player thoughts concerning the most and least influential actions taken by each nation during the course of the game.

c. Data Analysis. The majority of data collected was qualitative. The quantitative data (the measure of regional influence and costs) were analyzed using simple graphing techniques to identify trends and points of interest in the game.

#### 4. Findings:

a. The wargame remained in Phase 1 throughout ten full rounds of game play. No actions were taken by any player that caused the game to escalate to Phase 2 or deescalate to Phase 0.

b. Presence of the CSG in the Phase 1 environment had minimal effect on player decisions. Only minor advantages were realized by the presence of the CSG in the SCS during the Phase 1 scenario. Often those advantages did not justify the risk to the CSG as tensions increased during the game. Although the U.S. team was “forced” to make a military move with the CSG at least every four turns, its use was limited to port-calls and freedom of navigation style sailing in and around the SCS. The U.S. team used its CSG to conduct a bilateral military exercise with the Vietnamese, which was viewed favorably. During the post-game debrief, the Chinese team remarked that the presence of the carrier had no impact on their decision-making process. It offered little deterrence to Chinese objectives of expanding territorial claims and incrementally improving its regional position. The regional nation panel viewed the presence and participation of smaller U.S. naval vessels as more productive and beneficial.

c. The regional nation players viewed economic incentives from the U.S. and China as strong influential measures. Military exercises were also viewed favorably. Actions taken by the U.S. and China that escalated tension in the region were viewed negatively, while any action taken by the main players to deescalate tensions elicited a positive response.

d. The Chinese viewed any U.S. military presence in the region as escalatory and took action to counter U.S. efforts. For example, when the U.S. team based P-8s in Vietnam, the Chinese

team countered by conducting a “trade war” against Vietnam. Ultimately, the Vietnamese succumbed and asked for the U.S. to withdraw the aircraft.

e. Vietnam was seen as the most influential regional player, while Taiwan was seen as the least influential. There are two possible reasons for this observation. First, the fictitious scenario we wrote started the game with China and Vietnam having economic disputes and a tense relationship. We feel this may have artificially forced the focus of a majority of the game on resolving the tension between those two countries. Unfortunately, since only ten rounds were played, the length of the wargame did not allow for additional scenarios to develop. Secondly, the regional panel had no representative from Taiwan, and as a result, little attention was devoted to Taiwan’s part in the wargame.

f. The lack of subject matter experts on the regional nation panel proved to be a limiting factor in the wargame. Due to this fact, the regional panel was conducted as a seminar style wargame and decisions were made collectively by the players on the panel.

g. The U.S. achieved on average 3.2 “influence points” per cost unit spent, as compared to China, which averaged 2.8. These ratios captured the cost of influence which was our main quantitative metric collected. As previously mentioned, on every round, we used a paper worksheet to capture each player’s diplomatic and military move. The worksheet data was then entered into the DCMP Excel spreadsheet. The spreadsheet allowed us to record and manipulate the cost and regional influence data easily resulting in a relatively quick and straight forward analysis which helped identify which game events were impactful.

h. The U.S. and China experienced diminishing returns as the game progressed. In other words, the longer the game was played, the U.S. and China had to spend more to increase its regional influence.

i. The U.S. saw no effect on regional influence when a second CSG was introduced into the region.

## 5. Bias:

Inherent biases which were introduced into our study based on the nature of how the wargame was designed, developed, and implemented.

a. A well-defined scenario was essential to placing the game players in the appropriate mindset for the wargame. However, as some of the game results show, our scenario was a factor in driving player actions. For example, Vietnam was the initial focal point for the U.S. and Chinese players, simply because the written scenario began in that particular state. Given longer game play, or scenario injects, we may have seen an adjustment to the game’s focus. The scenario also highlighted border tensions between Malaysia and Indonesia. In response, the U.S. team used one of its diplomatic moves to hold talks to resolve the issue. This was noted in the post wargame survey as one of the least influential U.S. diplomatic moves.

b. Regional influence, as defined by the wargaming team, gave an initial advantage to the U.S. team. Since one objective of the U.S. and China was to increase its influence within the SCS, this placed the Chinese team in a position requiring it to take swift action to gain the favor of its neighbors. The lack of subject matter experts on the regional nation panel proved to be a limiting factor in the wargame. We were unable to secure representatives from Vietnam, Taiwan, Singapore and Malaysia. Due to this fact, the regional panel was conducted as a seminar style wargame and collectively made decisions for each nation on the panel. A few players on the regional panel were military members from Indonesia and the Philippines. While they provided excellent insight from a military point of view for their particular country, they acknowledged a lack of complete familiarity with the political and diplomatic perspectives.

c. Allowing a single diplomatic and single military decision per round was also a limiting factor, effecting the player's ability to take all necessary actions. It is conceivable that multiple diplomatic or military moves would be desired in a single turn. However, to aid in analysis, and to examine cause and effect, the wargame team placed this limitation into the game rules.

d. Regional nation military forces were not considered as usable in the wargame. The addition of these forces could have changed the course of decisions for the main players. In the scope and size of this wargame, their addition was deemed to add too much complication to the game play.

e. Although the game objective for the main players was to minimize cost, the resources available to spend was considered unlimited. This is not realistic, but was implemented as to not restrict player's actions. It is also recognized that the cost for the Chinese to operate in their "backyard" would be much less than U.S. forces operating at a greater distance. This fact was not accounted for. Also, the cost for a particular action was a subjective assessment determined by the wargame team, or by the game adjudicator during play.

f. The wargame did not capture the impact of a transition to the Phase 2 environment. Although the wargame allowed for transition to Phase 2, no player action resulted in a shift out of the Phase 1 environment. Due to the fact that force on force adjudication between the main players was not accounted for in the wargame, there existed no sufficient mechanism to allow conflict or measure the resultant probability.

## 6. Recommendations:

a. Longer game play would allow the game to transition away from the initial starting conditions and yield more data to analyze. We recommend a subsequent game be played over multiple days which would allow for players to put more thought into strategy and reactions to opponent actions.

b. Utilize subject matter experts to represent each nation in the game. We recommend having experts who are familiar with each aspect of the diplomatic, informational, military, and economic instruments of power for their respective country.

c. Refine the manner of assigning costs to diplomatic and military actions.

7. Conclusion: Our analysis and observations from the wargame show that the presence of a CSG had little impact in a Phase 1 scenario, most notably due to issues outlined in the bias section. While the presence of the CSG did little to deter Chinese actions in a Phase 1 environment, the wargame participants believed it would prove effective in preventing actions that would lead to transition into Phase 2. The economic instrument of power proved to be the most influential method to increase regional influence in the scope of our wargame. Economic incentives were consistently viewed as favorable, while military interaction between the U.S. and China were viewed unfavorably. Our wargame results reinforce the need to examine the Phase 2 environment and how the presence of the CSG influence individual country actions. Future work would benefit by addressing the issues highlighted within the bias section of the report.

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This wargame executive summary was written by the Wargame Development Team and is Unclassified and has no distribution restrictions.