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Naval Services Game '12

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NAVAL SERVICES GAME
REPORT

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6 November, 2012

The power of war gaming has been a critical part of US military studies and planning throughout the years. It has evolved into significant efforts such as the Title 10 war games like the Navy's Global series and the Marine Corps' Expeditionary Warrior series. These games dive into issues of utmost concern to the individual services to provide data and enlighten a way forward for the services along a myriad of topics. Yet, as a Naval Service, we have a responsibility to ensure we jointly study issues of concern to both our Services.

This summer, at the behest of the newly formed Naval Board, the staffs of the War Gaming Department at the Naval War College in Newport, Rhode Island and Wargaming Division of the Marine Corps Warfighting Laboratory in Quantico, Virginia integrated to conduct the first Navy-Marine Corps war game since the SECNAV Wargame in 1994. In so doing the staff of the Naval Services Game (NSG-12) succeeded in proving the utility of gaming to explore issues of concern to the naval services.

By artfully limiting the scope of the game in order to fit an abbreviated timeline, the team conducted a game that included Navy and Marine Corps leaders and subject matter experts from across the warfighting spectrum to aid in defining the problems of *naval force aggregation*. As a result of this game's success future events can more deeply explore the details and potential solutions in order to bridge the existing gaps in command and control, staff construct, doctrine and training.

This report is hopefully the first of many efforts by our organizations to work together in the interest of furthering the mutual goals of our services.

Rear Admiral John N. Christenson, USN
President
U.S. Naval War College
Newport, Rhode Island

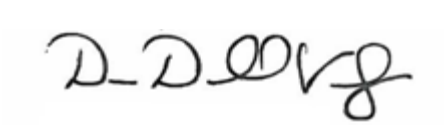
Brigadier General Mark R. Wise, USMC
Commanding General
Marine Corps Warfighting Laboratory
Quantico, Virginia

October 22, 2012

From 11-13 September 2012, the War Gaming Department of the United States Naval War College (NWC) in collaboration with the Wargaming Division of the Marine Corps Warfighting Laboratory (MCWL), hosted the 2012 Naval Services Game (NSG). The Naval Board directed both the War Gaming Department and the Wargaming Division to develop and execute a "proof of concept" Navy/Marine Corps wargame that would permit the examination of issues of concern to both services. The determination was made to explore the problems associated with aggregating naval forces in response to an emerging conflict.

The ensuing analytic report was prepared by a core team of research faculty and professional analysts from both of these institutions. The findings in this report reflect the observations, insights, and recommendations that were garnered from participants during game play. Moreover, this report reflects the use of a wide range of research methods and tools designed to elicit intellectually honest analysis of complex problems.

For additional information please contact the Chairman, War Gaming Department, Naval War College, 686 Cushing Road, Newport, RI 02841 or via electronic mail at wargaming@usnwc.edu.



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EXECUTIVE SUMMARY

Overview, Objective & Research Questions

The United States Naval War College (NWC) in Newport, Rhode Island, in partnership with the Marine Corps Warfighting Laboratory (MCWL), hosted the Naval Services Game (NSG) from 11-13 September 2012. The NSG was developed and executed under the sponsorship of the Naval Board. The purpose of the NSG was to explore the challenges associated with aggregating naval forces in response to an emerging conflict.

Specifically, the following objective was identified for this project:

Develop principles and identify potential gaps that result from the aggregation of naval forces beyond the Amphibious Ready Group (ARG)/Marine Expeditionary Unit (MEU) and Carrier Strike Group (CSG).

Based on the Naval Board's interest in force aggregation, and after performing a review of related literature, the NWC's War Gaming Department (WGD) and the MCWL Wargaming Division (WGD) jointly developed the following overarching research questions:

- As a naval force aggregates afloat, what are the implications on force structure? What are gaps and areas of concern across DOTMLPF?

- Relative to the following areas, (Mission, Task Organization, Battlespace Organization, and Command Relationships) as a naval force aggregates, how will command arrangements evolve?

- What are other potential approaches for aggregating naval forces outside of typical organizational structures?

Game Structure

The NSG was a one-sided, professionally facilitated, seminar event. It consisted of three, unclassified, time-stepped vignettes, each of which expanded upon the aggregation of BLUE forces in the maritime environment. The vignettes featured a notional scenario using real world geography. A simulated conflict between the countries of GREEN and RED in 2014 served as the initial condition. The participants were placed into one of two BLUE cells. BLUE Cell A was comprised predominately of operators, whereas BLUE Cell B was staffed primarily with experts in support establishment. Both cells were playing from the perspective of the Service Component Commander during vignette 1, and from vantage point of the Joint Force Maritime Component Commander during vignettes 2 and 3. The WHITE cell (also referred to as the *Control* cell), was comprised of NWC WGD and MCWL WGD staff who served as the Combatant Commander

during vignette 1 and the Combatant Commander/Joint Task Force Commander during vignettes 2 and 3.

During each of the three vignettes, each BLUE cell was required to collectively produce a Course of Action (COA) sketch, complete individual Web-IQ surveys, engage in cell-based facilitated seminar discussions captured by members of the control team, and provide content to Web-IQ threaded discussions captured electronically, which emphasized the gaps, principles and insights associated with naval force aggregation.

On the final day, players participated in a combined plenary session where they presented the COAs developed during each vignette and discussed the gaps, principles and insights identified during gameplay. Senior naval services leaders, such as RADM John Christenson (NWC), BGen Mark Wise (MCWL), RDML Ann Phillips (ESG-2), and CAPT Michael Napolitano, representing RADM Michael Tillotson (NECC), were also present during this session and their insights were captured for inclusion in post-game analysis.

Summary of Participants

Thirty-five members of the United States Navy (USN) and Marine Corps (USMC), representing officer pay grades O-4 through O-6 served as players in the NSG. Players averaged 21 years of service per participant, including nearly 7 years of experience at the battalion/command level. Players were highly educated, with 69 percent of participants holding a master's degree or higher. With respect to warfare specialties, 34 percent served in the surface/submarine warfare community, 29 percent of participants were from Navy and Marine aviation, 14 percent were USMC ground combat experts, 14 percent served in the intelligence/information dominance community, and 9 percent belonged to the USMC logistics military occupational specialty (0402). Both BLUE Cell A and Cell B were comparably matched in terms of players' education and expertise.

Summary of Analysis

Data were captured through a variety of techniques including cell-generated COAs, individual player surveys, facilitated discussion, and threaded thematic sessions. The Data Collection and Analysis Team (DCAT) subsequently employed several qualitative analytical techniques in order to examine these data streams, ultimately yielding the following responses to the Naval Services Game's research questions:

Question #1: As a naval force aggregates afloat, what are the implications on force structure? What are gaps and areas of concern across DOTMLPF?

Response: Overwhelmingly, players in both cells emphasized the importance of cultivating command relationships. These relationships were defined as personal, structural, organizational, formal and informal, and were deemed a precursor to effective force aggregation. Specifically,

fostering organizational unity of command and developing a simplified command and control (C2) element through the use of integrated staffs were also identified as essential preparatory steps prior to engaging in a combined Navy-Marine Corps fight. Further analysis into doctrine, organization, training, materiel, leadership and education, personnel and facilities (DOTMLPF) revealed that the elements of doctrine, organization, leadership, and training manifest the greatest gaps in present-day Navy-Marine Corps joint operations.

Question #2: Relative to the following areas (Mission, Task Organization, Battlespace Organization, and Command Relationships) as a naval force aggregates, how will command arrangements evolve?

Response: Game participants identified lack of service culture awareness and diminished understanding of cross-domain resources as the greatest challenges to combined Navy-Marine Corps force aggregation. Specifically, Navy personnel did not fully comprehend amphibious operations, whereas Marine Corps participants acknowledged only cursory familiarity with maritime operations. This lack of fluency between the services presented the greatest challenge for players when planning viable courses of action for combined operations in the littorals. Moreover, because the composition and functionality of staffs are presently bifurcated towards either maritime or land operations, mission planning, and task and battlespace organization continue to challenge the commander engaged in combined Navy-Marine Corps operations.

Question #3: What are other potential approaches for aggregating naval forces outside of typical organizational structures?

Due to the finite time constraints imposed upon game play (i.e., three vignettes over less than two days of game play), participants in the 2012 Naval Services Game opted to focus on the gaps, principles, and issues germane to force aggregation rather than delve into alternate perspectives on atypical organizational structures. However, data garnered from both cells suggests that regardless of organizational structure considered, greater emphasis needs to be placed on cultivating command relationships, and simplifying and unifying command and control structures.

During the course of game play, the participants were asked to identify any potential gaps and propose principles based on the difficulties they faced in aggregating naval forces. Both BLUE A and B cell participants were expected to focus on naval force aggregation issues and the evolution of command relationships throughout game play.

On the final day of the NSG, BLUE cells A and B participated in a combined plenary session that allowed them to present the COAs developed during each of the three vignettes, and to discuss the gaps, principles, and insights garnered by the players. The following gaps and principles were identified by either BLUE cell A *or* BLUE cell B, but not necessarily by both, and not in prioritized order.

Participant Identified Principles of Aggregation

- Naval staffs organized and manned by permanent and appropriately skilled Navy and Marine staff officers in each functional area provide full command and control of the naval battle, and facilitate force integration.

- Integrated operational planning facilitates coordination, seamless operations, and ensures desired operational tempo.

- Continuity of Command and effective C2 is maintained by staff organization that accounts for changes in force structure as the mission evolves.

- Interoperability of systems and TTPs, and common operational terminology enables seamless aggregation.

- Common Training and Education in Naval warfare facilitate aggregation.

Participant Identified Gaps Affecting Aggregation

- Insufficient doctrine to guide battlespace organization, staff organization, integrated logistics, and seamlessly synchronized operations across littoral, surface, subsurface and air.

- MOCs and other naval staffs are not integrated, organized and manned with appropriate expertise and service composition to enable integrated maritime operations.

- Limited common training (Navy/Marine Corps) of personnel, staffs, and leaders that build experience with aggregation and cross service understanding of requirements and capabilities.

- Operational logistics lacks doctrine, organization, training and systems to integrate across service and functional areas with the speed, flexibility and scope required aggregation.

- Current equipment and systems lacks the interoperability required for flexible and integrated operations.

Conclusions and Recommendations for Further Study

The 2012 Naval Services Game brought together warfighters from the USN and USMC in order to explore issues germane to force aggregation in combined operations. Despite the differences

in the composition of BLUE cells A and B, findings between the two cells were nearly identical. Indeed, game findings collectively highlighted the cultural differences between both services and the need to enhance command relationships—ultimately yielding more integrated and efficient command and control structures. Analysis further suggests that aggregating forces for operations conducted in the littorals presents the greatest challenges for Navy-Marine Corps missions.

Additional efforts to cultivate command relationships should be undertaken including, but not limited to conducting additional games focused on inter-cultural awareness and the continued refinement of principles and gaps through analysis; developing and exercising C2 integrated staffing models; and formulating doctrine to address aggregation and provide guidance to gap closure. Moreover, the development of a 2013 Naval Services Game to continue exploring Navy and Marine Corps operations is recommended. Lastly, the Naval Warfare Group should be consulted to distill other tangible actions for future decision/direction.

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I. INTRODUCTION

A. Statement of Sponsor's Interest in this Topic

According to the *Cooperative Strategy for 21st Century Seapower*, "the speed, flexibility, agility and scalability of maritime forces provide joint or combined force commanders a range of options for responding to crises (2007, p. 8)". However, such benefits can only be garnered if the maritime services, especially the warfighting-focused Navy and Marine Corps have a holistic appreciation beyond their own strengths to include the capabilities and equities of their sister services.

Towards this end, in the spring of 2012, the Naval Board tasked the United States Naval War College's War Gaming Department (NWC WGD) and the Marine Corps Warfighting Laboratory's Wargaming Division (MCWL WGD) with cooperatively developing a game that would explore the gaps, issues, and principles germane to the aggregation of Navy and Marine forces at the operational level of war. The project was subsequently termed as the 2012 Naval Services Game (NSG).

The purpose of this report is to discuss the NSG, including the game's objectives and research questions, design, and participants. In addition to these descriptive elements, this *Report* will also summarize and analyze player findings and insights, especially as they pertain to the gaps and principles associated with combined Navy-Marine Corps force aggregation at the operational level. Lastly, concluding comments will be stated.

B. Game Purpose and Objective

The purpose of the NSG was to explore the challenges associated with aggregating naval forces in response to an emerging conflict. Specifically, the following objective was identified for this project:

Develop principles and identify potential gaps that result from the aggregation of naval forces beyond the Amphibious Ready Group (ARG)/Marine Expeditionary Unit (MEU) and Carrier Strike Group (CSG).

C. Overarching Research Questions

Based on the Naval Board's interest in force aggregation, and after performing a review of related literature, the NWC WGD and MCWL WGD jointly developed the following three research questions:

Research Question #1: As a naval force aggregates afloat, what are the implications on force structure? What are gaps and areas of concern across DOTMLPF?

Research Question #2: Relative to the following areas (Mission, Task Organization, Battlespace Organization, and Command Relationships) as a naval force aggregates, how will command arrangements evolve?

Research Question #3: What are other potential approaches for aggregating naval forces outside of typical organizational structures?

D. Identification of Independent, Dependent, and Moderator Variables

In order to objectively conduct research into the relationship between force structure and aggregation and its gaps and implications, the Data Collection and Analysis Team (DCAT) identified both the independent variables (i.e., those items that can be manipulated by the researchers for the purpose of conducting the study) and dependent variables (resultants). Moreover, the relationship of these two variables to a third variable, referred to in social sciences research as a moderator variable, was also included.

Identifying the independent and dependent variables was important, because it established the parameters that would be studied in the 2012 Naval Services Game. By bounding game design around the independent variable (naval force aggregation) as it pertains to the dependent variables (implications, gaps, and the evolution of other command relationships), analysts were able to focus their research efforts on the objective promulgated by the Naval Board. Moreover, the inclusion of moderator variables allowed data to be collected along specific lines of inquiry, thus affording the cell facilitators the opportunity to keep cell discussions concretely focused during game play.

Based on the three research questions posed in this project, the independent, dependent and moderator variables were identified as follows:

Research Question #1

- Naval force aggregates afloat (Independent)
- Implications on force structure? (Dependent)
- What are gaps and areas of concern across DOTMLPF? (Dependent)

Research Question #2

- Naval force aggregates (Independent)
- Mission (Moderator)
- Task organization (Moderator)
- Battlespace organization (Moderator)
- Command relationships (Moderator)
- How do command arrangements evolve? (Dependent)

Research Question #3

- Naval force aggregates (Independent)
- Outside of typical organizational structures (Moderator)
- What are other potential approaches? (Dependent)

The NSG sought to answer these questions through direct observation of participants (i.e., ethnographic data capture), individual player surveys, facilitator-guided sessions within each of the player cells, and via a final, all-inclusive plenary session.

E. Definition of Key Terms

In order to ensure that all participants in the game were grounded in a common lexicon, the following terms and concepts were provided to them for reference throughout data collection periods of the NSG (e.g., individual player surveys, cell-based plenaries). Many of these terms were also presented in the academic sessions held prior to game play, which emphasized the Maritime Operations Center (MOC), Joint Force Maritime Component Commander (JFMCC) Marine Air Ground Task Force (MAGTF), and Composite Warfare Commander (CWC) constructs of combined Navy-Marine Corps operations.

Naval Aggregation: The process of aligning naval forces using common tactics, techniques, and procedures in arrangements that allows them to operate in an integrated manner. The inherent mobility, organizational agility, and self-sustainability enable forward postured naval forces to tailor themselves across the range of military operations from geographically disparate locations with a variety of options.

Effective aggregation of maritime forces relies on common tactics, techniques, and procedures associated with intelligence, command and control (C2), fires, maneuver, logistics, and force protection. This underscores the importance of sufficient joint and combined training, and of interoperable systems, to achieving and sustaining operational readiness. The Naval Service constantly seeks to sustain this critical foundation, to include allies and partners. The intertwined dynamic of the air/sea-superiority fight and the amphibious assault makes it critical that these operations are tactically integrated.

The following key terms and definitions were internally developed during the design phase of the 2012 Naval Services Game, and used by players as common language in their plenary discussions and survey responses.

Gap*:* Gaps are shortfalls, imposed limitations, and missing elements necessary for accomplishing objectives.

Principle*:* A guideline grounded in a foundation of past experiences and present observations, intended to shape future actions.

The following additional key terms and definitions were used throughout game play:

Doctrine: The way we fight (e.g., emphasizes maneuver warfare, combined air-ground campaigns). Fundamental principles by which military forces, or elements thereof, guide their actions in support of national objectives. It is authoritative but requires judgment in application. (CJCS-CSM 3170.01C, dated 1 May 2007)

Organization: How we organize to fight divisions, air wings, MAGTFs. Defines the structures and groupings that are used by formations and units on operations. (CJCS-CSM 3170.01C, dated 1 May 2007)

Training: How we prepare to fight tactically; basic training to advanced individual training, various types of unit training, joint exercises, etc. (CJCS-CSM 3170.01C, dated 1 May 2007)

Materiel: All the "stuff" necessary to equip our forces, that is ships, tanks, self-propelled weapons, aircraft, etc., and related spares, repair parts, and support equipment, but excluding real property, installations, and utilities necessary to equip, operate, maintain, and support military activities without distinction as to its application for administrative or combat purposes. (JP 1-02)

Leadership: How we prepare our leaders to fight from the squad leader to four-star-General/Admiral. Further defines specific training and leadership requirements; this refers to the development of leaders primarily through further education. (CJCS-CSM 3170.01C, dated 1 May 2007)

Personnel: The availability of qualified people for peacetime, wartime, and various contingency operations. Those individuals required in either a military or civilian capacity to accomplish the assigned mission. (CJCS-CSM 3170.01C, dated 1 May 2007)

Facility: A real property such as installations and industrial facilities that support our forces. (CJCS-CSM 3170.01C, dated 1 May 2007)

II. GAME DESIGN

A. Discussion of Game Design

The 2012 Naval Services Game (NSG) was held over three days, from 11-13 September 2012 at the United States Naval War College in Newport, Rhode Island. Figure 2.1 and table 2.1 depict the overall flow of the game, while Appendix "D" provides the detailed schedule of events.

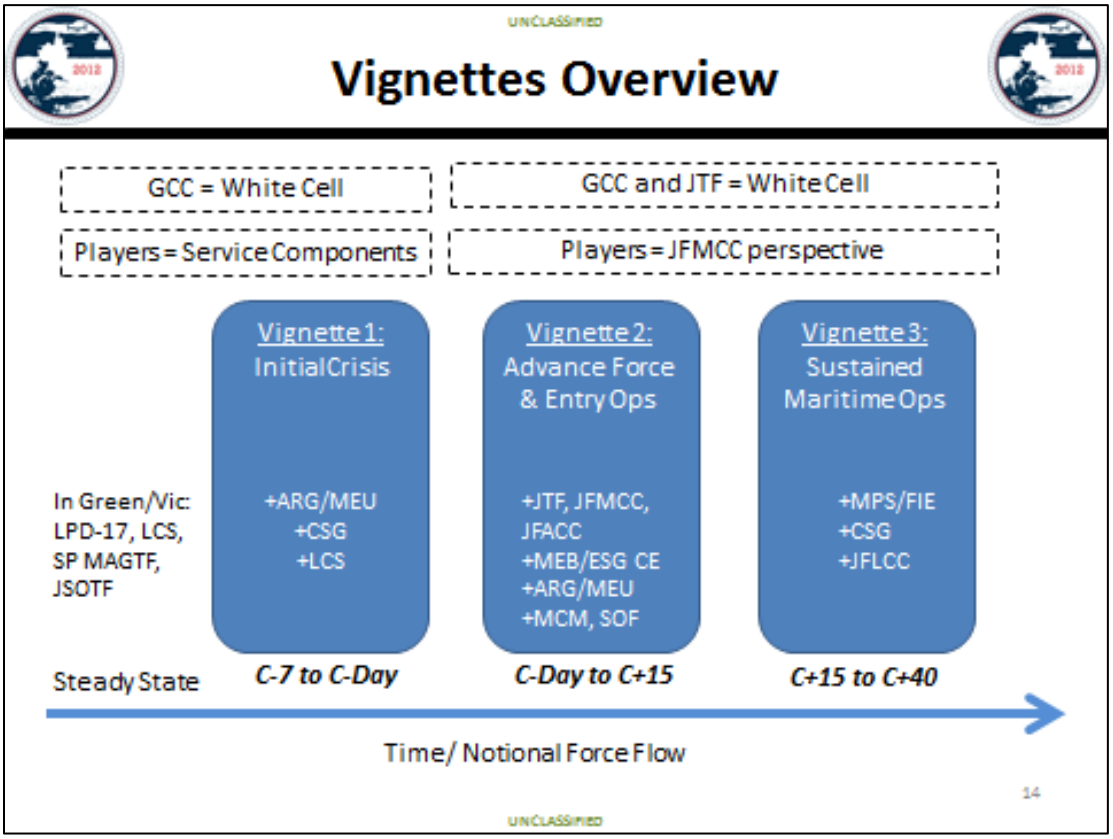


Figure 2.1 – 2012 Naval Services Game Design Flow

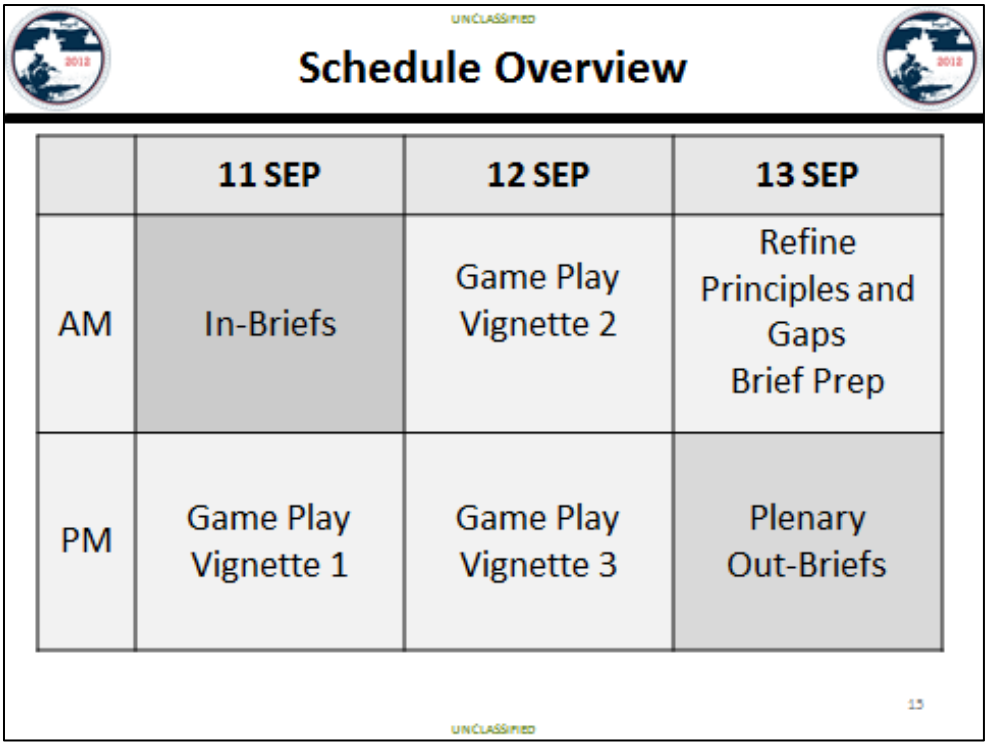


Table 2.1 – 2012 Naval Services Game Summary Schedule

The Naval Services Game (NSG) was a one-sided (i.e., opposing force elements embedded into the scenario as opposed to free play), professionally facilitated seminar style event. It was comprised of three, unclassified time-stepped vignettes, each of which expanded aggregation of the BLUE force in the maritime environment.

The vignettes featured a fictitious scenario employing real world geography. Set in the year 2014, a notional conflict between the countries of GREEN and RED served as the initial condition, with the country of GREEN identified as a key democratic partner of BLUE. An overview of Vignettes 1-3 follows:

- ***Vignette 1*** (Initial Crisis, C-7 to C-Day) – BLUE Forces: ARG/MEU, CSG, LCS
- ***Vignette 2*** (Advance Force and Entry Operations, C-Day to C+15) – BLUE Forces: Vignette 1 BLUE Forces + JTF, JFMCC, JFACC, MEB/ESG CE, ARG/MEU, MCM, SOF
- ***Vignette 3*** (Sustained Maritime Operations, C+15 to C+40) – BLUE Forces: Vignette 2 BLUE Forces + MPS, FIE, CSG, JFLCC

Participants in BLUE Cell A and BLUE Cell B were expected to focus on naval force aggregation issues and the evolution of command relationships throughout the game. Both cells played from the perspective of the Service Component Commander during Vignette 1 and from the viewpoint of the Joint Force Maritime Component Commander (JFMCC) staff during

Vignettes 2 and 3. The WHITE Cell (also referred to as the Control Cell) acted as the Combatant Commander during Vignette 1 and the Combatant Commander/Joint Task Force Commander during Vignettes 2 and 3. BLUE cell players were provided with the scenario, higher headquarters Operational Order (OPORD), BLUE force flow, and both GREEN and RED force composition and actions.

B. Game Mechanics and Participant Assignments

During the morning of the first day (11 September 2012), players convened in the McCarty Little Hall (MLH) Decision Support Center where they received a series of briefings that created a common understanding of initial conditions at the start of the first vignette. Briefing topics included a game overview along with presentations on the MOC, JFMCC, MAGTF, and CWC constructs. The final presentation consisted of the road to war brief and an overview of vignette 1 (refer to Appendix A of this game report).

Following these presentations, the 35 participants were divided into two player cells, referred to as BLUE Cell A and BLUE Cell B, respectively. Participants assigned to BLUE cell A were primarily USN/USMC officers currently serving in operational billets. In contrast, BLUE cell B participants were primarily from supporting establishment billets.

The two cells were given an identical scenario, and were asked to complete a situation review, Course of Action (COA) development activity, and individual WEB-IQ surveys. Cell members also participated in a facilitated seminar discussion and a WEB-IQ threaded discussion activity for each vignette.

A detailed demographic summary of NSG players including their names, ranks, and organizations/commands is found in Appendix E of this *Report*. In brief, players in the NSG represented officer pay grades O-4 through O-6. They averaged 21 years of service per participant, including nearly 7 years of experience at the battalion/command level. Players were highly educated, with 69 percent of participants holding a master's degree or higher.

With respect to warfare specialties, figure 2.2 summarizes that 34 percent served in the surface/submarine warfare community, 29 percent of participants were borne from the Navy and Marine aviation, 14 percent were USMC ground combat experts, 14 percent served in the intelligence/information dominance community, and 9 percent belonged to the USMC logistics military occupational specialty (0402).

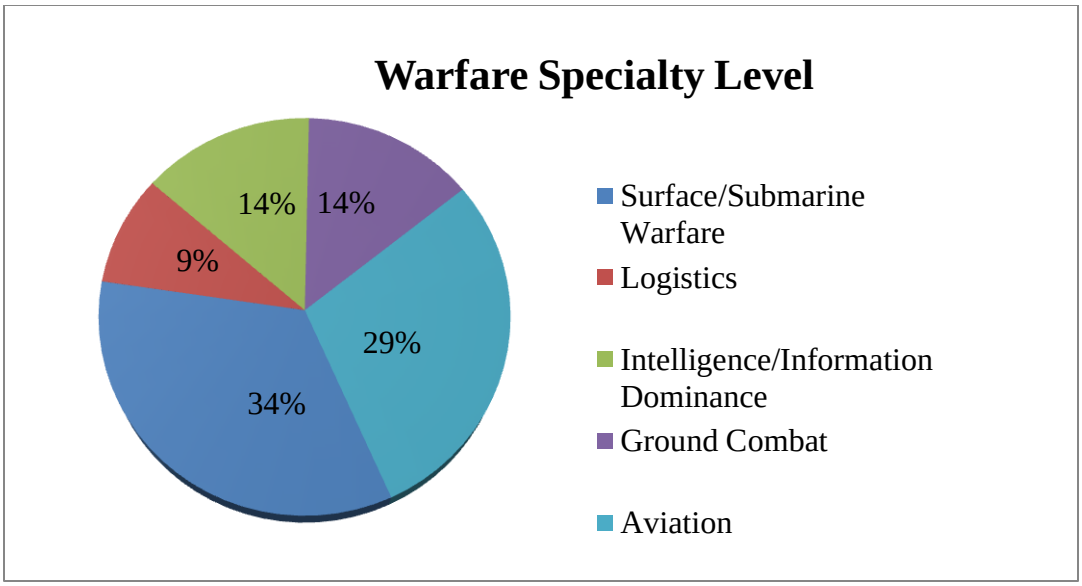


Figure 2.2 – Warfare Specialty Areas of 2012 Naval Services Game Participants

Both BLUE Cell A and Cell B were comparably matched in terms of players' education (refer to Appendix E of this *Report*), with 69 percent of the players holding a master's degree or higher.

As shown in figure 2.3, participants in the 2012 Naval Services Game possessed a wealth of battalion/command experience (mean=6.5 years). BLUE cells A and B, each contained a nearly equal number of Navy and Marine Corps representatives. The command/battalion experience difference between the two player cells was statistically insignificant.

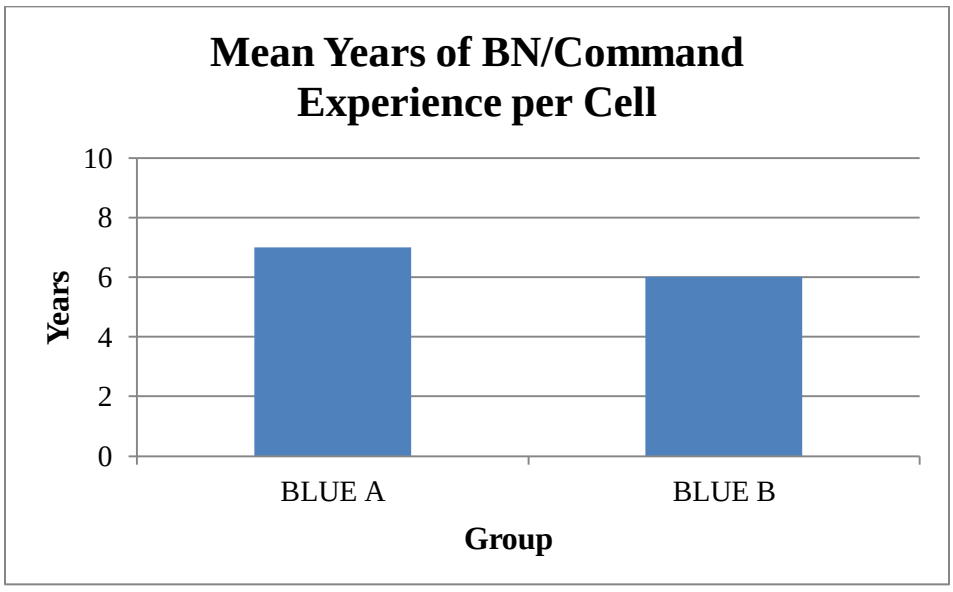


Figure 2.3 – Mean Years of Battalion/Command Experience per Player Cell

The WHITE cell, also referred to in this *Report* as the Control Cell, consisted of NWC WGD and MCWL WGD staff. These personnel were responsible for responding to any requests for information (RFIs) that the player cells submitted. The WHITE cell also served as the Combatant Commander during vignette 1 and the Combatant Commander/Joint Task Force Commander during vignettes 2 and 3. Lastly, WHITE cell members were charged with analyzing the COAs submitted by the cells and determining any follow-on opposing force actions that would take place in order to stimulate discussion about gaps, principles, and insights that the players identified during the each vignette.

Upon completion of identifying discussion points to emphasize with the players based on their actions and the game's overarching research questions, facilitated seminars were conducted at the end of each vignette (11 and 12 September 2012). These discussions provided the opportunity for players to present their perspectives and insights on the gaps, principles, and insights associated with naval force aggregation. Ethnographers are assigned to each BLUE cell in order to capture these discussion highlights. The WEB-IQ software application was used to launch both the individual player surveys and to capture player comments in a threaded discussion format.

On the final morning of the NSG (13 September 2012), both BLUE cells were allowed time to revise the gaps, principles, and insights identified during each of the three vignettes. This refined information was incorporated into BLUE Cell A and BLUE Cell B outbriefs (refer to Appendix B). These briefings were subsequently presented during the combined plenary activity, which took place on the afternoon of 13 September 2012. This combined plenary activity served as the first opportunity for both BLUE cells formally to exchange ideas in a facilitated forum.

The full schedule of events for the Naval Services Game is found in Appendix D of this game report.

III. ANALYSIS & RESULTS

A. Summary of Player-Identified Data

During the course of game play, the participants were asked to identify any potential gaps and propose principles based on the difficulties they faced in aggregating naval forces. Both BLUE A and B cell participants were expected to focus on naval force aggregation issues and the evolution of command relationships throughout game play. Despite the differences in the composition of BLUE cells A and B, findings between the two cells were nearly identical.

On the final day, players participated in a combined plenary session where they presented the COAs developed during each vignette and discussed the gaps, principles and insights identified during gameplay. Senior naval services leaders, such as RADM John Christenson (NWC), BGen Mark Wise (MCWL), RDML Ann Phillips (ESG-2), and CAPT Michael Napolitano,

representing RADM Michael Tillotson (NECC), were also present during this session and their insights were captured for inclusion in post-game analysis.

The following gaps and principles were identified by either BLUE cell A *or* BLUE cell B, and in some cases by both, but not in prioritized order. They include the descriptive summaries of the player-identified gaps and principles, as well as their associated recommendations for improvement.

a. Descriptive Summary of Player Identified Gaps and Proposed Solutions

Identified Gap	Description	Proposed Solution
Insufficient doctrine	Service doctrine does not effectively address the aggregation of naval forces. Doctrine is needed to describe how to aggregate forces consistent with the principles of C2 simplicity, flexibility, unity of command, unity of effort, and seniority.	Develop Navy and Marine warfighting publications in USMC/USN formal schools at all levels that educate officers on naval force aggregation. Review and update existing doctrine to reflect current service capabilities.
MOCs and other naval staffs are not integrated, organized and manned	Current Staff compositions and functionality are oriented toward either maritime or land. This doesn't provide a commander with SMEs needed to inform decisions. The lack of staff integration causes gaps between USN/USMC forces.	Reorganize Naval Staffs, assigning Navy and Marine Corps personnel to the appropriate functional areas. Permanently integrate Navy personnel into Marine staffs and Marine personnel into MOCs. These combined staffs will be able to provide better tailored support to the warfighter.
Limited common training	There is a knowledge (i.e. training) gap in both USN and USMC in regards to other service's doctrine, staff organization, operation, resources and capabilities of assets. Multi-MEU operations are not practiced. Exercises and training always start at the final level of effort (MEU or MEB) rather than starting small and growing as forces arrive. CSG and MEU/MED training is not currently conducted. Cross service capabilities and operations are not understood and therefore complicate the coordination, command relationships, and mission execution.	Conduct Naval Services PME/Wargames. Service schools and distance education programs must teach staff processes, organization, resources and capabilities. Formalize a process for integrating MEU. Combine MEUs and place MEU commanders into lead roles of the land, ACE, etc. Conduct cross service training and exercises.

Operational logistics lacks doctrine, organization, training and systems to integrate	The aggregation of the warfighting function of logistics at the operational level, when it is primarily seabased, is challenging. Logistical support is required not only within the Joint Operation Area (JOA), but also around it. The question of who is responsible for and how to execute logistics becomes an issue. Aggregating forces together can result in relationships that have differing and incompatible logistics chains. As forces aggregrate, we need to provide continuity of logistics both afloat and for those transitioning from sea to shore.	Improve joint training and coordination between entities for the application of operational logistics inside and outside of the JOA. More formal structures are required for training and practical experience as we continue to operate in more joint environments. CJTF direct additional theater logistics (T-AOE/T-AKE) to support the CJFMCC. This will provide seabased logistics for both forces afloat and ashore until a solid log trail is established ashore for ground forces.
Current equipment and systems lacks the interoperability	The only allies possessing a mature and secure comm link are our NATO allies. The ability to pass secure comm and data to non-NATO allies remains a challenge.	Upgrade comms onboard existing naval and allied shipping.
Battlespace organization	There lacks a common, holistic understanding of how to organize the battlespace to support the naval battle. In order to eliminate the seam that exists between land and sea domains during littoral operations, a different way of thinking, organizing, and employing control measures needs to be developed	Establish TTPs that yield naval and joint doctrine and allow a continuous flow of operations from sea to littoral to landward objectives.
Existing Naval Headquarters are not fully capable of conducting full-spectrum littoral operations.	Currently Naval HQs are capable of conducting integrated naval operations, but lack the understanding of amphibious and land operations necessary to conduct integrated littoral operations.	USMC structure and personnel should be permanently assigned to existing Fleet HQs to enable littoral operations and single naval battle principles within the maritime operations areas. An integrated USMC/USN Joint Force Littoral Component Commander (JFLWCC) should be established where sea/air control and power projection are inextricably linked.
Seabase Aggregation and C2	As naval forces aggregate within the JOA, the seabased footprint will continue to grow. Command, Control, and visibility of seabased assets become more complex and may exceed the capabilities of multiple CTF commanders.	Assign a single commander responsibility for all seabased assets. Operational level C2 of all seabased sustainment assets will enable flexible and responsive support to the JFMCC and JTF commanders.

JFMCC Communications	JFMCC must look up and out, not just down and in. JFMCC comms can be restricted if afloat on platforms where existing commander and staffs are already embarked. Need a standardized comms suite to support JFMCC and existing commander and staffs.	Determine combined comms requirements for all organizations embarked when JFMCC is afloat. Develop materiel solution that meets requirements and includes future expandability.
JFMCC ISR	Limitations of current organic ISR capabilities hinder the achievement of persistent ISR and the ability to cover the dimensions of the single naval battlespace.	Increase organic naval ISR and include USN/USMC personnel in Naval staff integration and training to ensure seamless processing, exploitation, and dissemination.

b. Descriptive Summary of Player Identified Principles

Principles	Description
Naval Staffs	Naval staffs are comprised of both USN and USMC personnel to provide full command and control in a single staff. The JFMCC staff is the primary incorporation of this principle and is organized along functional operational lines of in a construct such as naval battle with appropriately skilled USN/USMC personnel assigned to each functional area. The JFMCC staff and lower echelon staffs such as CSG, ESG, and MEB incorporate permanent staff officers to facilitate force integration at that level. As forces aggregate, staffs need to be combined or utilized in different manners (including removing someone from command). Experience and seniority of CDR and Staff-command relationships are easier to define. Knowledge and ability to find critical information about unit capabilities are critical for providing the Commander with an accurate picture.
Integrated Operational Planning	Naval forces require common operating terms and graphics, common tactics, techniques and procedures, and the appropriate material solutions (systems) in order to support common understanding. They need to be consistent with concepts like Joint Operational Access and Air Sea Battle. The naval service must also have systems fully capable of seamless information exchange. The continuous process of planning and sequencing key events relative to one another in a timely and coordinated manner to ensure continuity of operations and desired operational tempo. In context, this addresses seamless operational execution that seeks to avoid transitional gaps.

Continuity of Command and Effective C2	Developing command and control architecture with a flexible construct facilitates seamless transition of authority as mission requirements concurrently increase with level of command and organizational responsibility and capacity. Transfer of authority at every level of command should be planned in detail in order to offset staff and force rotations and avoid simultaneous knowledge and experience gaps. During the process of naval force aggregation, the principle of simplicity must be observed. Existing command structures that continue to provide effective C2 should be maintained so that new forces and capabilities can be added with minimal disruption. Although naval force aggregation is initially about command and control between USN and USMC forces, it must also be able to operate in and easily transition to the context of joint C2. C2 arrangements need to be complimentary to established joint C2 such as functional and/or service componency. When aggregating a force, unity of effort will often prove more effective in accomplishing the mission than strict adherence to unity of command. For subordinate units, the supporting/supported relationships will more easily synchronize when there is no argument about who is in charge. This will allow for greater flexibility as the focus of effort changes throughout the various phases of the operation.
Interoperability	Technology, Culture, Language. Force must be able to work together (comms, systems, etc.) More cross service and cross community training and experience is required to be effective moving forward. Forces which are able to link resources, share C2 nodes, and coordinate actions real time have a distinct advantage.
Common Training and Education	Implementing supported/supporting relationship is easier with training/practice.
Mission Precedence	The commander must identify the priority mission and adjust supported/supporting relationships to appropriately synchronized priorities.
Force Flow and Arrival Time	Force Flow and Arrival Time Description: Force aggregation is driven by the requirement to build a larger force than the initial first arriving crisis response force(s). The operational commander determines how and when these forces arrive into his AO based on mission requirements. As possible, units/ships preparing to deploy as the FOE for a naval crisis response force should be tailored and embarked IAW mission requirements and time constraints in order to reduce or eliminate the requirement for operational pause in the AO and create a more seamless transition into the operation.
Consistency	Task organization should account for incoming forces so that each time a new unit enters the theater the organizational chart doesn't need to change.
Professionalism	Commanders need to be mission oriented and overcome difficulties in personal interaction
Flexibility	Establish a CSF with a subordinate Strike Warfare Commander
Combat Efficiency	Maximize the use of resources and the unity of effort.
Duration	Ability to sustain. Aggregation options and execution are dependent on the duration of the operation.

Span of Control	Commanders must be able to understand and acknowledge if/when the level of effort has expanded beyond their ability to effectively control the operation.
Understanding the capabilities of assigned units	Commanders and operators must understand what forces in the JOA are capable of what missions. Assigned forces must also understand what the Commander can do for them.
Battlespace Organization	Command relationships should be generated based on mission execution and sequencing rather than previous experience.
Seaborne Sustainment	If the objective is to aggregate and fight from the sea, then a sustainment plan should be planned from the sea as well.
Flexibility	Not all assets will be in place conducting missions that reflect the changes in environment. It's a requirement to remain flexibly minded, as no plan survives contact.
Proximity	Suboptimal command structure shortfalls can be alleviated by subordinate command proximity (either by geography or informational flow). The ability to develop plans with different staffs in the same location cannot be overlooked.
Clear Tasking	CDRs must be able to convey their expectations to the subordinates.

B. Analysis of Player-Identified Data

After the game concluded, the DCAT performed structured analysis on the NGS's six data streams including descriptive quantitative statistics, qualitative content analysis and grounded theory as discussed in Appendix F of this *Report*.

The terms provided in this section were identified using grounded theory and analyzed using the ATLAS.ti co-occurrence function (see Appendix G). Pairs of terms scoring the highest overall correlation values were included in this analysis. In addition, Pearson Product Moment Correlation (i.e., "Pearson's r") and r-squared analysis were also performed on each of the term pairs coded from the six data streams discussed in Section III of this *Report*. The overall Pearson's r was recorded at .937, suggesting a strong correlation between the paired terms identified in this section. Lastly, r-squared analysis yielded a percentage of 87.8, meaning that nearly 88 percent of the change in the dependent variables (implications on force structure, gaps across DOTMLPF, evolution of command arrangements) could be explained by, or shared with the change in the independent variable (naval force aggregation) .

Based on analysis of these data, fostering command relationships was deemed to be the most critical gap presently faced in conducting cooperative Navy-Marine Corps operations. Analysis further revealed that the doctrine, leadership, training, and organization facets of DOTMLPF should be leveraged to improve these relationships and that such planning and coordination must be considered prior to engaging in a conflict. The difficulties faced by the Navy and Marine Corps in engaging in combined operations are depicted in figure 3.1.

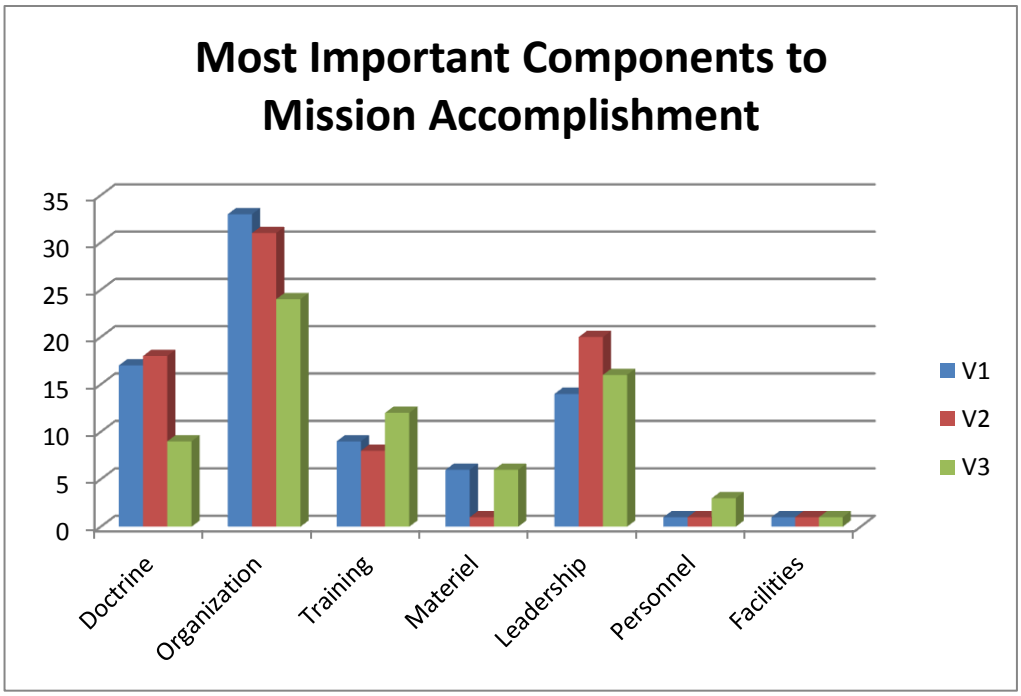


Figure 3.1 –Analysis of NSG Player Responses: Most Important to Mission Accomplishment

Specifically, through pre-conflict training, exercises, games, and doctrine, both the Navy and the Marine Corps need to develop a better understanding of one another's unique culture, leadership proclivities, and maritime and amphibious resources. Service staffs also need to become better integrated in a simplified C2 structure. These gaps become most evident during combined operations in the littorals, where commanders appear to face the greatest challenges due to a lack of an integrated C2, and the absence of understanding in service culture and difficulties holistically leveraging the Navy maritime capabilities and Marine Corps amphibious resources.

Not surprisingly, as game play moved from initial crisis response (vignettes 1 and 2) and the advancement of the force into sustained operations (vignette 3), doctrine and organizational needs stabilized, although requirements for continued training and leadership remained. As depicted in figure 3.2, these factors were also deemed the most difficult to obtain in order to accomplish the commander's stated mission.

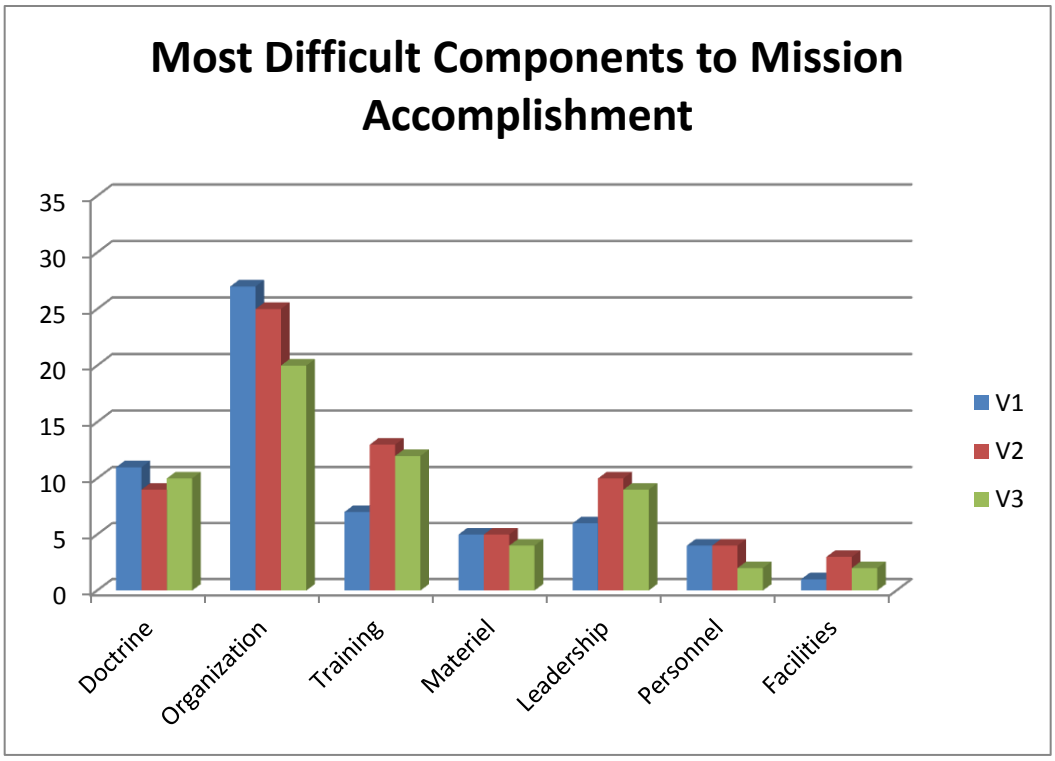


Figure 3.2 – Analysis of NSG Player Responses: Most Difficult to Mission Accomplishment

Specific analytic responses to three research questions posed in the Naval Services Game are provided below.

Question #1: As a naval force aggregates afloat, what are the implications on force structure? What are gaps and areas of concern across DOTMLPF?

Response: Overwhelmingly, players in both cells emphasized the importance of cultivating command relationships as a precursor to effective force aggregation. These relationships were defined as personal, structural, organizational, formal and informal, and were deemed a precursor to effective force aggregation. Specifically, fostering organizational unity of command and developing a simplified command and control (C2) element through the use of integrated staffs were also identified as essential preparatory steps prior to engaging in a combined Navy-Marine Corps fight. Further analysis into doctrine, organization, training, materiel, leadership and education, personnel and facilities (DOTMLPF) revealed that the elements of doctrine, organization, leadership and training manifest the greatest gaps in present-day Navy-Marine Corps joint operations.

Doctrine

Throughout game play, several key doctrinal gaps affecting the ability to aggregate a naval force were identified. The lack of guidance pertaining to command and control relationships among

Navy and Marine Corps players was most notable. This included the lack of common understanding of the service specific capabilities, terminology, tasks, organization and missions which made coordination a challenge. Due to this lack of collective understanding, much of the discussion during each vignette was spent trying to determine the initial command relationships, as detailed in the following player comment:

> A simple example comes in the form of how we (each of the services) talk about support between different portions of the force. The 'supported-supporting' concept is very normal to personnel in the US Navy, but is a little more foreign to personnel in the US Marine Corps (that is not to say that we don't understand it, it is to say that it is not how we do business on a day to day basis). On the other side of that coin, Marines tend to talk about the Main Effort and supporting efforts. Neither is incorrect, and it was interesting to note that during the course of the discussion we saw people saying effectively the same things, but having trouble understanding each other because of the way they were describing them.

Proposed solutions to these gaps focused on additions to or creation of new doctrine focused on force aggregation. Many players described the need for a different way of thinking about, organizing and employing control measures to eliminate the seam that exists between sea and land domains during littoral operations. Current capabilities of services have changed significantly, and that has fueled pre-conceived notions of how to conduct command and control of aggregated naval forces, "for example, consider utilizing a JTF-capable Marine Corps staff as a JFMCC that can affect the air, land and maritime domains" with Navy augmentation to increase capability in the maritime domain. A preponderance of the players noted that aggregation is highly achievable as long as there is common doctrine and understanding of respective Navy and Marine Corps capabilities that is currently lacking.

Organization

Organizational shortfalls were highlighted during this game. Players noted that current organizational stovepipes hamper flexibility and effective utilization of forces. This was particularly evident when the players crossed service lines and integrated with Special Operations Forces. In some cases, the TACON/OPCON relationships did not directly correlate between the Navy and Marine Corps task organization. Participants were concerned about getting the command and control relationships and organization right.

Players also cited the need to permanently integrate the Navy and Marine Corps staffs in order to establish formal and informal relationships that would foster trust and mutual understanding. "Creating a Naval Staff does not just happen by putting both Marines and Navy personnel on the staff. The staff also needs to be functionally reorganized to ensure that all aspects… are covered and that the staff is able to effectively inform the commander during the decision making process."

Leadership

The need for strong support from both Navy and Marine Corps leadership for aggregating naval forces was consistently noted throughout the game. Players stated that leadership was the key to enabling all considerations in the development of a coherent plan and establishment of germane command relationships. "The mission is well within the capabilities of the USN/USMC team, so it falls on the leadership to navigate the C2 and ensure the forces are supported so they can get on with the mission."

Training

All players agreed that the Navy and Marine Corps lack the experience and knowledge base to currently aggregate forces above the MEB/ESG level. Specifically cited was a lack of awareness of each other's service capabilities. Training for both service staffs is required to enhance the interoperability of personnel and systems in support of naval aggregation. The infrequency of MEB/ESG level exercises was also an area of concern. Players stated that a once a year exercise such as Bold Alligator is not sufficient to develop the knowledge to perform this complex operation. Frequent exercises will foster better understanding between the Navy-Marine Corps staffs which in turn will facilitate intuitive decisions on command and control. "Conducting more joint training events and stressing those seams is the only way to really reveal the problem so we can come up with best practices and mitigating factors."

Question #2: Relative to the following areas (Mission, Task Organization, Battlespace Organization, and Command Relationships) as a naval force aggregates, how will command arrangements evolve?

Response: Game participants identified lack of service culture awareness and diminished understanding of cross-domain resources as the greatest challenges to combined Navy-Marine Corps force aggregation. Specifically, Navy personnel did not fully comprehend amphibious operations, whereas Marine Corps participants acknowledged only cursory familiarity with maritime operations. This lack of fluency between the services presented the greatest challenge for players when planning viable courses of action for combined operations in the littorals. Moreover, because the composition and functionality of staffs are presently bifurcated towards either maritime or land operations, mission planning, and task and battlespace organization continue to challenge the commander engaged in combined Navy-Marine Corps operations. Cell participants aptly noted that challenges abound based on whether or not "we are trying to establish 'joint' command and control or 'Navy and Marine Corps' command and control that is equally capable of affecting the sea, air and land domains" Respondents noted "we're pretty good at joint C2 that takes place at the JTF-level, [however] what we need to develop is a

reinvigorated 'Navy and Marine Corps' command and control capability." This was deemed especially important when establishing the "homogenous littoral battlespace."
Lastly, players noted that evolving arrangements suggest that:

> There are a few models that exist for what to do to bring MEUs together under a MEB. We could simply leave them intact and allow the MEUs to operate. We could disaggregate the MEUs and bring in additional GCE, LCE and ACE headquarters. CSG and ARG/MEU intel organizations will continue to support their primary tactical customers. Regardless, the challenge will be in allocating scarce collection resources to support amphibious operations, air wing strike operations, mine clearance, force protection of the ESF and forces on the ground, and other combat operations in the littoral and on the ground.

Question #3: What are other potential approaches for aggregating naval forces outside of typical organizational structures?

Due to the finite time constraints imposed upon game play (i.e., three vignettes over less than two days of game play), participants in the 2012 Naval Services Game opted to focus on the gaps, principles, and issues germane to force aggregation rather than delve into alternate perspectives on atypical organizational structures. However, data garnered from both cells suggests that regardless of organizational structure considered, greater emphasis needs to be placed on cultivating command relationships, and simplifying and unifying command and control structures.

It should be noted that the analytic findings of the NSG's DCAT are consistent with the findings of the 2009 Navy-Marine Corps Command Relationships Game and the 2011 Maritime Stability Operations Game, both of which suggest a new paradigm of interoperability, one forged in pre-established relationships between entities such as the Naval services are important, especially when the Navy and the Marine Corps are engaged in combined operations in the littorals. In the words of the players, this issue "poses a series of important questions that we probably won't get to in the conduct of this game, but certainly need to be looked in a future session."

IV. CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER STUDY

The findings of the 2012 Naval Services Game suggest that as a conflict matures, Navy and Marine Corps activities are able to become more integrated and function more effectively. However, at the onset of conflict, coordination issues are a significant challenge for the Operational Commander given the lack of pre-existing command relationships, disparate C2 structures, and cultural differences between maritime-focused Navy resources and amphibious-minded Marine assets.

In order for effective mission accomplishment, a more holistic approach to developing command relationships is warranted—one that emphasizes forming relationships pre-conflict through improved doctrine, training, organization (including C2 staff integration), and leadership.

The 2012 Naval Services Game brought together warfighters from the USN and USMC in order to explore issues germane to force aggregation in combined operations. Indeed, game findings collectively highlighted the cultural differences between both services and the need to enhance command relationships—ultimately yielding more integrated and efficient command and control structures. Analysis further suggests that aggregating forces for operations conducted in the littorals presents the greatest challenges for Navy-Marine Corps missions.

Additional efforts to cultivate command relationships should be undertaken including, but not limited to conducting additional games focused on inter-cultural awareness and the continued refinement of principles and gaps through analysis; developing and exercising C2 integrated staffing models; and formulating doctrine to address aggregation and provide guidance to gap closure. Moreover, the development of a 2013 Naval Services Game to continue exploring Navy and Marine Corps operations is recommended. Lastly, the Naval Warfare Group should be consulted to distill other tangible actions for future decision/direction.

V. APPENDICES & SUPPLEMENTAL DATA

Appendix A – Scenario and Summary of Vignettes

EXECUTIVE SUMMARY

The NSG was a one-sided, professionally facilitated seminar event. It consisted of three, unclassified, time-stepped vignettes, each of which expanded upon the aggregation of BLUE forces in the maritime environment. The vignettes featured a notional scenario using real world geography. The participants were placed into one of two BLUE cells who were playing from the perspective of the Service Component Commander during vignette 1, and from vantage point of the Joint Forces Commander during vignettes 2 and 3. The WHITE cell (i.e., Control), was comprised of NWC WGD and MCWL WGD staff who served as the Combatant Commander during vignette 1 and the Combatant Commander/Joint Task Force Commander during vignettes 2 and 3.

Background

The fictional country of GREEN is a developing country in Southeast Asia with a population estimated to be around 4,500,000 people. GREEN is an established democracy and a key democratic partner of the U.S. in the region. The GREEN military is small, poorly trained, and ill-equipped for a sustained military engagement. They have a ground force of approximately five infantry brigades (BDEs), a motorized BDE, three militia BDEs and one special forces battalion (BN). GREEN also has four squadrons of helicopters, as well as patrol boats. While GREEN currently receives U.S. military training assistance, they are still poorly trained and equipped across the board.

The fictional country of RED is also a developing country in Southeast Asia that borders GREEN. The population of RED is estimated at around 6,500,000 people. RED is under the control of an Authoritarian government. The military is far more advanced and numbered than the neighboring country of GREEN. RED has a ground force comprised of two infantry divisions (DIVs), two motorized DIVs, an airborne BDE, a riverine BDE, and two infantry BDEs. They also have multiple squadrons and aircraft (fighter, ground attack, and transportation), an air defense DIV, and a considerable maritime component. In addition, RED also has a cyber-exploitation, attack, and defense unit though they have not demonstrated effective skills.

Scenario

The neighboring countries of GREEN and RED are disputing territorial boundaries and natural resources. These disputes have led to confrontations between the two countries' naval patrol vessels over contested maritime borders. RED has blockaded the Mekong River which is an important source of commerce for both countries. There are indications and warnings that RED

intends to invade GREEN in order to settle border and resource disputes. RED actions are threatening regional stability and economic growth. The U.S. President has ordered the U.S. military, BLUE, to conduct Flexible Deterrent Operations (FDO) against RED and to be prepared to defend GREEN if necessary.

Currently, U.S. Joint Special Operations Task Force - GREEN (JSOTF-G) and Special Purpose Marine Air Ground Task Force (SPMAGTAF) with LPD-17 are conducting Foreign Internal Defense (FID) and Security Force Assistance (SFA) operations in GREEN. Blue LCS is conducting port calls and conducting Freedom of Navigation Operations (FONOPS) in the Gulf of Thailand and a BLUE ARG/MEU is concluding an exercise in the vicinity of GREEN.

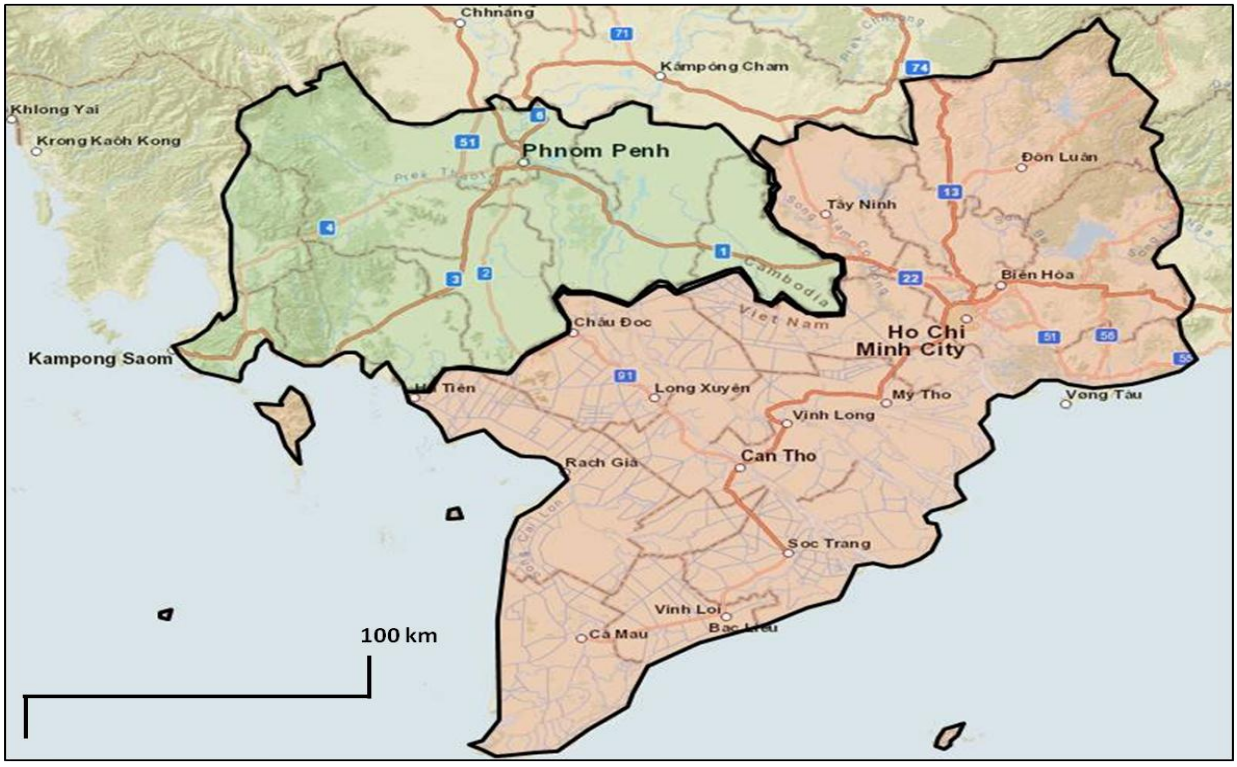


Figure A.1 Fictional Countries of Red and Green

Vignette 1: Initial Crisis

Vignette 1 starts at day C-7. RED has placed its forces on the highest level of security alert and is currently conducting deception operations. They are massing their forces along the GREEN border and preparing their mining vessels to get underway. RED is also increasing naval patrolling in the vicinity of RED and the disputed islands and deploying their ASCMs. ISR indicates that RED is preparing to invade GREEN.

The United States government, in response, has condemned the actions of RED, stating that RED'S behavior not only infringes upon the sovereignty of GREEN, but also threatens freedom of navigation, regional security, and regional economic growth. The President of the United

States has ordered the military to prepare all necessary responses to deter RED, defend GREEN if necessary, and to conduct Non-combatant Evacuation Operations (NEO) of 200 American citizens (AMCITs). The AMCITs are situated in two locations: one hundred are in GREEN'S capitol city of Phnom Penh and the other one hundred are in the west coast city of Sihanoukville. Other than the in-country available forces, an ARG/MEU, CSG, and a second LCS are arriving. At this time, BLUE actions in RED territory are limited to ISR. It is assessed that RED will most likely not interfere with the NEO, but may challenge U.S. presence at sea. GREEN is currently preparing defensive operations and has activated their militia.

PACOM Initiating Directive for Operation Deter and Respond

Mission Statement: On order, COMPACFLT conducts FDO and NEO in GREEN and adjacent waters in order to deter RED aggression against GREEN and to safeguard American citizens.

USPACOM has designated COMPACFLT as the supported command for Operation Deter and Respond. MARFORPAC and SOCPAC are designated as supporting commands.

PACOM Tasks to COMPACFLT:

- Conduct show of force
- Conduct ISR
- Conduct NEO
- Prepare to support U.S. forces in Green as required
- Provide Personnel Recovery

PACOM Tasks to MARFORPAC:

- Conduct show of force
- Conduct ISR
- Conduct NEO
- Prepare to support U.S. forces in Green as required
- Provide Personnel Recovery

PACOM Tasks to SOCPAC:

- Conduct ISR
- Conduct FID
- Provide support to NEO

Vignette 2: Advance Force and Entry Operations

Vignette 2 encompasses D-Day to D+15/C-Day C+15. The NEO has been successfully completed. RED has invaded GREEN, but has not yet engaged BLUE forces. RED infantry and airborne battalions (BNs) have occupied key terrain along the GREEN coast. RED'S naval forces are operating along GREEN'S coastline mining GREEN waters. GREEN is defending their territory, but their southern infantry has been defeated and their navy completely destroyed.

GREEN has formally requested U.S. military assistance and BLUE has been ordered to defend GREEN. PACOM has stood up the JTF Rapid Response. JFLCC is not yet arrived and is not operational in the JOA at this time. BLUE available forces are: LPD-17, 2x LCS, SP MAGTF, JSOTF-G, ARG/MEU, CSG, JFMCC, JFACC, MEB/ESG CE, MCM, a second ARG / MEU and additional SOF.

JTF OPORD

JTF Mission Statement: On order, JTF Rapid Response conducts operations in the JOA to defeat Red aggression against Green, in order to preserve the Green government and ensure Green territorial integrity.

JTF Commander's Intent

Purpose: Conduct operations to defeat Red attacking forces in Green, in order to preserve the Green government and ensure Green territorial integrity.

Method: Rapidly aggregate joint forces to respond to the Red invasion of Green. Initially, we will rely on forward postured naval and air forces to ensure our access to the JOA and to rapidly shift to offensive operations against Red. We must rapidly build additional capabilities to conduct sea and air control and take offensive actions to shape the landward battlespace. We will swiftly project power in order to defeat Red forces in Green. As much as we are able, we will maximize sea-based joint forces, so we are not reliant on or limited to a single S/APOD. We will maximize our relationships with Green forces and the friendly local population. I envision JFMCC being the main effort from phases I to IV.

Endstate: Green sovereign territory is secure, the Green government is preserved, and any Red forces in Green have been defeated.

JTF CONOPS

Phase I – Shape and Control

JTF Tasks to JFMCC:

- Establish sea and air control
- Conduct offensive strike operations
- Conduct ISR
- Support Green forces and U.S. forces ashore as required
- Provide personnel recovery
- Conduct FID
- Provide terminal control for strikes
- Conducting Advance Force Operations

JTF Tasks to JFACC:

- Provide aerial refueling and ISR

JTF Tasks to JFLCC:

- Prepare to receive and employ ground forces in following phases

Phase II – Offensive Operations
JTF Tasks to JFMCC:

- Maintain sea control
- Conduct offensive strike operations
- Conduct ISR
- Support Green forces and U.S. forces ashore as required
- Provide personnel recovery
- Conduct FID
- Provide terminal control for strikes
- JTF Tasks to JFACC
- Maintain air control
- Conduct offensive strike operations
- Conduct close air support for Blue and Green forces
- Conduct ISR and aerial refueling

JTF Tasks to JFLCC:

- Prepare to receive and employ ground forces in following phases

Vignette 3: Sustained Maritime Operations

Vignette 3 encompasses day D+15 to D+40/C+15 to C+40. RED forces are continuing to attack on their way towards Phnom Penh. The BLUE JTF Rapid Response is continuing with operations while the JFLCCis arriving in the JOA and preparing for operations. BLUE ground forces have defeated RED's airborne BN in the vicinity of Sihanoukville and have control of GREEN's Aerial Port of Debarkation (APOD) and Seaport of Debarkation (SPOD). BLUE has defeated RED's naval and air forces, establishing air and sea control. RED's southernmost motorized DIV and infantry BDE along the coast are stalled but continuing to attack, while GREEN's southern forces are on the retreat towards the capital. BLUE forces are in Phnom Penh supporting GREEN's defense.

GREEN and BLUE forces in the north continue to hold against the RED offensive. RED has defeated one GREEN infantry BDE and a militia BDE. Though RED northern forces are stalled, they are still continuing to attack. BLUE available forces include: LPD-17, 2xLCS, SP MAGTF, JSOTF-G, 2xARG/MEU, CSG, JFMCC, JSOTF, JFACC, MEB/ESG CE, MCM, MPS/FIE, and another CSG.

Vignette 3 ends with enabling the transition of ground operations to JFLCC control in order to restore sovereignty and conduct stability operations.

Phase II – Sustained Offensive Operations

JTF Tasks to JFMCC

- Maintain sea control
- Conduct operations to defeat RED offensive
- Conduct offensive strike operations
- Conduct SPOD operations and receive follow-on forces
- Conduct ISR
- Support GREEN forces and BLUE forces ashore as required
- Provide personnel recovery
- Conduct FID
- Provide terminal control for strikes

JTF Tasks to JFACC

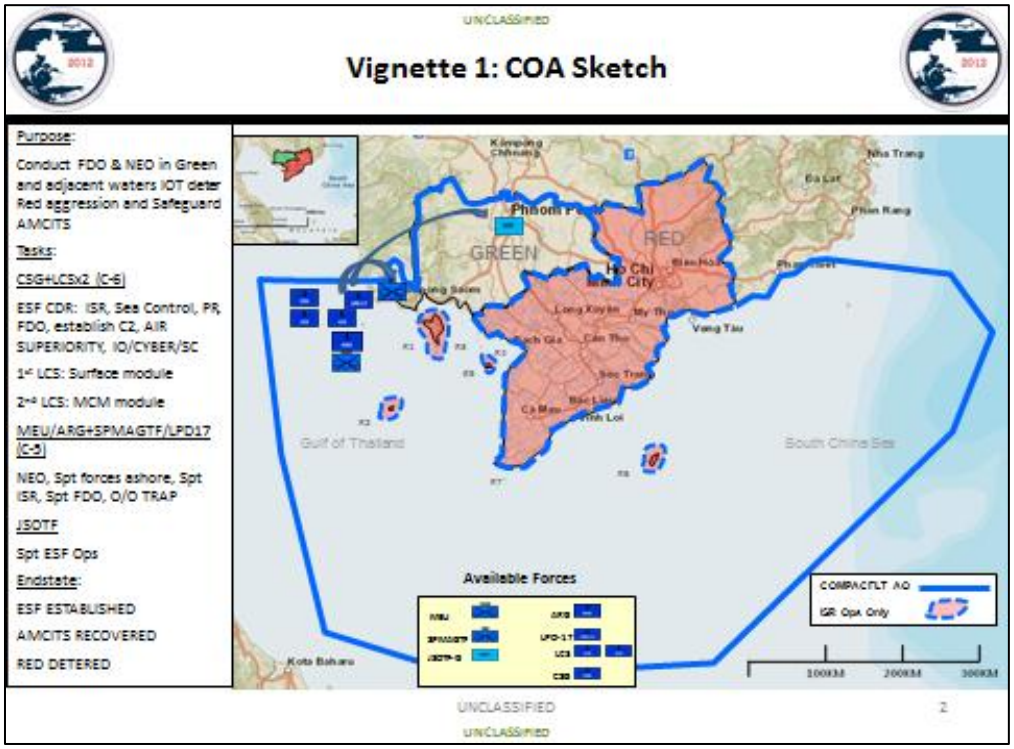
- Maintain air control
- Conduct offensive strike operations
- Conduct close air support for BLUE and GREEN forces
- Conduct ISR
- Conduct APOD operations and receive follow-on forces

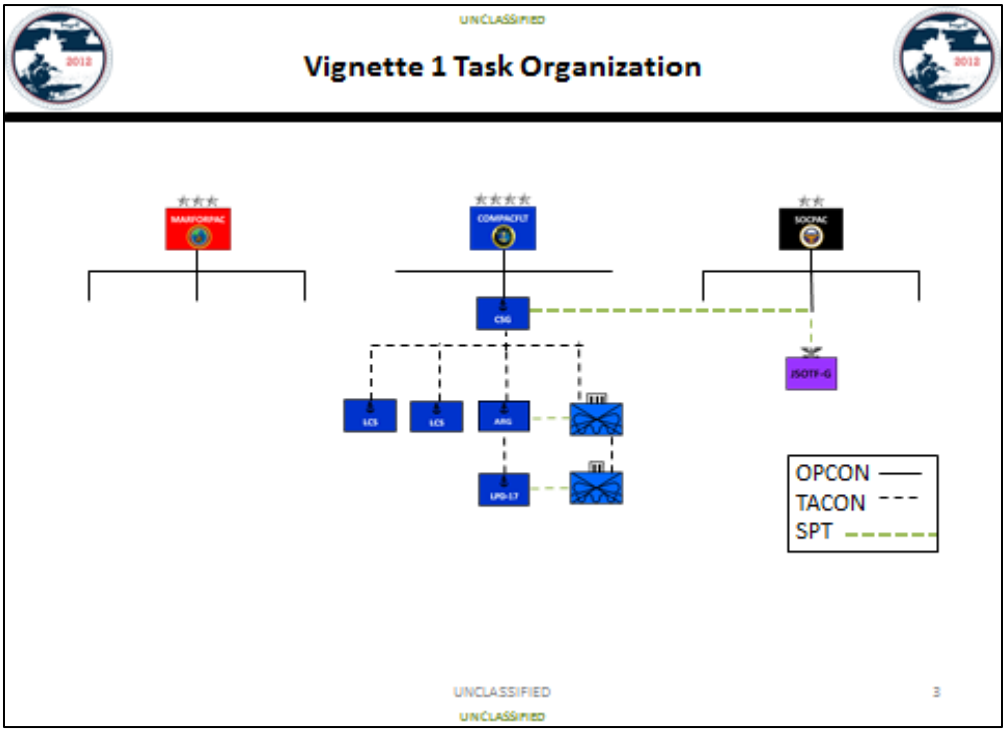
JTF Tasks to JFLCC

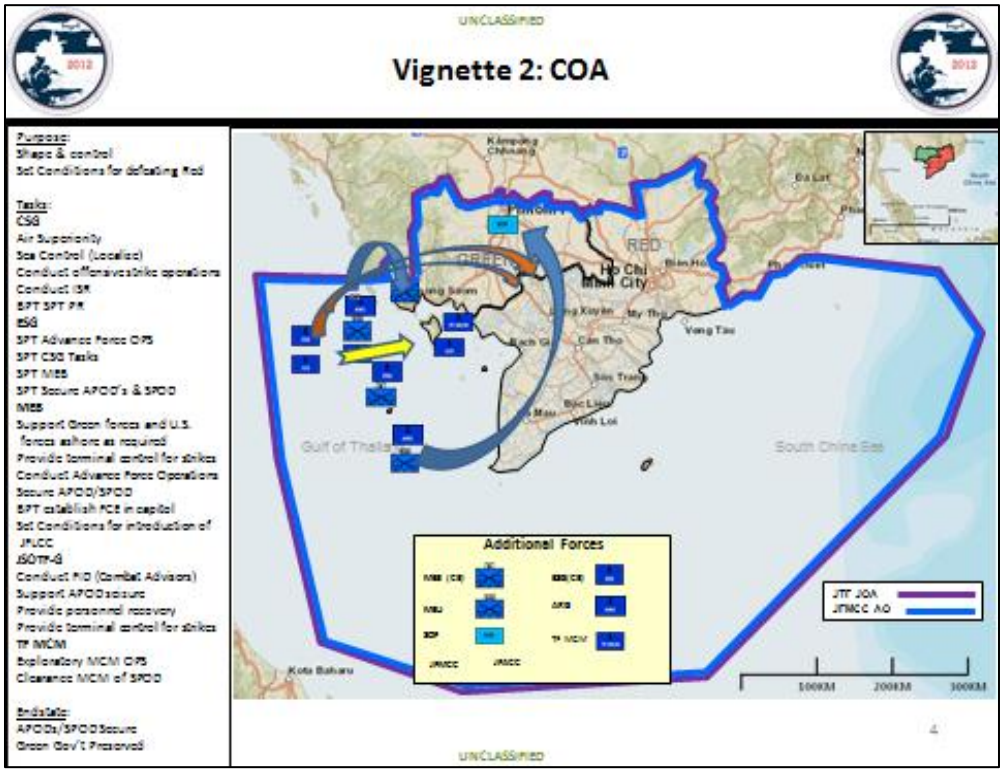
- Receive ground forces
- Prepare to conduct operations in support of GREEN in following Phases

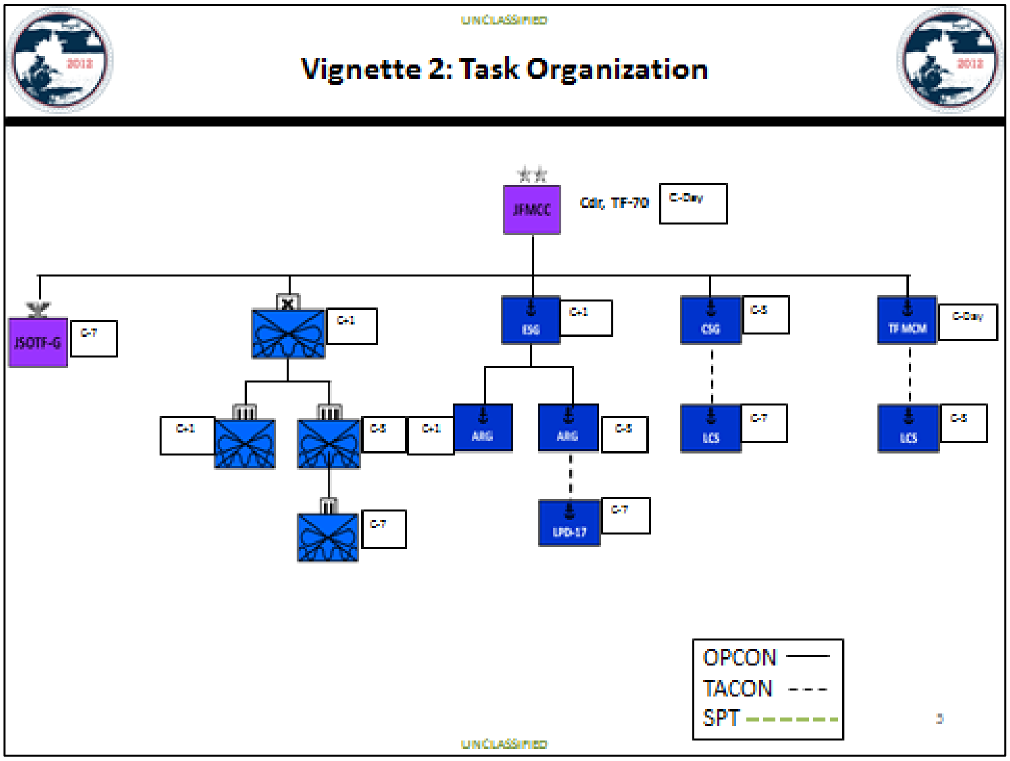
Appendix B – Final Outbriefs

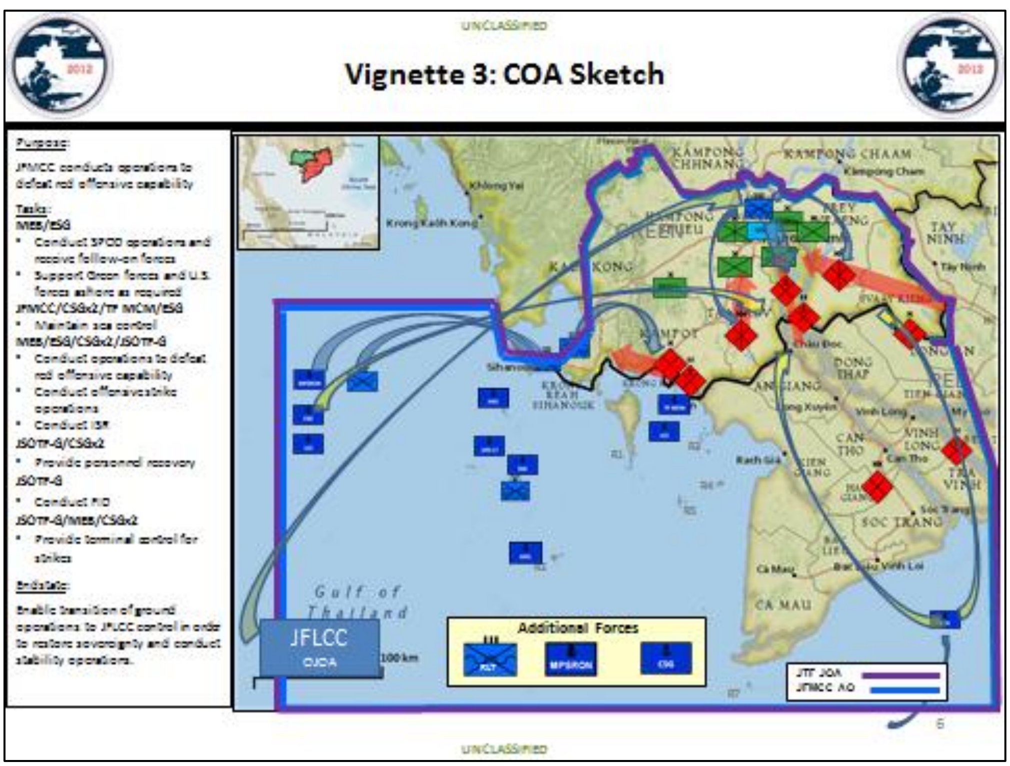
BLUE Cell A:




UNCLASSIFIED
Vignette 1 Task Organization
MARFORPAC
COMPACFLT
SOCPAC
CSG
LCS
LCS
ARG
LPD-17
JSOTF-G
OPCON
TACON
SPT
UNCLASSIFIED
3
UNCLASSIFIED

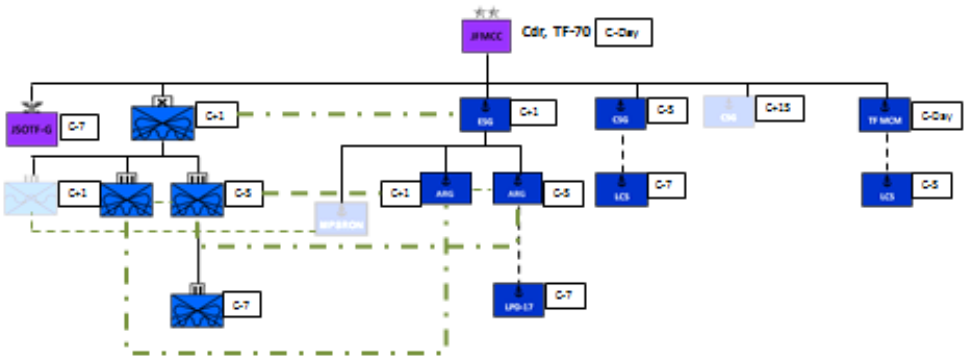

UNCLASSIFIED
Vignette 2: COA
Purpose:
Shape & control
Set Conditions for defeating Red
Tasks:
CSG
Air Superiority
Sea Control (Localize)
Conduct offensive strike operations
Conduct ISR
SPT SPT FR
ESG
SPT Advance Force OPS
SPT CSG Tasks
SPT MSE
SPT Secure APOD's & SPOD
MSE
Support Green forces and U.S. forces ashore as required
Provide terminal control for strikes
Conduct Advance Force Operations
Secure APOD/SPOD
SPT establish FCE in capital
Set Conditions for introduction of JFLCC
JSOTF-G
Conduct FID (Combat Advisors)
Support APOD secure
Provide personnel recovery
Provide terminal control for strikes
TF MCM
Exploratory MCM OPS
Clearance MCM of SPOD
Endstate:
APODs/SPOD Secure
Green Gov't Preserved
RED
Ho Chi Minh City
Gulf of Thailand
South China Sea
Kota Baharu
Additional Forces
JTF JOA
JFMCC AO
100NM
200NM
300NM
4
UNCLASSIFIED


UNCLASSIFIED
Vignette 2: Task Organization
JFMCC
Cdr, TF-70
C-Day
JSOTF-G
C-7
C-1
ESG
C-1
CSG
C-5
TF MCM
C-Day
C-1
C-5
C-1
ARG
ARG
C-5
LCS
C-7
LCS
C-5
C-7
LPD-17
C-7
OPCON
TACON
SPT
UNCLASSIFIED


UNCLASSIFIED
Vignette 3: COA Sketch
Purpose:
JFMCC conducts operations to defeat red offensive capability
Tasks:
MEB/ESG
• Conduct SPOD operations and receive follow-on forces
• Support Green forces and U.S. forces ashore as required
JFMCC/CSGx2/TF MCM/ESG
• Maintain sea control
MEB/ESG/CSGx2/JSOTF-G
• Conduct operations to defeat red offensive capability
• Conduct offensive strike operations
• Conduct ISR
JSOTF-G/CSGx2
• Provide personnel recovery
JSOTF-G
• Conduct FID
JSOTF-G/MEB/CSGx2
• Provide terminal control for strikes
Endstate:
Enable transition of ground operations to JFLCC control in order to restore sovereignty and conduct stability operations.
KAMPONG CHHNANG
KAMPONG CHAAM
Kampong Cham
Khlong Yai
Krong Kaoh Kong
TAY NINH
Tay Ninh
Sihanoukville
Chau Doc
DONG THAP
AN GIANG
Long Xuyen
Vinh Long
CAN THO
Can Tho
VINH LONG
TRA VINH
Rach Gia
KIEN GIANG
SOC TRANG
Soc Trang
Ca Mau
Bac Lieu
CA MAU
Gulf of Thailand
JFLCC
CJOA
100 km
Additional Forces
MPSRON
CSG
JTF JOA
JFMCC AO
UNCLASSIFIED

UNCLASSIFIED

Vignette 3: Task Organization



7

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Gaps

- Battlespace Organization in support of Single Naval Battle
- Naval Force Aggregation Doctrine
- Integrated Naval Staffs
- Single Naval Battle Training and Education Seams
- Single Naval Battle Operational Logistics
- JFMCC ISR

8

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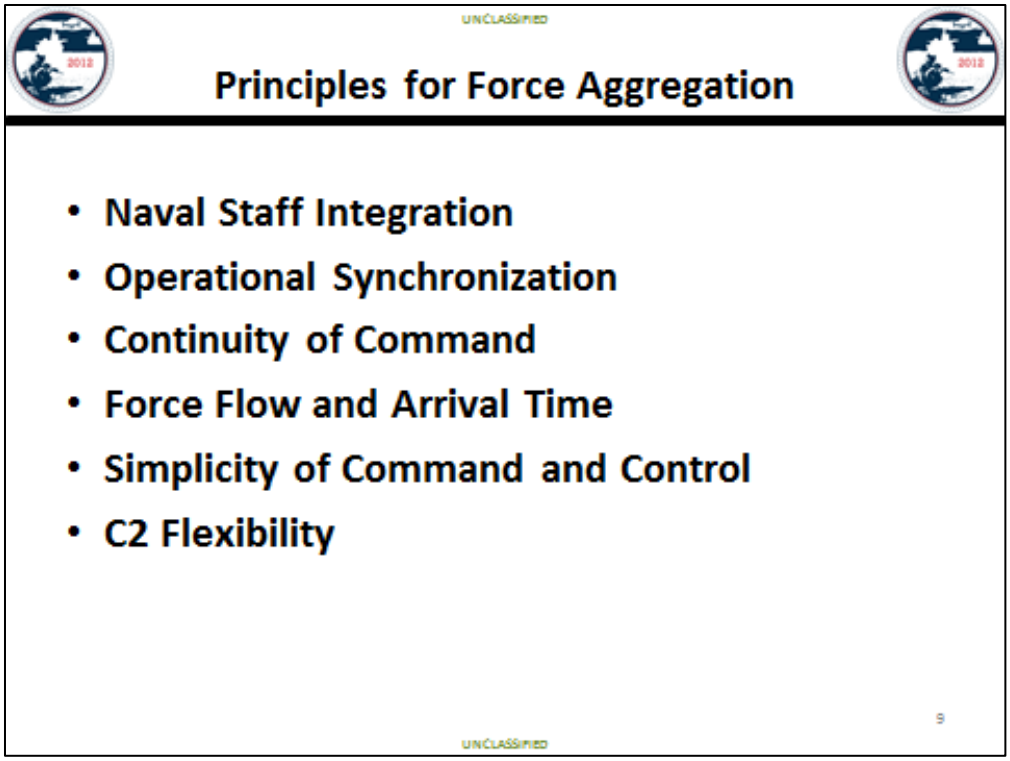
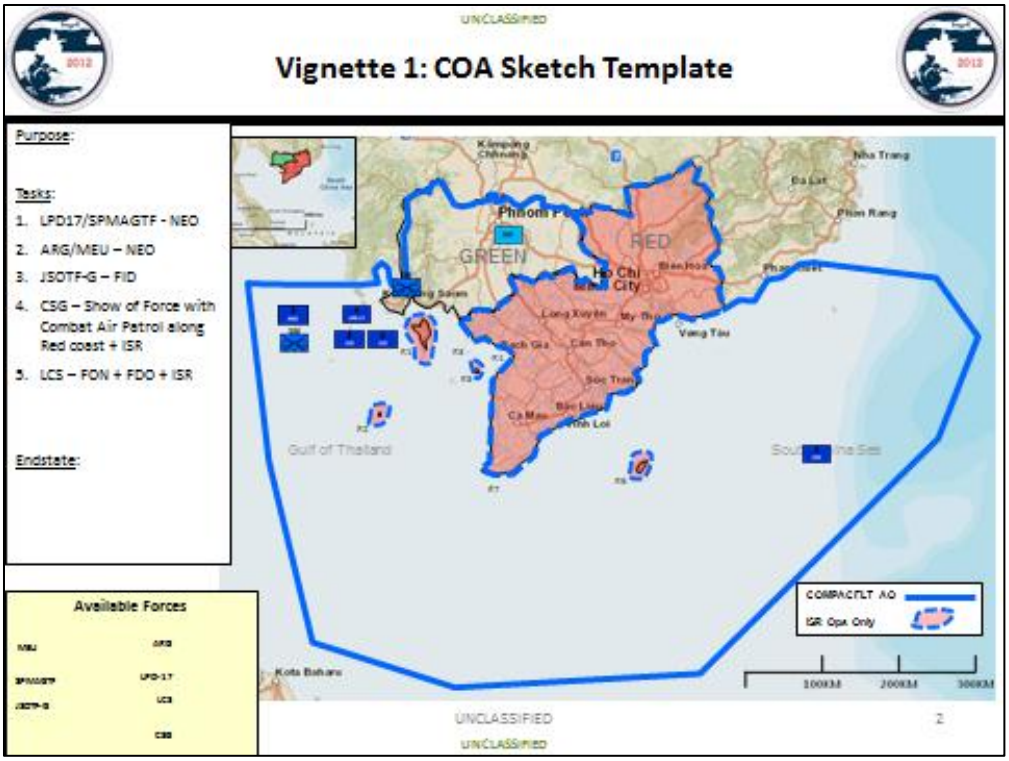
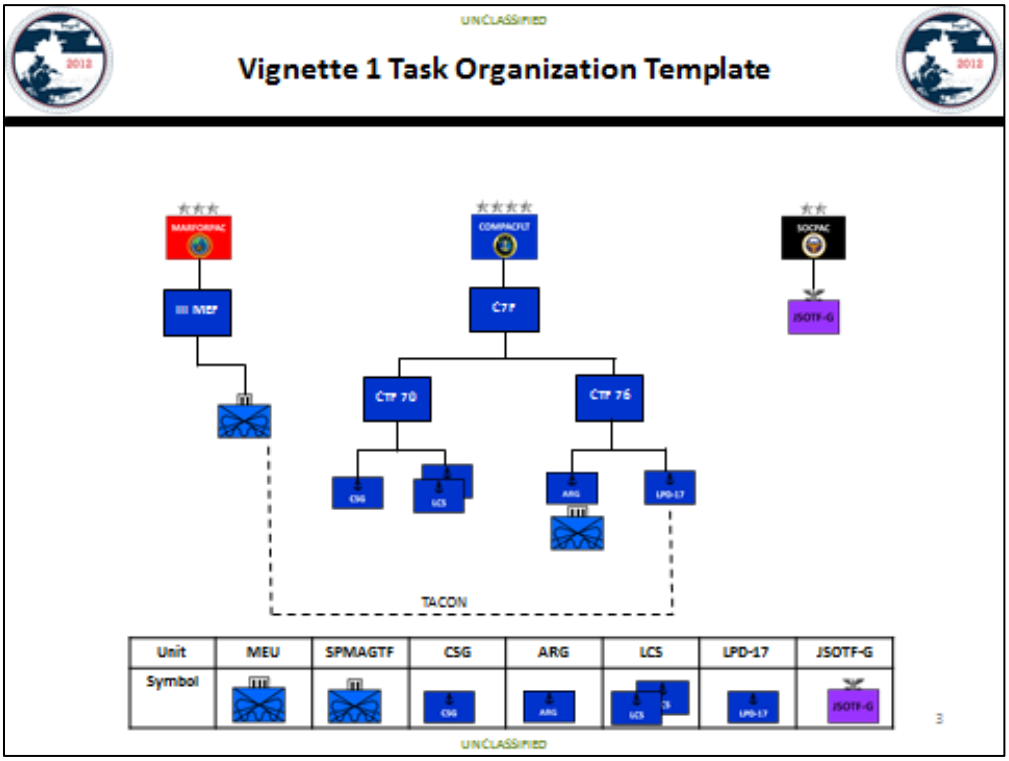
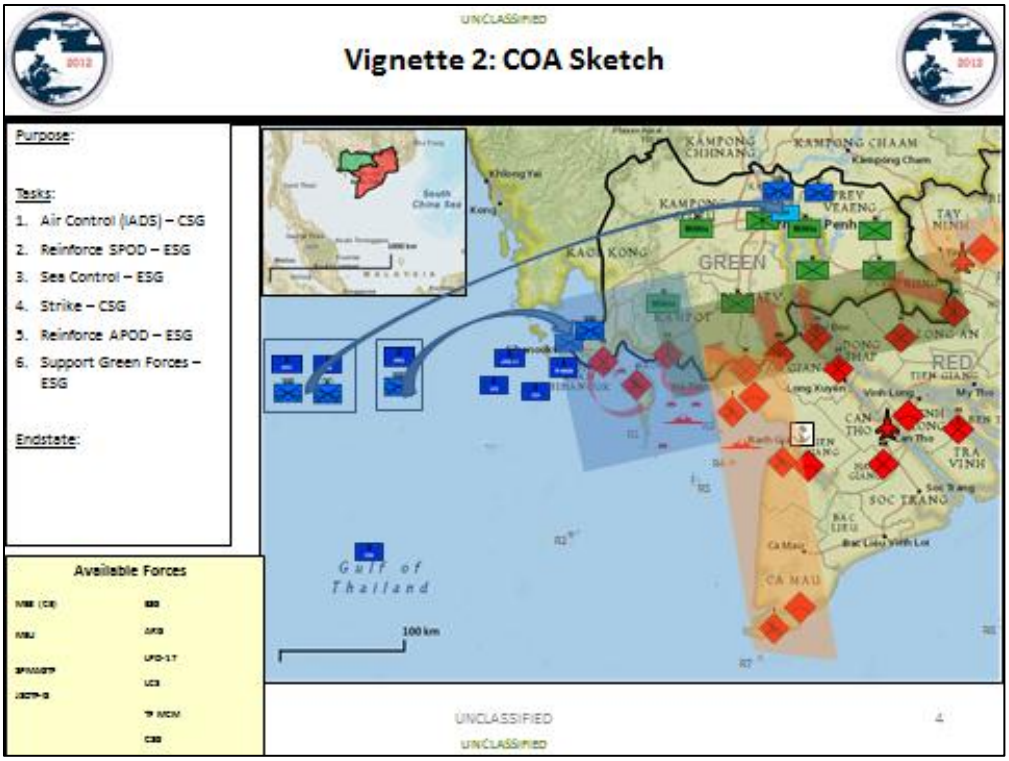

UNCLASSIFIED
Principles for Force Aggregation
• Naval Staff Integration
• Operational Synchronization
• Continuity of Command
• Force Flow and Arrival Time
• Simplicity of Command and Control
• C2 Flexibility
9
UNCLASSIFIED

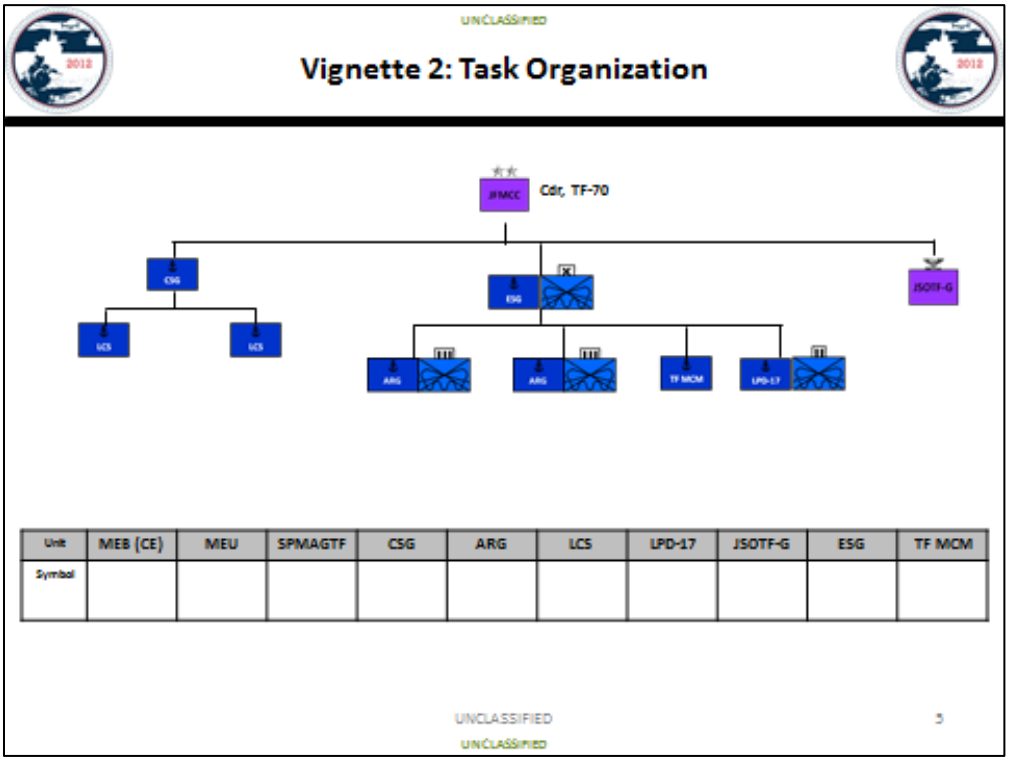
BLUE Cell B:

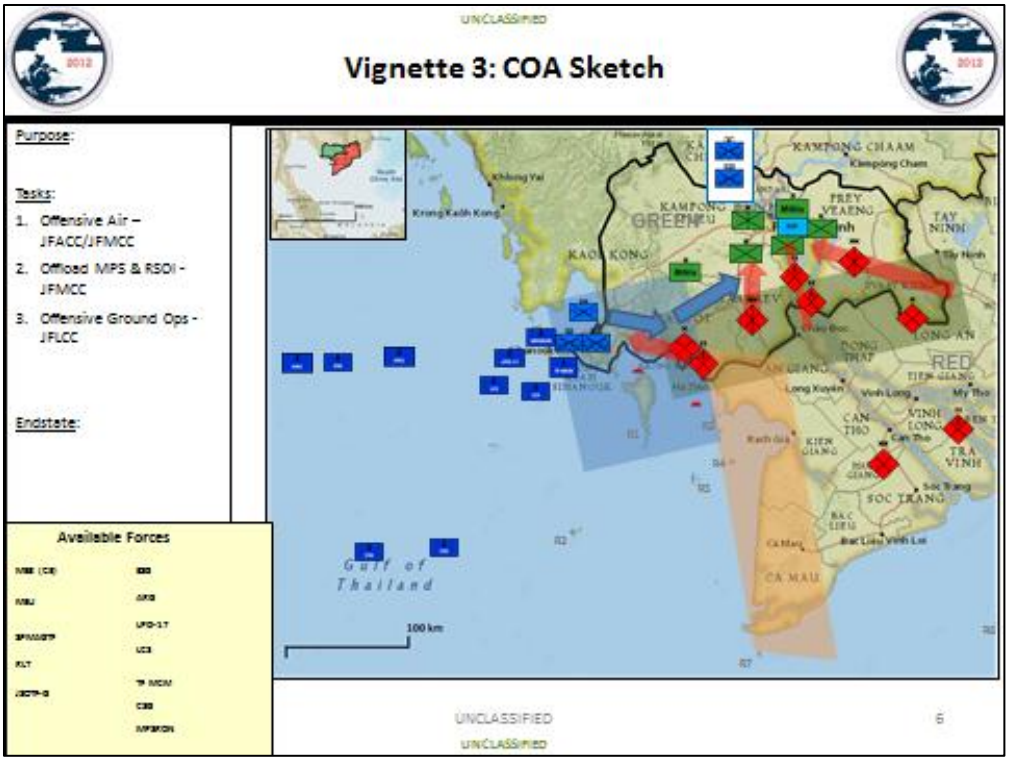

UNCLASSIFIED
2012
Naval Services Game
Cell B Outbrief
War Gaming Department, NWC
Wargaming Division, MCWL
UNCLASSIFIED

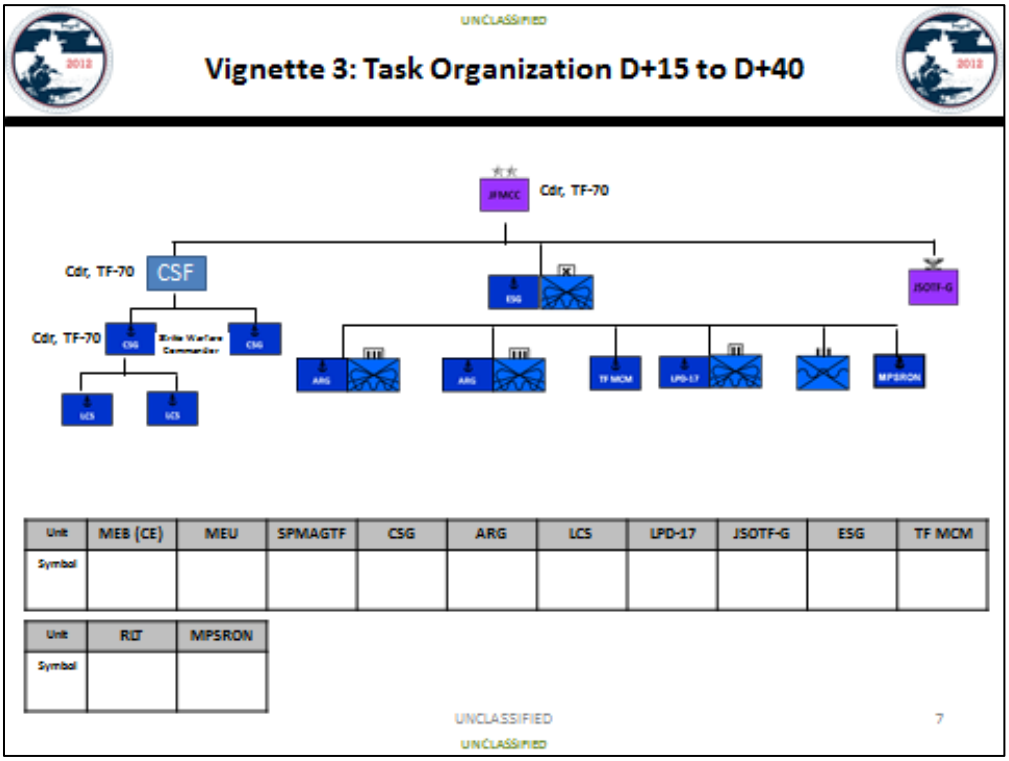

UNCLASSIFIED
Vignette 1: COA Sketch Template
Purpose:
Tasks:
1. LPD17/SPMAGTF - NEO
2. ARG/MEU – NEO
3. JSOTF-G – FID
4. CSG – Show of Force with Combat Air Patrol along Red coast + ISR
5. LCS – FON + FDO + ISR
Endstate:
Available Forces
GREEN
RED
Gulf of Thailand
COMPACFLT AO
ISR Ops Only
UNCLASSIFIED
2
UNCLASSIFIED


UNCLASSIFIED
Vignette 1 Task Organization Template
MARFORPAC
III MEF
COMPACFLT
C7F
CTF 70
CTF 76
CSG
LCS
ARG
LPD-17
SOCPAC
JSOTF-G
TACON
Unit
MEU
SPMAGTF
CSG
ARG
LCS
LPD-17
JSOTF-G
Symbol
3
UNCLASSIFIED


UNCLASSIFIED
Vignette 2: COA Sketch
Purpose:
Tasks:
1. Air Control (IADS) – CSG
2. Reinforce SPOD – ESG
3. Sea Control – ESG
4. Strike – CSG
5. Reinforce APOD – ESG
6. Support Green Forces – ESG
Endstate:
Available Forces
GREEN
RED
Gulf of Thailand
100 km
UNCLASSIFIED
4
UNCLASSIFIED


UNCLASSIFIED
Vignette 2: Task Organization
JFMCC
Cdr, TF-70
CSG
ESG
JSOTF-G
LCS
LCS
ARG
ARG
TF MCM
LPD-17
Unit
MEB (CE)
MEU
SPMAGTF
CSG
ARG
LCS
LPD-17
JSOTF-G
ESG
TF MCM
Symbol
UNCLASSIFIED
5
UNCLASSIFIED


UNCLASSIFIED
Vignette 3: COA Sketch
Purpose:
Tasks:
1. Offensive Air – JFACC/JFMCC
2. Offload MPS & RSOI - JFMCC
3. Offensive Ground Ops - JFLCC
Endstate:
Available Forces
Gulf of Thailand
100 km
UNCLASSIFIED
6
UNCLASSIFIED


UNCLASSIFIED
Vignette 3: Task Organization D+15 to D+40
JFMCC
Cdr, TF-70
Cdr, TF-70
CSF
Cdr, TF-70
ESG
JSOTF-G
ARG
ARG
TF MCM
LPD-17
MPSRON
Unit
MEB (CE)
MEU
SPMAGTF
CSG
ARG
LCS
LPD-17
JSOTF-G
ESG
TF MCM
Symbol
Unit
RLT
MPSRON
Symbol
UNCLASSIFIED
7
UNCLASSIFIED

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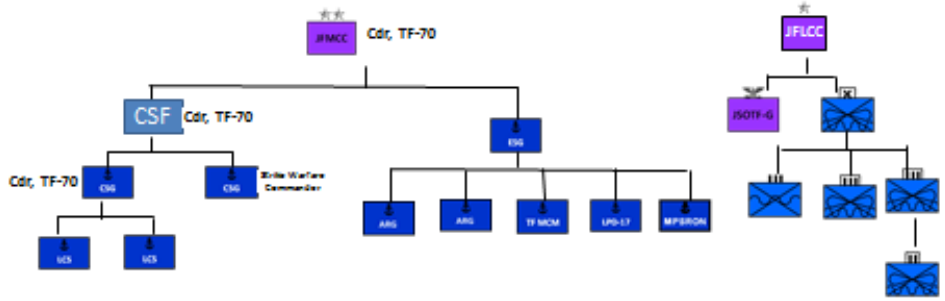
Vignette 3: Task Organization for D+40



Unit	MEB (CE)	MEU	SPMAGTF	CSG	ARG	LCS	LPD-17	JSOTF-G	ESG	TF MCM
Symbol										

Unit	RLT	MPSRON
Symbol		

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Gaps

- Logistics
  - Aggregating forces together can result in relationships that have differing and incompatible logistic chains (example–JSOTF-G under the JFMCC).
  - Transition of Marine forces from the JMFCC to the JFLCC. Some but not all of the supplies are still resident onboard the sea based assets.
- Transition of Command Authorities
  - It is not clearly defined process in changing the task organization. Altering wire diagrams does not encompass the physical and personnel aspects of the change, specifically from a ship to shore to land progression.

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Gaps

- Training
  - Understanding cross-service capabilities. Cross service capabilities and operations are not understood and therefore complicate coordination, command relationships and mission execution.
  - Multi-MEU ops are not practiced. Exercises and training always start at the final level of effort (MEU or MEB) rather than starting small (1 MEU) and growing as forces arrive. CSG and MEU/MEB training is not currently conducted
  - CSG gets designated as the JFMCC based on seniority despite the fact that the staff may not be optimally designed to operate in a COPS/FOPS format. CSG staffs may not have the understanding of maritime expeditionary warfare
  - Lack of experience/TTP for utilizing an LCS

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Gaps

- Organization
  - Amphibious warfare elements are not addressed in the composite warfare commander doctrine
  - CWC constructs across services are not equivalent (example ARG & MEU)
  - Roles and responsibilities for defense of the ATF
- Supported/Supporting
  - Support vs. tasking authority is unclear because mission priority is not established especially in a resource constrained environment.
  - It is unclear too what level is supporting enough when the supporting commander has tasking of his own, particularly in a resource constrained environment.
- ESG/MEB Construct
  - Constitution and capabilities are not fully understood. Creating a command structure that includes these entities becomes difficult. ESG/MEB's in use today are inconsistent.
  - ESG & MEB Command relationships are undefined when deployed together.

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Principles for Force Aggregation

Vignette 1	Vignette 2	Vignette 3
Experience/Seniority	Capability Understanding	Consistency
Flexibility	Battlespace Organization	Professionalism
Proximity	Unambiguous Guidance	Flexibility
Interoperability	Clear Command Structure	Combat Efficiency
Clear Tasking	Redeployment	Duration
Training	Duration	Span of Control
	Seaborne Sustainment	Interoperability
	Staff Capacity/Utilization	

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General Insights

- Training and exercises above the ARG/MEU level (to include build up from the lower to the higher levels)
- Clarify the level above the ARG/MEU – ESG/MEB
- Cross service and cross agency training/schooling to gain practical experience
- Enhanced capability for a scalable augmentation to command operations with a level of effort between the numbered fleets and the strike group commanders (example – ESF Level)
- Force aggregation challenges have been encountered and overcome in the past. Historical experiences need to be analyzed and utilized (AOA & Littoral)
- Day to day communications (inter-service and cross service) need to increase so that the only time that we talk is not the day that the mission orders are written or the crisis occurs

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Appendix C – Player Surveys

Player Background Survey
U.S. Naval War College

Player Profile Baseline Assessment Sheet

PLAYER NAME:_____

BRANCH OF SERVICE OR ORGANIZATION:_____

PRESENT COMMAND:_____

TITLE (RANK IF MILITARY/RETIRED MILITARY OR GS IF APPLICABLE):_____

DESIGNATOR OR MOS:_____

TOTAL YEARS OF MILITARY OR DEFENSE DEPARTMENT SERVICE:_____

PLAYER AGE:_____ PLAYER SEX: M____ F____

HIGHEST EDUCATION LEVEL COMPLETED (CHECK ONE):

_____ High School _____Associate's Degree _____Graduate Degree

_____Technical Certificate _____Bachelor's Degree _____ Juris Doctorate

_____Doctoral Degree (PhD, PsyD, EdD) _____Medical Degree ____Other

ASSIGNED CELL:

____BLUE A ____BLUE B ____WHITE

WHAT SUBJECT MATTER EXPERTISE WERE YOU ASKED TO BRING TO THE GAME?

_____

DESCRIBE ANY BILLETS HELD AT THE BATTALION LEVEL (USMC) / COMMAND LEVEL (NAVY) OR HIGHER THAT CONTRIBUTE TO YOUR ABILITY TO SUPPORT THIS GAME:

_____

_____

YEARS OF EXPERIENCE AT THE BATTALION/COMMAND LEVEL:_____

Post COA Player Survey
Naval Services Game 2012

INTRODUCTION: The purpose of this survey is to provide timely and candid feedback regarding your experience in the formulation of your most recent Course of Action (COA). This information will be forwarded to the Naval War College's Data Collection and Analysis Team (DCAT) for post-game analysis. Ultimately, your responses will greatly assist the Naval Services in developing principles and identifying potential gaps that result from the aggregation of naval forces beyond the ARG/MEU and CSG. You have 15 minutes to complete this survey.

Please indicate Player cell (Note for WebIQ: Should be a dropdown menu)
- Blue A
- Blue B

1. Based on the COA developed by my cell, the most important component or components to accomplishing the mission is/are:
(Note: You may select up to three)

1) Doctrine
2) Organization
3) Training
4) Materiel
5) Leadership
6) Personnel
7) Facilities

2. Please provide additional clarification of your answer in the space below:

3. Based on the COA developed by my cell, the most difficult component or components to accomplishing the mission is/are:
(Note: You may select up to three)

1) Doctrine
2) Organization
3) Training
4) Materiel
5) Leadership
6) Personnel
7) Facilities

4. Please provide additional clarification of your answer in the space below:

5**.** Based on the COA developed by my cell, the most important action required to achieve force aggregation is:

6. Based on the COA developed by my cell, the most difficult action required to achieve force aggregation is:

7. As you reflect upon each of the questions asked in this survey including the important and difficult aspects of force aggregation, what ideas, concepts, or principles are becoming more apparent to you?

Appendix D – Game Schedule

Tuesday, September 11, 2012

Start	End	Event	Remarks	Location
0715	0800	Check-In	Registration	MLH Lobby
0800	0825	Welcome	Welcome, Admin Remarks	DSC
0825	0845	Overview	Game Overview	DSC
0845	0945	Briefs	MOC and JFMCC briefs	DSC
0945	1030	Brief	MAGTF Brief	DSC
1030	1100	Brief	Composite Warfare Brief	DSC
1130	1200	V1	Road to War and Vignette 1	DSC
1200	1300	Lunch	Player Lunch	NWC Café
1300	1330	Intro	Cell introductions, Cell familiarization and baseline survey	Room 207 & 211
1330	1345	Situation	Situation Review	Room 207 & 211
1345	1445	COA	Cells Develop COAs	Room 207 & 211
1445	1500	Survey	Players' Survey	Room 207 & 211
1500	1700	Dialog	Seminar Discussion	Room 207 & 211
1700	1730	Data	Tool-based Data Capture	Room 207 & 211
1800	1900	Social	No-Host Evening Social	Officers' club

Wednesday, September 12, 2012

Start	End	Event	Remarks	Location
0800	0830	V2	Vignette 2 In-Brief	Room 207 & 211
0830	0845	Situation	Situation Review	Room 207 & 211
0845	0945	COA	Cells Develop COA	Room 207 & 211
0945	1000	Survey	Players' Survey	Room 207 & 211
1000	1200	Dialog	Seminar Discussion	Room 207 & 211
1200	1230	Data	Tool-based Data Capture	Room 207 & 211
1230	1330	Lunch	Player Lunch	NWC Café
1330	1400	V3	Vignette 3 In-Brief	Room 207 & 211
1400	1415	Situation	Situation Review	Room 207 & 211
1415	1515	COA	Cells Develop COA	Room 207 & 211
1515	1530	Survey	Players' Survey	Room 207 & 211
1530	1730	Dialog	Seminar Discussion	Room 207 & 211
1730	1800	Data	Tool-based Data Capture	Room 207 & 211

Thursday, September 13, 2012				
Start	**End**	**Event**	**Remarks**	**Location**
0800	1100	Seminar	Refine Principles and Gaps (Player Cells)	Room 207 & 211
1100	1200	Prep	Brief Preparations (Player Cells)	Room 207 & 211
1200	1300	Lunch	Player Lunch	NWC Café
1300	1400	Outbriefs	Cells Outbrief and Q&A	DSC
1400	1530	Dialog	Facilitated Discussion	DSC
1530	1600	ENDEX	Final Discussions and Remarks	DSC

Appendix E – Game Participants and Demographics

Participants

The demographic statistics included in this section of the Game Report are based on self-reported responses from the players garnered during the baseline survey administered prior to the start of vignette 1 (Appendix C). Thirty-five members of the USN and USMC, representing officer pay grades O-4 through O-6 served as players in the Naval Services Game. All participants had ample knowledge and experience to draw upon when developing potential courses of action and identifying challenges that may limit the Navy and Marine Corps' ability to aggregate a naval force. The 35 players averaged more than 20 years of military experience. The players were divided into two cells, providing a mixture of subject matter experts from the Navy and Marine Corps in each.

Blue A Player Cell:

Brown, Daren	LtCol	Marine Corps Combat Development Command
Dickey, Stuart	Col	Marine Forces Command
Donovan, Edward	LtCol	Combat Logistics Battalion 11, 11th MEU
Herrera, James	Col	I MEF
LaBranche, Rick	CAPT	Carrier Air Wing 17
Lehane, John	Maj	III MEF
Lowell, James	CDR	Surface Warfare Officer's School Command
Ostrowski, John	Col	3rd MEB, III MEF
Parker, Timothy	Col	Marine Corps Warfighting Laboratory
Parrott, Neil	CAPT	EWTGLANT
Phillips, Ford	Maj	Ellis Group
Posey, Carlos	LCDR	DESRON 14
Riccio, Marc	Col	II MEF
Seaman, William	CAPT	Carrier Strike Group Two
Waltermire, Brad	LCDR	Carrier Air Wing 17
Weathered, Ronald	LCDR	COMCMRON THREE
Wissen, Frederick	LCDR	CTF-24 TASW

Blue B Player Cell:

Bjerke, Mark	LCDR	COMSUBLANT
Charney, Michael	LtCol	1st Marine Regiment
Donegan, Don	CDR	MWDC DET Washington DC
Driscoll, Jerome	Col	Ellis Group
Gagnon, Jeffrey	LtCol	Marine Corps Combat Development Command
James, Barry	CDR	US Fleet Forces Command
Keefer, Jason	LtCol	MAG-16
Landau, Fred	CDR	USS GEORGE H.W. BUSH (CVN 77)
McMillan, Shannon	LCDR	USS ARLEIGH BURKE (DDG 51)
Negus, Thomas	CAPT	Expeditionary Strike Group TWO
Oles, Gary	GS-14	MARSOC
Pluta, Jim	Maj	HQMC, Plans, Policies and Operations
Schendler, Phil	LtCol	Marine Corps Combat Development Command, Ellis Group
Schreiner, David	Maj	HQMC AVN
Sile, Jack	Maj	HQMC, Intelligence Department
Thom, Maxie	Mr.	OPNAV N2N6

In addition to the BLUE cell A and B participants, a final session including RADM John Christenson (NWC), BGen Mark Wise (MCWL), RDML Ann Phillips (ESG-2), and CAPT Michael Napolitano, representing RADM Michael Tillotson (NECC), was also conducted, during which the perspectives and insights of these senior naval services leaders was captured for inclusion in post-game analysis.

With respect to warfare specialties, 34 percent of participants served in the surface/submarine warfare community, 29 percent were USN and USMC aviators, 14 percent were USMC ground combat experts, 14 percent served in the intelligence/information dominance community, and 9 percent belonged to the USMC logistics military occupational specialty (0402).

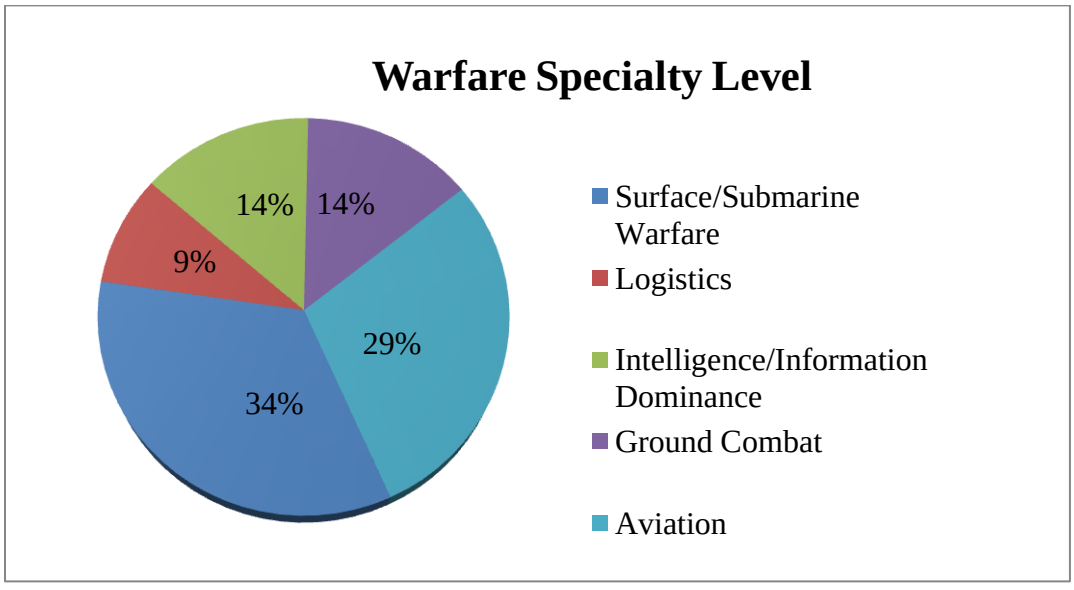


Figure E.1- Warfare Specialty

Overall, players in the game reported to have had a moderate level of battalion or command experience during their military careers.

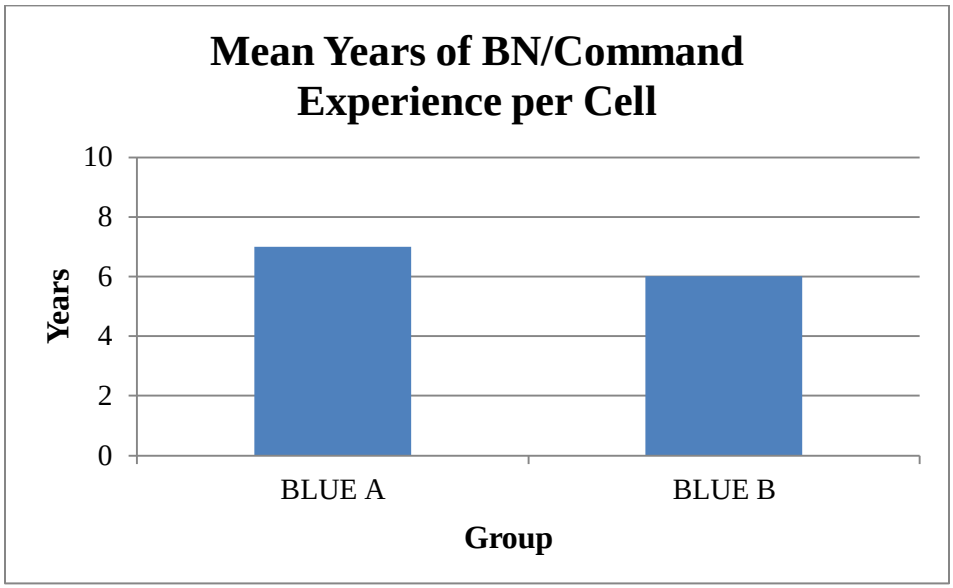


Figure E.2- Comparison of BN/Command Experience between the Cells.

The NSG participants were highly educated, with 69 percent of the players holding a master's degree. Educational level of participants is displayed in figure E.3.

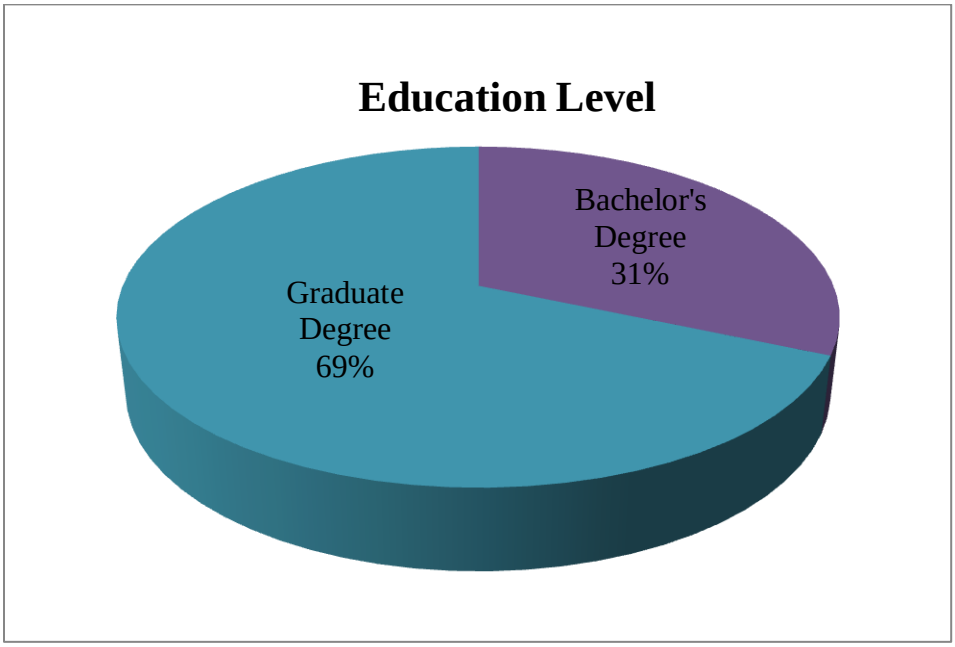


Figure E.3- Summary of Game Participants' Education from Baseline Survey

Appendix F – Research Methodology

Overarching Methodology and Analytic Framing

Given the Naval Services Game's focus on generating new knowledge to develop a better understanding of force aggregation, the overarching methodology for this game was induction. Specifically, the DCAT sought to identify terms, phrases, themes, and concepts germane to the game's three research questions. The preponderance of datasets encountered in the NSG were qualitative, because they focused on the players' opinions, beliefs, and values. Quantitative data were also included in this project, especially demographic data pertaining to players' ages, years of experience, and level of educational attainment.

The collection of disparate datasets (i.e., both qualitative and quantitative) suggested that a triangulative approach to analysis was warranted. This process allowed the DCAT to derive the same or very similar conclusions using different datasets or methods. Triangulation has incredible power as an analytic technique because it allows the researcher to distinguish between exceptions and commonalities in data. Moreover, the use of a triangulative approach allowed the DCAT to evaluate data with the appropriate methodology, rather than the methodology driving the evaluation. A brief description of each analytic process use in this study's inductive, triangulative approach is described in this section of the *Report*.

Content Analysis: A method in which a researcher seeks objectively to describe the content of communication messages that people have previously produced, content analysis involves identifying coherent and important examples and patterns in the data and subdividing data into coherent categories, patterns, and themes.

Grounded Theory: A more detailed and methodical approach to analysis than content analysis, grounded theory employs systematic, hierarchical procedures to develop inductively derived theory grounded in data. Grounded theory directs researchers to look for patterns in data so that they can make general statements about the phenomena they examined. Selective, in-vivo, and serendipitous coding were conducted on these data using the ATLAS.ti software application. The use of ATLAS.ti is especially cogent for qualitative analysis, because the co-occurrence function within this software function allowed the DCAT to determine the level of correlation between terms from little or no correlation (r=0) to moderarely correlated (r=.50) to strongly correlated (r=1.00). The co-occurrence function is similar to Pearson Product Moment Correlation in quantitative statistics, because the closer the r-value comes to absolute value 1.00, the stronger or more highly correlated the relationship between the two terms. Lastly, although direction of relationship cannot be computed in ATLAS.ti due to the qualitative relationship of the data, r-squared analysis was subsequently performed in an effort to determine the percentage of shared relationship between each pair of coded terms.

Ethnography: Rooted in the field of Anthropology, ethnography occurs with a natural setting and seeks understand the social interactions and rationale of players' of decisions during the course of game play. Ethnographers assigned to BLUE Cell A and BLUE Cell B captured qualitative, descriptive data throughout the facilitated discussions, plenary sessions, and final outbriefs.

Collection Approach

In order to answer the three research questions considered in the 2012 Naval Services Game, six primary datasets were collected. These six datasets, their inherent value to this project as data streams, and the approach used to analyze them are included in table F.1.

Dataset Name	**Inherent Value of Data**	**Primary Analytical Technique & Tool(s)**
Cell-based COA	Collective Insights/Macro-level Themes	Grounded Theory using selective coding with ATLAS.ti
Participant Demographic Survey	Participant Background	Descriptive Quantitative Statistics using Microsoft Excel
Post-Vignette Participant Survey (Open Ended Questions)	Individual Insights	Grounded Theory using selective and in-vivo coding using ATLAS.ti
Post-Facilitated Discussion Threaded Session (Plenary)	Macro-Level Insights	Content Analysis and Grounded Theory using selective coding, in-vivo and serendipitous coding with ATLAS.ti
Final Outbrief Slides	Macro-Level insights	Content Analysis and Grounded Theory using selective coding, in-vivo and serendipitous coding with ATLAS.ti
Ethnographic Notes from Plenary Sessions and Final Outbrief	Macro-Level Insights	Content Analysis and Grounded Theory using selective coding, in-vivo and serendipitous coding with ATLAS.ti

Table F.1 –Datasets Collected, Inherent Value of Data, and Analytic Techniques

Each of the datasets analyzed in this game are considered descriptive, because they emphasize the nature of certain situations, settings, processes, relationships and systems. These descriptive datasets were also aggregated to clarify the information that was gathered.

Before, during, and after the game, members of the DCAT ensured the following parameters for these data streams strictly adhered to quality assurance/quality control requirements.

Formatting and standardization: COA templates submitted to the White cell were required to adhere to the structure provided by the control team. Any issues with the player cell's inputs were identified during the game and brought to the DCAT who immediately reported their concerns to the Control cell for corrective action. It was the responsibility of the technographers in each cell to ensure that templates were properly populated and saved in the correct location.

Internal validity: Collection instruments were designed to ensure that accurate conclusions could be drawn from the data. To ensure their proper use during game play, specific internal validity issues with these instruments and the information they were designed to collect were identified during the Alpha and Beta tests, and were corrected prior to the start of player vignette number one, which occurred during the morning session on 11 September 2012.

External validity: External validity applies predominately to the open-ended survey questions that were asked in the individual cell player surveys that were captured via WEB-IQ on the Unclassified Gaming Network (GAMENET). In order to provide quality controls on data collection, such as freedom from researcher bias and clarity these questions were evaluated by an internal focus group as part of the Alpha and Beta testing process, prior to being deployed in the game.

Data Collection & Analysis Team Roles and Responsibilities

DCAT Co-Leads: Responsible for collection strategies, information technology challenges, concerns with methodologies and analytic procedures, and tasked other members of the team with preparation of report sections and ensured compliance with requisite deadlines. The DCAT co-leads for the 2012 Naval Services were Dr. Hank Brightman and LT Lindsay Kaiser (USN). Other DCAT members who supported post-game analysis and report writing included and Ms. Janelle Gatchalian and CDR Parker Glasier (USN).

Data Collection Lead**:** Accountable for data management during the game as well as post-execution organization of files. Answered all questions regarding file structure, data import/export, and information. The Collection Lead for this project was LCDR Stacey Auger (USN).

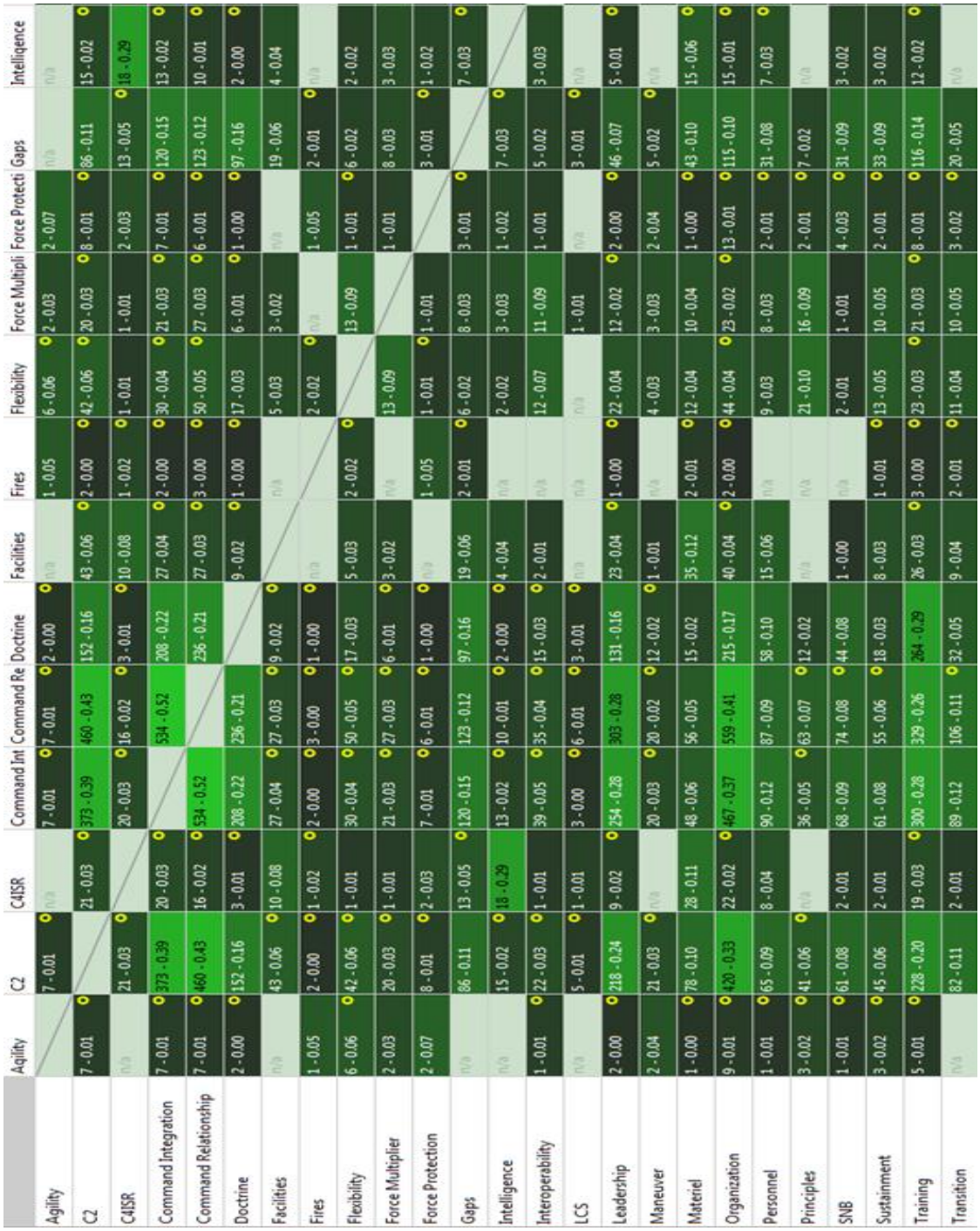
Facilitators: Charged with management of the two player cells (BLUE cells A and B) to ensure that player deliverables (e.g., COA sketches, individual participant surveys, WEB-IQ threaded discussions, and cell outbriefs were completed on schedule. Fostered the environment for robust and candid player discussion, and coordinated participant inputs to ensure that conversation was germane to the game's objectives and research questions. The facilitators for the NSG were Prof. Doug Ducharme and Col Doug Stillwell (USMC-Ret.).

Technographers: Supported player development of the COA sketches for each of the three vignettes, by assisting cell participants with creating their final outbriefs, displaying WEB-IQ

generated outputs in order to support facilitated discussion in the plenary sessions, and ensuring that data were properly saved in the appropriate formats and locations on the unclassified GAMENET for subsequent analysis. The technographers for this project were LCDR Nick Miller (USN), LCDR Chris Baker (USN), and Prof. Robin Babb.

Ethnographers: Employed a variety of data capture techniques to record player comments and perspectives during game play and plenary sessions. Recorded observations in Microsoft Word for use in post-game analysis. The ethnographers in the Naval Services Game were CDR Clint Beck (USN), CDR Dave Flanagan (USN), CDR Parker Glasier (USN), LSCS Deanna Follis (USN), and AG1 Rodolfo Ornelas (USN).

Appendix G – Co-Occurrence Tables



	Agility	C2	C4ISR	Command Int	Command Re	Doctrine	Facilities	Fires	Flexibility	Force Multipli	Force Protecti	Gaps	Intelligence
Agility		7 - 0.01	n/a	7 - 0.01	7 - 0.01	2 - 0.00	n/a	1 - 0.05	6 - 0.06	2 - 0.03	2 - 0.07	n/a	n/a
C2	7 - 0.01		21 - 0.03	373 - 0.39	460 - 0.43	152 - 0.16	43 - 0.06	2 - 0.00	42 - 0.06	20 - 0.03	8 - 0.01	86 - 0.11	15 - 0.02
C4ISR	n/a	21 - 0.03		20 - 0.03	16 - 0.02	3 - 0.01	10 - 0.08	1 - 0.02	1 - 0.01	1 - 0.01	2 - 0.03	13 - 0.05	16 - 0.29
Command Integration	7 - 0.01	373 - 0.39	20 - 0.03		534 - 0.52	208 - 0.22	27 - 0.04	2 - 0.00	30 - 0.04	21 - 0.03	7 - 0.01	120 - 0.15	13 - 0.02
Command Relationship	7 - 0.01	460 - 0.43	16 - 0.02	534 - 0.52		236 - 0.21	27 - 0.03	3 - 0.00	50 - 0.05	27 - 0.03	6 - 0.01	123 - 0.12	10 - 0.01
Doctrine	2 - 0.00	152 - 0.16	3 - 0.01	208 - 0.22	236 - 0.21		9 - 0.02	1 - 0.00	17 - 0.03	6 - 0.01	1 - 0.00	97 - 0.16	2 - 0.00
Facilities	n/a	43 - 0.06	10 - 0.08	27 - 0.04	27 - 0.03	9 - 0.02		n/a	5 - 0.03	3 - 0.02	n/a	19 - 0.06	4 - 0.04
Fires	1 - 0.05	2 - 0.00	1 - 0.02	2 - 0.00	3 - 0.00	1 - 0.00	n/a		2 - 0.02	n/a	1 - 0.05	2 - 0.01	n/a
Flexibility	6 - 0.06	42 - 0.06	1 - 0.01	30 - 0.04	50 - 0.05	17 - 0.03	5 - 0.03	2 - 0.02		13 - 0.09	1 - 0.01	6 - 0.02	2 - 0.02
Force Multiplier	2 - 0.03	20 - 0.03	1 - 0.01	21 - 0.03	27 - 0.03	6 - 0.01	3 - 0.02	n/a	13 - 0.09		1 - 0.01	8 - 0.03	3 - 0.03
Force Protection	2 - 0.07	8 - 0.01	2 - 0.03	7 - 0.01	6 - 0.01	1 - 0.00	n/a	1 - 0.05	1 - 0.01	1 - 0.01		3 - 0.01	1 - 0.02
Gaps	n/a	86 - 0.11	13 - 0.05	120 - 0.15	123 - 0.12	97 - 0.16	19 - 0.06	2 - 0.01	6 - 0.02	8 - 0.03	3 - 0.01		7 - 0.03
Intelligence	n/a	15 - 0.02	18 - 0.29	13 - 0.02	10 - 0.01	2 - 0.00	4 - 0.04	n/a	2 - 0.02	3 - 0.03	1 - 0.02	7 - 0.03	
Interoperability	1 - 0.01	22 - 0.03	1 - 0.01	39 - 0.05	35 - 0.04	15 - 0.03	2 - 0.01	n/a	12 - 0.07	11 - 0.09	1 - 0.01	5 - 0.02	3 - 0.03
LCS	n/a	5 - 0.01	1 - 0.01	3 - 0.00	6 - 0.01	3 - 0.01	n/a	n/a	n/a	1 - 0.01	n/a	3 - 0.01	n/a
Leadership	2 - 0.00	218 - 0.24	9 - 0.02	254 - 0.28	303 - 0.28	131 - 0.16	23 - 0.04	1 - 0.00	22 - 0.04	12 - 0.02	2 - 0.00	46 - 0.07	5 - 0.01
Maneuver	2 - 0.04	21 - 0.03	n/a	20 - 0.03	20 - 0.02	12 - 0.02	1 - 0.01	n/a	4 - 0.03	3 - 0.03	2 - 0.04	5 - 0.02	n/a
Materiel	1 - 0.00	78 - 0.10	28 - 0.11	48 - 0.06	56 - 0.05	15 - 0.02	35 - 0.12	2 - 0.01	12 - 0.04	10 - 0.04	1 - 0.00	43 - 0.10	15 - 0.06
Organization	9 - 0.01	120 - 0.33	22 - 0.02	467 - 0.37	559 - 0.41	215 - 0.17	40 - 0.04	2 - 0.00	44 - 0.04	23 - 0.02	13 - 0.01	115 - 0.10	15 - 0.01
Personnel	1 - 0.01	65 - 0.09	8 - 0.04	90 - 0.12	87 - 0.09	58 - 0.10	15 - 0.06	n/a	9 - 0.03	8 - 0.03	2 - 0.01	31 - 0.08	7 - 0.03
Principles	3 - 0.02	41 - 0.06	n/a	36 - 0.05	63 - 0.07	12 - 0.02	n/a	n/a	21 - 0.10	16 - 0.09	2 - 0.01	7 - 0.02	n/a
SNB	1 - 0.01	61 - 0.08	2 - 0.01	68 - 0.09	74 - 0.08	44 - 0.08	1 - 0.00	n/a	2 - 0.01	1 - 0.01	4 - 0.03	31 - 0.09	3 - 0.02
Sustainment	3 - 0.02	45 - 0.06	2 - 0.01	61 - 0.08	55 - 0.06	18 - 0.03	8 - 0.03	1 - 0.01	13 - 0.05	10 - 0.05	2 - 0.01	33 - 0.09	3 - 0.02
Training	5 - 0.01	228 - 0.20	19 - 0.03	300 - 0.28	329 - 0.26	264 - 0.29	26 - 0.03	3 - 0.00	23 - 0.03	21 - 0.03	8 - 0.01	116 - 0.14	12 - 0.02
Transition	n/a	82 - 0.11	2 - 0.01	89 - 0.12	106 - 0.11	32 - 0.05	9 - 0.04	2 - 0.01	11 - 0.04	10 - 0.05	3 - 0.02	20 - 0.05	n/a

	Intelligence	Interoperabilit	LCS	Leadership	Maneuver	Materiel	Organization	Personnel	Principles	SNB	Sustainment	Training	Transition
Agility	n/a	1 - 0.01		2 - 0.00	2 - 0.04	1 - 0.00	9 - 0.01	1 - 0.01	3 - 0.02	1 - 0.01	3 - 0.02	5 - 0.01	n/a
C2	15 - 0.02	22 - 0.03	5 - 0.01	218 - 0.24	21 - 0.03	78 - 0.10	420 - 0.33	65 - 0.09	41 - 0.06	61 - 0.08	45 - 0.06	228 - 0.20	82 - 0.11
C4ISR	18 - 0.29	1 - 0.01	1 - 0.01	9 - 0.02		28 - 0.11	22 - 0.02	8 - 0.04		2 - 0.01	2 - 0.01	19 - 0.03	2 - 0.01
Command Integration	13 - 0.02	39 - 0.05	3 - 0.00	254 - 0.28	20 - 0.03	48 - 0.06	467 - 0.37	90 - 0.12	36 - 0.05	68 - 0.09	61 - 0.08	300 - 0.28	89 - 0.12
Command Relationship	10 - 0.01	35 - 0.04	6 - 0.01	303 - 0.28	20 - 0.02	56 - 0.05	559 - 0.41	87 - 0.09	63 - 0.07	74 - 0.08	55 - 0.06	329 - 0.26	106 - 0.11
Doctrine	2 - 0.00	15 - 0.03	3 - 0.01	131 - 0.16	12 - 0.02	15 - 0.02	215 - 0.17	58 - 0.10	12 - 0.02	44 - 0.08	18 - 0.03	264 - 0.29	32 - 0.05
Facilities	4 - 0.04	2 - 0.01		23 - 0.04	1 - 0.01	35 - 0.12	40 - 0.04	15 - 0.06		1 - 0.00	8 - 0.03	26 - 0.03	9 - 0.04
Fires	n/a	n/a		1 - 0.00		2 - 0.01	2 - 0.00				1 - 0.01	3 - 0.00	2 - 0.01
Flexibility	2 - 0.02	12 - 0.07		22 - 0.04	4 - 0.03	12 - 0.04	44 - 0.04	9 - 0.03	21 - 0.10	2 - 0.01	13 - 0.05	23 - 0.03	11 - 0.04
Force Multiplier	3 - 0.03	11 - 0.09	1 - 0.01	12 - 0.02	3 - 0.03	10 - 0.04	23 - 0.02	8 - 0.03	16 - 0.09	1 - 0.01	10 - 0.05	21 - 0.03	10 - 0.05
Force Protection	1 - 0.02	1 - 0.01		2 - 0.00	2 - 0.04	1 - 0.00	13 - 0.01	2 - 0.01	2 - 0.01	4 - 0.03	2 - 0.01	8 - 0.01	3 - 0.02
Gaps	7 - 0.03	5 - 0.02	3 - 0.01	46 - 0.07	5 - 0.02	43 - 0.10	115 - 0.10	31 - 0.08	7 - 0.02	31 - 0.09	33 - 0.09	116 - 0.14	20 - 0.05
Intelligence		3 - 0.03	n/a	5 - 0.01	n/a	15 - 0.06	15 - 0.01	7 - 0.03	n/a	3 - 0.02	3 - 0.02	12 - 0.02	n/a
Interoperability	3 - 0.03		3 - 0.03	13 - 0.02	2 - 0.02	9 - 0.03	37 - 0.03	14 - 0.06	14 - 0.07	2 - 0.01	9 - 0.04	44 - 0.06	2 - 0.01
LCS	n/a	3 - 0.03		n/a	n/a	6 - 0.02	10 - 0.01	1 - 0.00	n/a	2 - 0.01	2 - 0.01	12 - 0.02	n/a
Leadership	5 - 0.01	13 - 0.02	n/a		13 - 0.03	27 - 0.04	277 - 0.22	71 - 0.12	34 - 0.06	47 - 0.08	14 - 0.02	206 - 0.21	41 - 0.07
Maneuver	n/a	2 - 0.02	n/a	13 - 0.03		5 - 0.02	23 - 0.02	5 - 0.02	3 - 0.02	12 - 0.07	8 - 0.04	13 - 0.02	10 - 0.05
Materiel	15 - 0.06	9 - 0.03	6 - 0.02	27 - 0.04	5 - 0.02		82 - 0.07	22 - 0.06	11 - 0.03	11 - 0.03	39 - 0.11	43 - 0.05	13 - 0.03
Organization	15 - 0.01	37 - 0.03	10 - 0.01	277 - 0.22	23 - 0.02	82 - 0.07		118 - 0.11	39 - 0.03	76 - 0.07	66 - 0.06	332 - 0.23	93 - 0.08
Personnel	7 - 0.03	14 - 0.06	1 - 0.00	71 - 0.12	5 - 0.02	22 - 0.06	118 - 0.11		5 - 0.02	18 - 0.06	2 - 0.01	118 - 0.15	12 - 0.04
Principles	n/a	14 - 0.07	n/a	34 - 0.06	3 - 0.02	11 - 0.03	39 - 0.03	5 - 0.02		6 - 0.02	12 - 0.04	31 - 0.04	15 - 0.06
SNB	3 - 0.02	2 - 0.01	2 - 0.01	47 - 0.08	12 - 0.07	11 - 0.03	76 - 0.07	18 - 0.06	6 - 0.02		15 - 0.05	50 - 0.06	29 - 0.11
Sustainment	3 - 0.02	9 - 0.04	2 - 0.01	14 - 0.02	8 - 0.04	39 - 0.11	66 - 0.06	2 - 0.01	12 - 0.04	15 - 0.05		38 - 0.05	24 - 0.08
Training	12 - 0.02	44 - 0.06	12 - 0.02	206 - 0.21	13 - 0.02	43 - 0.05	332 - 0.23	118 - 0.15	31 - 0.04	50 - 0.06	38 - 0.05		33 - 0.04
Transition	n/a	2 - 0.01	n/a	41 - 0.07	10 - 0.05	13 - 0.03	93 - 0.08	12 - 0.04	15 - 0.06	29 - 0.11	24 - 0.08	33 - 0.04	

Appendix H – Player-Identified Proposed Definition of Naval Force Aggregation

The Naval Services Game's purpose was to explore the challenges associated with aggregating naval forces in response to an emerging conflict. With this purpose in mind, players focused on generating new knowledge in order to develop a better understanding of force aggregation. At the beginning of gameplay, all participants were given definitions of key terms and concepts in order to ground them in a common lexicon. Developed by the Ellis Group, Figure H.1 was the definition of Naval Aggregation that players used to frame their discussions.

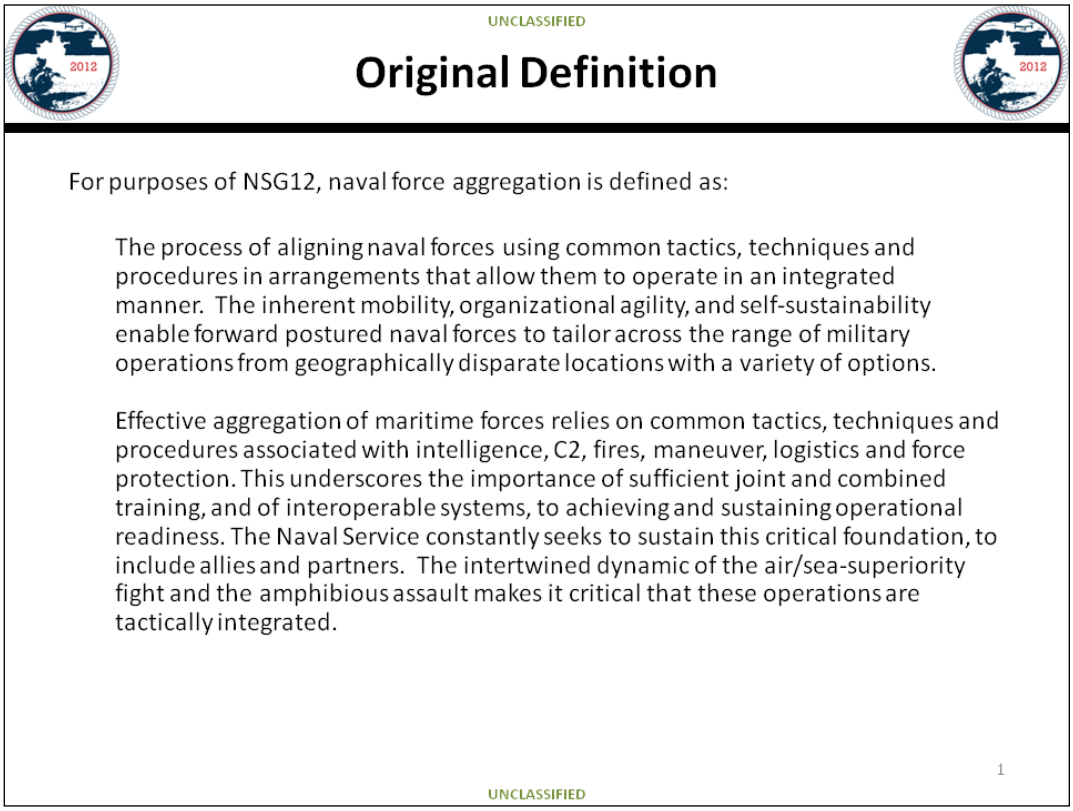


Figure H.1- Ellis Group Definition of Naval Force Aggregation

Towards the end of the game, the Ellis Group asked participants to refine the original definition. While this was not in scope with the game design, BLUE Cell A players developed their proposed definition, as seen in Figure H.2, and presented it during the final plenary session.

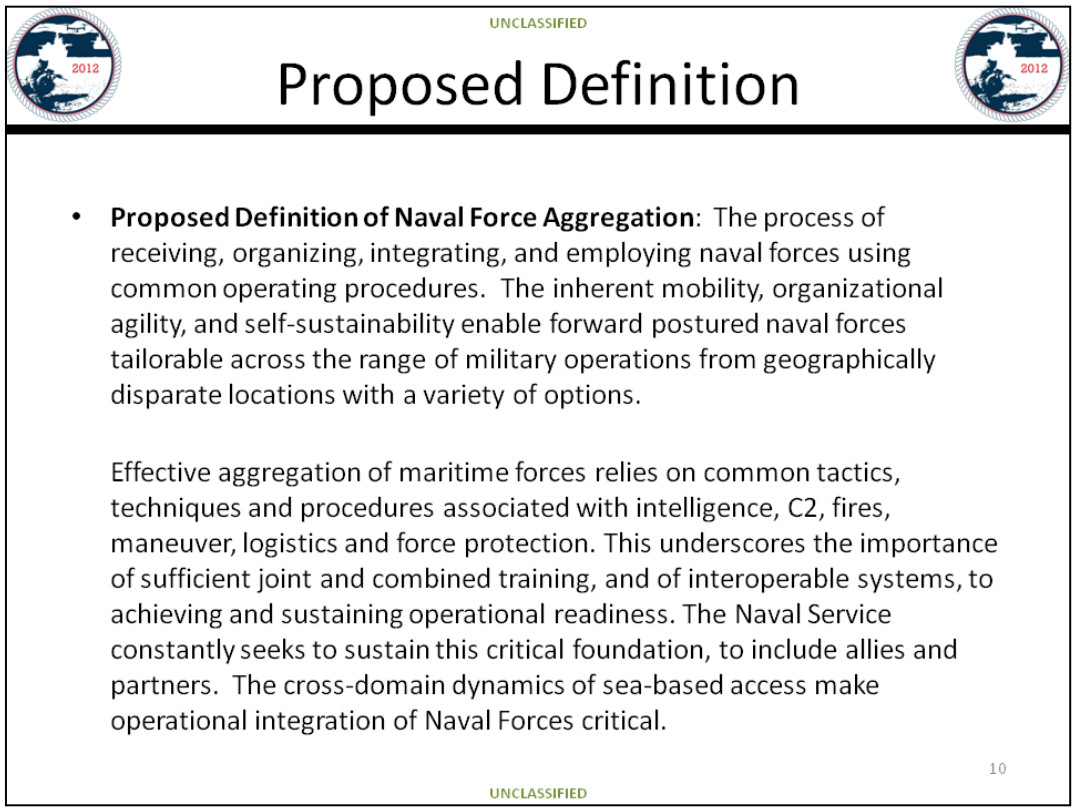


Figure H.2- Player-Identified Proposed Definition of Naval Force Aggregation