

WAR GAMING DEPARTMENT



Relative Combat Power Analysis (RCPA) in the Revised NWP 5-01

Final Report

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This is the final report of the RCPA Project conducted at the NWC between January and May 2013. Included are a brief overview of the projects, results and analysis of the RCPA test conducted 22 April 2013, and recommendations for the NWP 5-01 Stakeholders at the NWC.

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Executive Summary

The Relative Combat Power Analysis (RCPA) Project was conducted from February to April 2013 by the Naval War College War Gaming Department (WGD) in concert with NWP 5-01 (Navy Planning) stakeholders at the Naval War College involved in a scheduled update of the doctrine. These NWC stakeholders requested that the WGD provide a process to enable a better understanding of the role of RCPA, different approaches, and potential improvements.

RCPA is used for gaining an understanding of how to better address and develop solutions to complex problems when conducting Naval Operational planning. Like addressing other complex problems, there are numerous potentially useful methods that could be employed. Through investigating different approaches, we sought to continue developing planning doctrine that meets the needs of its target audience, the Fleet or Task Force planners. The current RCPA method assists planners in developing a better understanding of the problem and potential solutions by starting with what they are probably most familiar with—the tactical capabilities of friendly and enemy forces.

The WGD and participants from the stakeholder organizations conducted a test of the draft NWP 5-01 RCPA method on 22 April. During this test the draft RCPA method was demonstrated to the satisfaction of stakeholders to be acceptable, with some modifications, for inclusion in the revised NWP 5-01.

This report summarizes the work leading up to the test, the results of the test, and proposed revisions to RCPA based on analysis of the test. To meet the schedule for NWP 5-01 review, this report was initially issued in a preliminary version. As expected, further analysis has not contradicted the initial findings from the preliminary report. This final report includes further analysis, incorporates participant insights from the test, and makes recommendations to the NWC stakeholders for RCPA in the revised NWP 5-01. Additional research and work products are archived as appendices to this report.

The collective revisions to RCPA consist of: arranging the forces by task, conducting separate quantitative and qualitative assessments, removing the Enemy Center of Gravity (ECOG) review, and expanding the worksheet to accommodate phasing constructs. Additionally, recommendations are provided to more closely align the text with the agreed upon material and highlighting the importance of developing planning considerations.

Introduction

The Relative Combat Power Analysis (RCPA) Project was conducted from February to April 2013 by the Naval War College War Gaming Department (WGD) in concert with NWP 5-01 (Navy Planning) stakeholders at the Naval War College involved in a scheduled update of the doctrine. These NWC stakeholders requested that the WGD provide a process to enable a better understanding of the role of RCPA, different approaches, and potential improvements.

RCPA is the first activity in Course of Action Development that follows Joint Intelligence Preparation of the Operating Environment (JIPOE) and Mission Analysis phases of Navy Planning. It “provides planners with a deeper understanding of friendly and enemy force numbers, capabilities, strengths, and weaknesses relative to each other at a given point in time and in a particular geographic location.” The current method has evolved from a mix of quantitative and qualitative methods employed by the services over the past century.

RCPA is used for gaining an understanding of how to better address and develop solutions to complex problems when conducting Naval Operational planning. Like addressing other complex problems, there are numerous potentially useful methods that could be employed. Through investigating different approaches, we hope to continue developing planning doctrine that meets the needs of its target audience, the Fleet or Task Force planners. The current RCPA method assists planners in developing a better understanding of the problem and potential solutions by starting with what they are probably most familiar with-the tactical capabilities of friendly and enemy forces. From this method, planners should be able to generate courses of action for the operational command to consider and evaluate while conducting Navy planning.

Problem, purpose, objectives

Problem

In revising the NWP 5-01, NWC stakeholders each expressed concerns over how the RCPA processes should be conducted in order to meet the requirements and outputs of Course of Action Development in Naval Planning. To provide a basis for assessing these RCPA processes, the project team considered what specific outputs were necessary in order to determine which RCPA processes can be identified and incorporated into the Naval Planning process overall. This led to development of the research question.

Research Question

The research question should yield answers that will serve the purpose of the project. Additionally, the research question helps bound the area in which solutions are sought. The

research question has a broad scope and was developed to help ensure that solutions for RCPA would be consistent with the broader purposes of Naval planning doctrine:

“What relevant information and level of detail need to be provided from RCPA?”

Purpose

The purpose of this project is to achieve NWC stakeholder concurrence on a revision to RCPA in the NWP 5-01. Since RCPA is a practical exercise, a better understanding of what is documented about it would be gained by observing and assessing it in action. RCPA in the planning context is an approach based on reasoning that builds on the knowledge of its participants, not the application of scientific theories. To fulfill this purpose, participants should agree on the informational outputs of RCPA, the processes involved in generating the information, and evaluation criteria. Project objectives were established to guide development of processes to achieve concurrence on the revisions to RCPA.

Objectives

The main objective identifies the activity that leads to achieving the purpose of the project:

- Examine RCPA processes to identify strengths and a basis for proposed revisions

Subordinate objectives identify other required activities required to support this project:

- Conduct research to identify the historical basis of RCPA
- Develop a set of goals for the RCPA process from existing doctrine and practice
- Develop criteria to assess RCPA processes
- Develop and conduct test of RCPA processes
- Conduct analysis of RCPA test and propose a revision

Design & Development

The objectives were met through conducting and analyzing a test of the RCPA to answer the research question. This test was designed to permit observation of whether or not an RCPA process developed necessary information for COA Development. The specific types of information needed were derived from NWP 5-01.

Problem Solving Approach

The type of problem addressed here is considered ill-defined, in that there does not exist a systematic way to determine if a proposed solution is optimal, or even acceptable. To develop an acceptable solution, the problem must be characterized through adding missing information from personal knowledge and transforming it in a manner that would suggest appropriate

tasks. These problems also require that a number of conditions be satisfied to some extent, some of conditions requiring trade-offs between each other.

RCPA is a process that generates information to be used in subsequent planning steps. This information can be assessed along two main dimensions of correctness and completeness. As there are no absolute standards to measure these against, they would be assessed against the criteria delineated in NWP 5-01, and compared to each other across methods. There are other conditions that need to be satisfied that were identified for this test and used as evaluation criteria.

Criteria for RCPA were drawn from several sources, and included:

- Functions or requirements explicit in the present and draft NWP 5-01
- Appropriate for the NWP 5-01 target audience i.e. fleet and task force planners
- Revision would receive the assent of participating stakeholders
- Required information would include adequate explanation of how to generate it
- Preliminary test results and analysis to be issued within two weeks of the test

We sought to answer the research question through identifying the conditions that an RCPA solution should address, some of which are the information outputs. A test or demonstration of the method would allow evaluation not only of the information generated, but the extent to which the demonstrated method was practicable, effective, and efficient. Though the *relevant* information needed from RCPA is explicit in NWP 5-01, the *level of detail* is unspecified and needed to be understood through demonstration.

The original intent was to set up an analysis using different methods and scenarios, this was changed during test execution based on the judgment of the participating stakeholders. This is addressed in following sections

Test Description and Results

The RCPA test was conducted on Monday, 22 April, 2013 in McCarty Little Hall. The PACTEAK scenario was briefed during a bootstrap session and at the test introduction. The RCPA work sheet (Appendix E) was filled out in advance with Blue and Red Order of Battle (OOB) by WGD participants. Professor Gene Augustine of COSL acted as OPT lead to conduct RCPA.

The test consisted of a group of participants from stakeholder organizations in the NWC simulating the activities of an Operational Planning Team (OPT) during the RCPA step of the naval planning process. The test was designed to highlight how the RCPA methods either meet planning doctrine objectives, or could be improved upon.

The test was originally developed to generate data from the application of two distinguishable RCPA approaches in two separate scenarios, allowing a comparison of strengths and weaknesses between methods. The test was revised upon the recommendation of stakeholders to focus on the improvements needed to the most current draft NWP 5-01. This change removed the ability to provide a comparison of criteria between methods, which might have been helpful in making further improvements to RCPA, though it did allow stakeholders more time to work at improving the proposed revision.

The RCPA test generated representative planning products for the scenario and discussion about improving the RCPA process. The following sections group the discussions into the particular aspects of the RCPA Appendix E where there was concurrence among participants concerning specific improvements.

RCPA Worksheet Arrangement by Task

The worksheet calls for the side-by-side listing of friendly and adversary forces to facilitate comparison. Participants concurred that a more appropriate arrangement would be to list forces assigned the same task together to assess their ability to conduct that task in a geographic area against the forces of the adversary. Specific participant comments noted:

- RCPA has the “potential (if linked to specified / implied /essential tasks) to improve OPT comprehension of relative capability vis-à-vis the enemy and taskings.” (Participant B)
- This method is “focused in that it looks at specified and implied tasks” (Participant K)
- Recommend adding “objectives / tasks columns in all sections.” (Participant C)

This arrangement by task should highlight several issues for the planners. First, does it appear that they have sufficient resources to conduct the task. Second, it should suggest alternate ways of achieving objectives that might or might not be feasible based on the forces and their specific capabilities, available to each side. Third, it should help identify planning considerations that might drive the overall character of the operation.

Quantitative before Qualitative Assessment

The worksheet has planners consider both quantitative and qualitative factors related to the forces. Participants concurred that conducting the quantitative assessment was the preferred first step before applying qualitative (or intangible) factors to determine if sufficient forces are available. This would be done through use of separate quantitative and qualitative worksheets. Participants commented:

- “i.e. Quantity essentially pre-filled prior to OPT meeting, but organized by CWC [Composite Warfare Command] area (Participant A)
- The RCPA method uses a “quantitative then qualitative methodology.” (Participant E)

Remove Center of Gravity (COG)/ Enemy Center of Gravity (ECOG) section

Participants concurred that the review of COG/ECOG and critical factors at the end of the worksheet is not necessary in order for RCPA. Though it is useful to consider these factors to maintain consistency throughout the planning process, the objectives of this step can be achieved by focusing on the tasks identified in Mission Analysis. This would also help avoid confusion that might arise from differences in focus between Operational and Tactical level COG. Participants recommended:

- “Frequently lists COG without the associated objective making it easier for inexperienced planners to make the classic mistake of confusing the COG with the objective.” (Participant B)
- “Limit the amount of fixation on COGs rather than objectives.” (Participant C)

Expanding the RCPA worksheet

The worksheet is intended to be adaptable to different planning conditions, while remaining simple to use. One of its purposes is to provide a basis for aggregating forces by assigned tasks so a general characterization can be made of a task or objective in place of multiple pairwise comparisons. The worksheet is more a method to gain a better general understanding of the problem than a series of computations. This should enable an informed transition to COA generation and COA analysis, where further elaboration allows a more finely grained assessment of the likelihood of success.

The worksheet can be expanded by adding new cells, with the caveat that this might add unnecessary complexity while not improving the characterization of the problem. The worksheet might also be expanded by creating additional worksheets for each phase of an operation, if a phasing construct has been provided in COA Guidance or it is apparent that the nature of the tasks and/or the available forces will change significantly.

- One participant expressed concern writing, “not sure if scalable to deliberate planning [for a] JFMCC, early commitment in a crisis may limit value of RCPA [in this context]. (Participant E)
- But another participant did note that this method was “flexible in that it can be adapted to any scenario.” (Participant K)

- And another saw the method as allowing for “consideration of all perspectives,” and that it could “be used at multiple levels (tactical, operational).” (Participant I)

RCPA Test Likert Survey Results

After the test, participants completed a simple Likert Scale survey to evaluate the information generated by RCPA for Course of Action generation. Responses were mostly in agreement across the participant surveys and suggested that the tested RCPA method will meet RCPA objectives in the generation of COAs in the revised NWP 5-01.

Overall, participants indicated that the tested method could produce relevant information and the level of detail necessary to generate courses of action during course of action development in the Navy Planning Process.

Participants strongly agreed that the tested RCPA method could identify additional resources that may be required to execute the mission, and that the method examined friendly capabilities pertaining to the operation. However, participants did not reach a consensus on how RCPA could, if necessary, consider all possible enemy actions.

Additionally, the test participants agreed that tested method was not the best way to determine allocation of existing resources, and nor could the method be done quickly in the event of a time constrained planning timeline.

See the Likert Results in figure 1 below.

Survey Question	MEAN	MODE
This method identifies what additional resources may be required to execute the mission.	3.636364	4
This method examines <u>friendly capabilities</u> that pertain to the operation.	3.545455	4
This method prepares the staff to generate COAs for development.	3.363636	3
This method identifies the types of operations possible from the friendly perspectives.	3.272727	3
This method identifies how, when and where friendly forces may be vulnerable.	3.272727	3
This method identifies the types of operations possible from the enemy perspectives.	3.181818	3
This method identifies how, when and where enemy forces may be vulnerable.	3.181818	3

This method will facilitate the generation of quality COAs to be considered for COA development.	3.181818	3
This method is scalable, able to be used across the spectrum of planning, from crisis management to deliberate planning process.	3.090909	3
This method enables planners to generate valid COAs, that are suitable (adequate), feasible, acceptable, distinguishable, and complete.	3	3
This method enables planners to generate COAs that could, if necessary, consider all possible enemy actions.	2.818182	3
The method identifies how to best allocate existing resources to gain and maintain a relative combat advantage.	2.636364	2
This method is can be done quickly (minimum of at least an hour), in a time constrained planning timeline.	2.363636	2
Strongly Agree		4
Agree		3
Disagree		2
Strongly Disagree		1

Figure 1, RCPA Likert Results

RCPA Test Participants and Demographics

Eleven subject matter experts participated in the Relative Combat Power Analysis Test conducted 22 April 2013. The demographic statistics included in this section are based on self-reported responses from the players gathered during the baseline survey administered at the conclusion of the test. The average operational experience of the group was over 28 years, with the most senior participant having 40 years, and the most junior participant having 14 years of experience. All participants were male. They possessed a minimum of a graduate degree, with one participant holding a doctoral degree.

Participants came from the departments of the U.S. Naval War College charged with revising the NWP 5-01: Joint Military Operations (JMO), College of Operational and Strategic Leadership, and the Maritime Advanced Warfighting School. Additionally, the War Gaming Department and the College of Distance Education provided participants to support the test. Project stakeholder organizations at NWC provided an equal number of participants for the test. See chart in figure 2 below.

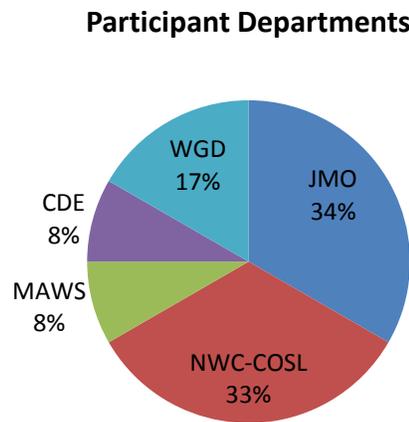


Figure 2, RCPA Participant Departments

Analysis and Recommendations

The RCPA Test was intended to provide a basis for revising relevant sections of NWP 5-01. Results have implications for: Chapter 2 Mission Analysis, Chapter 3 Course of Action Development, and Appendix E Analyzing Relative Combat Power.

Analysis

Evaluation of the RCPA method consisted of an assessment of the extent to which it could produce the types of information necessary to provide a sound basis for COA generation in Navy Planning. This assessment was based on the RCPA method as conducted, and how participants believed that their experience could be generalized to planning in the fleet. Survey responses indicated that participants observed the right information types being produced.

The project identified the following as the types of information considered relevant to planning doctrine, and where the information would come from and how it would be developed. Player comments reflected how well the RCPA method yielded the relevant information during the test.

- **Friendly capabilities that pertain to the operation**—Relevant friendly capabilities are identified through the assignment of forces to tasks in the worksheet.
 - “It lays out force requirements for COA development.” (Participant C)
 - This RCPA method provides an “itemized list of all friendly and enemy numbers and capabilities.” (Participant G)
 - “Forces users to consider capabilities / platforms and planning considerations based on these discussions.” (Participant J)
- **Types of operations possible from the friendly perspective**—Types of friendly operations are suggested by friendly and enemy capabilities, assigned tasks, and development of planning considerations.
 - “Guides users through a specific thought process, places enemy and friendly capabilities next to one another for more detailed contemplation.” (Participant F)
- **Types of operations possible from the enemy perspectives**—Types of enemy operations are suggested by ECOAs, and development of planning considerations.
 - “Solid objective way of proceeding; allows consideration of all perspectives.” (Participant I)

- **How/when/where friendly forces may be vulnerable**—Friendly vulnerabilities are identified through relating force and task assignment with ECOAs, and development of planning considerations.
 - RCPA method “gets to the heart of capability shortfalls (Participant K)
- **How/when/where enemy forces may be vulnerable**—Enemy vulnerabilities are identified through relating force and task assignments with ECOAs and development of planning considerations.
 - “Itemized list of all friendly and enemy numbers and capabilities.” (Participant G)
- **Additional resources that may be required to execute the mission**—Additional resource requirements are identified in the initial assignments of forces to tasks, application of staff estimates of supportability to the tasks, and development of planning considerations.
 - At least one participant thought that the RCPA method possessed “not enough analysis” to provide complete COA development. (Participant L)
- **How to best allocate resources to gain and maintain a relative combat advantage**—Understanding relative combat advantage is understood through an iterative process of trading forces between tasks to identify the most favorable arrangement.
 - RCPA method “forces users to consider capabilities / platforms and planning considerations based on the discussions.” (Participant J)

During the RCPA test, participants observed advantages and disadvantages to using the current RCPA method in navy planning. Post-test analysis points to the recommended changes below as a means to mitigate the disadvantages illuminated by the participants during the test. As one participant summarized, it is not possible to “do COA development without doing RCPA in some form. This appears to be a reasonable attempt to assist planners” (Participant A). The insights gained from the participants during the test greatly enhanced the NWC stakeholders understanding of how RCPA supports COA Development in the Navy Planning process.

Advantages of RCPA Method

There was consensus among the group that the RCPA worksheet needed to enhance the NWP 5-01 planning process, and that the RCPA was not a stand-alone component in Navy planning. NWP 5-01 needs to “ensure that the COA development highlight the need to identify the COG and focus the COA on defeating the enemy COG while protecting the friendly COG.” (Participant C) While the RCPA process should not focus on COG analysis, RCPA should inform the OPT understanding of the friendly and enemy COGs. Advantages of the tested method include:

- Using the tested RCPA method, Navy planners are capable of discovering relevant information that can be used during the COA generation and development phase of the Navy Planning Process.

- RCPA is useful for understanding friendly capabilities, strengths, and vulnerabilities.
- By incorporating an analysis of tasks into the comparison, planners can better comprehend relative capabilities between friendly and enemy forces. Future RCPA tables / charts should include sections that highlight “objectives” and “tasks” for all sections being compared (Participant C).
- Using the RCPA framework should encourage OPT “dialogue [that] should capture good perspectives,” and facilitate quality COA development (Participant D).

Disadvantages of RCPA Method

Disadvantages to the tested method include:

- “The matrix could expand rapidly based on complexity of operation” (Participant A). On the other hand, several participants noted that the RCPA method will have to be scoped to operation being planned. Planners, “particularly those for HA/DR operations,” will need to tailor the RCPA method “extensively to meet the specific needs of each OPT and the type of operation” (Participant F).
- As written, the current RCPA method and Navy Planning are “inconsistent with the Joint Operational Planning Process (JOPP) as the [participant] understands them.” (Participant B) Similar but not related, there was a concern that the “JFMCC (TAC Level) may be already committed to specific actions by [the time the OPT does COA Development with RCPA]” (Participant E).
- Another disadvantage perceived was how the RCPA method will create excessive requirements on time. One test participant cautioned, “untrained or rusty staff OPTs will spend a large amount of time on this” because the “Navy is not used to thinking this way” (Participant D). The RCPA method “could give someone a false sense of security—script writing,” and “possibly become a lengthy staff paper drill” (Participant C). Another projected that the OPT could “easily go down ‘rabbit holes,’” and thus, will “require a strong OPT lead to keep the group on track.” One participant commented that the tested RCPA method would be challenging for “inexperienced planners” to “to rapidly assess the considerations that the [RCPA] discussion will generate. This is a graduate planner level discussion that basic naval planners may have a difficult time having” (Participant J).

Recommendations for Proposed Revisions

Based on additional observations and analysis, the following should be considered for incorporation into the revision (NWP 5-01 draft excerpted notes in red):

Chapter 3.3.1

Combat power is the total means of destructive and/or disruptive force which a military unit/formation can apply against the opponent at a given time and is created by combining the elements of intelligence, movement and maneuver, fires, sustainment, protection, command and control, information and leadership. A relative combat power analysis (RCPA) is a comparison of those friendly and enemy tangible (**quantitative**) and intangible (**qualitative**) factors that allow each to generate combat power. Such an analysis can be useful to both planners as well as those charged with monitoring and directing the execution of an operation.

Prior to generating courses of action, maritime operational planners will find it useful to conduct a “relative combat power analysis” or RCPA. Doing so provides planners with a deeper understanding of friendly and enemy force numbers, capabilities, strengths, and weaknesses relative to each other (**for each task**) at a given point in time and in a particular geographic location. When conducting a RCPA, a numerical comparison of major air, surface, and subsurface platforms must be balanced by comparing the actual capabilities of what are often multi-mission platforms. Other intangible factors such as will to fight, training, the presence or absence of an alliance/coalition, leadership, morale, discipline, soundness of doctrine, and combat readiness, etc. must also be compared when conducting a RCPA.

Of note, many of the inputs required to conduct a RCPA will have been generated prior to the COA Development step in the NPP. For example, several tangible and intangible factors related to time, space, and force identified during IPOE should be compared when conducting a RCPA. Similarly, factors identified while conducting the adversary center of gravity (COG) analysis such as critical strengths and weaknesses, critical capabilities, critical requirements, and critical vulnerabilities should also be considered when conducting a RCPA. During mission analysis, the results of both the friendly center of gravity (FCOG) analysis as well as the “analysis of friendly forces and assets” should also feed into the RCPA.

While conducting a RCPA is primarily a subjective endeavor, by comparing each force’s size, capabilities, strengths and weaknesses, planners can gain insight into: (1) friendly capabilities pertaining to the operation, (2) the types of operations possible from both friendly and enemy perspectives, (3) how, when, and where friendly and enemy forces may be vulnerable, (4) what additional resources may be required to execute the mission, and (5) how to best allocate existing resources to gain and maintain a relative combat power advantage in a particular geographic location for a particular duration of time.

(COAs haven’t been generated yet, move to different section or delete) If courses of action are divided into phases, planners might also find it useful to consider whether or not friendly forces possess sufficient combat power at the right time, and in the required geographic locations (e.g. previously identified decisive points) to accomplish the mission. During the COA Analysis and COA Comparison steps of the NPP, planners should remain cognizant of whether or not the COA ensures that friendly forces possess the ability to generate the required amount of combat power at the right time and in the right location, especially in the vicinity of identified decisive

points (or objectives), to accomplish the mission at a minimal cost. This can be done by adding a RCPA line item to the war gaming worksheet during COA Analysis and by including it as a governing factor during COA Comparison.

Maritime OLW staff involved in execution, specifically those that monitor and direct, must also be keenly aware of whether or not friendly forces retain the relative combat power advantage, at the right time and in the necessary location, required to accomplish the mission. As such, staff members that monitor and direct should have the ability to conduct a hasty RCPA if required. If friendly forces lack the requisite amount of relative combat power then modifications may be necessary with respect to the operational functions of movement and maneuver, protection, intelligence, sustainment, command and control, and/or fires.

For stability and civil support operations (and HADR), operational staffs might consider determining “relative combat power” by comparing available resources to specified or implied stability or civil support tasks. This is known as “troop to task” analysis. This analysis provides insight as to what options are available and whether or not additional resources are required. During such operations, the elements of sustainment, movement and maneuver, nonlethal effects, and information may dominate.

It might also be mentioned that RCPA is likely conducted as a precursor to inform a Higher Headquarters staff of the capabilities and “preferred” way of executing tasking.

(See Appendix E for a more detailed discussion of RCPA)

APPENDIX E

E.1 ANALYZING RELATIVE COMBAT POWER

Preparation for COA generation involves organizing the information developed in previous steps in order to suggest distinguishable alternate COAs. This is done by characterizing the problem through gaining an understanding of the aspects of the problem that guide or limit potential solutions. These dominant aspects are highlighted by the RCPA. In order to provide planners with a sound basis for generating valid COAs from this process, RCPA begins with quantitative and qualitative assessments of force capabilities for individual tasks.

A relative combat power analysis (RCPA) is a comparison of those friendly and enemy tangible and intangibles factors that allow each to generate combat power. Such an analysis can be useful to both planners as well as those charged with monitoring and directing the execution of the operation.

Prior to generating courses of action, maritime operational planners will find it useful to conduct a “relative combat power analysis” or RCPA. Doing so provides planners with a deeper understanding of friendly and enemy force numbers, capabilities, strengths, and weaknesses relative to each other (for each task) at a given point in time and in a particular geographic location.

When conducting a RCPA, a numerical comparison of major air, surface, and subsurface platforms must be balanced by comparing the actual capabilities of what are often multi-mission platforms. Other intangible factors such as will to fight, training, the presence or absence of an

alliance/coalition, leadership, morale, discipline, soundness of doctrine, and combat readiness, etc. must also be compared when conducting a RCPA.

Of note, many of the inputs required to conduct a RCPA will have been generated prior to the COA Development step in the NPP. For example, several tangible and intangible factors related to time, space, and force identified during IPOE should be compared when conducting a RCPA. ~~(I believe it was agreed that the following is no longer necessary) Similarly, factors identified while conducting the adversary center of gravity analysis such as critical strengths and weaknesses, critical capabilities, critical requirements, and critical vulnerabilities should also be considered when conducting a RCPA. During mission analysis, the results of both the friendly center of gravity (FCOG) analysis as well as the “analysis of friendly forces and assets” should also feed into the RCPA.~~

E.2 METHOD TO CONDUCT A RELATIVE COMBAT POWER ANALYSIS

There are several ways to conduct a RCPA. Historically, the US military has employed RCPA methods that resulted in obtaining mathematical force ratios.. However, these land-centric methods proved insufficient to maritime planners. There are several reasons for this, to include the multi-mission nature of many naval platforms, the qualitative difference between various nations’ platforms, and the characteristics of the maritime domain itself where forces simultaneously operate on, under, and over the water and land as well as outer space and cyberspace.

As such, naval planners benefit by focusing less on mathematical force ratios and more on the subjective comparison of friendly and adversary tangible and intangible factors that reveal relevant information that should be taken into consideration when developing COAs. ~~(I believe this is worth making the opening sentence)~~ **The most important information derived from conducting a RCPA at the outset of COA development are those critical planning considerations generated by analyzing and comparing adversary and friendly factors; specifically those related to if, where, when, and how friendly forces can generate overwhelming combat power to accomplish the mission.**

E.3 RCPA Advantages/Disadvantages Method

It is recommended that maritime planners and those charged with monitoring and directing execution adopt the RCPA Advantages and Disadvantages Method. (See figure E-1.) ~~(We already spoke of the most important outcome, i.e. the information)~~ ~~The most important outcome of applying this method is not the worksheet produced but rather the rich dialogue that should take place through the analysis and comparison.~~ The worksheet is merely intended as a means to focus the dialogue and concisely capture key advantages, disadvantages, and ultimately, planning considerations prior to COA Development.

~~Planning considerations, in this method, are crucial insights that are discovered when comparing the quantitative and or qualitative factors of engaging forces. They spring from what is known, as well as what is not known, about the adversary. These considerations might: shape how the task is accomplished, identify needed capabilities, drive task sequencing, foreclose certain~~

options, impact other tasks, or dictate friendly operating areas. Their purpose is to focus efforts on more promising options and to identify options with little or no likelihood of success.

The steps in this methodology are as follows:

1. Create a list of friendly and adversary tangible and intangible factors that should be analyzed and compared based on the nature of the mission.
2. Analyze and compare each tangible and intangible factor selected..
3. If it makes sense to list a number or quantity related to a particular factor, do so.
4. If it makes sense to concisely describe the quality of a particular factor, do so.
5. If friendly forces have an advantage related to a particular factor, briefly describe..
6. If friendly forces have a disadvantage related to a particular factor, briefly describe.
7. Briefly describe the planning consideration ascertained as a result of the analysis and comparison of the factor.

E.4.2 Analyze and Compare Relevant Factors Related to Time, Space, Force

The essence of operational art is the ability to balance the factors of time, space, and force. As such, prior to COA development it is useful for planners to analyze, and possibly compare, certain critical factors related to time, space and force that may have been identified during IPOE. The worksheet below offers some suggested factors that might merit analysis and comparison.

~~E.4.3 Analyze and Compare Enemy and Friendly Centers Of Gravity~~

~~When conducting a RCPA, planners may benefit from considering if friendly forces achieve and/or maintain a sufficient combat power advantage to act upon a decisive point previously identified during enemy and friendly COG analysis. Additionally, because all COAs should take into account a way to defeat or neutralize the adversary enemy center of gravity while at the same time protecting the FCOG, planners may find it worthwhile to briefly re-analyze and possibly compare the adversary COG and FCOG components prior to COA development. This should help planners develop COAs that employ friendly strengths that take advantage of adversary weaknesses in order to defeat the ECOG indirectly through identified critical vulnerabilities. Additionally, such an analysis and comparison should help planners consider how best to mitigate friendly critical vulnerabilities and protect the FCOG.~~

Revised RCPA Worksheets

These worksheets contain the revised headings discussed during the RCPA test. They distinguish between the quantitative and qualitative assessments. Units can be broken out by class, organization, mission, or capabilities.

Quantitative Worksheet

Units assigned to task	Adversary quantity	Friendly quantity	Advantages or disadvantages	Planning considerations	
Ship types					
Aircraft types					
submarines					

Qualitative Worksheet

Units assigned to task	Adversary qualities	Friendly qualities	Advantages or disadvantages	Planning considerations	
Ship types					
Aircraft types					
submarines					

Conclusions

Planning is the practical application of facts and theories, and much of a planner's skill is based on personal experience and tacit knowledge. This tacit dimension makes teaching planning processes difficult, in that *how* to think must be emphasized over *what* to think. In addition to providing principles to apply and checklists, practitioners must be able to explain how the criteria by which a product is evaluated are employed in its design and development.

NWP 5-01, and other services' planning doctrine have evolved based on experience, heuristics, and are grounded in the cognitive sciences. They are designed to assist in the search for solutions to problems that are presented with incomplete and/or inconsistent information, which planners must resolve with their own knowledge. The problems posed do not have systematic methods to validate correct solutions. As warfare and warfighting change, the best practices collected in the planning doctrines and methods of interpretation must adapt through activities like this NWP 5-01 revision.

The RCPA step in the planning process is at a point where a large volume of information developed in previous steps is transformed to provide the basis for generating alternate COAs. The process would be well served by making explicit what experienced planners already do intuitively, and that is *characterizing the problem*. What distinguishes a catalog of tasks from a campaign is that the relationships that are perceived to impact across tasks or objectives are highlighted in a narrative or graphic representation of the problem. This problem characterization is intended to evoke or suggest broad approaches to solving the problem, and would fit naturally into the RCPA step.

The RCPA Project allowed the War Gaming Department and NWP 5-01 stakeholders to take a critical look at a small slice of the planning process to improve its relevance, practicality, and pedagogy. The experiential and analytic results from this project should provide a basis for stakeholders to implement and continue making improvements. This report is the result of many peoples' efforts in support of the RCPA project as well as ongoing NWP 5-01 stakeholder efforts.