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NAVAL SURFACE COMBAT STUDY

GENERAL APPROACH

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General Approach

A requirements study is expected to produce answers to two different types of questions:

The REQUIREMENTS FOR question, e.g.,

"Does the U.S. Navy need a surface-to-surface anti-ship missile system?"

The REQUIREMENT ON question, e.g.,

"What should be the stand-off range of an advanced Air-to-Surface Missile for anti-ship use?"

The short answer to the first question is "YES". Certainly, every Navy ship should have at least a self-defense capability against other surface craft it may encounter. Similarly, every ship should have an air defense capability, an anti-submarine capability, excellent sensory gear, long range communication, and an automated command system. Budget and ship-space limitations preclude all that. The correct question is:

"What priority should a surface-to-surface anti-ship missile system enjoy relative to other needs of the Navy?"

The short answer to the second question is "AS MUCH AS POSSIBLE". It is always possible to hypothesize a threat requiring a given range for the ASM - if a single ship will not hold sufficient defensive gear, postulate a task force of wide and flexible radius. It would be foolish to settle for less than the maximum possible range, unless you must give up some other desirable characteristic such as accuracy, lethality, or total inventory.

Since one always must make such trades in actual weapon design, the REQUIREMENTS ON question is really:

"What achievable combination of performance characteristics is best for an advanced ASM for anti-ship use?"

Proper answers to such questions are highly contingent on the context in which the question is asked. For instance, if one forecasts or assumes that air and submarines will in the future dominate the sea surface, anti-ship SSM's may be too infrequently useful to enjoy any priority as a requirement. In regard to the second question - if the postulated target has formidable defenses, range of the ASM will be very important; if not, other desirable characteristics of the ASM take priority.

Forecasts of future threat, combat environments and budgetary, logistic and technical limitations are understandably very "iffy". The further one attempts to peer into the future, the more alternatives present themselves for consideration. Assumptions advocated by various persons or groups who will influence the decision thus become very diverse and often strongly colored by specialized points of view or interests.

The systems analyst does not decide such questions; he merely presents evidence on which a decision can be based. To minimize misunderstanding, such evidence would be presented in an "if - then" form:

If one makes the following assumptions....., then the following is true, within a range of error determined by the following sensitivities to input values and calculation of approximations

Such answers will be useful only if the assumptions cover all reasonable alternatives and are drawn from some supportable future context of warfare, and if sensitivities are carefully analyzed and presented.

The Tactical War Studies are conceived as a mechanism for providing such answers to a wide variety of specific questions. In part, this paper describes the methodologies to be developed and used for structuring contexts and performing various analyses. This is envisioned as a long range effort which can show substantial progress in two to three months, but which should be furthered and refined over an indefinite period.

The paper also lists certain specific questions for which early answers will be sought, and describes the proposed application of the general methodology to these questions. Detailed sub-studies will form a justifiable excursion from the main flow of methodology development; the products are expected to be useful and timely for business purposes, and application to concrete questions will keep the methodology from growing sterile.

