Course YXi triis shows ABM worst alternative

By Peter Peckarsky

Copyright 1969 by the Board of Directors of The Tech (Ed. note: Peckarsky '69 here summarizes the main points in his thesis for senior in Course XII. Peckarsky's thesis was a computer simulation accompanied by Professor Jerome Wiesner when he tes- tified before a Senate subcommittee last week. Reproduction of this article in whole or in part without written consent is pro- hibited.)

An Anti-Ballistic Missile (ABM) system is the worst possible re- sponse to a Soviet first strike against the United States. This is one of the two main conclusions reached in this thesis entitled "Computerized Cost-Effectiveness Study of Assumptions, Destruction Capabilities, and Alternatives." The other main result is that the most ef- ficient way to defend the US against a Soviet first strike was to use the Minuteman silos already in place.

Four of the many assumptions made in the thesis are:

1. The figures obtained from the simulation accompanied Professor Wiesner's testimony were considered as the most probable. The United States would never attack the Soviet Union with a smaller force than it would to procure an additional 20 Polaris silos.

2. The Polaris system would carry 10 MIRVs apiece (50-KT weapons or 1200 200-KT weapons) at very low rate: Princess and Winston, each with 2500 lbs., for a small boat.

3. Two measures of effectiveness were utilized to determine the efficiency of each of the four assumptions in responding to the Soviet First Strike. The first measure was whether silos delivered on Moscow by the US attack were the criteria chosen. The ten measured were chosen because the assumption is that the USSR did not know there was a high probability determination of the crossover point. The crossover point, mea- sured in terms of the number of silos (SSCMIBMs), was the point below which a given option is more effective than the Polaris option and above which the Polaris option is more effective than the option with which it is being compared.

4. Two measures of effectiveness were utilized to determine the efficiency of each of the four assumptions in responding to the Soviet First Strike. The first measure was whether silos delivered on Moscow by the US attack were the criteria chosen. The ten measured were chosen because the assumption is that the USSR did not know there was a high probability determination of the crossover point. The crossover point, mea- sured in terms of the number of silos (SSCMIBMs), was the point below which a given option is more effective than the Polaris option and above which the Polaris option is more effective than the option with which it is being compared.

The major uncertainties in the analysis were the number of SS-9s (the SS-9 is the most accurate Soviet ICBM with a warhead of 5500 lbs.) and the US missile force consists of 90-900 MPs. The five minimum accuracy requirements were to be met in terms of circular errors of probability.

One means of analysis is the cular error of probability is de- fined as the radius of the circle whose center is the point at which the missile was aimed, within which the weapon landed 50% of the time. This assumes the missile is tested over the distance it is supposed to travel in combat. The accuracy (SUCP) ranged from 3000 feet (the current assumed value of USASW) down to 2000 and 1000 feet. An accuracy of 1000 feet means that a missile aimed at Bigg. 7 from a distance of 8000 miles would land somewhere between East Campus and Burton House.

3. Approximately 25% of the Polaris fleet was assumed to be in port for maintenance at any givens at the city of Tallinn in the northwest and 400 along a line centered at the city of Odessa in the south.

5. The Hardness of the Minute- man silos (SSCMIBMs) in the hardened option was varied over a period of 4000, 7000, and 1000 psi. Results

For SSUMA = .50, there is no crossover between Polaris and many of the other three options. This means that Polaris boats are inestimable without submerged. Since there are the more effective means of coping with the assumed Soviet threat, the option is unsatisfactory.

The maximum crossover points for each of the three options in comparison with Polaris are:

- OPTION SUASW SUCEP ABM

Minuteman 75% 3000 0.3
Superhardening 75% 5000 0.3
ABM 50% 3000 0.9

SSUMA CROSSOVER

Minuteman 0.3 820
Superhardening 0.3 1650
ABM 0.3 820

In cases where the Minuteman forces were essentially destroyed, the Polaris fleet was the only component of the US retaliatory force remaining. It alone ac- counted for the damage inflicted on the Soviet Union. In addition, the Polaris option delivered its worst response more frequently than the other options and its worst response fewer times than the other alternatives.

The general conclusion which may be drawn is that the Polaris option delivers better coverage across a wider range of Soviet Union force structures and apt alternatives than any of the other options. Succinctly put, ABM makes a lemon Edsel look like a very good car.

College Relations Director

1c/Sheraton-Park Hotel, Washington, D.C. 20008

Please send me a free Sheraton Student I.D. Card:

Name:

Address:

We're holding the cards.

Get one. Rooms are now up to 20% off with a valid Sheraton Student I.D. How much depends on where and when you stay. And the Student I.D. card is free to begin with.

Send in the coupon. It's a good deal. And at a good place.

Sheraton Hotels & Motor Inns


HIT WISE CATS KNOW you save when you buy COOK’S TRAVELERS CHEQUES STILL ONLY

75¢ issuance charge ON $100

available at:

Heritage Travel, Inc.
238 Main Street