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8 January 1963

MEMORANDUM FOR THE RECORD

SUBJECT : 9-10 January Meeting On Satellite Vulnerability

1. The vulnerability meeting on 9-10 January should result in two fairly well detailed programs. One would be directed specifically at the "C" vehicle. The second would be a broad, long term program of a more fundamental nature, aimed at providing the basic data we will need for succeeding systems and for more sophisticated approaches with the current system.

2. "C" Vehicle Program

This is already well underway. The communications system has been hardened and all reasonable efforts have been made to reduce the possibilities of anomalous recovery. In addition, a pellet attack reporter is being readied and a shield is being designed. Some very basic measurement work has been done on the radar response and a few simple decoys have been designed. What is left to be done?

a. First, we do not have a clear understanding of vehicle vulnerability to nuclear explosions. The damage effects of prompt gamma and low flux x-rays are not known, nor have we measured the kill distance of high x-ray fluxes. These measurements should be made. Some effects, probably those from low flux x-ray may be quite easy to overcome.

b. SSD should undertake an extensive program of cross section reduction and concurrent decoy design. At the same time they should investigate scintillation techniques to confuse radar signatures. (This may be particularly suitable for "J" which will scintillate naturally for part of its lifetime.)

c. We should develop, test and maintain as shelf items one or more hardened models of the "C" mission. Such models would incorporate cross section reduction techniques, decoys, shielding and other countermeasures. Undoubtedly severely reduced payloads would result. However, without such models we may find ourselves out of business during a trying period when we need coverage most.

3. Broad Program

A great deal of basic work needs doing. The following, surely, is just a partial list.

a. Development of orbit adjust capability and the associated guidance and thrust mechanisms.

b. General pallet shield development and weight reduction.

c. Development of decoy materials and designs, drag life studies, thrust and ejection mechanisms, decoy jammers, decoy propulsion, etc.

d. Methods of reducing optical cross sections.

e. Radar cross section study, low cross section shapes, absorbers, signal attenuation and modification, scintillation techniques, flush mounted antennas.

f. Air and underwater launch systems.

g. X-ray shielding.

h. Study and development of capability to hide among existing space objects.

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