

~~TOP SECRET~~
SPECIAL HANDLING

JAN CON LDD
COPY #2

S-81-0

M E M O

December 27, 1967

TO : Project 1820 File (POPPY)
FROM : J. C. deBroekert
SUBJECT: Suggested improvements in POPPY

During an SEL study of collection systems, some effort was devoted to comparing various systems in terms of technical characteristics and operational performance. One very simple system has been particularly effective in first detecting new emitters by providing wide frequency band coverage with multiple crystal video receivers. Although limited to radar main beam intercept, this system, through long term coverage, has good cumulative intercept probability on most radar types. The success of this system is due to the concept of simplicity which applies to the collection vehicle, payload, and in data processing.

The purpose of this informal memo is to suggest several modifications to improve the effectiveness of the POPPY system without compromising the concept of simplicity.

A. Reliability

A vehicle of this level of complexity can be designed for an average life of several years (e.g., comsat vehicles). This can be accomplished in the design phase by applying MTBF standards to all positions of the vehicle sub-systems. As an alternative, which in this case may be more satisfying, one can examine the failure history over the past several years to determine what failed and probable causes. A trade off exists here, in that the initial cost of higher reliability vehicles may well be offset by longer useful collection life. Therefore, fewer vehicles would be required for a given time coverage, thus lowering the

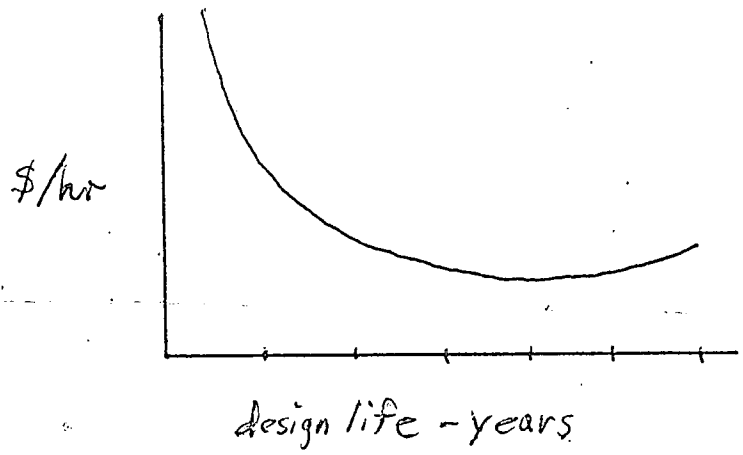
Handle Via B4EMIAN
Control channels only

~~TOP SECRET~~
SPECIAL HANDLING

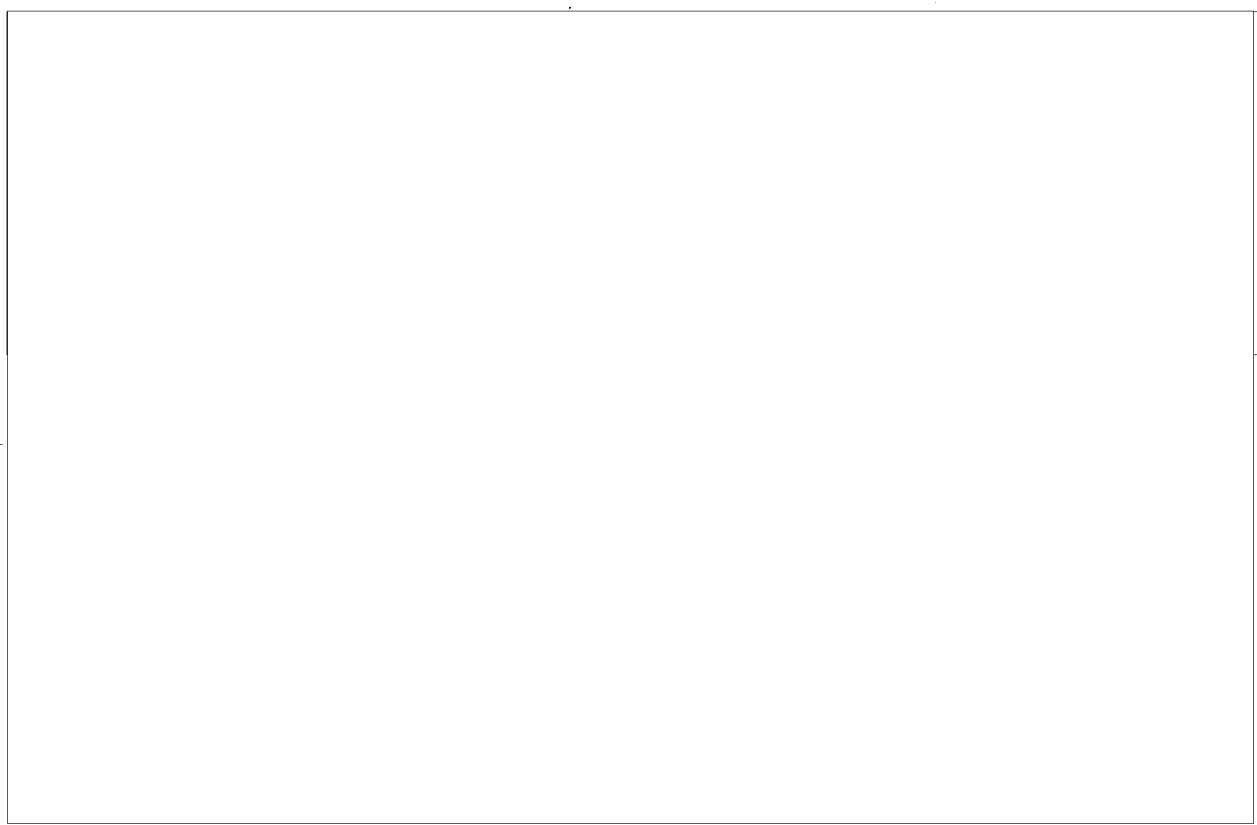
~~TOP SECRET~~

SPECIAL HANDLING

cost per collection hour. A quantitative study of the cost-reliability trade-off should produce a curve of the form shown below, where the vehicle cost is in dollars per collection hour.



I suspect the present POPPY design may be operating to the left of the optimum point on this curve.



Handle via BYEMAN
Control system only

~~TOP SECRET~~
SPECIAL HANDLING

Page Denied

Page Denied