OUTGOING
NRL SPECIAL PROJECTS CONTROL NUMBER

BYE-61930-92

SEC

DATE
710330

ORIGINATOR	SERIAL NO.	ENCLOSURES
8000	BYE-61930-92	00

RECEIVED	COPY NUMBERS	RECEIPT NO.
	1	H/C

SUBJECT
LM W/P POPPY VARIANT
OR ALT CONFFIG

DISTRIBUTION INFO

ROUTE TO	COPY NO.	W/ ENCL	SIGNATURE	DATE OUT	DATE RET'D
1298	1	00		920604	

TRANSFER

DESTROY

NRL OUTGOING DOCUMENT

BYE-61930-92

1

DES/SHEET NO.

COPY NO.

DESTROYED BY:

WITNESSED BY:

DATE

FINISH FILE

Bernier Variant

SECRET

MEMORANDUM 30 March 1971

TO 7900

From 7920

Subj: Dr. Berman's POPPY VARIANT or ALTERNATE CONFIGURATION....

1. Several events have occured which make this proposal more meaningful:

A- CNO was briefed by PM-16 on 22 March and the question of a Contingency Plan for a disasterous loss of the Payloads, (for instance failure to achieve orbit on Launch) was raised....Mayo and Wilhelm have prepared and delivered on Saturday Morning to Capt Geiger, the paper provided as Enclosure #1, which will be discussed in greater detail if desired.

[redacted]

D- The contingency Plan (~~for~~ requested by CNO) has taken the concept for a SCOUT Launch much farther than was necessary for the [redacted] and now [redacted] pproximately six or seven alternative designs have been examined and modified and rejected. the SCOUT is indeed capable of

SECRET

BYEMAN CONTROL SYSTEM ONLY

SECRET

lofting a [redacted] small POPPY spacecraft into orbit and a plan which minimizes both the cost risks and the time delays associated with the Scout launch have been determined.

2. POPPY has developed from a background of ELINT collection requirements and thus has historically emphasized the versatility and accuracy of the various parametric ELINT measurements available in the Mission. Now however, with (1) [redacted] Identification and (2) [redacted] Localization being the dominate design criterion many alternative simplifications are possible in the spacecraft. These simplifications must be carefully selected or else the ability to provide sufficient Fingerprinting of each Hull will disappear, or at least be severly degraded. Fingerprinting, while demonstrated against the [redacted] emitter, has not shown significant Potential with ~~great extension into the~~ other emitters in the 820 to 920 MHz band or the 2680 to 2930 MHz band. Either the emitter must display a wide range of a single parameter characteristic ~~used within a single family of emitter~~ or else the characteristic must be so invariant that slight differences between various members of an emitter family can be detected and recognized as a fingerprint for this particular family member. [redacted] (around Moscow) is an example of the latter case where PRF of all these emitters is around 2000 PPS but they are crystal controlled and in the third decimal place there is a distinguishable variant ~~between various~~ identifying each members of this [redacted] Family which have enough stability to be useful over fairly long periods for identification of the particular emitter. So far the ship emitters have not ~~little~~ displayed ~~demonstra~~ this characteristic visible through POPPY. A Further study might lose it though.

SECRET [redacted]

HANDLE VIA BYEMAN CONTROL SYSTEM ONLY

~~4497524~~ Carpenter

~~SECRET~~ [redacted]

Shipboard data reception complexes can be designed but the hostile high-noise ambient aboard all except most cooperative vessels would present some extreme RFI problems. ~~[illegible]~~ Frequency diversity and exotic information theory transmission techniques may be needed to cope with the hostile RFI environment.

Spacecraft: Size, Shape and power restraints impose many compromises on the technical design. It seems about 8 bands can be included which should provide adequate potential for Weapon System definition ~~[illegible]~~ and Identification. For instance a single Hull has many radar emissions, the dependancy on the ship radiating can not be removed by any passive system but emission control is rarely complete and total so by adding other frequencies to the passive system capability does improve probability of intercept.

This 8-Band system adds to the cost by requiring stabilized spacecraft and 4 × the ELINT costs but it does vastly increase operational effectiveness. Over Soviet Territory it could address between 75 & 80% of all radar emissions & over water 70-75% of radar signals. [redacted] the latest most sophisticated emissions from

HANDLE VIA BYEMAN CONTROL SYSTEM ONLY

~~SECRET~~

~~SECRET~~ [redacted]

Ships discloses use of the 820 to 950 MHz, the 4200 to 5050 MHz, the 6700 MHz & 7700 MHz bands. 8800 mHz

[redacted] 720 — 9

The higher performance Scout will be launched Oct 71. For the first time. After Jan this booster could be available between 1 & 2 M depending on Polaris cooperation.

Earth peculiar (Nose fairing, adapter section and Guidance package) can be the long lead time items & cost between $50K & $100K & take about 9 to 10 months.

Communication from bird to bird is an attractive concept and we should study all methods of getting info to friendly sites to avoid foreign setting. We need a staff (Lee's Section) to carry this study effort. [redacted] could help in this too.

~~SECRET~~ [redacted]

HANDLE VIA BYEMAN CONTROL SYSTEM ONLY

Processing

~~SECRET~~

(or Perishable) Data Extractor (PDE) hardware is currently under development and evolutionary future design concepts are being studied which should optimize the operational Time-Critical job ~~with the majority of~~ afloat, in the air and ground mobile emitters.

The Second Generation Computer System is undergoing early procurement definition at this time and when deployed and equipped with a Software suit will be highly capable of near real-time signal identification and location.

Second Generation S.D.E. will have both Scan Sort and A-T (Geographic sort) capability by hardwired recognizer type system furthering the potential of real time I.D. & localization.