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*Chad B*

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NRL SPECIAL PROJECTS CONTROL NUMBER

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OUTLINE FOR CO [redacted] DRY AND FUTURE CAPABILITY (OPINTEL)

Introduction statement of historic performance

Project POPPY ~~is~~ has functioned in the <sup>Intelligence</sup> category of General Search  
 June satellite collection systems are  
 ELINT collection since/1960. / ~~xxxx~~ The ~~xxxx~~ tailored to intercept and transpond the  
 main-beam signals from radar over the frequency range from 100 to 14,800 Mcs.  
*system transponds* The intercepted radar which exceed the triggering threshold thus the data is  
 The pulse for pulse ~~transponded~~ signals ~~are~~ preserved in their time ~~xxxxxxx~~  
 domain so that [redacted]

[redacted] which is independant with frequency. Oper-  
 ationally the time resolution attainable, has been enhanced by the instal-  
 lation of Field-Digitizing equipment along with special receiving and adapt-  
 ive type thresholding equipment so that the standard ~~xxxxxxx~~ deviation  
 of time has been improved from plus and minus 25 microseconds to about

[redacted] attainable. <sup>poppy</sup> This has resulted in improvement in the emittor  
 location accuracy [redacted]

[redacted]

The digitizer system has associa-  
 ted with it, a small general purpose computer to effect near real time  
 diagnostic support in the quality control area. This instrument is  
 also operationally programmed to assist in the search for Signals of  
 Interest (SOI), to provide [redacted]

[redacted]

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Future ~~SECRET~~ [redacted] ial toward OPINTEL Fleet usage.

Several areas where POPPY must be enhanced to fulfill this future roll:

1. [redacted] analysis must be developed....
2. Alert capability must be developed ~~xxxxxxx~~ which will satisfy both the specific threat area, and the general build-up threat.
3. Analysis at data collection site must be developed.
- 4.



~~SECRET~~ [redacted]

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NOTES CONCERNING THE POPPY POTENTIAL IN OPINTEL:

I. Present Capability through monitoring regularly/broad spectrum the ELINT and developing the ~~xxxxxxxxxxxx~~ data base to predict ~~the~~ statistically the strategic posture of the opposition. Direct comparison of the observed data with the predicted would then be used to develop the implication in support of OPINTEL. Over seven years of POPPY data are available with which one might establish this/<sup>ELINT</sup> data base in depth..... The long life attributes of POPPY coupled with the high accuracy and repeatable data make such a statistical approach possible.

Historically several instances come to mind where POPPY data could have been used to predict the course of events:

A. The deployment of S-Band radar in the vicinity of [redacted] was observed well in advance [redacted] of this country by the Soviet Bloc. [redacted] techniques were used in these early days to locate to within [redacted] in these early days.

B. Deployment of Soviet type radar into the [redacted] countries was noted in the POPPY data, as well as into Indonesia.

*C - Norwegian Sea exercise fall of 1966.*

*D*

II. Relative to other space programs the POPPY program does preserve one of the most valuable identifying parameters of the ELINT signature that is the [redacted] of the signals intercepted. Other programs are restrained in either frequency or receiving system aperture or both so they can effectively use higher sensitivity to intercept the minor lobes of the emitter radiation, thus making it difficult without a lower sensitivity sensing system to determine the main lobe of each emitter intercepted. Many of these other systems look down at the emitter and then inhibit against the intercept of Main lobes of horizon-looking radar. The [redacted] rate the highest importance in the identification parameters which disclose the purpose of the ~~xxxxxxx~~ radar i.e. whether it is a low power station-keeping, navigation, <sup>early warning</sup> weapon aiming, target tracking or missile guiding emitter can not be determined by either RF Frequency, PRF, or [redacted] but by examination of the [redacted] one is most likely to be able to ascertain the purpose of the emitter. This attribute makes a system like [redacted] PY a more likely choice than other <sup>BYEMAN</sup> oriented systems for threat recognition and Alert functions of <sup>CONTROL SYSTEM ONLY</sup> opintel support.

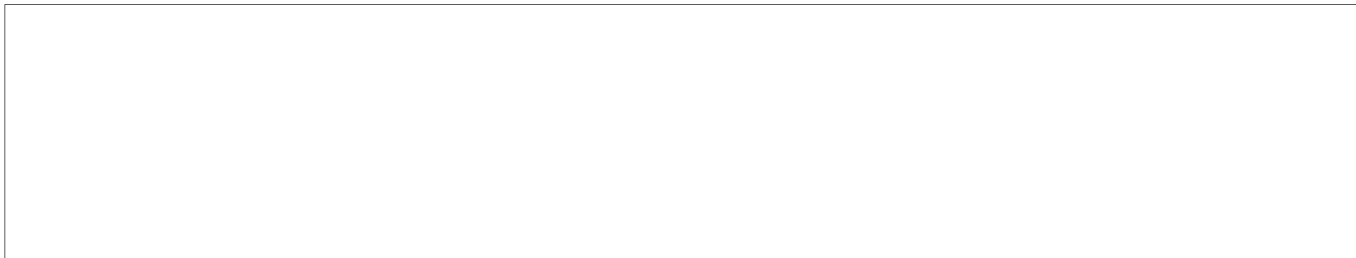
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*W. M. D. Draft*  
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NOTES CONCERNING THE POTENTIAL FOR POPPY IN OPINTEL

1. Unique among the other space oriented systems, POPPY Provides a long operational life time where a statistical long look can be taken at the ambient in an infinite variety of cross section. This Gross overall study of the ELINT ambient could very definitely serve as ~~the~~ basis for a real operational thermometer.

2. Because of the limited sensitivity which is designed into POPPY the data from this system preserves the vital [ ] of the Emitters.

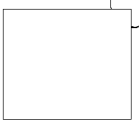


4- Tactual use of POPPY not established but could be significantly enhanced if the goals were set from design concept of satellite:  
a- *Optimize*  
*altitude*  
*sensitivity*  
*Signal Recognition*  
*Ground data collection*

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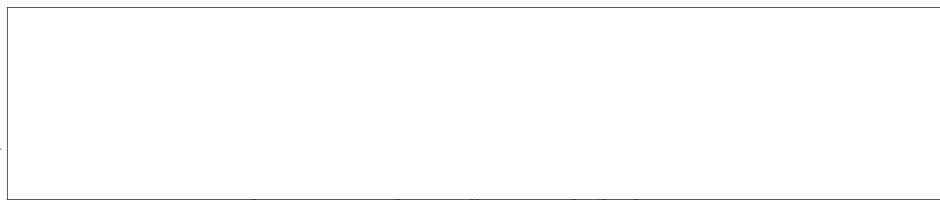
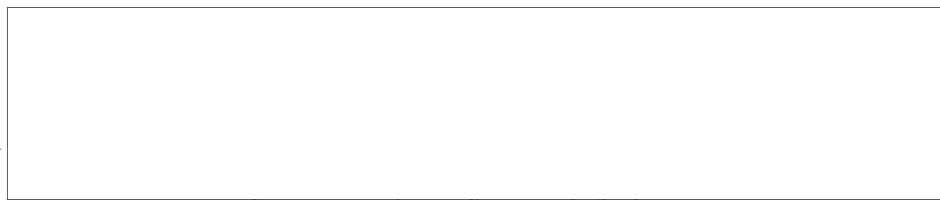
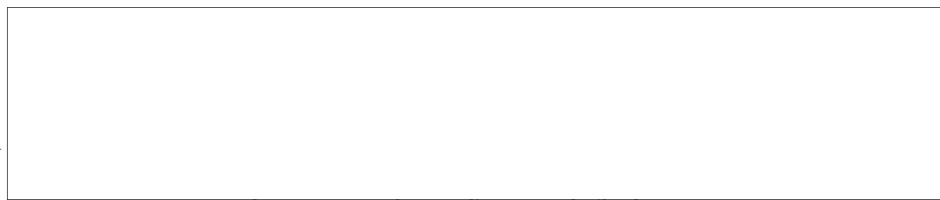
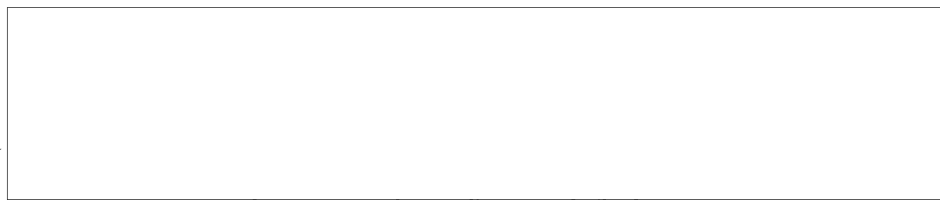
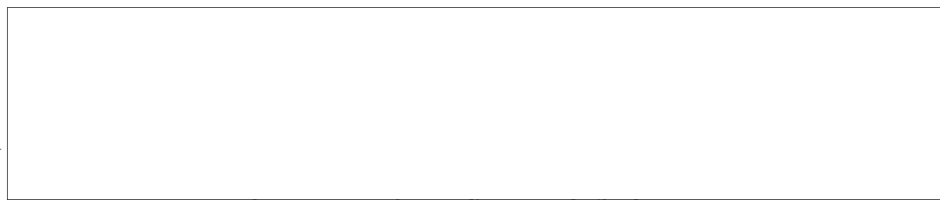
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Notes on Poppy's areas of support to Navy requirements.

The basic poppy system is a broad-band omni directional radar intercept system and as such is just an extension of the standard ELint mission performed by the Navy.

The 500 mile satellite orbits provide an instantaneous coverage over circle of 3700 mile diameter which equates to the area of the North Atlantic Ocean. The frequency coverage is from 100mc to 15.76c with some gaps where foreign radars are not known to exist. The collection system is a series of crystal video receivers, thresholding systems and pulse transmitters, which operate in a real time transpond mode. This technique allows all significant parameters to be measured i.e.

1. P R F (Thermost accurate system in existence)
2. scan rate
3. 
4. 
5. 
6. 
7. 
8. Frequency ( radar family )

A wide range of tasking flexibility allows the 4 satellites in a launch to be used in many different patterns for the various missions which may be required.

Operationally the system has been in use for a number

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currently there are 6 satellite

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some degree of constrain on ~~3~~ satellites. The use of ~~1~~ systems has been directed to the SORS - NRO requirements almost exclusively which have reflected the soviet E.W. and ABM tasking with other programs and a General Search role for soviet new developments in the interior of the soviet Union. The results of this effort to these requirements have been very outstanding with most of the general intelligence in the Elint field coming from Poppy (19) [redacted]

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The overall system responds in a number of different fashions, (1) Tip off for other Programs on [redacted] by message [redacted] of intercept (2) Signal of Interest recognition and alert within 24 to 72 hours (3) Location or detailed analysis of signals (both by site and NSA) 1 week to 4 weeks. (4) Strategic deployment (demonstrated by NSA, but not currently being used).

There has been no direct requirement for Navy oriented missions, but a number of items of interest have resulted after the fact. The most noticeable was the build up and fall off of ship board emitters with a deployment, operation and termination of a soviet North sea exercise in the fall of 1965. There have been many other cases where after the fact an analysis has shown signals or modes of operation of Navy interest. Just recently, for example, [redacted] was analysed in a short term [redacted] ing condition which was unique. To date

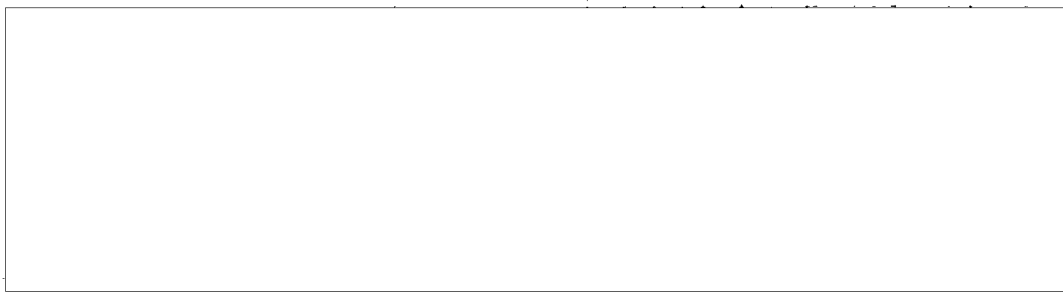
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no method of getting regular Navy oriented analysis exists and ~~no~~ inputs for the tasking exist and as a result the intelligence has been very spotty, however, all of the parameters of signals have been measured and accidentally such items as ship location have been analysed.

For the future Poppy could contribute in a

much more significant fashion by:

1. Having tasking and collection over ocean areas.
2. Directing tasking to Bands of Naval emitters



5. By directing analysis to ship board targets

NRL is currently updating the existing ground stations with new receivers, antennas, and digital processing equipment including a computer to allow the individual ground stations to provide highly accurate, reliable data. This type of ground station could easily provide additional input to tactical Navy's ELint needs.

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