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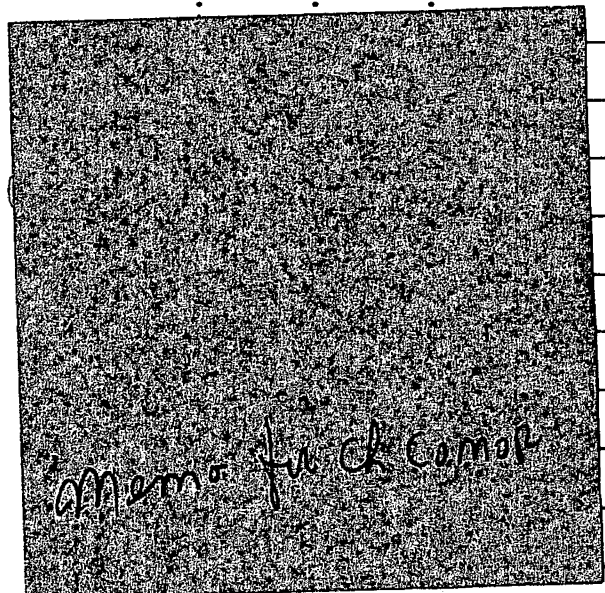
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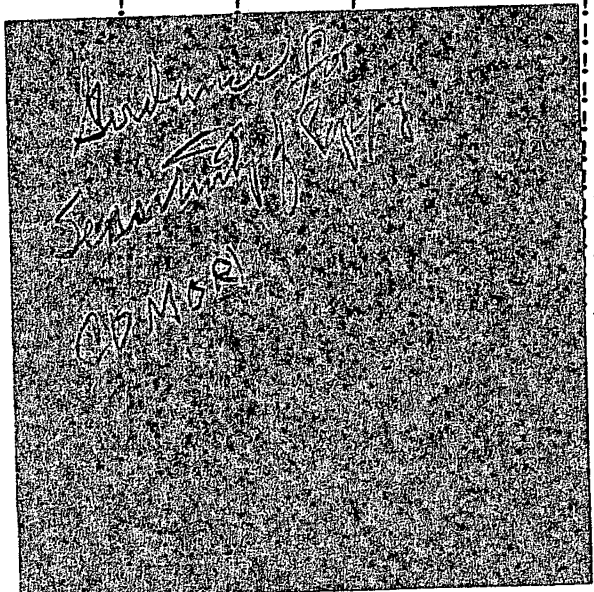
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MEMORANDUM FOR: Chairman, COMOR.

SUBJECT: SIGINT Satellite Scheduling

1. The proposed SIGINT Satellite Scheduling and the proposed payload equipments presented by NRO (a) and noted in Tab A to CSWG-M-31/64 have been carefully reviewed. In general, it is believed that the majority of the scheduled systems should contribute to the fulfillment of existing intelligence requirements. Comments and recommendations considered to be applicable for technical guidance for Missions 7157 and 7104 follow.

2. Mission 7157

a. Comments - The acquisition of general search information should be aided by the placement of an analog recorder on the Mission 7157 digital payload. This action is a useful interim measure.

b. Recommendation - That 6 Mc. predetection recording preferably, or at least 1 Mc. analog recording be planned for use on all future 698 BK (P-315) COM Missions.

3. Mission 7104

a. Comments - The primary objective of guarding against Soviet technological electronics breakthrough requires the methodical general search of the electronic spectrum from 60 Mc. to 12,000 Mc. with a high sensitivity intercept system of sufficient reliability to produce valid positive and negative data. Mission 7104 is proposed to employ an intercept system covering the frequency range up to 9500 Mc. with a system limited in sensitivity to -50 dbm. The probability of the detection of new and unusual emitters above

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Draft dated 4 May 1964

Paragraph ~~SECRET~~ [redacted] res Methodical general Search of the electronic spectrum from 60 to 12,000 mc."

The POPPY System approach is consistent with only slight difference (85 to 9 500 mc) in frequency coverage. The plan for POPPY is to extend a demonstrated collection technique, upward in frequency; search out the [redacted] type Medium and High Power emitters in all frequency bands and enhance the NSA automatic processing complex by providing data ~~XXXXXXXXXX~~ format which ~~are~~ compatible. (Methodical) evolution of the ~~XXXXXXXXXXXXXXXXXXXX~~ Planned discrete and deliberate/steps have been taken in the POPPY collection system to provide a uniformity high quality data without hiatus due to overambitious collection/~~XXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ Some of the Cardinal principles of the POPPY System/~~ix~~ system-reliability and ultimate long life, number (2) is Unity probability of intercept ~~with~~ Crystal Video type receivers ~~given~~ with generated spurious signals., (4) sensitivity consistent with the Garden-Variety signals which are expected and known to exist in ^{The frequency range of} the respective collection experiments, (5) preservation of the Pulse Repetition Frequency and the Antenna Scan Rate of the emitter.

"Mission 7104limited in sensitivity to -58dbm."

The sensitivity of the experiments for 7104 Mission will in fact be tailored for ^a the specific target in ^{each} ~~all~~ collection bands...4900 to 5300 Mc will have about-65 to -70dbm; 8800 to 9100 to 9500 Mc bands are expected to have sensitivities of about/-80dbm. In general, the sensitivities of Mission 7104/~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ has a planned increase in sensitivity ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ as the frequency of the collection bands increase, in order to assure detection of the lower power emitters anticipated. Specific Information on the characteristics of each "Target signal" for each collection experiment would be continue to helpful in assuring that POPPY will/be responsive to the Communities requirements.

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 "by the limited sensitivity systems such as the 710X series is far below an acceptable margin". State the ~~received~~ Power and Transmitter Antenna Gain and the antenna scan characteristics ~~mmmm~~. . . . in other words set the priority sequence on the emitters in each band and define the characteristics of the new and unusual signal which is the Target.

Tasking for Mission 7103 commenced on 24 January 1964 and since the orbits were so circular and for other reasons, the tasking was not at all heavy, the record will show how many times the C-band experiment was tasked prior to 11 March. The 3800 to 4800 mc band lack of data does not mean that there are absolutely no emitters power than capable of being intercepted by a collection scheme with about of less/~~than~~ -55 dbm sensitivity. Definition of the Threat is again the point in question. No one else has reported a Target in this band nor have they defined the characteristics of the unknown emitter for which POPPY should be designed.

Recommendations..... No low sensitivity POPPY 7104 receiving system is being contemplated but what is low??? again, Define the characteristics of the Target.

-90 dbm @ S-band....seriously who will process this??? and HOW??

The problems of -100 dbm at XBand are far less than the -90 @ Sband, but this requirement is not consistent with the POPPY effort at this time....try -75 to -80dbm first and then if the results are negative try for higher sensitivity....the major is one of a problem/~~xxxxxxxxxxxx~~ difference in the basic intercept philosophy. POPPY must preserve both the PRF and the Antenna SCAN RATE in order to enhance the NSA routines in the machine processing area. Interception of the minor lobes of an emitter will to the major extent hide the antenna scan periodicity and thus make it extremely difficult/~~if not impossible~~ to distinguish one emitter from all others of the same PRF without additional information such as DF, Pulse Duration or high-resolution frequency-information along with the PRF data.

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Recommendations (Continued)

~~SECRET~~ [redacted] scan capability ~~is~~ be developed for general search purposes". . . . sounds familiar but ~~we~~ don't think this will solve the problems of (1) unity probability of intercept (2) Long Life, (3) Spurious signals due to harmonics and inhibited signals leaking through. . . .

POPPY systems have demonstrated (1) consistent data with a very HIGH CONFIDENCE FACTOR (no spurious content) (2) high resolution of PRF and Antenna SCAN RATE (3) [redacted] with great potential (4) very little change of collection experiment performance with age of the experiment . (5) long useful life (June 1962 for 7101 and it is still marginally useful).

Any frequency scanning system would consume so much power it is doubtful if more than
 POPPY
 one or two bands could be covered in one/payload and this would seriously reduce the probability of intercept, system reliability and ultimate useful life as well as greatly increase the possibility of spurious data and complete lack of confidence in the product.

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