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PROGRAM COORDINATING THE SITES PRIOR TO MISSION 7106 in November 1968.

1. Due to the demand for overhead interrogation from each of the command sites it will be necessary to add the command antenna which will be trainable in elevation as well as azimuth.

2. MISSION 7106 will have a new command frequency so the command antenna must be made capable of handling both the old and the new frequency...a design which has been accomplished by Mr. Withrow.

SCHEDULE FOR DEPLOYMENT OF THE COMMAND ANTENNA SYSTEMS

[redacted]

in July
in mid August
in late October

3. New Solid State Receiving systems are being procured in pre-production quantity at this time and will be evaluated in [redacted] in May-June so that the production for all other sites can take place in time for deployement before November 1968. This receiving system has several novel and highly significant design objectives. It incorporates the adaptive thresholder system(which makes the data immune to fluctuations in amplitude) and a digitally controlled local oscillator so that the computer may at a date some time in t e future, be able to tune the receiver.

4. The second generation Analog to Digital Data System is under development and will be in prototype testing stage befor the end of April. Long lead time procurements for the production systems are already under contract; with five month production phase and a release to production anticipated about mid May, two of these systems will be deployed about mid October.

5. The Computer for [redacted] is almost reddy to go to procurement and at the cost of $280K it is a modest procurement which should allow for partial delivery on or about 1 July 1968. It is essential that the system overseas be back-fitted with a floating head disc unit to expand core to accomodate some of the future routines.

6. Considerable Environmental engineering must be done at each of the sites where this digital system is to be utilized to minimize the demands of the environment upon the performance of the system...temperature, power, humidity and dust variations with time are severe influences on this system and must be carefully controlled if the system is to operate reliably at these remote sites. Mr. Hellrich and Mr. Wales are to make an engineering survey trip in late April/early May to assure the solution to all the environmental interface problems.

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How Well are we doing in [redacted]

[redacted]

2. Against targets where the location of the emittor is known, the Ephemeris has been improved to the best available in the ~~xxxx~~ time and accuracy. Against these same targets with standard SPASUR ephemeris the locations vary from [redacted] in error. This indicates the criticalness of the ephemeris on this near real-time operation.

3. The accuracy of location of any emittor through the [redacted] analysis is largely dependant upon the position [redacted]

[redacted]

4. Computer Software is aimed at two distict areas:

I. Geographic Location Sort where all the data from a given pass is sorted by comparing [redacted]

[redacted]

II. P-7 is the computer routine which by an iterative reduction in error process, will provide the geographic coordinates of the ~~xxxx~~ emittor when ~~xxx~~ a series of up to [redacted] are fed into the computer. This routine is useful in [redacted]

[redacted]

5. PRF sort is adjustable from _____ to [redacted] pps

~~SECRET~~ [redacted]

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SEARCH FOR SIGNALS OF INTEREST (SOI SEARCH)

1. NSA has sent a list of these high priority signals to each site

2. Each site must upon detection of any of these signals file a msg.

3. NSA Manual Analysis shop(K-44) then procedes to analyze the tape recordings where these SOI intercepts were reported and responds with a message correcting the initial signal characteristics which were reported by the site. These two messages differ only in the ability of the two teams and their respective complexes of equipment.

4. The value of the SOI report from the site

(a) It alerts the community to new or unique signals, variants in parameters and allows the community to deploy other resources against these targets as they are disclosed.

(b) The major value of this routine is that it utilizes the site personnel who view the virgin unrecorded data to appraise it against list of priority signals, thus selecting out the majority of these highest priority signals.

(c) It also provides the opportunity to effect a Quality Control assurance on the data recordings being prepared for NSA...If trouble does occur in the receiving, recording or timing systems the SOI search will detect it immediately and not depend upon the analysis at NSA which takes months.

SUMMARY OF POPPY PERFORMANCE HIGH-LIGHTS.

I. [redacted] Historic summary.

II Shipborne signal summary

[redacted]

V. Observational accuracy of PRI now the most accuract available... [redacted] major improvement occuring with the combination of the adaptive thresholder and the Analog to digital data conversion system so that the time errors [redacted] normally resultant with variations in signal amplitude and distortions of time in the recording and playback of the analog data are not suffered in the digital system today.

VI. NSA data processing is now automated to a much greater extent than was possible during the past when they were using the IBM 7094 system. The new CDC-6400 automatically takes the digitized data from [redacted] or the AUDICO digitized data from other sites and sorts PRF and Scan and then goes through the location analysis [redacted] and gives the 95% confidence areas. Ephemeris is the major limitation to this highly sophisticated and automated system at this time and it has not been given the attention which it deserves at NSA.

VII. Ephemeris correction potential. [redacted]

It is planned that each of the MISSION 7106 payloads will carry an [redacted] This system is not yet Flight Certified but it is well along. The system will when interrogated in flight, provide the beacon type position enhancement for purposes of ephemeris calibration or generation. The orbital altitude for the past three launches has been much better than one should expect from the Agnea system so the need for this [redacted] system has not been essential.

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~~SECRET~~ [redacted]

ELINT Collection Experiments Proposed for Mission 7106:

The Naval Research Laboratory has attempted to be responsive in preparation of this proposal to the requirements for GEneral Search and for EOB collection which have been promulgated by the COMOR in so far as they are compatible with the basic POPPY system. POPPY has demonstrated the capability for measurement of [redacted]). The measurement of these parameters will be possible with all bands, R &D YIG one band at a time except for the Comb-Filter bands and those bands where the collection frequency exceeds 9.5 Gc. The criterion of replenishment will be important in the final selection of the particular collection frequency-bands, but for the purposes of guidance, the following experiments are recommended at this time:

Band #	7106A	7106 B
1.	153 - 165	153 - 165
2.	165 - 200	~~153~~ 165 - 200
3.	820 - 1085*	820 - 1085
4.	1080 - 1400	1400 - 1800
5.	1800 - 2500	2500 - 4100**
6.	5250 - 5850	5850 - 6700
7.	7000 - ~~10000~~ 8450***	7850 - 8450
8.	8100 - 8600	8100 - 8600
9.	8600 - 9340	8600 - 9340
10.	9340 - 9600	9340 - 9600
11.	9600 - 10000	14.8 - 15.1Gc

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