NNNNQTSFC007
RR RUXQAAJ
DE RUXQAA 323 3050950
ZNY XXXXX VVV
R 010949Z
BT
XXXXX
[redacted]

TOR 0915 11-3-

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R 312000Z
FM COMNAVSECGRU
[redacted]
YSNKLDC/NRL
COMNAVINTCOM
DIRNSA
SAFSS FOR SOC
ZEM
~~T O P S E C R E T~~ - BBBBB - EARPOP BYEMAN CONTROL SYSTEM
DIRNSA FOR K4/SPO
SOC FOR CDR [redacted]
NRL EVALUATION OF 7106 PHASE III

1. PHASE III ENGINEERING EVALUATION OF MISSION 7106 DURING THE THIRD AND FOURTH WEEK OF LIFE, CONSISTED OF AN INTENSIVE EVALUATION OF ABOUT 93 ORBITS AND COVERED ALL OPTIONS AND COLLECTION BANDS. 23 ORBITS WERE DEVOTED TO THE EVALUATION OF THE SLX OPTIONS? 11 ORBITS TO THE [redacted] 7 ORBITS TO THE POLARIZATION SELECTION OPTIONS OF CHARLIE AND DELTA.

2. MALFUNCTIONS OBSERVED.

A. DATA SIGNAL STRENGTH VARIATIONS ON DELTA WERE OBSERVED WITH CHANNEL B USUALLY BEING SLIGHTLY HIGHER IN SIGNAL QUALITY THAN CHANNEL C.

B. BAND 4 OF DELTA USING THE [redacted] OPTION HAS PERIODICALLY BEEN REGENERATIVE. HOWEVER, THIS MALFUNCTION SEEMS TO BE DIMINISHING IN RATE OF OCCURRENCE. SINCE THIS PORTION OF THE SPECTRUM IS COVERED BY ALL 7106 SPACECRAFT THE "CW" MALFUNCTION WILL NOT MATERIALLY EFFECT THE OPERATIONAL EFFECTIVENESS OF THIS MISSION.
[redacted]
OTHER SIGNALS IN THE 800 MHZ BAND AS WELL.

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3. GROUND STATION CONSIDERATIONS.

A. THE DIGITAL SITES AT [redacted] HAVE BEEN EQUIPPED WITH THE LATEST ANALOG-TO-DIGITAL DATA CONVERSION SYSTEMS (ADDS) IN ORDER TO UTILIZE THE NEW 7106 FOUR-LEVEL ("W","X","Y","Z") DATA FORMAT. THESE NEW ADDS HAVE, BY VIRTUE OF THEIR DOUBLE CLOCKING SPEEDS, PROVIDED IMPROVED ACCURACIES BY 100 PERCENT IN ALL THE DATA TIMING FOR BOTH MISSION 7105 AND MISSION 7106.

B. THE NEW OPERATIONAL SOFTWARE PACKAGE HAS BEEN INSTALLED AND IS OPERATIONAL AT [redacted] DUE TO MORE EFFICIENT PROGRAMMING PROCESSING TIME HAS BEEN REDUCED BY A FACTOR OF 25 TO 30 PERCENT OF THAT FORMERLY REQUIRED. NEW EXACT ORBIT SOLUTION CALCULATIONS HAVE IMPROVED EMITTER LOCATION ACCURACIES. SOFTWARE ROUTINES FOR PROCESSING THE SLX [redacted] DATA HAVE BEEN INSTALLED ON LINE AND ARE OPERATIONAL.

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4. SYSTEM CAPACILITIES.

A. THE DELTA PAYLOAD DATA MALFUNCTION HAS RESULTED IN A VERY WEAK SIGNAL LEVEL IN BOTH TRANSMISSION CHANNELS. ONLY ABOUT 15 TO 20 PERCENT OF THE TIME IS EITHER OF THESE OF SUFFICIENT STRENGTH TO BE ACCEPTABLE FOR PROCESSING IN THE DIGITAL PROCESSING SYSTEM AT USN-17. THE DATA IS OCCASIONALLY USABLE FOR A PORTION OF A COLLECTION-PASS, HOWEVER THE LEVEL IS DOWN AGAIN ON THE NEXT PASS. THERE HAS BEEN NO DETECTABLE PATTERN OF EITHER IMPROVEMENT OR DETERIORATION. THE PROBLEM WILL CONTINUE TO BE STUDIED IN TWO ASPECTS: (1) TO DETERMINE WHY TWO ISOLATED TRANSMITTERS ARE SO SIMILARILY DEGRADED, AND (2) TO CONCENTRATE ON GROUND SYSTEM IMPROVEMENT DJOOT PROGRAMS WHICH WILL RESULT IN HIGHER SENSITIVITY OR ANTENNA GAIN IN THE OVERSEAS COLLECTION RECEIVING SYSTEMS. INVESTIGATION OF THE OVERSEAS RECEIVING SYSTEM SENSITIVITY AND ANTENNA GAIN WILL BE PURSUED BY THE NAVAL REASEARCH LABORATORY, USING THE SYSTEMS AT [redacted] AS A TEST SITE.

B. ALL ELINT DATA COLLECTION SYSTEMS WERE TASKED IN VARIOUS COMBINATIONS AND ALL PERFORMED WITH THE OVERALL DATA QUALITY HIGHER THAN EXPECTED. FOR EXAMPLE, SLX [redacted] TASKS WITH TWO COLLECTION BANDS ACTIVATED RESULTED IN DATA WHICH WAS EASILY PROCESSED VISUALLY AND DIGITALLY IN ALL BUT THE MOST DENSE BANDS OF THE EMITTER SPECTRUM. MANY OF THE SIGNALS WHICH HAVE BEEN CARRIED AS "UNKNOWNS" WERE OBSERVED THOUGH USE OF BOTH SLX [redacted] DURING THE PHASE III EVALUATION . THIS DATA IS EASILY EVALUATED AND YIELDS A SIGNIFICANT INPUT TO THE DATA BASE OF THESE UNKNOWN EMITTERS.

GP-1
745

MNNNTSCC180
RR RUXGAAJ RUXGAAL
DE RUXGTA 098 3182045
ZNY XXXXX VVV
R 141915Z
BT
XXXXX
CONQUER 261 [redacted]

NRL INCOMING DOCUMENT
B847-92
1
NONE

5614

~~S E C R E T EARPOP~~ 141915Z NOV 69 CITE MARGO 1630.
ROUTINE CONQUER [redacted] INFO PROBE WHIG WAHOO
SUBJECT: PROCESSING SYSTEM TECHNICAL EXCHANGE/EVALUATION
1. MARGO IS EAGER TO PARTICIPATE IN A TECHNICAL EXCHANGE AND EVALUATION OF THE PRESENT SOFTWARE CAPABILITIES AND PROCEDURES USED IN THE PROCESSING OF POPPY DATA AT YOUR DIGITAL FIELD SITE INSTALLATIONS AND AT MARGO.
2. IT IS HOPED THAT THIS TECHNICAL EXCHANGE/EVALUATION WILL ASSIST PERSONNEL INVOLVED TO DIRECT THEIR EFFORTS TOWARDS A MORE TOTALLY INTEGRATED PROCESSING CONCEPT. REDUNDANT OPERATIONS SHOULD BE ELIMINATED BY MORE MEANINGFULLY BE PERFORMED AT THE DIGITAL FIELD SITES.
3. REQUEST NAMES AND TIME FRAME AVAILABLE OF THOSE INDIVIDUALS FROM

Handle via BYEMAN Control System

PAGE 2 MARGO 1630 ~~S E C R E T EARPOP~~
YOUR ORGANIZATION WHO WILL BE AVAILABLE TO PARTICIPATE IN A TEAM EFFORT WITH MARGO TO EVALUATE THE PRESENT POPPY PROCESSING OPERATIONS.
~~S E C R E T~~
BT

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[redacted]

NMMNTSCC131
RR RUXGAAJ RUXGAAL
DE RUXGAA 886 3191330
ZNY XXXXX VVV
R 151330Z
BT
XXXXX
[redacted] CONQUER 262

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Control System

R 141905Z
FM DIRNSA
TO SAFSS
BT
XXXXX
WAHOO 023 WHIG 002
GUARD PASS [redacted] CONQUER PROBE
~~S E C R E T EARPOP~~ 141905Z NOV 69 CITE MARGO 1628.
ROUTINE [redacted] INFO CONQUER, WAHOO, WHIG, PROBE.
WAHOO FOR [redacted] WHIG FOR [redacted]
SUBJECT: RETEP MALFUNCTION
REF: COMNAVSECGRU 272150Z OCT
1. ENGINEERING EVALUATION OF 7106 CONTAINED IN REFERENCE INDICATES THE DIFFICULTIES EXPERIENCED WITH THE [redacted] SYSTEM.
2. MARGO IS NOT IN AGREEMENT WITH PARAGRAPH 2C.
3. MARGO ASSUMES THAT YOUR REMARKS IN PARA 2C OF REFERENCE ARE MEANT FOR FIELD SITE PROCESSING USING NEW EPHEMERIS PROGRAMS.
4. MARGO HAS NOT SEEN ANY REFINEMENTS AVAILABLE IN BASIC EPHEMERIS ACCURACY AND IT WAS ANTICIPATED THAT [redacted] IN ALL FOUR BALLS, WOULD IMPROVE OUR PRODUCT.

ACTION
TOR 0940
11-17-69
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PAGE 2 MARGO 1628 S E C R E T EARPOP

[redacted]

BT

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TSCC174
PP RUXQAAJ
DE RUXQAA 873 3172235
ZNY XXXXX VVV
P R 142230Z
BT
XXXXX
[redacted] CONCERT 097
CONCERT PASS MARGO

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ACTION

TOR 0910
11-17-69
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~~T O P S E C R E T~~ 142230Z NOV 69 CITE WAHOO 1550
PRIORITY [redacted] MARGO INFO WHIG
[redacted] FOR MR. MAYO
MARGO FOR MR. POTTS
~~EARPOP~~
1. DESIRE TO MEET WITH TECHNICAL REPRESENTATIVES OF [redacted] AND KWMARGO AT THE PENTAGON RM BD944 AT 0900 ON 21 NOVEMBER TO DISCUSS POPPY [redacted] CAPABILITY.
2. INTENT IS TO OBTAIN A JOINTLY AGREED UPON VIEW CONCERNING CAPABILITIES AND LIMITATIONS OF THE SYSTEM TO PERFORM EOB FOR NRO PLANNING PURPOSES.
3. SUGGESTED AGENDA IS AS FOLLOW:
(A) 0900-0945 - CURRENT [redacted] TECHNIQUE FOR POPPY. BRIEFER - NSA.
(B) 0945-1030- LIMITATIONS INTRODUCED BY THE PROCESSING METHOD AND THE COLLECTION SYSTEM ON GEOPOSITIONING ACCURACY. DESIRE SPECIFICS FOR 150-2000, 2000-4000, 4000-8000, 8000-10000 AND ABOVE 10000 MHZ RANGES. BRIEFER-NSA
(C) 1030-1100 - EXPECTED GEOPOSITIONING ACCURACY WHEN

PAGE 2 WAHOO 1550 ~~TOP SECRET~~
FOUR BALL CAPABILITY AND/OR OTHER PROCESSING IMPROVEMENTS ARE DEVELOPED. BRIEFER - NSA.
(D) 1100-1200 - CURRENT FIELD GEOPOSITIONING TECHNIQUE. BRIEFER - NRL.
(E) 1200-1245 - LUNCH.
(F) 1245-1500 - DISCUSSION.
4. DESIRE NSA TO LIST THE NUMBER OF SEPARATE [redacted] OR LESS FOR ANY SIX CONSEUTIVE MONTH PERIOD USING 7105 DATA IN THE FREQUENCY RANGES OF PARA 3b. ALSO DESIRE NSA OPINION CONCERNING THOSE EMITTERS LISTED IN SECTION VII VOL. I OF THE DIA EOB WHICH POPPY CANNOT GEOPOSITION TO THE ABOVE ACCURACY.
5. DESIRE NRL TO RESPOND TO PARA. 4 ON THE BASIS OF THE CURRENT FIELD CAPABILITY.
6. POINT OF CONTACT FOR ATTENDENCE IS [redacted]
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20 November 1969

POPPY EOB CAPABILITY MEETING

AGENDA

0900 - 0945	Current geopositioning processing techniques for POPPY	- NSA
0945 - 1030	Limitations introduced by the processing method and the collection system or geopositioning accuracy. Specifics for RF bands 150-2000 MHz, 2000-4000 MHz, 4000-8000 MHz, 8000-10000 MHz and above 10000 MHz	- NSA
1030 - 1100	Expected geopositioning accuracy when four ball capability and/or other processing improvements are developed	- NSA
1100 - 1200	Current field geopositioning technique	- NRL
1200 - 1245	Lunch	
1245 - 1500	Discussion	

~~EARPOP~~

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DATA DESIRED FROM NSA:

List of separate emitters geopositioned to [redacted] for any six consecutive month period using 7105 data in RF ranges noted under agenda item. (Cram)

DATA DESIRED FROM NRL:

Same as for NSA. Those emitters processed at mission ground stations.

LIST OF ATTENDEES:

Name	Organization
[redacted]	NSA
Mr. J. Doheney	NSA
Mr. C. Cram	NSA
Mr. R. Abplanalp	NSA
[redacted]	NSA
	NSA
~~Cdr. R. Olson, USN~~	NSG
Ltjg. L. Morgan, USN	NSG
[redacted]	NRO
	NRO
	NRO
	NRO
Mr. F. Raymond	NRL
Mr. P. Wilhelm	NRL
Mr. R. Mayo	NRL
~~Mr. H. Lorenzen~~	~~NRL~~
[redacted]	NRL
	NRL
	NIC

~~TOP SECRET EARPOP~~ [redacted]

To: Red Mayo
Fm: Fred Gleason

12 November 1969
NSA-BYE-19258-69

MEMORANDUM FOR THE CHAIRMAN,
SIGINT OVERHEAD RECONNAISSANCE SUBCOMMITTEE

SUBJECT: EOB Processing of POPPY and LAMPAN/SAMPAN Data

1. Reference is made to AFSSO USAF message 312015Z

2. Action has already been taken by NSA to maximize the EOB processing of POPPY and LAMPAN/SAMPAN in view of the STRAWMAN II difficulties. Present POPPY processing for radars in the [redacted] band is expected to provide approximately 1000 locations/month. These are being reported on the basis of a 90% confidence elipse with less than 15 NM semi-major axis for emitters in USSR and less than 30 NM semi-major axis for emitters in China. Emitters of the [redacted] are further limited to locations whose confidence elipse has less than a [redacted] semi-major axis.

[redacted] characteristics will not be available within the next 30-60 day time frame. Based on the above POPPY is expected to provide approximately one-seventh of the EOB available in the past from STRAWMAN on a monthly basis.

4. The provision of EOB data from LAMPAN/SAMPAN requires a change in emphasis from the search for new and unusual signals as per SORS 10./89 to processing for EOB purposes. Although the development of a machine EOB processing capability has been underway for some time for these payloads, it is estimated that the operational system is still about 30 days away. This effort has been hampered not only by lack of priority but also by the loss of the TRG and problems associated with the application of a new processing digitizer.

5. As an interim measure emphasis is being placed on EOB processing of LAMPAN/SAMPAN using machine runs and manual interpretation and analysis. This effort is expected to provide some 500 locations at best from each payload and hence will add an additional one-seventh to the

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total previously provided from STRAWMAN in the 100-4000 mhz frequency range. This interim effort will be at the expense of the present processing of SOIs, and this deficiency will continue until the automated system is operational.

6. The operational machine processing system for LAMPAN/SAMPAN EOB is expected to provide approximately 1200 locations/month from LAMPAN and approximately 1800 locations/month from SAMPAN and hence would provide approximately three-sevenths of the data available in the past from the STRAWMAN system. It is further intended to process and report only some 50% of the available [redacted] intercepts since this data is highly redundant and represents some 60-70% of the total data intercepted by these payloads. The resulting savings in computer time will be used to keep the volume of data at a reasonable level and yet allow for more timely processing and reporting than would otherwise be possible.

7. The results of the recently revised STRAWMAN tasking and related processing modifications, although difficult to accurately predict, are estimated to provide nearly 20% of usable EOB data from STRAWMAN II. Thus the net result of all the above should provide EOB data degraded (quantity-wise) only some 30% from that ordinarily available from the STRAWMAN system in the range 100-4000 mhz.

JOHN E. LIBBERT
NSA Member
SIGINT Overhead Reconnaissance Subcommittee