NRL file

NNNN
ZCZCEKA398OAB411SPC832
FP YSEKLD YSEKLI
DE YEKAAH 683 1981748
P 171638Z
FM DIRNSA
TO SSO SAC
DIRNAVSECGRU
NAVSTIC
AFSSO DET 1 AFSCF
SAFSS
OPCEN
CNO
AFSSO SSD
CGUSASA
USAF
AFSCC
DIA
ZEM

HANDLE VIA ~~BYEMAN~~ TK CONTROL SYSTEM

~~TOP SECRET~~

July 67

RECORD OF DISCLOSURE

Code	Date	Signature

1967 JUL 18 00 55

Act: Y3 NRL

Relay: ST

~~T O P S E C R E T~~ BBBBB ~~EARPOP/~~BYEMAN CHANNELS ONLY
AFSSO DET 1 AFSCF (HOLD AND PASS TO MR. WILLIAMS). AFSSO SSD HOLD AND PASS TO MR. [redacted]
CITE NSA SPO 1207-7
EV/3-67
SUBJ: PRELIMINARY SYSTEMS EVALUATION MISSION 7316.

1. THIS PRELIMINARY EVALUATION OF MISSION 7316 (SLEWTO) IS BASED ON AN ANALYSIS OF THE FOLLOWING TAPES:

R/I	R/O	DATE COLLECTED
6	8	10 MAY 1967
8	15	10 MAY 1967
124	124	18 MAY 1967

2. SEVERAL ANOMALIES HAVE DEVELOPED SINCE THE SYSTEM BECAME OPERATIONAL. THE PAYLOAD DID NOT ACHIEVE THE DESIRED 280 NM CIRCULAR ORBIT, BUT INSTEAD WAS PLACED INTO AN ELLIPTICAL ORBIT, WITH AN APOGEE OF 457 NM AND A PERIGEE OF 301 NM. THE HIGHER THAN PLANNED ORIBT PRODUCED A GREATER RADIO HORIZON AND HENCE A MORE DENSE SIGNAL ENVIRONMENT THAN PLANNED, AND MAY COMPLICATE ANALYSIS PROBLEMS. A SECOND AND MOST SERIOUS DEFICIENCY HAS BEEN THE MALFUNCTION OF THE "S" BAND TELEMETRY TRANSMITTER ON ORBIT 50, ELIMINATING THE ONLY MEANS OF RECOVERING THE WIDEBAND PREDETECTION DATA. PRIOR TO FAILURE OF THE "S-BAND" LINK, THE WIDEBAD DATA WAS OF GOOD QUALITY AND APPEARED TO BE OPERATING AS EXPECTED.

3. THERE IS A HIGH "FALSE ALARM" RATE OF NON-TARGET SIGNALS, NOTABLY [redacted]. THE FREQUENCY COUNT CIRCUIT COUNTS ZERO CROSSINGS OF [redacted] AS WELL AS THE TARGET SIGNALS, AND AVERAGES THEM TOGETHER; THIS SIGNAL ENVIRONMENT COULD CAUSE THE RECEIVER TO BE MISTUNED FOR THE TARGET SIGNAL OF INTEREST.

4. THERE HAVE BEEN 14 INTERCEPTS OF THE TARGET SIGNAL TO DATE, ACQUIRED AFTER THE LOSS OF THE WIDEBAND DATA LINK; THEREFORE, ALL ANALYSIS HAS BEEN FROM THE NARROW BAND PREDETECTION DATA. ANALYSIS HAS BEEN PRELIMINARY IN NATURE; HOWEVER, TARGET SIGNAL PULSE CODING IS RECOVERABLE AND LIMITED PHASE ANALYSIS MAY BE POSSIBLE.

5. CONSISTENT INTERCEPTS OF CW SIGNALS HAVE BEEN MADE BY MISSION 7316. THE SOURCE OF THESE SIGNALS HAS NOT BEEN RESOLVED, HOWEVER, THERE ARE A NUMBER OF GROUND TO AIR COMMUNICATIONS SYSTEMS IN THE

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FREQUENCY RANGE COVERED BY THE MISSION. [redacted] INTERCEPTS HAVE BEEN APERIODIC IN NATURE AND HAVE VARIED IN THE LENGTH OF TIME OF INTERCEPT; THIS CAN BE ATTRIBUTED TO THE FALSE ALARM TUNING OF THE RECEIVER AS IT TUNES INTO AND OUT OF THE SIGNAL. IN SOME OF THE INTERCEPTS THERE HAVE BEEN APPARENT INTERNAL FREQUENCY SHIFTS OBSERVED, ALTHOUGH NO PATTERNS HAVE BEEN NOTED IN EITHER THE AMOUNT OF FREQUENCY SHIFT OR THE DURATION. THE GEOGRAPHIC AREA OF COVERAGE OF THE TAPES ANALYZED TO DATE HAVE NOT BEEN SUFFICIENTLY DIFFERENT TO ALLOW DETERMINATION OF EMITTER LOCATION BASED ON RADIO HORIZON ANALYSIS.

6. IN AS MUCH AS THIS MISSION IS THE FIRST SUCCESSFUL ATTEMPT TO UTILIZE PREDETECTION RECORDING ON A P-11 CONFIGURED PAYLOAD, THE OVERALL PERFORMANCE OF THE RECEIVING SYSTEM IS CONSIDERED SATISFACTORY. THE PRE-DETECTION TECHNIQUE AS FAR AS CAN BE ASCERTAINED AT THIS TIME IS VERY GOOD. THE MAJORITY OF THE PROBLEMS BEING ENCOUNTERED ARE DUE TO THE HIGH FALSE ALARM RATE IN THE SYSTEM AND UNDOUBTEDLY THE HIGH ELLIPTICAL ORBIT IS A CONTRIBUTING FACTOR. THE 150 KC/S. NARROW BAND PREDETECTION INFORMATION WILL LIMIT TECHNICAL ANALYSIS OF PULSE STRUCTURE.

7. SEVERAL RECOMMENDATIONS FOR FUTURE SYSTEMS OF THIS TYPE SHOULD BE CONSIDERED.

A. A METHOD OF COMMANDING CHANGES IN THE IN-FLIGHT SENSITIVITY OF THE RECEIVING SYSTEM SHOULD BE INCORPORATED IN THE PAYLOAD.

B. PARALLEL OUTPUTS OF THE FREQUENCY CODE INFORMATION ON BOTH THE NARROW-BAND (150 KC/S) AND WIDE-BAND (1.0 MC/S) RECORDERS. THIS WOULD ALLOW REAL TIME CORRELATION BETWEEN THE SIGNAL PULSES FOR BOTH PREDETECTION CHANNELS, THUS SIMPLIFYING MACHINE AND MANUAL PROCESSING OF THE DATA.

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~~SECRET~~ [redacted] July NRL Code 5614

7105CHARLIE

The following bands are capable of operating in any combination:

Band 5,6,7,8,9,10, & 11

The following bands will operate satisfactorily only in these Paired combinations:

Band 4 & 7
Band 2 & 3
Band 1 & 5

Crosstalk prohibits tasking in other than these combinations.

The following band will cross talk with any other band and therefore it must be tasked alone...

Band #12.

7105 DELTA

The following bands are capable of operating in any combination:

Bands #2,3,4,5,6,7,8,9 & 10

The following bands will operate satisfactorily only in these Paired combinations:

Bands 1 & #

Bands 10 & 11.

The following band will crosstalk with allother bands and therefore must be tasked alone:

Band #12.

Due to the present Inverted attitude of the 7105D satellite, the collection antennas on the following bands do not illuminate the earth:

Bands # 5 and #10.

7105Alpha = Data found in every Band
Performance as Planned
R & D Pulse Width Experiment
Operated satisfactorily.

7105BRAVO = Data Found in Every Band
Performance as Planned
R & D Pulse Width Signal Amplitude Experiment
operated satisfactorily.

COMPUTER IMPROVEMENTS PLANNED:

1. Executive Routine to have Mag-Tape Library of all programs.
2. [redacted]de Selectric Typewriter to allow Header and Trailer to [redacted]itten by BTM-9 Freeing computer for full time processing.

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Increases in the data density of X-Band can not be explained by sensitivity improvements in 7105D and 7105C, but rather these greater population of signals is due to the opening up of the collection systems azimuthal horizon from a single quadrant in 7104 to full 360° in the systems of 7105. There are in this X-Band spectrum, severe directional variations to the density of the radar population so that with 7104 and only quadrant the density was quite variable. but with 7105 the density is always high since the concentrations are always within the horizon and therefore under surveillance with these azimuthal wide-open collection systems....This is just the logic which has led to the use of Quadrant type collection in the 7106 systems under design.

High Sensitivy Option in 7105B has not as far as we know been used over the SinoSoviet Bloc areas....During the NRL evaluation at HYBLA Valley this was evaluated and found to be completely operable.
This dual sensitivity option should greatly enhance the measurement capability of the R & D Signal Amplitude Experiment in 7105BRAVO

On the Question of Crosstalk....

A general statement that certain difficulties were encountered during the first three weeks of 7105 where minor crosstalk problems were detected and by modifications in the tasking groupings these problems should not reoccur....NRL will study on a priority basis any reported crosstalk in the future.

Specifically the 05C Band 2 comming out as a wide pulse is very fortunate since the next adjoining band #3, is always tasked along with #2 so that the combination will present all the data as wide pulses on the CHARLIE data channel giving the same response as provided by the [redacted] in 7105DELTA band [redacted]. If this is a voltage manifestation and it should occasionally go away the data on Band #2 will become the Narrow type pulses and the other half of the 196 to 550 mc band will be portrayed as wide pulses. It could in the far future cause some problem but certainly it is a great advantage now to have the [redacted] coming outwith the same pulse width signaltures for this 200 to 550 mc band.

The computer system ... Needs:

1. CALIBRATION Benchmark type emittors to use routinely to establish the capability of the computer system to sort against specific geographic locations....NSA Can be of great assistance in providing just such targets...

MEMORANDUM

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via 5610

From 5614

Subj: Meeting at the NRO 17 July 1967

1. Atendees: R.D. Mayo, VS Rose and Hohn Poole (5170) from NRL

[redacted] from NSA

[redacted] and Wm Boenning and [redacted] from NRO.

2. Discussion of Mission 7105 based on the acomplishments not troubles.

Spread of the Pulse widths as seen through the NSA Audico remains wide and not symmetrical...noise peak at areound 50 to 60 μsecs.

NSA voiced troubles on:
a Ephemeris quality and timeliness
b not able to use digital tape from site due to incompatibility of Record length...Programmer is trying to change this now.
c.60 to80 n.mi. Major axis now being seen in [redacted] Therefore suggested an increase in Spacing to 120-150 n.mi.
d. PDM Playback unit not working satisfactorily... HRB will help.

3. MISSION 7106 Discussion....
a. Main concern in our proposal of 7 Feb. was the coverage Gaps at 3300-4900, 5070-5850 and 6700 to 8600
b. Date for 7105 was misunderstood but pointed out to them that it was 10 months following flight of 7105...they agree now that 12 months seems to be more reasonable and June 68 flight.
c. High-Sensitivity Option...Not now being operationally used due to extremely high density now seen with 150° coverage. Quadrants are not the answer since they will degrade [redacted]

e. [redacted]
dissapears, so these agguments reinforce one another.
f. In order to fill the gaps in our original proposal by adding 8 bands in the "C & X" bands we must make space for them (Antennas and volume)

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Talent-Keyhole
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MEMORANDUM TO FILE:

Meeting held at NSG 13 July 1967.

Attendees: NSA = [redacted]

NSG = [redacted]

[redacted] evidently set the firm party line by blasting the actions taken by NSA in dealing directly with the site and bypassing Headquarters. ~~XXX~~ NSA lack of coordination within their own organization etc.

[redacted] has its back against the wall and can not support the [redacted] project at this time and NSG recommends that the project be considered for entry into the complex at [redacted] via a HUT operation....

The second in Command at [redacted] has been selected as [redacted] who LDcr Heindl knows very well. He is an ex-enlested man from Sakata with possible project experience there. Excellent Elint background...Lt since 1965 therefore possible candidate for OIC after [redacted].... Will not be released from CINC LANT FLEET until Nov.67

~~SECRET~~ [redacted]

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