CROSS REFERENCE

2.

SPECIAL PROJECTS CONTROL NUMBER

NRL B-00068-74

3-26-74

~~TOP SECRET~~ - HANDLE VIA BYEMAN CONTROL SYSTEM

DATE
15 MAR 74

dtg 7/6/94

ORIGINATOR	SERIAL NO.	ENCLOSURES
NRL 106-541	BYE 55,346-74	(1) AGENDA (2) ATTENDEES (3) TWX MSG CONQUER 261720ZFEB74 CITE 121 (4) MINIMUM DAILY VOLTAGE PLOT(5) COLLECTION HIGHLIGHTS (6) BASIC POPPY SYSTEM PLAN

DATE REC'D	TICKLER DATE	COPY NO.	RECEIPT NO.
3/22/74	-	9	DLG 928/7 WA 80,562

SUBJECT
POPPY TOG MEETING: REPORT OF

DIST INFO

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☐ BASIC DOCUMENT NOT HELD. DESTROY.

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REMARKS

D644

ENCL (1) D645 – ENCL (6) D650

NRL INCOMING DOCUMENT

B068-74

8

BYE-55346-74

E-EVALUATION

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WA 80,562
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HANDLE VIA BYEMAN CONTROL SYSTEM

NAVY SPACE PROJECT OFFICE
~~(S)~~ NATIONAL RECONNAISSANCE OFFICE, PROGRAM C
WASHINGTON, D.C.

OFFICE OF THE DIRECTOR

PME-106-541/lc

MAR 15 1974

MEMORANDUM FOR THE CHIEF OF NAVAL OPERATIONS (OP 094W)
DIRECTOR, CENTRAL INTELLIGENCE AGENCY (OSI)
DIRECTOR, NRO STAFF (SS4, SS4A and SS7)
COMMANDER, NAVAL SECURITY GROUP COMMAND
DIRECTOR, NAVAL RESEARCH LABORATORY (1000 and 7030)
DIRECTOR, NATIONAL SECURITY AGENCY (W24, W34, R24, A81)

Subj: POPPY TOG (Technical Operations Group) Meeting; report of

Encl: (1) Agenda
(2) List of Attendees
(3) TWX Message CONQUER 261720Z Feb. 74, Cite 121
(4) Minimum Daily Voltage Plot
(5) Collection Highlights
(6) Basic POPPY System Plan

1. A POPPY TOG meeting was held at the NSA at 0930 on 28 February 1974. The agenda and a list of attendees are forwarded as enclosures (1) and (2).

2. The following specific items were discussed:

a. Status. (NRL)

The 7107 satellites are emerging from a period of low sunlight exposure, during which a problem developed with 7107A. Enclosure (3) is a resume of the situation. Enclosure (4) shows the severe drop in voltage that accompanied this event, including the automatic "reset" at 10.2 volts. All satellites appear to be healthy at this time, with no additional malfunctions not previously identified.

On occasion, however, field sites observe additional malfunctions and cross-talk that do not persist. The next Engineering Evaluation, to be conducted in May, if funds are available, will try to reconstruct and test these anomalies. This periodic evaluation of options and equipments results in a system-wide update in knowledge of capabilities and status.

The current [redacted] to maintain the spacing above [redacted] was complicated by the fact that the C satellite tumbles and turns (because the gravity gradient boom cannot be deployed fully), and aggravated by the loss of command to thrust to the D satellite. The procedure used by NRL personnel was to read and process telemetry starting as soon as the C satellite appeared over the horizon of [redacted] in order to determine the attitude by comparing readings of solar cell illumination/charging around the satellite, and then to activate thrusting as the satellite achieved the desired attitude. This procedure is very tedious and requires great coordination to avoid thrusting at the wrong time. The total action involved thrusting on several passes over a six day period to achieve a total of sixty minutes of thrusting. Under this procedure, only passes in sunlight are candidates, also causing an extension of the operation.

Subj: POPPY TOG (Technical Operations Group) Meeting; report of

The NSG representatives reported that, because each of the thrustings was very small, sites other than [redacted] were not seriously affected. At [redacted] however, twenty five passes were lost. The effect on data (geopositioning) is reflected in the comparison provided by [redacted] on one pass they were able to achieve a geoposition on a benchmark emitter within 2 nm of its known position; on another pass this offset degraded to 30 nm.

A short discussion ensued on the rationale and justification for the [redacted] spacing. If the limits on [redacted] can be eased beyond the currently specified [redacted] this delicate thrusting operation will not occur as frequently because thrusting is an unexact operation. Since the [redacted] and opening at the rate of [redacted] per day, the [redacted] limit will be exceeded in approximately eighteen days (the minimum because the rate of opening will decrease).

[redacted]

drag). At the meeting it was agreed that the SPO/NRL will TWX this information to all concerned with a statement of intention with regard to thrusting operations. The question of spacing limits on [redacted] will be deferred pending this TWX.

b. Collection Highlights. (NSG)

Enclosure (5) was submitted and read. The last topic is a report on the PAPS deployment that summarizes the activities during that evolution. The NSG representatives took this opportunity to make the following points:

(1) Naval maintenance personnel at the sites should not be expected to be able to repair components at a lower level than card replacement.

(2) Adequate spares provisioning to support this level of maintenance, with appropriate test equipment and procedures, is the most viable way to solve this problem.

The use of contractor technical representatives to alleviate field maintenance problems was discussed as another possible solution.

c. Processing Highlights. (NSA)

No presentation was delivered.

At this time, representatives of Project DEPARTURE present at the meeting stated that they have encountered some inconsistencies in POPPY collected SLM data, from which they attempt to measure ERP (Effective Radiated Power) on specific signals of interest.

The 7107 satellites are designed to provide SLM on a pulse-to-pulse basis

PME-106-541/lc

Subj: POPPY TOG (Technical Operations Group) Meeting; report of

where each intercepted pulse in an ELINT band tasked for SLM should be followed by a sync pulse of 120 μ sec length, followed by binary coded data which indicates the SLM in fifteen step levels. The anomaly seen by DEPARTURE personnel consists of:

(1) binary data immediately following the parent pulse, without the sync pulse, and

(2) sync and binary data without a parent pulse.

The system was not designed to output binary data without an introductory sync pulse and this is the troubling problem.

DEPARTURE personnel are using tapes from orbits 4000 to current (11,000) and are seeing anomalies in approximately 50% of SLM data.

At the meeting it was decided that DEPARTURE personnel would try to be more definitive in terms of which satellites, ELINT bands and ground sites show these anomalies, to help isolate the problem. Since [redacted] contributes most to the DEPARTURE base of data, it is the likely source - and is scheduled for Engineering Evaluation next, in the May - June time frame. Additionally it was agreed that NRL payload engineers would be available for consultation to answer questions on satellite antenna coupling, etc. This topic should also be discussed at the next TOG meeting, and until then will be pursued by NRL/DEPARTURE personnel with SPO assistance as required.

d. FY 75 POPPY PLAN. (SPO)

The time is nearing when the FY 75 plans for POPPY and supporting budget must be prepared. The SPO representative distributed copies of enclosure (6) which is a kind of outline of planned activities. TOG members were asked for inputs, so that the SPO can show a coordinated plan for FY 75 effort.

A few individual items in enclosure (6) were discussed, and the SPO will coordinate, before the next TOG meeting, so that the program objectives can be reviewed then.

3. The next TOG meeting is scheduled for 28 March 1974, to be hosted by the NRL.

R. K. GEIGER

~~TOP SECRET~~ EYES ONLY ZARF

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AGENDA

STATUS

COLLECTION HIGHLIGHTS

PROCESSING HIGHLIGHTS

FY 75 POPPY PLAN

ENCLOSURE (1) to BYE
55,346-74
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PAGE 1 OF 1 PAGES

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EXCLUDED FROM AUTOMATIC REGRADING
DOD DIRECTIVE 5200.10 DOES NOT APPLY

LIST OF ATTENDEES

PME 106 SPO: [redacted]

PME 106-4

NRL: Mr. Lawton
Mr. Frankovic

NRO (SOC): [redacted]

NSG: LT Morgan

NSA: [redacted]

Enclosure (2) to

~~TOP SECRET~~ EARPOP ZARF

~~T O P S E C R E T~~ 261720Z FEBRUARY 1974 CITE CONQUER 121
ROUTINE WAHOO, JUNO INFO ROUTINE CONCERT, COGNAC, [redacted]
CONCH .
HANDLE VIA BYEMAN CHANNELS ONLY
EARPOP
REINDEER-41X
1. FOLLOWING IS A WRAP-UP OF RECENT ALFA PAYLOAD VOLTXVBCD PROBLEMS AS RECONSTRUCTED FROM IM MEMORY DUMPS AND SITE REPORTS:
[redacted] COMMANDED ALFA PAYLOAD WITH C01 TASK GROUP AND FIFTY MINUTE TIMER ON REV 11017 (0618Z) FOR COLLECTION BY THEMSELVES, [redacted] RECONSTRUCTION OF EVENTS REVEALS 50 MINUTE TIMER FAILED TO RESET PAYLOAD AT COMPLETION 50 MINUTE PERIOD (0708Z). VOLTAGES OVER [redacted]

PAGE TWO CONQUER 121 ~~T O P S E C R E T~~
AND [redacted] ON REV 11017 WERE WITHIN ACCEPTABLE LIMITS AND PAYLOAD WAS IN SUNLIGHT. THE DRAIN OF THE C01 TASK GROUP CAUSED VOLTAGES TO START DROPPING STEADILY AT APPROX 0742Z, ELEVEN MINUTES BEFORE EQX OF REV 11018. ANALOG TAPE RECORDINGS OF ALFA IM REVEAL SECONDS AFTER PAYLOAD ENTERED [redacted] HORIZON ON REV 11018 (0812Z) THE PAYLOAD AUTOMATICALLY RESET. VOLTAGES INCREASED RAPIDLY TO ABOVE 11.0V AT WHICH TIME [redacted] CONTINUED PAYLOAD OPERATIONS. IM MEMORY DUMP ON REV 11022 REVEALLED THE DROP IN VOLTAGE AND [redacted] PERS RECOMMENDED SUSPENSION OR CUTBACK IN ALFA OPERATIONS UNTIL SUCH TIME AS PROBLEM COULD BE INVESTIGATED AND TROUBLE PINPOINTED. KWCONQUER CUT ALFA/BRAVO OPERATIONS BY APPROX 50 PERCENT AT THIS TIME. AFTER CAREFUL CHECK OUT OF PAYLOAD SYSTEMS A TIMER CHECK WAS INITIATED ON REV 11042 BY [redacted] TIMER TEST WAS POSITIVE, THE SYSTEM RESET PROPERLY, AND IN COORDINATION WITH [redacted] PERS, KWCONQUER ORDERED RESUMPTION OF FULL OPERATIONS WITH THE ALFA/BRAVO [redacted] ALL OPERATIONS ARE NORMAL AT THIS TIME AND VOLTAGES ARE GOOD.

PAGE THREE CONQUER 121 ~~T O P S E C R E T~~
2. PROBABLE CAUSE OF MALFUNCTION WAS COMBINATION OF LOW SUNLIGHT AND L TEMPERATURES. PAST EXPERIENCE INDICATES A NUMBER OF ANOMALIES OF THIS NATURE OCCUR DURING LOW SUNLIGHT PERIODS. PAYLOADS ARE NOW IN APPROX 70 PERCENT SUNLIGHT AND ON THE UP SLOPE.
E-2 IMPDET
~~T O P S E C R E T~~
BT

Enclosure (3) to BYE 55,346-74

~~TOP SECRET~~ EARPOP ZARF

Page 1 of 1 Pages
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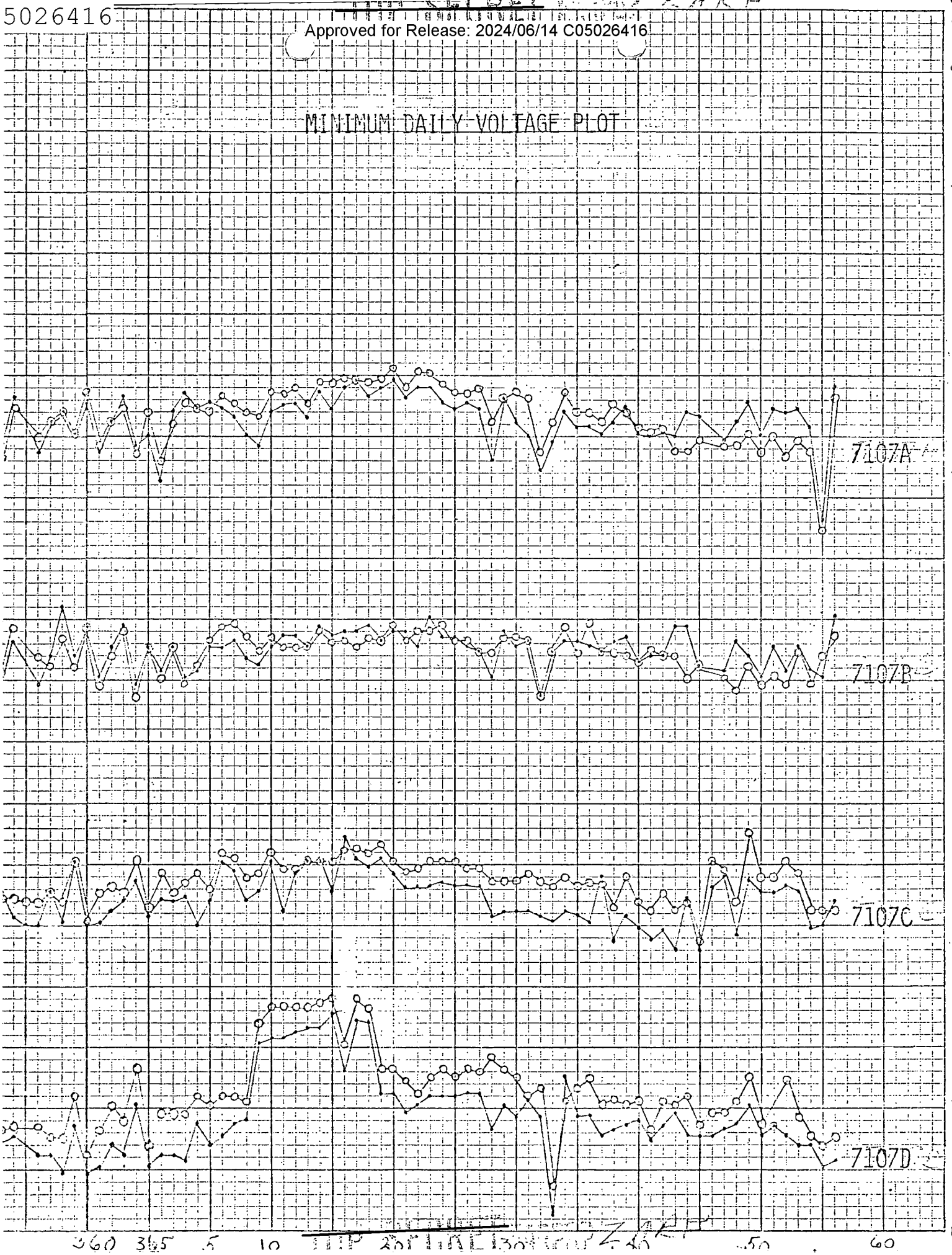
MINIMUM DAILY VOLTAGE PLOT



COLLECTION HIGHLIGHTS

Since the last TOG Meeting, the following has occurred:

Technical Intelligence and EOB:

SLM collection with Charlie/Delta [redacted] will be discontinued commencing 01 March. The loss of Delta SLM collection coupled with the instability of the Charlie payload have prevented the collection of usable SLM data for analysis. Charlie single-ball collection on ascending revs at [redacted] will also be discontinued effective 01 March. This is again the result of the Delta Malfunction in which we also lost delay mode capability. Single-ball collection over [redacted] is not cost-effective in terms of payload drain versus system output. Some slack will be taken up in [redacted] collection through increased tasking of southbound revs through [redacted]

[redacted] is intercepting a signal similar to [redacted] from the [redacted] Signal exhibits the same parameters as the [redacted] but unlike the [redacted] it exhibits unstable pri's.

[redacted] continues to intercept the [redacted] with a 47 pps prf mode.

[redacted] activity is up. [redacted] has reported 48 intercepts of these emitters this month. This could be due to the fact that payloads are over Europe during morning hours when system is brought up on test. Majority of intercepts are from [redacted]. [redacted] analysts are doing extensive work in identifying the various scan modes that are being seen from the [redacted]

Ocean Surveillance:

A total of 3751 [redacted] intercepts have been reported since the last TOG. 340 were equated to major combatants or auxilliaries. There were 57 locations of submarine associated radars reported.

[redacted] monitored the Kresta II ADM VOROSHILOV from the Baltic until vessel passed beyond their horizons along the west coast of Africa. Vessel is transiting to the Indian Ocean and will probably join the Pacific Fleet. This is the first Kresta II deployed to the Pacific and it will add the [redacted] radars to the environment of the Pacific sites. This vessel, with flag on

board, has relieved the CLCP ADM SENYAVIN and the Kashin SPOSOBNYY which have been on ops in the Indian Ocean since the recent hostilities in the Mideast. These two vessels are now in transit to the Sea of Japan and their movements are being monitored by [redacted] continues to monitor the movements of the AGM's deployed in the Pacific. AGM's are apparently conducting ops with the new active O/S radar satellite.

PAPS III Deployment:

PAPS III hardware and software were deployed to [redacted] on 21 January. Four HRB Singer reps and one NSG representative accompanied deployment. SEL 8600 computer was found to be in somewhat less than optimum operating condition.

Several hours were required to troubleshoot the 86 mainframe and correct problem. Problem was found in memory core and existing spare was also defective. Another core had to be shipped from CONUS.

Initial attempts to introduce PAPS III into the system failed. Several DCC cards failed and problems were encountered with the Macs/CRT interface. Since no spare parts package had been deployed for PAPS III, no spare DCC and MACS cards were available. Spares were again ordered from CONUS. HRB reps made several attempts to repair existing boards by replacement of individual IC's. This process is tenuous in terms of results and resulted in complete failure or the causing of problems in other cards. An SEL rep was sent to [redacted] the first week of Dec to troubleshoot the MACS/CRT interface. He confirmed problem as bad MACS cards. Still no spares. Two HRB reps and NSG rep returned to CONUS on 8 Feb. This left two HRB reps, one SEL rep on station and one HRB rep on the way to conduct training and assist in software maintenance, whenever the system came on-line. Spare parts for PAPS III arrived at [redacted] on 9 Feb, and two hours later the system became fully operational. Two HRB reps remained on board thru 17 Feb to correct minor software problems and to conduct operator training on the various options available. Computer and ER personnel are now indoctrinated on the equipment interfaces and reporting software mechanisms and [redacted] processing/reporting is continuing without major mishap. A considerable amount of time is still required to completely familiarize analysts with all the options available within the long term data bases this however will not hinder the speed and accuracy of the [redacted] product. The advent of the DIN/DSSCS system during the writing of software for PAPS III/COMMS interface created problems not previously foreseen. Certain COMMS functions unique to DIN/DSSCS were not included in message handler software. These problems will be corrected in a PAPS III maintenance package.

At this time it is too early to determine how PAPS III has enhanced the speed of the system. We will address this at the next TOG. However, there has been a definite increase in [redacted] volume.

ENCLOSURE (5) TO BYE 55,346-74

BASIC POPPY SYSTEM PLAN

I. Background and Purpose

Mission 7107 is the only currently operating and planned set of satellites in the POPPY System. Current planning for

a. Program C development and engineering support personnel. The current fiscal year has seen a significant shift in this effort from POPPY

b. Program C/CCP Operations personnel of the NSG, including field and Headquarters contingents.

c. Program C/NSG Operations Facilities, including communications.

d. NSA facilities and personnel that process POPPY data.

The purpose of this plan is to define FY 75 actions that will allow the POPPY System to meet NRP Mission Guidance objectives while

II. Objectives

a. Allocation of resources in such a manner that NRP Mission Guidance can be accomplished.

b. Plan for integration for disposition of all current POPPY assets.

c. Planning of actions within the POPPY System that will aid the [redacted] development, and ease the transition POPPY-to-[redacted]

III. Tasks

In keeping with the objectives of Section II, the following FY 75 tasks will be undertaken.

A. Development and Engineering Support

Continue efforts on the following

(1) Ground Stations (Engineering). This category covers engineering, materials and procurement for developing and deploying ground station faciltiies and for continuing engineering support of the POPPY ground stations. There are several classes of information into which this effort can be broken down.

(a) Electronic Systems. The POPPY site at [redacted] received the third in a series of PAPS (POPPY Automated Processing System) deliveries in FY 74. This sytem currently outputs to punched paper tape or to hard copy from which paper tape must be prepared for transmission. It is planned to install an automated communications interface that will increase reporting timeliness and reliability. The equipment for this interface has been purchased with FY 74 funds. This effort will include adaptation of the current processing software and deployment and installation. [redacted]

(b) Salaries/Overhead. The NRL provides engineering and logistics personnel to monitor and evaluate 7107 satellite and payload status and provide support of ground stations for operations. Specific activities are:

On-orbit Calibrations
Engineering Evaluations
POPPY TOG and engineering studies logistics
POPPY Relocation due to Transition

(c) Miscellaneous/Material/Travel. This item supports (1) (b) above for procurements less than $10,000 plus travel for NRL personnel.

(d) Data Processing. The NSA supports POPPY through an ongoing S/W development and maintenance effort.

(2) Ground Stations (Operating). This category covers replacement parts and other consumables purchased through the NRL, including current O&M, and NSG procurement of quick reaction spares and consumables at sites and travel required for technical coordination between the sites and NSG (G-54), in connection with SPO requirements.

(3) Services. This category provides contractor support for POPPY operations at [redacted] at the field sites as necessary and for same analytic support.

B. Personnel and Training

[redacted]