OUTGOING
NRL SPECIAL PROJECTS CONTROL NUMBER

BYE-61789-92

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| 920409 | 1 | HC |

SUBJECT
SEJ W/P PRO POPPY PROG
FOR MIS-7104/7105

DISTRIBUTION INFO

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| 1298 | 1 | 00 | | 920409 | |

TRANSFER

DESTROY

Pre-7104 launch
Cost RDT 12/24/63
Proposal + cover
ltr which was flown

NRL OUTGOING DOCUMENT
BYE-61789-92
1

Contains material
from prior
2 4/8/64 08-9273
ltrs: apr 64
or later
on various items of
(no mylar tab)

Proposed Program
for 04 + 05

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# PROPOSED POPPY PROGRAM FOR 7104 AND 7105 LAUNCHINGS

1. Informal discussions have been held with NRL personnel about the configuration for POPPY 7104 program. Since the launch date for this four-satellite launch has been pushed back to January 1965, a serious review of the configuration has been made. The prime requisite is to be responsive to the USIB requirement for broad and continuous frequency coverage in a long life configuration which would stress reliability. While 7103 covers most of the spectrum from 158 mc to 5100 mc it will be approximately one year old at the time 7104 is launched. Recognizing the need for frequency coverage in smaller increments, extending coverage to the higher microwave frequencies [redacted] the following changes have been advanced and encouraged by the NRO personnel.

a. The four satellites would consist of 24-inch diameter configurations to provide maximum space for circuit components and the larger configuration of solar cell layout to provide as much primary power capacity as possible.

b. Two of these Satellites would be conventional unstabilized units with the regular configuration and the other two would have stabilization. One would have three axis stabilization with an extended boom - viscous-magnetic damping system and the other would be two axis stabilized similar to that used in 7103C.

c. Each satellite would contain twice the number of collection systems as 7103 or a total of eight frequency bands per satellite. This would be accomplished by a simple selection system capable of providing any combinations of four intercept bands or any combination of an alternate group of four.

d. [redacted]

e. To accommodate the doubling of the number of active intercept bands within the satellite, new miniature types of electronic units will have to be developed to conserve space, weight, and power.

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[redacted] VIA BYEMAN
CONTROL SYSTEM ONLY

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f. Limited availability of space will preclude including any except the simpler types of cover experiments and these may only be accommodated in the unstabilized satellites on a space available basis.

FREQUENCY COVERAGE

The informal discussions between NRL and NRO have resulted in the following selections for the collection bands.

| | Primary | Alternate |
|---|---|---|
| 7104A | *170 - 205 | *550 - 650 |
| | 340 - 450 | 600 - 720 |
| | 1350 - 1850 | 690 - 920 |
| | *3200 - 4100 | *820 - 1080 |
| 7104B | *170 - 205 | 280 - 340 |
| | *550 - 650 | 2350 - 2860 |
| | *820 - 1080 | 2690 - 3070 |
| | 1080 - 1350 | *2960 - 3300 |
| 7104C | *155 - 165 | 450 - 550 |
| | 1850 - 2350 | 3800 - 4700 |
| | *4700 - 5300 | 6700 - 7300 |
| | 9050 - 9500 | 7900 - 8400 |
| 7104D | (1) *155 - 165 | 200 - 240 |
| | 230 - 290 | 5300 - 5900 |
| | *4700 - 5300 | 5900 - 6700 |
| | 7300 - 7900 | 8400 - 9100 |

(1) An attempt will be made to extend this to as low a figure as possible within the state of the art in isolation filters.

Since the interrelationship of antenna configuration, transmitter pulse length and other circuitry parameters is extremely critical, any modification of the above frequency coverage will result in considerable compromise. It is felt even the smallest modification will require major compatibility studies to establish the feasibility of any changes proposed.

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GROUND STATION

To meet the requirement for site monitoring and quality control of the data product tapes, an extensive effort is being carried forth to provide this capability of major operational sites during the Spring of 1964. Eventually it is hoped that the exploitation of this field processing capability will provide an early alert to new and unusual signal types.

The existing field stations will be updated by azimuth deviation tracking units, recorder monitor metering kits now and in the near future, an impulse noise blanking system.

Further modification of the field stations will include a broader bandwidth receiving system and a positive system for indicating receiver tuning on pulse type data.

FUTURE PROGRAM

Under the POPPY system there is need to consider the requirements for a further program in FY 65 since the existing program has been pushed back into the first half of that fiscal year. Proposed plans for the second half of FY 65 are as follows:

Following the launching of 7104 another four-satellite combination should be planned for approximately six months after 7104 or about June 1965. This configuration could cover any selection of 32 Radio Frequency Bands, from approximately 155 mc through 16 gcs. To accommodate the higher microwave frequencies two stabilized satellites should be considered. Experimental electronics has demonstrated the feasibility of indicating

the data from which is capable of being reduced in the field, is available at microwave frequencies. All of these techniques are available for incorporation in the 7105 launch combination.

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To match the [redacted] satellite system the ground stations will have to be updated to provide optimum configuration for this type data. Also if quality control of the data is to be attempted at the field sites, [redacted] equipment will be required at selected sites.

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