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(b)(1)
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From: Dir. US NRL Wash D.C. 20390

TO: Chief of Naval Operations (OP 92)

Subj: Project POPPY Alternate Proposal for 7104 Launch/17 November 1964
on or after

Ref: (a)NRL 5400-26 HOL:pk BYE 19979-64 of 20 March 1964

(b) OP-922Y3/bmb - BYE 19697-64 of 23 March 1964

(c) OP-922Y3/Bmb. BYE 19712-64 of 8 April 1964

Enclg (1) Proposal for Alternate Launch for 7104 on/17 November 1964.
or after

1. Reference (a) outlines a proposed ~~satellite~~ ^{a four satellite} program which ~~could~~ ^{would} be ready for launching after ~~the~~ 18 February 1965.
2. References (b) and (c) both request NRL to review the 7104 Launch and indicate the changes which would be required to provide for a launch in November 1964.
3. The US Naval Research Laboratory considers the proposal for a four-satellite launch detailed in reference (a) is vastly superior to the ~~proposal~~ ^{proposal} offered in enclosure (1) when weighed against the requirements for General Search set by the US Intelligence Board:. Specifically with regard to the extent and continuity of frequency coverage, the proposal of Ref (a) offers continuous frequency coverage from 155 mc to 9500 mc whereas the proposal of Enclosure (1) offers ~~only~~ ^{only} coverage ~~only~~ from 155mc to/5300 mc with a gap between 1350 and 1850 mc. This gap is due to an antenna incompatibility between this band and other/bands which will be included ~~in~~ ^{higher priority} in the design.

4. The frequency bands above 5300 mc will ^{require} for reasons of sensitivity, ~~require~~ ^{with delivery expected/} rf-preamplifiers. These components are now under development/and prior to integrating

~~SECRET~~ payload, extensive sub-system evaluation and environmental tests must ^{CONTROL SYSTEM ONLY} be carried out. It is for these reasons that no coverage is proposed above 5300 mc in the 7104 ~~launch~~ ^{November} launch proposed in Enc(1). ^{(b)(1)} ^{(b)(3)}

to begin in September

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PROPOSED ALTERNATE LAUNCH FOR 7104 "POPPY" PROGRAM

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[redacted] review of the 7104 proposal has been made to determine the abbreviated design which could be ready for launch on or about mid-November 1964. The prime requisite has been to be responsive to the ^{US Intelligence Board} USIB requirements for Broad and Continuous General Search over a long life. While 7103 covers most of the frequency spectrum from 158 to 5100 Mc, it will be ^{about} 10 months old by the earliest time which 7104 could be prepared for launch, and replacement of certain collection bands can be expected to be desired by then. Recognizing the need for frequency coverage in smaller increments, [redacted]

[redacted] the following alternate proposal is made.

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a. The three satellites would consist of 24-inch diameter units to provide for maximum volume of electronic payload and at the same time increase the primary power capability by utilizing larger solar cells, ~~than have been employed in the past.~~

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b. Two of these satellites would be conventional unstabilized units with the normal configuration for the collection experiments and the third one would have the two axis gravity gradient stabilization R and D experiment similar to that now in use on 7103C.

c. 7104A and 7104B each would have two groups (a primary group and an alternate group) of four collection experiments (as shown in the Tabulation). By command either primary or alternate group could be selected for use. Within the selected group any combination of the four collection bands may be interrogated for use on a particular orbit.

d. 7104C would have two groups of three collection experiments and by command either the Primary group or the Alternate group can be selected for use on a particular orbit and within this group any combination of ^{the} three bands may be activated for use.

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[redacted]

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b. Satellite 7104A would be spin stabilized. It would contain a [redacted] experiment supported by separate funds. 7104B would contain no stabilization system. 7104C would have the two axis gravity gradient stabilization R and D experiment similar to that now in use on 7103C. An [redacted] experimental damper proposed by Philco is being considered for 7104C in place of the G. E. design. It would provide damping independent of the earth's magnetic field.

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2. After careful review of the schedule factors the following Program "C" experiments are proposed for an abbreviated 7104 Launch on or about mid-November. *can be provided*

<u>Primary Band</u>	<u>Payload 7104A</u>	<u>Payload 7104B</u>	<u>7104C</u>
1	165 - 200 *	165 - 200 *	155 - 165
2	600 - 720	450 - 550	1350 - 1850
3	690 - 920	820 - 1080 *	4900 - 5300
4	820 - 1080*	1850 - 2350	

Alternate Band

1	200 - 240	230 - 290	280 - 340
2	550 - 650 *	550 - 650*	340 - 450
3	2690 - 3070 *	2350 - 2860*	3800 - 4900*
4	3200 - 4100*	2960 - 3300*	



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3. This proposal provides essentially the same band coverage as previously proposed for 7104A and 7104B in the February schedule. The selection of the collection bands proposed for 7104C is predicated on (1) availability of components to meet the schedule, (2) compatibility and availability of antenna designs to match the collection experiments, and (3) meeting the General Search requirements so that only one gap exists (1080 - 1350) in the proposed coverage from 155 to 5300 Mc.

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a. This proposal provides the same frequency coverage experiments on two of the payloads as previously proposed for the February launch. ~~except~~ The only difference in the designs for the first two payloads ~~designs~~ for either February or November is that for the earlier date, it is not possible to include the R & D experiment for measurement of due to insufficient time to ~~prepare this complex instrumentation.~~ ~~rather than complete experiments~~

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b. The third payload (7104 C) for the November launch has only six collection instead of the eight bands proposed for the 7104A and 7104B. bands available for use. ~~And~~ This limitation is imposed by (1) availability of components to meet this schedule, & (2) compatibility and availability of antenna designs to combine these six collection experiments. The selection of ~~the~~ collection bands has in-so-far as ~~is~~ possible ~~is~~ taken into account the priorities set by the US Intelligence Board for general search.

c. No attempt will be made to provide the three-axis stabilization or On-orbit station keeping in this November launch schedule due to insufficient time. ~~xx~~ NRL is continuing to study this area of ~~technology~~ payload control for a future application

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