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From: Dir. US NRL Wash D.C. 20390

TO: Chief of Naval Operations (OP 92)

on or after

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

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

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

- a four **makenthintesm **mountainx**preparenx**mperthontesm 1. Reference (a) outlines a proposed/satellite program which **mountain** be ready for launching after **ke** 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 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 www.x coverage only from 155mc to/5300 mc with a gap between 1350 and 1850 mc. This gap is due higher priority to an antenna incompatibility between this band and other/bands which will be included xmxmmm in the design.
- 4. The frequency bands above 5300 mc will for reasons of sensitivity, require with delivery expected/rf-preamplifiers. These components are now under development/and prior to integrating HANDLE VIA BYEMAN

yload, extensive sub-system evaluation and environmental tests must be carried out. It is for these reasons that nocoverage is proposed above 5300 mc in the 7104 much November (aunch proposed in Euc/(1).

a to begin in Soptember

DRAFT

PROPOSED ALTERNATE LAUNCH FOR 7104 "POPPY" PROGRAM

view 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 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 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,

following alternate proposal is made.

- 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.
- 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 the of three bands may be activated for use.

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b. Satellite 7104A would be spin stabilized. It would contain a experiment supported by separate funds. 7104B would contain no stabilization system. 7104C would have the two axis gravity gradient tabilization R and D experiment similar to that now in use on 7103C. An 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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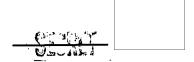
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After careful review of the schedule factors the following Program "C" experiments are proposed for an abbreviated 7104 Launch on or about mid-

	<i>(</i> ************************************		
Di Rimary	Purford	Paylos	
Band	7104A	<u>71Ó4B</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*	

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 prop	osal provides the same frequency coverage experiments on two of the
	eviously proposed for the February launch. ********* The only difference for the
in the/first t	wo payloadx xxxxxxxx for either February or November is that for the
the earlier da	te, it is not possible to include the R & D experiment for measurement prepare this complex instrumentation.
of	due to ansufficient time to/mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm
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- 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.km NRL is continuing to study this area of kmm/mm/mm/m payload control for a future application

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