OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

~~SECRET~~ ~~Secret~~ [redacted]

4000-256:AB:sor

TO : Howard Lorenzen

DATE: 9 November 1970

FROM : [redacted]

SUBJECT: Management of NRL's participation in Program "C"

Ref: (a) NRL ltr Ser 51916-70 of 26 Oct 1970

1. [redacted] and I have become increasingly concerned about NRL's management structure relative to Program "C". In an earlier communication, I outlined to you my views concerning my desire to make Code 5614 into an independent Branch with full management resources necessary to pursue NRL's role in Program "C". The target date for establishing Code 5614 as an independent Branch was given as 1 January 1971. In view of the recent cost growth in the Program "C" proposal and in view of the extremely unsympathetic review given to Program "C" and its cost growth by the National Office, it is clear that NRL must take immediate steps to keep a much tighter rein on this program. [redacted] and I are extremely upset that the first indication we had of any cost growth in the program came when we were given reference (a) to chop. This is hardly a proper way to inform the management of NRL concerning the status of a program.

2. I would like you to take steps to provide regularly an NRL internal review of Program "C" on a monthly basis. Furthermore, I want to be sure that both [redacted] and I are informed of any changes which affect the status of this program as soon as they happen and before a letter is written to external organizations. We do not particularly like to discover the status of a program after-the-fact or on an info-addee basis.

3. I have asked [redacted] to arrange a meeting between us when I get back from Hawaii. At that time, I would like to have a report on the progress to date relative to the establishment of Code 5614 as a Branch. I wish to know the outstanding problems that obtain and any progress which has been made relative to recruiting the necessary personnel. I also would like a comprehensive review of the program status in considerable detail. This review should include project milestones, cost controls, technical problems, etc. I also want a response to my last communication to Reid Mayo requesting a demonstration of the software and a complete discussion of the programming for the SEL-86.

[redacted]

Director of Research

Copy to:
Code 1000/Cy 2
Code 5000/Cy 3
Code 5006/Cy 4
Code 5614/File/Cy 5

[redacted]

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Copy 5 of 5 copies

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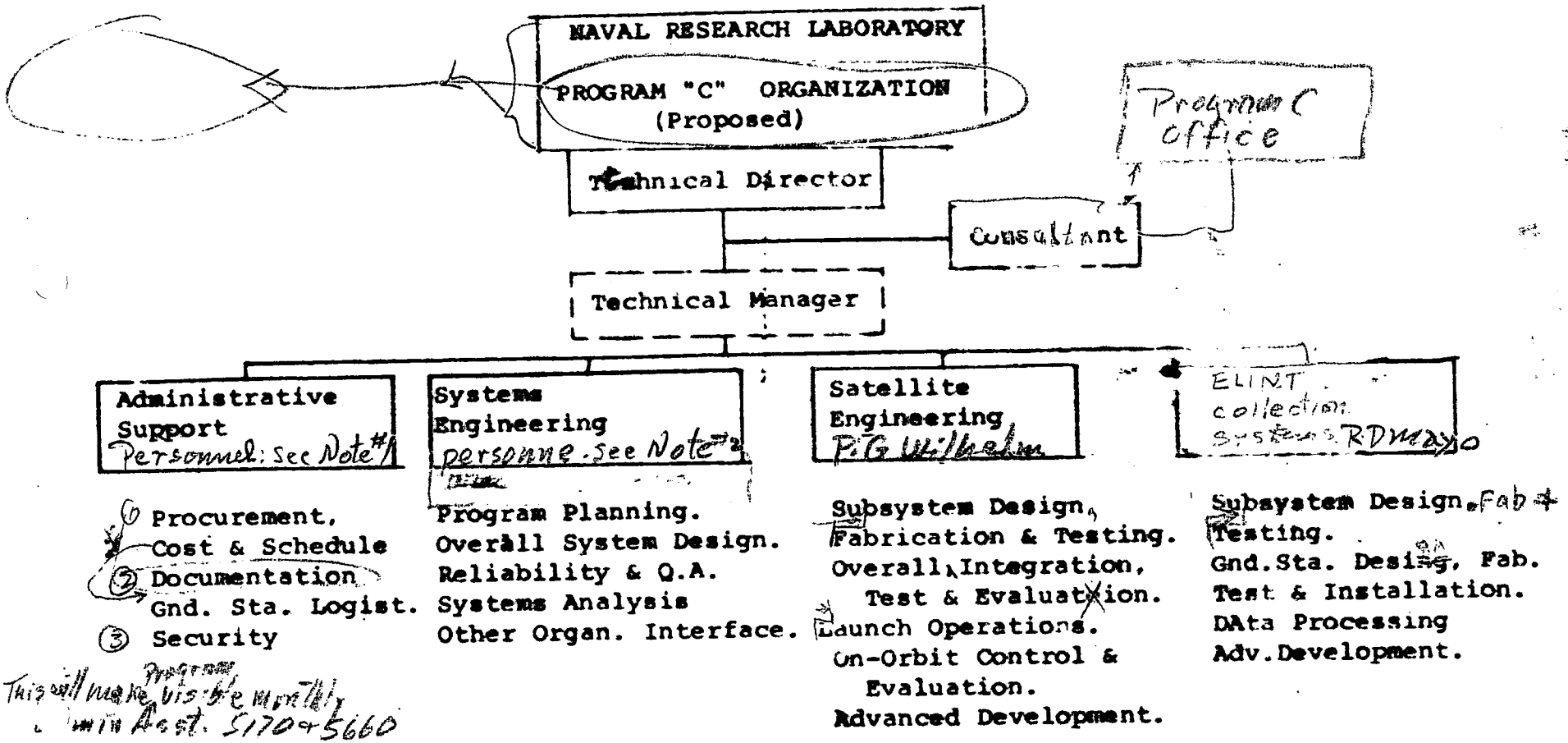

NOTE: The items under each block are Functions, not organizational units. The latter will be shown in subsequent planning, assuming this proposed approach is approved.

Ident Uncancies: (3) for 5660 (Yoeman Adm Asst Note #2: Sec. Note #1

Approved for Release: 2024/06/12 C05026165
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~~S E C R E T~~ EARPOP BYEMAN CONTROL SYSTEM [redacted] NOVEMBER 1970
CITE CONQUER 480
ROUTINE [redacted] INFO ROUTINE PROBE

SUBJ: POPPY AUGMENTATION AT [redacted]

A. DIR, PROGRAM "C" MEMORANDUM BYE/66387 17 AUG 1970 "PROPOSAL FOR POPPY SUPPORT TO OCEAN SURVEILLANCE"

1. PROGRAM "C" MANAGER HAS REQUESTED THAT THIS HQS UNDERTAKE TO DETERMINE MORE SPECIFICALLY THE EXPENSES ANTICIPATED IN ESTABLISHING THE POPPY FACILITY AT [redacted] USING DATA INCLUDED TAB B REF A AND TOTAL COST ESTIMATE $372,000 DOLLARS AS POINT OF DEPARTURE, [redacted] EQUIPMENT CONFIGURATIONS HAVE BEEN STUDIED AND THE FOLLOWING POINTS APPEAR TO REQUIRE CLARIFICATION:

A. USE (AFTER REFURBISHING) OF SEL-810A COMPUTER SYSTEM CURRENTLY INSTALLED [redacted] IS OFFERED AS MINIMUM COST METHOD PROVIDING [redacted] FACILITY WITH COMPUTER PROCESSING CAPABILITY. HOWEVER, REQUIREMENT FOR ON SITE ANALOG-TO-DIGITAL DATA CONVERSION EQUIPMENT IS NOT ADDRESSED NOR LISTED TAB B REF A.

B. DIGITAL BUFFERED RECORDING SYSTEM (BTM-9 OR SIMILAR) IS NOT INCLUDED REF A FOR [redacted] INSTALLATION.

C. ONLY EQUIPMENT SPECIFICALLY INCLUDED REF A FOR COLLECTION (RED/GREEN) POSITIONS AT [redacted] ARE NINE RS1A RECEIVERS. IT IS INDICATED THAT ALL OTHER EQUIPMENTS REQUIRED FOR COLLECTION/ANTENNA SYSTEMS WILL BE AVAIL FROM THOSE UNITS BEING RETURNED FROM [redacted] THIS NUMBER RS1A RECEIVERS (NINE) WILL PROVIDE FOUR EACH FOR [redacted] COLLECTION POSITIONS WITH ONE SPARE. UNDERSTAND 7107 SERIES (WHICH WILL BE OPERATIONAL BY THE TIME THE [redacted] FACILITY IS ESTABLISHED) DESIGN IS BASED ON THREE (B,C,D) DATA TRANSMITTER DOWN LINKS, WHICH IMPOSES REQUIREMENT FOR SIX RECEIVERS EACH COLLECTION POSITION (I.E. 12 PLUS SPARES).

D. COMMAND INTERROGATION POSITION AND ANTENNAS FOR [redacted] FACILITY WAS NOT INCLUDED AS PART OF PROPOSAL REF A, HOWEVER, IT IS CONSIDERED ESSENTIAL THAT THIS CAPABILITY BE PROVIDED FOR [redacted]. EQUIPMENT RESOURCES FOR THIS CAPABILITY HAVE NOT BEEN IDENTIFIED AND ARE NOT ADDRESSED REF A.

2. REQUEST ADVISE IF EQUIPMENT DEFICIENCIES NOTED ABOVE ARE CURRENTLY AVAILABLE WITHIN PROGRAM "C" RESOURCES WITHOUT ADDITIONAL COSTS OVER THAT $372K AUTHORIZED REF A. IF NOT, REQUEST PROVIDE YOUR BEST ESTIMATE ANY ADDITIONAL EXPENSE ANTICIPATED FOR ALL UNITS PROCESSING/COLLECTION AND/OR COMMAND EQUIPMENT NOT CURRENTLY PROGRAMMED/FUNDED OR OTHERWISE AVAILABLE WITHIN PROGRAM "C" RESOURCES.

~~S E C R E T~~
BT

 Dec 1970

"AUGMENTATION OF PROGRAM C FOR OCEAN SURVEILLANCE)

1. Introduction:

The program for Augmentation of Program C for purposes of Ocean Surveillance was initially proposed by Director of Program C in June, 1970 subsequently reveiwed by NSA and then resubmitted by Director of Program C as Reference (b). Initial Funding approvals were SECRET authorized by Reference (c) in the ammount of $1220.5K with the [redacted] portion of the proposal being deferred to FY-72.

2. The information provided in the table of this Enclosure presents both the current year Summary and the Financial program for FY-72 and FY-73 for this "Augmentation" effort. It includes an Interrogation complex for [redacted] as detailed in Director Program C Memo to DNRO on 5 November 70, BYE-66442-70. It includes the A-to=D system and the PDE development detailed in Dir Program C Memo to DNRO of 5 Nov 70, BYE-66449-70. In addition to these items there is included a more realistic estimate of the NRL Salary & OH and the Misc. Mats Travel and Shipment associated with this effort. In accordance with the guidance of Ref (e) and (f) the Operating and Maintenance costs for the "New or Replacement" Systems are itemized for each site by Fiscal Year.

3. Proposed for FY-73 is ~~FY-73 proposes~~ a program for procurement and deploying two SEL-Model-86 "Second-Generation Computer Systems" for the Pacific arena; one for [redacted] and the other for [redacted]. In addition to these processing systems there is also proposed a development program for adding the Antenna Scan and Time-Difference capability to the PDE Hardware system and the Software burden for accomodating these developments.

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AUGMENTATION

	FY-71	FY-72	FY-73	
I - SPACECRAFT (Development, Recurring)				
A. ELINT Payload:				
B. Command/Control:				
C. Telemetry:				
D. R F Systems:				
E. [redacted] r Supply:				
F. Attitude Control:				
G. Station Keeping:				
H. NRL Salaries & OH:				
I. Misc,Mat, & Travel:				
Subtotals:	—o—	—o—	—o—	
II- GROUND STATION (Developmental/Investment)				
A. Electronic System:	70.9	622.0	800.0	
B. Antenna Systems:				
C. NRL Salaries & OH:	21.5	60.0	120.0	
D. Misc,Mats. & Travel:	1.5	41.1	175.0	
E. A-to-D Systems:	999.0	141.0	1485.0	
Subtotals:	$1092.9M	$864.1K	$2580.0K	
III-GROUND STATION (Operating)				
A. Current Syst. O&M			57.0	
B. New & Replacement		58.0	90.0	
	—o—	$58.0M	$147.0M	
IV- FACILITIES (Investment):	—o—	$49.0M	—o—	
V- SERVICES (Operational):				
A- Contractor Services:	—·—	—·—	—·—	
B- Computer Services:	80.0	90.0	100.0	
	$80.0M	$90.0M	$100.0M	
FY TOTALS	$1172.9M	$1061.1K	$2827.0M	
APPROVALS	$1220.5M			
CARRYOVER	$47.6K	-$47.6M		
PROPOSED BUDGET		$1013.5K	$2827.0M	

								STATE COLLEGE	FY TOTALS
FY-71									
FY-72	30.0				10.0			78.0	58.0
FY-73		30.0	30.0						90.0
		10.0	10.0					10.0	

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~~SECRET~~ [redacted]

R&D spacecraft for Mission 7107:

Background:

The ~~normal~~ NRL position ~~for NRL~~ has consistently been on the subject of R&D opportunity in Program "C" ~~is~~ to recommend it strongly so that the future spacecraft systems can be brought to flight certification at the earliest time possible and thus push back the state of the art for improved ~~the~~ flight systems and techniques. It is for these reasons that Payload #176 was engineered and included along with Mission 7106. One of the experiments, (the one with a Frequency readout in the 320 to 420 MHz and the 820 to 920 MHz bands) has a technique where there is an amplitude comparison made, using ~~payload~~ electronic systems in the spacecraft. It is a scheme originally used for an airborne DF ~~xxxxxx~~ and adapted on this occasion for space use. In considering the techniques used for a [redacted] experiment one ~~realizes the~~ must, of necesity ~~of~~ ~~making~~, a comparison of amplitudes to determine [redacted] of the signals. The recent community discussion of another [redacted] (ROSALIE) has also given rise to the opportunity which ~~is~~ could be available to instrument such ~~this~~ [redacted] df scheme in the R&D spacecraft for ~~the~~ Mission 7107. The strength of this system is that the compatibility within the spacecraft would be ~~guaranteed~~ assured through the down link and data formating processing interfaces. There are problems in the use of a roughly stabilized spacecraft, ~~in being~~ to be able to resolve adequately, the instantaneous attitude of the spacecraft to support direction of [redacted] The scheme has in practice aboard aircraft, given relative readings of better ~~than~~ one degree and thus does ~~xxx~~ suggest that ~~it xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx~~ an engineering solution would be possible to utilize this technique successfully from space. There are geometry-of-intercept aspects ~~of~~ to the accuracy being experienced in the normal [redacted] effort of Program "C" that ~~could~~ might be relatively improved if ~~this~~ such a DF system was simultaneously used from the same spacecraft. Keep in mind that any instantaneous DF angle-of-arrival system does materially improve the geopositioning ability against the signal which is very brief or the one which does not illuminate the spacecraft with its main antenna-beam. The significant aspect of ~~wedding~~ combining these [redacted] is that ~~they are each strong~~ one is strongest where the other is weakest in capability. See the chart below:

~~SECRET~~ [redacted]

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A-1

CHARACTERISTIC		AMPLITUDE COMPARISON DF
1- Measurement of Sig. Antenna charactistics	excellent	very poor.
2- Signal Amplitude Measur ement	Excellent	meaningless on minor lobes.
3- Location of brief sigs.	Limited	no reduction of ability
4- Probability of Intercept	Depends on scan agility of emitter	limited by small footprint of collection system.
5- Frequency Coverage	Unlimited	Technique highly sensitive to bandwidth & wavelength.
6- Collection antenna system characteristics	Omni is best	Highly sensitive in determining performance.
7-		

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43-1

SECRET

R&D spacecraft for Mission 7107:

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SECRET [redacted]

This [redacted] system imposes a heavy structure demand on any spacecraft and it is not advisable to attempt to put in one of the primary spacecraft at this point. It could in the final analysis also levy space and power requirements on the already fully committed primary spacecraft that could not be satisfied either so that in order for it to be brought into contention for Mission 7107 it must be included in the R&D spacecraft, a subject which will be discussed with all its cost, schedule and technical implications under a separate staff study.

Cost implications for modification of the 4-Primary spacecraft:

Using the re-furbished spare components from previous missions is the only way that this can be undertaken without a schedule slip, since the pace-setting vender is the one from whom all the collection systems above 3600 MHz are purchased. This involves both C and X-Bands Ocean Surveillance spectrum systems. The X-Band Comb filter is already under design discussion and does not appear to be a schedule critical item except as it imposes heavily on the already burdened command system. Even this does not appear to be a delay-impacting item though, just one which requires significant costs and effort.

The refurbishing of the older electronic systems is both costly and time consuming but not exceedingly so when the operational capability is considered.

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