	Jun . Con .	,	DATE	
	(When filled in	·		
RIGINATOR		SERIAL NO.	ENCLOSURES	ckd
TE REC'D IN NRL COPIES R	EC'D COPY NOS.	RECEIPT NUMBE	R	
BJECT			CI 5-20	7-94 103
OUTE * COPY WITH SIG	NATURE DATE D	DATE ROUTE	COPY WITH	DATE DATE JT RETURNED
TO NOT ENELS	NRL C	UTGOING I	MININE Discoment	
	BYE-	51905-68		
				<u> </u>
· · · · · · · · · · · · · · · · · · ·	FROM		and the second s	DIVISIONS DO NOT FILL IN A
INSTRUCTIONS		Oir, NRL		
Prepare 2 copies of this rou forward All copies together	with meces	MANUAL PROPERTY OF THE STATE OF	H-IDENT SYMBOL	
sary correspondence and othe	r documents: ORIG	June 1968		DATE MAILED
PURPOSES		THE PARTY OF THE P	BYE: 51905-68	FILE 10
FOR: INFORMATION 7. FOR G			A BOOK TO THE WALL TO SE	A STATE OF THE STA
FOR APPROVAL 8. FOR C	OMPLIANCE			
为"严重多数的确保权力"。2016年120日,120日,120日代	IBUTE ENCLOSURE N ENCLOSURES	Mission:7107 for NRL ef	the section is the management of the section of the	costing details
FOR NECESSARY				
ACTION III RETAI	N COPYERS TO A SELECTION OF	新文字 最大的大型。 Arthur 1987	A CONTRACT OF THE PROPERTY OF THE PARTY OF T	a displaying the state of the s

Approved for Release: 2024/06/10 C05026021 SPECIAL PROJECTS CONTROL NO.

TOP SECRET - HANDLE VILLE CONTROL CHANGES

1	NAL	BYE-51905-68	Ì
			

						.	3	Ī	DATE		r rate-2	190 5- 65
	•				(When fille					en 68		
ORIGINAȚ	OF	२ ते असि	i (G	neo 5500)		SE Di	RIAL NO. 12-51903	-GD	ENCL(OSURES C		
DATE REC	. ' D	IN NRI	LCOPI	+	OPY NOS.		CEIPT NUI		c	77 F1 + 2	to N	10'
SUBJECT LÄSCS PRODE	J.1		Ti in	andere en en en en	y ecoti				0	73 fr	N	
ROUTE TO	*	COPY NO.	WITH ENCLS:	SIGNATURE	DATE OUT	DATE	ROUTE TO	* COP	Y WITH	SIGNATURE	DATE OUT	DATE RETURNE
មរ (ច្រះេ	١. أ	75° (Å	V-23	28-1949 -	986 e 78	pehed :	er ree	• রখ্যারঔ	1 <i>2</i> 73	nii0		
				Will be a second of the second								
				٠.								
		-							-			
			7.					-				
				· · · · · · · · · · · · · · · · · · ·						<u> </u>	7	
4.												
												•••
											-	-
RETURN DO NOT I	TH 701	IIS RO UTE 1	UTE S	LIP TO NRL S HER SECTION	PECIAL PI OR BRANC	ROJECTS H.	OFFICE, R	OOM 222	2, BLD	G. 43.		
* SYMBOI A-ACTION C-COMME I-INFORM R-RETAIN E-EVALU	Ñ NT NA	TION		ACTION TA	KEN BY		DE	STRUCT	TION R	EPORT NO.	FINISH	HED FILE

TOP SISTER - HANDLE VIA BYEAR CONTROL CHARMESL (When filled in)



5600:RDM:sr BYE 51905-68 5 June 1968

HANDLE VIA BYEMAN CONTROL SYSTEM

From: Director, Naval Research Laboratory, Washington, D. C. 20390

To: Director, National Reconnaissance Office (Attn:

Comptroller)

Via: (1) Director, Program "C" (CAPT Moffit)

Subj: Mission 7107; supplementary costing details for NRL effort on

Ref:

(a) Meeting at NRO on 31 May 1968

(b) NRL ltr of 7 Feb 67, BYE 26904-67

(c) NRL ltr of 6 Mar 67, BYE 26906-67

(d) NRO 1tr of 21 Mar 67, BYE 52212-67

(e) NRL 1tr of 18 Apr 68, BYE 51903-68

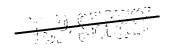
(#384) (f) Msg cite MARGO 617-8 of 112055Z April 68

INTRODUCTION

Reference (a) requested a further breakdown in funding information on Mission 7107 regarding the POPPY Program. The following answers have been prepared, using the same numbering sequence as specified in reference (a).

Reference (b) proposed a detailed design plan for Mission 7106 and a design concept for Mission 7107. Reference (c) provided an estimate of costs for the effort. Reference (d) authorized the Naval Research Laboratory to commit \$640 K to protect the acceleration of Mission 7107 but contained no decision on the concept for this mission. NRL has attempted to proceed with certain advanced concept developments for Mission 7107, however, it has been handicapped by not having a firm plan for this mission. Reference (e) is a resubmission of cost estimates for Mission 7107 and reflect the experience obtained during the intervening thirteen months since the previous cost estimate (reference (c)). The great similarity between the concept for Mission 7107 and that of Mission 7106 now under active production at NRL, has provided an

TOP SECRET HANDLE VIA BYEMAN CONTROL SYSTEM Page 1 of 5 pages Copy 3 of 3 copies





TOP SECRET
HANDLE VIA BYEMAN CONTROL SYSTEM

5600-RDM:sr BYE 51905-68

excellent basis for determination of the costs. The primary reasons for the increased costs for Mission 7107 are that the increased demands for data improvement to support the problem have led to development and ultimate deployment of new and improved systems into the POPPY Program both in the payload and in the overseas data collection sites. This accelerated evolution of the operating systems has given rise to additional costs both now and in the future. The payload costs rise directly in proportion to their increase in weight and sophistication. It is also true that there have been several informal discussions with members of the NRO staff on the technical requirements to enhance the basic POPPY design, resulting in an increase in the sophistication of the payload and an increase in the cost of the Mission.

In view of the past experience at the Naval Research Laboratory in the production of similar satellites it is not possible to consider completion of Mission 7107 payloads in a period less than eighteen months following the launch of Mission 7106.

- 2. In answer to the questions of how much is included in FY 69 for where and why costs for included in the estimate are as follows:
 - (a) A new interrogation system to cover the new command frequencies was included \$35 K. (The older system will be retained to cover the satellites in orbit.)
 - (b) New Azimuth/Elevation Antennas for both interrogation and data collection are proposed for this site, \$75 K. This will provide continuous tracking at the station on overhead passes without the voids in data which results from lithe existing antennas which are not steerable in elevation. The delayed commands for following orbits also require the elevation tracking antennas.
 - (c) Temperature-humidity control for the operating areas, \$15 K. The high humidity at the site has demonstrated the need for controls to give satisfactory operation of the magnetic tape systems and to reduce the maintenance demands caused by the high humidity.
 - (d) Analog-to-Digital conversion system, \$395 K. This item was included per the request included in NSA message, reference (f).

HANDLE VIA BYEMAN CONTROL SYSTEM

Page 2 of 5 pages
Conv 3 of 3 contes

Gaadle via Bylman Control System TOP SECRET WI WILL SYSTEM HANDLE VIA BYEMAN CONTROL SYSTEM

5600-RDM:sr BYE 51905-68

With the field digitizing system, it will be possible to monitor all four satellites simultaneously by utilizing one of the ground station receiving-antennas to collect data from two satellites spaced within 50 miles from one another and at the same time use the other ground station antenna to simultaneously monitor the data from the other two satellites

I thus, it will be possible with the deployment of the field digitizing system to collect and digitize in real-time the data from all four satellites simultaneously. This technique will allow the full frequency and azimuth capability normal to POPPY, to be extended

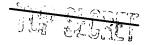
3. With regard to the FY 68 and FY 69 estimates - - -

- (a) NRL salaries and overhead are directly related to the amount of Engineering and Model Shop demands. During the production phases of the various satellites, this labor cost does normally rise appreciably as reflected in the figures of reference (e). With the slippage of the launch schedule this increase in labor cost will be delayed until after the beginning of FY 69. The average monthly labor and overhead cost experienced during the first eight months of FY 68 was \$134 K with the actual cost for February being \$137.3 K This labor cost will remain fairly constant until the four month period beginning in August during the peak period of Payload construction and pre-flight tests. Then the average labor cost will approach the \$160 K/month estimated in reference (e).
- (b) The funding at NRL for the remaining two months of FY 68 (our fiscal reporting lags about one month) is \$1,927 K. The ten month average cost per month is \$666.1 K which would leave us an estimated carry-over of about \$500 K. NRL should have the new funds in hand prior to 1 August.

	(c) The estimates for	miscellaneous material	s, travel and shipping
	estimated higher than F	Y 68 to support the plan	nned updating of both
the		The new systems for in	terrogation and data
col	lection will require extr	a travel to effect the in	stallation. Operating
spa	res and continuing logi:	stic support for the add:	itional installations are
CO	vered. Shipping costs to		areas will be approxi-

TOP: SECRET
HANDLE VIA BYEMAN CONTROL SYSTEM

Page 3 of pages
Copy 3 of 3 copies



Namuo via Byeman Control System

TOP SECRET HANDLE VIA BYEMAN CONTROL SYSTEM

Control System

5600-RDM:sr BYE 51905-68

mately three times as expensive both in dollars and in time as that experienced during the past year in the deployment of the advanced analog to digital system into the

(d) Investment in ground stations continues to be high because of refinements in the satellite technology which require complimentary ground station support. In addition, as the operational capability of the program is further developed to contribute in the areas of

of and timeliness of the program be enhanced accordingly. For this reason a more sophisticated quality control complex has been advocated. As the data is converted in real time from its received (analog) format to the digital format with the addition of a precise time notation on each pulse, it has been vitally necessary that the quality control of data be examined continuously. The trend of these investment costs in ground stations is downward as reflected by this summary of the FY-68,-69,-70 totals:

FY 68 - \$2930 K FY 69 - \$2290 K FY 70 - \$1965 K

Facility costs likewise reflect the need for changes occasioned by the changing nature of the satellite configurations. Better understanding of total satellite performance both prior to and after launch, dictate improved observation and measurement facilities. These costs are decreasing as reflected in the estimates below:

> FY 68 - \$557.8 K FY 69 - \$426.2 K FY 70 - \$375.0 K

(e) Requirements for Operational Field Assistance in FY 69 will be greater as the result of the installation of the digitizing equipment at the Two additional resident field engineers will be necessary to provide the technical support, programming and computer expertise needed to support these installations.

SUMMARY

As pointed out in reference (e) the costs and schedule have usually been defined first and then at some time later the operational and technical goals have been filled in by the community. Such procedures result in

TOP SECRET

HANTOE UIA EVENIAN CONTROL SYSTEM

Page # of 5 pages
Conv 3 of 3 copies



lizzele via byewan Control System C05026021

Approved for Release: 2024/06/10 C05026021.

100

TOP SECRET
HANDLE VIA BYEMAN CONTROL SYSTEM

5000-RDM:sr BYE 51905-68

either poor compromises of operational capability or they result in a significant adjustment to the cost and schedule elements in order to meet the operational goals which are imposed. This Laboratory therefore requests an early resolution to the definition for Mission 7107 concept; and design detail plan.

HANDLE VIA BYEMAN CONTROL SYSTEM

Page 5 of 5 pages Copy, 3 of 3 copies

