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BYE-51916-70
26 October 1970

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HANDLE VIA BYEMAN CONTROL SYSTEM

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

Subj: Revision of FY-71 NRL Budget for Mission 7107

Ref: (a) NRL ltr to DIR, Program "C" of 1 May 1970, BYE-51904-70

1. NRL has reviewed the budget associated with Mission 7107. Several factors have caused revision of the budget estimate provided in Reference (a):

(1) One very important factor is the serious escalation apparently reflected by the space component manufacturers increasing their costs to reflect the cut-backs by NASA in the National Space programs. Component prices have risen sharply since the last procurement cycle. This seems to be typical throughout the aerospace industry today but this factor was not recognized at the time Reference (a) was prepared. These increased costs are now identified and submitted in Column #2 of the budget Table #1.

(2) Another factor causing the revision of the budget of Reference (a) is reflected by the manner and extent to which it was necessary to reprogram the personnel effort and resources in support of the failure analysis on the two spacecraft of Mission 7106, which failed in late February 1970. The analysis was far more demanding than was estimated in Reference (a) and the amount of this is shown in the figures in Column #1 of the Table #1 attached. It was imperative that this analysis be completed prior to entering into the design phases of the next mission to preclude reoccurrence of any similar problems.

(3) As a result of the 7106 failure-analysis the emphasis on redundancy and improved reliability was applied to the design of Mission 7107 to an extent beyond that estimated in Reference (a) as shown in Column #3 of the budgetary information of Table #1.

(4) Since the submission of Reference (a) there have been many areas where more extensive operational requirements have been levied on the design of Mission 7107 systems. These costs are estimated and provided in Column #4 of the attached Table #1. Ocean Surveillance does not represent a very significant part of these intensified operational requirements and costs.

However it must be noted that improvements for Ocean surveillance are improvements for other purposes also because the Ocean Surveillance job is so very similar to the main effort of the program.

(5) Column #6 of Table #1 provides the total of the 16 month period for the efforts toward Mission 7107 as estimated in March 1970 and submitted in Reference (a). This 16 month period was for 4 months in late FY-70 and the 12 months of FY-71.

(6) The cost breakdown for the research and development (R&D) spacecraft proposed for launch with Mission 7107 are summarized in Column #8 of Table #1. It must be understood that if this R&D Spacecraft does not get launched with Mission 7107 but awaits another booster, these costs do not reflect the added costs that would result.

This R&D Spacecraft would permit the [redacted] and the (2) direct comparison with the [redacted] geopositioning system normally used in Program "C". These two techniques for emitter geopositioning provide highly compatible and complimentary capabilities which have never been attempted before from an overhead collection platform. It represents a truly novel and highly important investigation which could impact heavily [redacted]

(7) Table II presents a summary of the revised fiscal estimates for 7107.

[redacted]

Attachment (1): Table 1
Attachment (2): Table 2

TABLE I

	7106 FAILURE ANALYSIS (1)	PRICE ESCALATION (2)	RECOMMED REDUND-ANCY (3)	INCREASED OPER. REQ. (4)	BASIC 7107 COST INCREASE (5)	ORIGINAL ESTIMATE (16 MO.) (6)	NEW ESTIMATE (NO R&D) (7)	R&D PAYLOAD (8)	NEW ESTIMATE (WITH R&D) (9)
I. PAYLOAD (DEVEL.-RECUR.)									
A. Electr. Equip. (Data & T.M.)	---	$ 174.6	$ 155.0	$ 495.0	$ 824.6	$ 1,754.5	$ 2,579.1	$ 520.0	$ 3,099.1
B. Stabilization Systems	---	142.0	130.0	---	272.0	383.5	655.5	365.0	1,020.5
C. Power Systems	---	31.9	95.0	---	126.9	154.8	281.7	60.0	341.7
D. Control Systems	---	61.2	125.0	45.0	231.2	310.4	541.6	135.0	676.6
E. Compat. & Envir. Tests	$ 15.0	---	---	---	---	157.0	157.0	10.0	167.0
F. Mech. Struct. & Fab.	---	9.8	---	---	9.8	282.0	291.8	20.0	311.8
G. NRL Salaries & O.H.	265.0	---	45.0	44.5	89.5	2,385.2	2,474.7	80.0	2,554.7
H. Misc. Mat., Travel & Shpmt.	15.0	68.0	---	---	68.0	1,123.0	1,191.0	40.0	1,231.0
	* $ 286.0K 295.0	$ 487.5K	$ 550.0K	$584.5K	$1622.0K	$ 6,550.4K	$ 8,172.4K	$8172.4K 12300	$ 9,402.4K
II. GROUND STATION (INVESTMENT)									
A. Electronics (Rec.Rec.&Time)	$ 25.0	$ 31.0	---	$ 151.0	$ 182.0	$ 621.0	$ 803.0	$ 32.0	$ 835.0
B. Antenna Systems	---	2.7	---	20.0	22.7	63.2	85.9	---	85.9
C. NRL Salaries & O.H.	15.0	---	---	30.0	30.0	883.7	913.7	---	913.7
D. Misc. Mat.,Travel & Shpmt.	24.5	34.2	---	---	34.2	686.8	721.0	---	721.0
E. A - to - D Systems	---	---	---	325.6	325.6	---	325.6	---	325.6
	$ 64.5K	$ 67.9K	---	$ 526.6K	$ 594.5K	$ 2,254.7K	$ 2,849.2K	$ 32.0K	$ 2,881.2K
III. FACILITIES (INVESTMENT)									
A. Test Equip. & Facilities	$ 15.0	---	---	---	---	$ 573.0	$ 573.0	$ 290.0	$ 863.0
	$ 15.0K	---	---	---	---	$ 573.0K	$ 573.0K	$ 290.0	$ 863.0
IV. SERVICES (OPERATIONAL)									
A. Oper. Field Ass't	---	$ 70.0	---	---	$ 70.0	$ 785.0	$ 785.0	---	$ 785.0
B. Computer Services	---	---	---	$ 65.0	$ 65.0	$ 259.0	$ 324.0	---	$ 324.0
	$ ---	$ 70.0	---	$ 65.0	$ 135.0K	$ 974.0K	$ 1,109.0K	---	$ 1,109.0K
	$ 365.5K 374.5	$ 625.4K	$ 550.0K	$1,176.1K	$2,351.5K	$10,352.1K	$12,703.6K	$1,552.0K	$14,255.6K

Attachment (1)

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Handle via BYEMAN Control System

SUMMARY OF MISSION 7107
FINANCIAL STATUS

ESTIMATES

(4 Mo.) FY 70		$ 2,754.7K
(12 Mo.) FY 71		$ 7,597.4K
(16 Mo.) Original Estimate	(Col.6)	$ 10,352.1K
Inflation	(Col.2)	$ 625.4K
Redundancy	(Col.3)	$ 550.0K
Increased Operational Requirements	(Col.4)	$ 1,176.1K
(16 Mo.) New Estimate (No R&D P/L)	(Col.7)	$ 12,703.6K
R&D P/L	(Col.8)	$ 1,552.0K
(16 Mo.) New Estimate (With R&D P/L)	(Col.9)	$ 14,255.6K

FUNDS FOR MISSION 7107

(4 Mo.) FY 70		$ 2,754.7K
7106 Failure Analysis	(Col.1)	$ 365.5K
(4 Mo.) FY 70 for 7107		$ 2,389.2K
7107 Portion of MIPR #FY7616-71-0031		$ 7,498.6K
Funds for Mission 7107		$ 9,887.8K

DEFICIT

(With R&D P/L)	(Without R&D P/L)
$ 14,255.6K	$ 12,703.6K
$ 9,887.8K	$ 9,887.8K
$ 4,367.8K	$ 2,815.8K

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Attachment (2)

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BYE-51916-70

HANDLE VIA BYEMAN CONTROL SYSTEM

TABLE 2

Handle via BYEMAN Control System

~~TOP SECRET~~
HANDLE VIA BYEMAN CONTROL SYSTEM

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

Subj: Revision of FY-71 NRL Budget for Mission 7107

Ref: (a) NRL ltr to DIR, Program "C" of 1 May 1970, BYE-51904-70

1. The Naval Research Laboratory has reviewed it's budget in connection with the effort on Mission 7107. Several factors have caused revision of the budget estimate provided in Reference (a).

(1) One very important factor is the serious escalation apparently reflected by the space component manufacturers increasing their costs to reflect the cut-backs by NASA in the National Space programs. Component prices have risen sharply since the last procurement cycle.

(2) This problem was also aggrivated SP? with the failure of the two spacecraft of Mission 7106 in February 1970. During the period when extensive investigation and analysis was being done on those items which might have caused the failure, very little of the critical component procurements for 7107 were being processed. This delay in procurement, no doubt caused us to receive the brunt of the commercial-price escalations. These increases are shown in Column 2 of the attached Budget Table #1.

(3) Following the analysis of possible causes of the failures, measures were taken to assure greater redundancy and reliability in the forthcoming launch. These costs are reflected in Column 3 of the Budget estimates of Table #1.

(4) Optimizing the spacecraft for ocean surveillance did not greatly impact on the additional costs of the Mission 7107. These Ocean Surveillance requirements and other proposed program improvements have imposed an increased budgetary requirement shown in Column #4 of Table #1.

(5) Column 6 gives the total of the summary estimates from NRL's previous budget submitted in Reference (a). This is for a 16 month period covering the last 4 months of FY 70 and 12 months of FY 71 for Mission 7107.

(6) A cost break down for the research and development spacecraft proposed to be launched with Mission 7107 are shown in Column 8 of Table 1. Launching this satellite from the aft rack position on the launch vehicle of Mission 7107 would permit an evaluation of the downward looking amplitude comparison to

If the R&D payload proposed can not be flown with 7107 the estimates will require revision to reflect the increased costs.

(7) Table II presents a summary of the revised fiscal estimates for 7107.

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(7) Table II presents a summary of the revised fiscal estimates for 7107.

TABLE 1

	710 Failure Analysis (1)	Price Escalation (2)	Recommend. Redundancy (3)	Increased Oper. Req. (4)	Base 7107 Cost Increase (5)	Original Estimate (16 Mo.) (6)	New Estimate (No R&D) (7)	R&D Payload (8)	New Estimate (With R&D) (9)
PAYLOAD (Devel. Recur.)									
A. Electr. Equip. (Data & T.M.)	—	174.6	155.0	495.0	824.6	1754.5	2579.1	520.0	3099.1
B. Stabilization Systems	—	142.0	130.0	—	272.0	383.5	655.5	365.0	1020.5
C. Power Systems	—	31.9	95.0	—	126.9	154.8	281.7	60.0	341.7
D. Control Systems	—	61.2	125.0	45.0	231.2	310.4	541.6	135.0	676.6
E. Compat. & Envir. Tests	15.0	—	—	—	—	157.0	157.0	10.0	167.0
F. Mech Struct & Fab.	—	9.8	—	—	9.8	282.0	291.8	20.0	311.8
G. NRL Salaries & O.H.	256.0	—	45.0	44.5	89.5	2385.2	2474.7	80.0	2554.7
H. Misc. Mat., Travel & Shpmt.	15.0	68.0	—	—	68.0	1123.0	1191.0	40.0	1231.0
	$286.0M	$487.5M	$550.0M	$584.5M	$1622.0M	$6550.4M	$8172.4M	$1230.0M	$9402.4M
II. GROUND STATION (Investment)									
A. Electronics (Rec. Record & Time)	25.0	31.0	—	151.0	182.0	621.0	803.0	32.0	835.0
B. Antenna Systems	—	2.7	—	20.0	22.7	63.2	85.9	—	85.9
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E. A-to-D Systems	—	—	—	325.6	325.6	—	325.6	—	325.6
	$64.5M	$67.9M	—	$526.6M	$594.5M	$2254.7M	$2849.2M	$32.0M	$2881.2M
III. FACILITIES (Investment)									
A. Test Equip. & Facilities	15.0	—	—	—	—	573.0	573.0	290.0	863.0
	$15.0M	—	—	—	—	$573.0M	$573.0M	$290.0M	$863.0M
IV. SERVICES (Operational)									
A. Field Ass't	—	70.0	—	—	70.0	715.0	785.0	—	785.0
B. Computer Services	—	—	—	65.0	65.0	259.0	324.0	—	324.0
	—	$70.0M	—	$65.0M	$135.0M	$974.0M	$1109.0M	—	$1109.0M
	$365.5M	$625.4M	$550.0M	$1176.1M	$2357.5M	$10,352.1M	$12,703.6M	$1,552.0M	$14,255.6M

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TABLE 2