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5 March 1959

MEMORANDUM FOR THE RECORD

**SUBJECT : Trip Report on Meeting in Philadelphia
between General Electric and LSD**

1. A meeting was held on 2 - 3 March at G.E.'s Philadelphia facility. The purpose of this meeting was to discuss and analyze the overrun of costs G.E. was experiencing under their portion of the CORONA program. The following persons were in attendance:

2 March 1959

- G.E. - Marketing Mgr.
- G.E. - Project Engineer
- G.E. - Contracts
- LSD, Project Mgr.
- LSD - Contracts
- LSD - Project Eng.
- LSD - G.E. Resident Eng.
- G.E. - LSD Resident Eng.
- A.F., HQ
- Project Hqs
- Project Hqs
- AF Auditor

3 March 1959

All of the above, and:

- LSD
- G.E.

2. The meeting opened with a presentation by G.E. of the total Program cost picture as of now. The following is a recap:

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Total Program - "Black" and "White"
(in 1,000 of dollars)

	<u>Original Quote of 9/27/58</u>	<u>Actual Cost as of 1/25/59</u>	<u>Estimated to Complete</u>	<u>Total Revised Cost</u>	<u>Variance</u>
Material	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Labor	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Overhead	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total (less G&A)	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
G&A	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total Cost	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Fixed Fee	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

3. The LSCD people then requested a detailed description and explanation of the individual elements of cost by category. The first category discussed was Material which includes subcontracting and outside purchases. The following is a breakdown of the major subcontract issued by G.E. and their present estimate of what is happening and why.

	<u>Original Estimate</u>	<u>New Estimate</u>	<u>Increase</u>
(1) [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
(2) [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
(3) [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
(4) [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
(5) [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
(6) [REDACTED]	-0-	[REDACTED]	[REDACTED]

(1) [REDACTED] is developing the propellants and the retro rockets and is having considerable difficulty in making a propellant with an impulse rate of 267. They have been able to do it on static firings but when using operational type equipment they can only obtain 90% of

required impulse rate. The problem basically is one of weight and size limitations and it is difficult to develop a rocket with such a high rate of impulse to meet their requirements. LSCD is prepared to grant a waiver on this for the White program and it is believed it will be satisfactory for the Black when more information is obtained from the first few flights.

- (2) [redacted] is making the metal shielding for the nose cone. It appears that G.E. and [redacted] were overly optimistic in the beginning on the fabrication of this item. The problem is one of using light-weight metal and fabricating a conical shape with a strength of withstanding 20 psi; the metal must be "beaten" and dimpled and original tooling estimates of [redacted] have now climbed to [redacted]. Also, manufacturing costs have gone from [redacted] per unit to [redacted] per unit.
- (3) [redacted] is making the Ablation Shield and in this particular case because of weight limitations, the shield must also be structural. This has never been done before and considerable difficulty has been experienced in the coating process. The rejection rate is 2 for 1.
- (4) [redacted] is making the Spin Rockets and early in the program could not develop a rocket case which would not split as a result of cold temperature soaking. Here again, it was a problem of weight. They are now out of the woods and are making deliveries of a qualified rocket.
- (5) [redacted] is making the internal Cameras for the White program. Costs have increased because of the changes in requirements in the program, quantities have fluctuated up and down. Also, the requirement to take pictures only while in orbit was changed to take pictures during reentry also. This necessitated the installation of batteries and because of weight and size, packaging was a problem.
- (6) Gold Plating is a new requirement. Originally, it was thought that painting would provide the necessary insulation but tests revealed otherwise.

4. Of the above subcontracts all but the Gold Plating have been issued on a CFFV Letter Contract basis. In most instances, deliveries are substantially completed. However, not one has been definitized. G.E. states the problem was one of continual change in the state of the art and a firm scope and costs could not be arrived at. Further, it appeared that some of the increases in cost were known to G.E. prior to their proposal to LSMD. However, it could not be determined exactly where their system fell down and why they were not reported or included in their LSMD estimate.

5. The balance of material costs were made up of Purchase Orders (2,000 in number). These were briefly reviewed by the LSMD people as to scope. It would appear that because of the state of the art, G.E. had ventured down several unfruitful roads which resulted in cancellations and many new approaches to a problem having to be taken. This was thought to be normal in a new program. Whether or not it was higher than average could not be determined.

6. The next element of cost discussed was the Labor Category. A summary of the labor picture for the total Program is as follows:

(In \$1,000 of Dollars)

	<u>Original Quotation</u>	<u>Actual thru 1/25/59</u>	<u>Estimate to Complete</u>	<u>Total New Estimate</u>	<u>Variance</u>
Engineering	████████	████████	████████	████████	████████
Other Eng. Employees	████████	████████	████████	████████	████████
Drafting	████████	████████	████████	████████	████████
Shop	████████	████████	████████	████████	████████
Total	████████	████████	████████	████████	████████

The Subcontractor's shop orders were reviewed by LSMD and were found to be in order and consistent with the scope of the Program in most instances. However, again, there was the impression that early in the Program several approaches resulted in dead ends and had to be changed.

7. At this point, G.E. was asked to break down the total Program costs into "Black" and "White" charges. The following "ground rules" had been established by G.E. and LSMD for accomplishing this:

WHITE

- All applicable prime equipment charges
- All Bio Med charges
- Mark I Rockets
- Basic GSE

BLACK

- All applicable prime equipment charges
- All other development costs
- All other Rocket costs
- All Black GSE

The above was as a result of agreements reached between the Air Force and Agency regarding the transfer of [redacted] to the Black Program to cover certain development costs because of security problems. G.E. was unable to establish separate records until November of 1958 at which time most of the transfers were made. It appeared that there was some confusion during the period immediately prior to the transfer and this could be a reason why the estimates submitted to LSMD in September were not more accurate.

8. The attached Exhibits "A" and "B" are a comparison of the actual and forecasted costs of the total Program and the White program respectively. The difference, or the Black program, is readily obtainable by subtraction of the White from the total Program costs. It was determined that of the total overrun of [redacted] only [redacted] represented increase in scope and of this amount only [redacted] is applicable to the Black program.

9. The undersigned requested G.E. opinion as to the status of completion and whether or not in their opinion the present overrun was the absolute maximum. The following represents their statements:

Status of Completion

	<u>MK-I</u>	<u>MK-II</u>	<u>Black Program</u>
Eng. Design	100%	75%	95%
Design Changes	95%	50%	75%
Qualification (testing)	85%	30%	80% - 90%
Mfg.	95%	33%	25%
Deliveries	Complete except for a few spares.	One of three delivered.	3 of 10 delivered

With regard to costs, they could foresee no major outstanding contingency and in their opinion, the [redacted] overrun was the maximum. They felt quite confident of this.

10. In summary, the Program at G.E. looks as follows:

(In 1,000 of dollars)

	<u>White</u>	<u>Black</u>	<u>Total</u>
Negotiated	[redacted]	[redacted]	[redacted]
Overrun	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]

11. As indicated, the Black share of the overrun is [redacted]. However, this is only cost to LSD. The undersigned queried LSD on their intentions of applying G&A to this prior to presenting the total overrun to us for funding. A firm answer was not available. However, [redacted] indicated he did not think LSD would ask for G&A but he would discuss this with his people and plans to visit Project Headquarters on 6 March, at which time he may have an answer on this. [redacted] was also asked if, to his knowledge, there were any other increases in cost in the program. He stated that ITK had advised him of a possible [redacted] increase and LSD would probably need [redacted] more to procure a cooling blanket for the nose section to be used while the missile is on the launching pad. He stated that they were in the process of preparing a revised cost proposal of the entire program with a breakdown of their costs. It is anticipated that we will receive this in the next two weeks. In addition, LSD was requested to furnish a breakdown of costs on the "Black" overrun and show the portion that would have been costed against the "White" program had it not been for the Sept. decision to switch "White" dollars to the "Black" task.

J. H. McDonald
Contract Negotiator

[redacted]
Controller, LPD

LPD-DD/P:JMcDonald: [redacted]
Distribution:

[redacted]