ROUTING SLIP

TO	NAME AND ADDRESS	INITIALS	DATE
1.	D/Tech - [redacted]		
2.			
3.	[redacted]		
4.			
5.			
6.			
7.			
	RETURN TO SENDER		

	ACTION		CONCURRENCE		INFORMATION
	COMMENT		FILE		SIGNATURE

REMARKS

Jack;
Attached is correspondence from [redacted] which I mentioned last week. If you concur in the added scope pls have Program Staff cite additional funds as contract can be amended

FROM

NAME AND ADDRESS [redacted]

PHONE NO.

DATE 11/16/66

FORM 1-59 1582 (40)

77525

OSA 5003-65

December 6, 1965

MEMORANDUM

TO: File

5X1 FROM: [redacted]

SUBJECT: Work and delay on 64009 -
Trip Report - November 30 to December 4, 1965.

1. On arrival examined equipment as installed. Camera was pulsing as fast as it could cycle. Found that the 28 volt supply (ground power cart) was in use and was extremely noisy, causing malfunction throughout the system.

2. Investigation showed that our power in flight was to be drawn from generators driven by the engine. In order to use flight power the engines would have to be run up. This was apparently not possible except for a final system check of short duration.

3. Inquiry from the communicators and radar types indicated that the ship's line was no better than the ground carts having ± 15 volt pulses of several msec durations and very short rise times.

4. Decided to get system operating with ground carts and get final checkout with aircraft power, but to use aircraft wiring to simulate final configuration for current paths and pickup. This proved impossible since ground crews had the electrical system apart. Although we were promised availability on Thursday, this proved to be only physical not electrical.

5. Noise problems were handled as follows:

a) Separated the camera drive monostable MV and decoupled it from the line.

b) Separated the lamp matrix drive monostable MV from the other circuits and decoupled it from the line. Found this a great improvement but much noise still entered from ground currents.

c) Some noise was apparently strong enough to puncture a few transistors and these had to be replaced.

d) Ground noise was removed from the lamp matrix drive by returning the switching circuit ground to a point used for ground for the lamp drive monostable MV.

e) Placed a 4000 µfd condenser across the 28 volt supply at the lamp circuit board. This cut out occasional winking of the lamps.

6. With all above changes tried out system in the aircraft but using ground power carts. All operation was correct. Of course it was not possible to check the computer-transducer since no calibrated source of pressure was available.

5X1 7. [redacted] will make final changes and try the system with aircraft engines and power on Monday.

8. Note that many delays due to scheduling difficulties not caused by us were encountered. Work on the system was only begun on Nov. 28. At that time we first learned of the existence of severe noise on aircraft lines. We had assumed that these lines were governed by MIL interference requirements and would be sufficiently clean.

TT:en

[redacted] 25X

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CONFIDENTIAL

December 20, 1965

Dear Joe,

I have just concluded a telephone conversation with [redacted] bringing him up to date on the status of our job. In the last two months we have had very poor results indeed. In accordance with Jack's instructions, I would like to submit 1) a report of our difficulties, and 2) an estimate of the resulting overrum in costs. Jack indicated that we should be able to amend to cover this overrun.

I regret to say that some of these costs have already been incurred. This happened because much of these costs were the result of aircraft scheduling delays. Our people made trips to the aircraft facility in the expectation of being able to make tests only to wait for long periods without being able to. At first it looked like quite small costs which we were willing to absorb in view of the future possibilities of the device and its previous successful flight tests. However, these slowly mounted and appear to be headed for a yet larger number. At this point, we feel that we must ask for reimbursement.

One reason for the unexpectedly large cost is the very great difficulty we encountered in working at the field. While everyone there gave us the most gratifying and courteous cooperation, still, stocks of parts, which are essential in the type of trouble-shooting we were doing, were not available and each test required hours of scrounging for parts and trips to distant distributors.

Let me now summarize our difficulties and our present status:

1. After completion of the required changes to the system to adapt it to high altitude flight, we were ready for installation and test. A field engineer was sent out for this purpose after clearing the trip with [redacted] We were, at this time, left with ample funds to install and test.

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2. On arrival at the installation facility, around September 27, it was found that the installation work had not been scheduled as yet, and that the aircraft was engaged in other activity and unavailable. Our man returned.

3. A second trip was scheduled after clearance with Jack. On arrival (Nov. 14) it was found that only the hatch was available. All required work on the hatch was completed, whereupon it was pointed out by our engineer that the required static line had not been provided. This work required the presence of the aircraft which was at Edwards. Weather prevented its return for several days. When it arrived it was found that instructions had arrived to perform other work on it as well. Between the inclement weather and the vague schedule, our engineer was instructed to return.

4. Finally, word was received of the availability of the aircraft with all installation complete. Our engineer went to the test facility (Nov. 29) and the gear was turned on with ground power. This power was found to have extremely high noise, which was not specified in advance. He called for help and I had to go out to solve the problem imposed by the noise. I have enclosed my trip report.

5. When I left, a flight had been scheduled for the following day for final test. The next day our engineer was told that a night flight had uncovered a problem in the aircraft which produced an order grounding all equipment. Discussion between our engineer and [redacted] produced some results in scheduling a quick flight at lower altitude in another aircraft. Quick temporary rewiring in that aircraft permitted a short test flight. Unfortunately, the test aborted because our 400 cycle power was drawn from a generator that is turned on only at over 80% engine power. This limit was not exceeded since the pilot did not know of the use of this generator. However, some data was obtained from the flight indicating that our corrections to the circuitry had not completely immunized the system from the aircraft noise. This had been feared, since previous work was all done with ground power carts. As a result of this test, additional circuit changes of relatively minor character are projected.

25X

6. The additional work to completely insulate the system from noise on the aircraft power lines, and an additional trip for our engineer and myself, have been projected. This must include a final test using aircraft, not flight tests. This work cannot be scheduled until the grounding order for the aircraft is lifted.

I am afraid that the above report may have the sound of a series of excuses and gripes. This is unintentional. I would like to re-emphasize that [redacted] and their subordinates, were in every way helpful and cooperative. The troubles are almost all ascribable to unavoidable scheduling problems and to noise on the power lines. The latter was not foreseen because of the assumption during our system design that the aircraft power would be MIL Spec clean.

The overrun produced by the above history is as follows:

[redacted]

If any further breakdown of costs, or if any additional data is required, do not hesitate to call me. I hope that this can be settled rapidly, since we can gain time by making some of the changes in circuitry now.

Yours respectfully,

[redacted]

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