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~~(S)~~ NATIONAL RECONNAISSANCE OFFICE

WASHINGTON, D.C.

OFFICE OF THE DIRECTOR

2 February 1971

MEMORANDUM FOR THE RECORD

SUBJECT: Thoughts Following the ExCom Meeting of Friday, January 29, 1971

At this meeting the ExCom approved proceeding with Phase II of the Z program. However, their approval was conditional similar to that for the R program last summer.

Specifically, ExCom is in favor of our going ahead with additional studies and the work necessary to reach a firm design on the EOI, but they want to see us look at three configurations: the A and B configurations that have already been studied and a C configuration yet to be specified. As to what C consists of, they have in mind a design which will be more responsive to the revised requirements stressing the need for area coverage as well as frames and taking more account of what they consider the negative features of EOI. There are at least three negative features: (1) the overall complexity of the system, leading to the need to specify less complex versions of the EOI, (2) the need for a dedicated data relay satellite with the attendant expense, and (3) the difficulty which the EOI system has in dealing with area coverage. There has been a tendency for the Program Office to freeze in on a single design, using the contractors to make only minor perturbations on the overall scheme. The tone of the ExCom instructions was to broaden the concept to permit other trade-offs to be examined. What we need is a system which is good at area coverage as well as frame-by-frame coverage. We should not ask a system to be good simultaneously at high resolution and area coverage. There must be some way to trade these two off.

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ExCom also dealt with the question of finding a way to have a capability earlier than Z. They were especially interested in various film readout proposals - one based on GAMBIT and one the so-called [redacted] We agreed to get back to ExCom in a couple of months with our ideas of how we can move quickly into an FRO system of some sort, which would deal with the problems stressed by Secretary Rogers and his people and which might take the heat off getting EOI by any specific early date. In addition to the merits or demerits of the Z or FRO systems, we find that we must consider the ramification insofar as the data relay system is concerned.

The studies of the [redacted] people seem to indicate that a dedicated data relay is the way to go. However, they propose that such a system also find other uses because for the bulk of the time the data relay system is unused. In fact, typica the system would only be used one or two hours a day and this usage would occur during hours of darkness in the Western Hemisphere. Since most normal communications traffic is generated during hours of daylight in the Pentagon, there mus be a way to get more mileage out of these systems. I think [redacted] should be tasked to spend more time looking at ancillary uses for this system, hopefully finding enough such uses to justify a system that could be built by the regular A Force.

While 647 does not appear a logical candidate, there may be other systems which can share the [redacted] The [redacted] study purports to show [redacted] leads to a cheaper solution than a [redacted] However, the be solution depends on the ground rules that are stated; for example, if it were stated that the objective is to relay bot Z [redacted] data back to the ZI, it might be that a [redacted] system would be better. Perhaps we should examine a data rel system optimized for the combination of Z [redacted] At the same time, with respect to FRO systems, we have talked about 777 satellites as the way to go. While 777 appears to be very lightly loaded at the moment, we need to examine other potent uses for that system. It seems inconceivable to me that a program such as 777 would be carried on into the indefinite f unless there is better justification for it than I have seen far. It looks as though we can get a free ride by using thes

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channels, but if there is nobody else paying for them then we have no way of knowing that the system will be maintained in the future.

A casual observer looking at the sequence of programs ADVENT, TACSAT, IDCSP and DSCS-II could easily reach the conclusion that we have yet to come up with a viable space communications program which draws on the capabilities of satell which have been orbited over the years. I understand that [redacted] are in the process of writing an ar DCP which treats this issue and I wish them good luck. Our A Force people, and I assume I mean John Walsh and [redacted] ought to articulate an Air Force policy complementing the wor which will be done by [redacted]

I mentioned above that I think we need to look at the merits of relaying the [redacted] data back to the CONUS as well as th Z data. The present [redacted] has no difficulty with the [redacted] stations which we have [redacted], but the opposition is showing some tendency to make them an issue. Since the present Government has a rather tenuous hold on the populati we should definitely do some planning as to how we could phas out in case those stations become unpopular with the Government of a few years from now. We should also look at how muc goldflow would be saved if we brought those [redacted] (O&M runs about [redacted] for each of them and goldflow is about [redacted]

[redacted]

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On Program 647 we have the question of where we are going on the next phase. Should we maintain the same orbit? How many do we need in the East and the West? Should we maintain the overseas ground station, and if so, should we have a space link (e.g., 777) from that ground station back to the CONUS? Should 647 have a self-contained data relay link from East to West? And finally, what impact is the inauguration of 647 having on competing systems? Does it render any of these systems obsolete or redundant? And how is this question affected by how the 647 data are handled and displayed?

With respect to Z, what are the alternate configurations we should be looking at? Are there cheaper alternatives? Are there alternatives which provide better combinations of area and spot coverage? Is on-board storage a good or bad idea?

Finally, how is the urgency of EOI affected by work on alternate systems, the so-called interim systems, such as FRO

With respect to FRO itself, is it better to go for a pure interim system, such as [redacted] or could we solve the interim as a part of the long-term problem by going to a GAMBIT-based version.

A related issue is whether we can count on 777 to be available to support the FRO system, or must we make separate plans for operation beyond the data when 777 runs out.

With respect to [redacted] what is the optimum solution for Z only? Is this optimum affected by the availability of on-board storage on Z? What is the optimum solution if we include Z and [redacted] together? Can Z and [redacted] operate simultaneously on a time-shared basis, or must they be active simultaneously with antennas dedicated to each user? What other daytime uses for [redacted] can we expect to be clarified at an early date?

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While I have not referred to MILSAT as such, does its existence have any effect on our plans for the need for dedicated systems for [redacted] users, such as Z and [redacted] Could it provide for FRO data relay in case 777 is not continued? A we actually going to have both 777 and MILSAT, or is this a pipe dream?

I have not covered H in all of this, but there is the question, of course, of whether we can get area coverage us H through an extended life mission. The possibility of dev film on board and reading it out with a solid state scanner a certain appeal. Over a period of time, I think we need t look at this in more detail including Horizon film. Howeve for the moment it seems to me that H work should concentrat on moving toward simpler systems rather than more complicat ones. Nonetheless, I don't think we should rule out the po bility of an H which would still return the bulk of its dat through film packs, but which could return some data on an immediate basis. Of the systems that were presented to ExC only the FRO and [redacted] excited any interest as an inter selection.

Two items which were judged to have some merit and oug to be looked at further were G and C, each with a six-pack film recovery on a more frequent basis. If either or both these could be shown to have a low enough cost and are judg to be available rather quickly, they might be of interest. This needs to be checked out further.

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