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~~(S)~~ NATIONAL RECONNAISSANCE OFFICE

WASHINGTON, D.C.

OFFICE OF THE DIRECTOR

November 24, 1969

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MEMORANDUM FOR: Mr. Packard
Mr. Helms
Dr. DuBridge

SUBJECT: HEXAGON

As we approach the first launch of HEXAGON (December 1970) and the subsequent phase out of the CORONA system, I would like to keep you current on where we stand.

Development Schedule

The HEXAGON system is experiencing some of the difficulties which we have come to expect in major developmental programs. Various component schedule slips have occurred both in the satellite basic assembly (Lockheed) and in the sensor subsystem (Perkin-Elmer). At this time it is generally felt that these slips can be absorbed by work-arounds, work-week and shift expansions, and continual review and adjustments in the test schedule. There could be some effect on the shipping dates of subsystems but no apparent impact on the scheduled launch dates. The present HEXAGON FY 71 launch schedule is December 1970, March 1971, and June 1971. We will be following this matter very closely over the next few months since there are several critical milestones ahead which will give us a better overall idea about our progress. By about the middle of May we expect to have integrated and tested development models of the satellite basic assembly and the sensor subsystem which will be our first positive indication that HEXAGON, as a whole, will perform as planned. Further, the first flight vehicle camera system should have been shipped from Perkin-Elmer to the Coast.

You can understand how achieving these first ones on time will greatly increase our confidence in meeting the scheduled first launch. You will recall that in June my HEXAGON Review Committee, chaired by Bob Naka, made the assessment that the probability of meeting the December 1970 launch date within one month was 50 percent, within three months was 75 percent, and within six months was 95 percent. They felt that those probabilities had increased slightly as a result of the evaluation they conducted last month.

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~~ON CORONA~~

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Need for CORONA Back-up

Concurrently with our review of HEXAGON progress, we have been studying the requirement for procurement of additional CORONA systems as back-up. As you know, such procurement action would represent a serious fiscal impact on our current program since no funds are identified in the FY 70 or FY 71 budget for this purpose. Of course, the need for such action diminishes as our confidence increases in HEXAGON. The planned schedule provides CORONA overlap for the first four HEXAGON flights. If we assume that HEXAGON is initially successful, a nine-month slip in the first launch (to September 1971) would still overlap with the last CORONA (November 1971), and current search satisfaction levels would not be degraded. A slip of up to six months, corresponding to the 95 percent level of probability determined by the Review Committee, would permit overlap with at least the last two CORONA missions and thereby allow for some initial degraded performance and final prove-out of the total HEXAGON system on orbit.

A reorder of three CORONA systems would cost about $43.5M through FY 73. This would provide for follow-on CORONA launches starting about February 1972 which would back-up the current inventory. The lead time on additional CORONAs is about 24 months. Based on a procurement "go-ahead" between December 1969 and February 1970, $5-8M would be required in FY 70, with most of the remainder about equally divided between FY 71 and FY 72. If we terminated this procurement in May based on increased confidence in the HEXAGON schedule, about $2.4M would not be recoverable. From the preceding considerations, you can see that even the minimum price of insurance represented by procurement action is quite high and perhaps not warranted.

There is a way that we can possibly get this insurance at no net cost to the NRP. NASA is interested in the CORONA system for their ERTS (Earth Resources Technology Satellite) program. NASA may be willing to transfer funds to the NRO for the procurement of CORONA systems if the system can later be released for their use. If we then need additional CORONAs, they can be acquired from the NASA buy on a reimbursable basis. In this fashion, we would be guaranteed timely availability of back-up CORONA systems but at no cost to the NRP if they are not required. Discussions are under way with NASA to determine the desirability of this approach.

In summary, I will continue to explore all facets of the HEXAGON area and keep you advised of the status.

John L. McLucas