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THE WHITE HOUSE  
WASHINGTON



July 24, 1971

MEMORANDUM FOR

Honorable David Packard, Deputy Secretary of Defense ✓  
Honorable Richard Helms, Director, CIA

SUBJECT: Memorandum to the President on FROG and EOI

Attached is a draft memorandum to the President on FROG and EOI which I offered to prepare at our July 13th meeting.

If you will let me have your comments, I will have the memorandum prepared in final form.

*Ed*

Edward E. David, Jr.  
Science Adviser

Attachment

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GAMBIT ZAMAN

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## DRAFT MEMORANDUM TO THE PRESIDENT

ON READOUT SATELLITES

7/24/71

This memorandum presents an issue for decision between two alternative systems for photographic reconnaissance. The unique feature of these systems is that they are capable of returning images to  for review within a day. Thus one or the other is vital for crisis management and for any situation where timely intelligence is important. A choice between the two systems is desirable because of their costs on the one hand, and on the other because of their comparable capabilities. The two systems are (1) a modification of a current reconnaissance satellite known as GAMBIT (KH-8), and (2) an entirely new satellite using advanced technology. In this memorandum we refer to these two systems as (1) Film Readout GAMBIT, abbreviated FROG, and (2) Electro-Optical Imaging, abbreviated EOI.

There are many differences between the two systems but the most significant for your consideration are as follows:

1. In baseline programs, FROG can be available for launch in February, 1974; EOI can be ready for launch in June, 1976. These two dates assume the same level of development risk regarding schedule slippages and cost overruns.

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2. The eventual potential of EOI for new capabilities such as

is much better than for FROG.

The FROG system can be improved with a new camera technology which is still a few years away, at least.

3. FROG development costs are estimated to be \$187M; the comparable EOI costs are . The operations costs approximate \$100M per year for FROG and  for EOI.

4. The comparison of the performance of the two systems is difficult to summarize, but one clear distinction is that the EOI satellite provides a faster response. With EOI, images can be returned to  as compared to between  twelve hours for FROG, depending upon target location. The quality of EOI images is better on the average than from our current systems but not so good as our very best photography. FROG quality under some operating conditions spans the range of our current systems. The EOI satellite can provide twice as many images per day as FROG.

This summary plus considerations of cost and timing lead to the following four options.

Option 1: Procure FROG now for launch in early 1974; delay EOI for two years so that the first EOI would be launched in 1978.

Option 2: Procure FROG now for launch in early 1974 and in December 1971, procure EOI for launch in 1976.

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Option 3: Procure EOI only for launch in 1976.

Option 4: Procure EOI only in a shorter time frame by undertaking a riskier, crash program.

Further discussion of these options is provided below. Before elaborating, the following additional points are significant:

1. Some members of the intelligence community feel that procurement of FROG will either delay for a long period or completely prevent further work on the EOI satellite because of budgetary and other factors. Therefore they feel that Option 1 is not realistic. Other members of the community, however, feel that a properly phased procurement cycle can result in a prudent operational appearance of the EOI satellite late in the 1970s.

2. There are other resources of the National Reconnaissance Program of great importance. These satellites intercept communication signals, missile test signals and radar signals among others. This fact leads to a caution that too-great expenditures on photographic satellites in general, and readout satellites in particular, might prejudice the healthy condition of our signals intelligence program and of our overall intelligence posture.

3. The addition of either EOI or FROG to our satellite photographic capability will cause a reduction in our need for our present satellites with savings whose size is difficult to estimate accurately.

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Option 1: Start Film Readout system procurement now with February 1976 IOC; postpone Electro-Optical Imaging system procurement decision until December 1973 and carry out further technology development ad interim.

This option would make available through the Film Readout system the readout and crisis capability in February 1974 and is the basis also for making the potentially more responsive Electro-Optical Imaging System available in 1978. The development cost in this option of the Film Readout system and its ground station is \$187M, and the annual operating cost of about \$100M based on two-plus missions per year at about \$41M each. The development cost of the Electro-Optical System, its Relay Satellites and ground station through FY77 is [ ] and the annual operating cost is [ ] based on [ ] per year with greater than [ ] expected mission duration.

This option has utility if there is an urgent need for the readout and crisis capability or if fiscal restraints must be applied to the NRP, especially during FY73 and 74. In addition the option is apparently responsive to Congressional advice to choose one of the two systems. The option has the disadvantage of postponing for an extended period an attempt to attain the inherently great potential of the Electro-Optical Imaging system with an IOC no earlier than 1978.

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Option 2: Start Film Readout system procurement now with February 1974 IOC; start Electro-Optical Imaging system procurement in December 1971 with June 1976 IOC.

This option would make available through the Film Readout system the readout and crisis capability on an interim basis in February 1974 until inception of the Electro-Optical imaging system capability in June 1976. The Film Readout system development and annual costs are approximately as in Option 1, i. e., \$187M and \$95M per year respectively. The development cost of the Electro-Optical Imaging system, the Relay satellites and ground station in this option is  and the annual operating cost  based on  per year.

This option has utility if there is an urgent need for the readout and crisis capability and a desire to substitute the potentially more responsive and productive Electro-Optical Imaging system capabilities at an economically early date. The option has difficulties, however, as it requires major resource allocations in FY73 and FY74, and elevates the NRP budget level to or above  from FY73 onward. Moreover, the option is explicitly contrary to Congressional advice and would require strong defense.

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Option 3: Start Electro-Optical Imaging system procurement in December 1971 with level funding by fiscal year and with IOC about June 1976; terminate Film Readout system activities.

This option pursues Electro-Optical Imaging system procurement alone on a recommended level of funding of [ ] per year until system IOC. Without considering the inefficiencies of such a funding discipline it appears that an IOC could be expected no earlier than mid-1976. The development cost of the Electro-Optical Imaging system, Relay satellites and ground station in this option is [ ] and annual operating cost [ ] based on [ ] per year.

This option has utility if there is not an urgent need for the readout and crisis capability or if present satellite and aircraft resources can meet this need. It has utility also in that it applies fiscal restraints to the NRP budget, keeping budget levels at or below [ ] in FY73 and FY74. In addition, the option responds to Congressional advice concerning the choice of one of the two systems offered.

Option 4: Start Electro-Optical Imaging System procurement in December 1971 in an accelerated program with possible December 1974 IOC; terminate Film Readout system activities.

This option corresponds to an urgent effort to attain the Electro-Optical Imaging system capability at the earliest practical date and has significant risk of schedule slippage and cost overrun. The estimated

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development cost of the Electro-Optical Imaging system, its relay satellites and ground station is [ ] and the annual operating cost [ ] based on [ ] per year.

This option has utility in that it concentrates on one system and offers a chance of having the potentially greater responsiveness and productivity of the Electro-Optical Imaging system available at the earliest practicable date. The option has difficulties in that it has significant possibility of cost overruns and schedule slippages and in that it could be vulnerable to subsequent Congressional action and require strong defense in that it allocates well over [ ] in each of FY73 and FY74.

The Executive Committee agrees that the US should go to the EOI system at some level of funding. EOI is in fact the intelligence imaging system of the future: it has almost open-ended possibilities for growth both in image quality and in image processing. The Committee disagrees on the urgency and its associated risk, and on the price worth paying in attaining this capability. We are therefore presenting this issue to you for your decision.

David Packard  
Chairman  
NRP Executive Committee

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I prefer    Option 1 \_\_\_\_\_  
                  Option 2 \_\_\_\_\_  
                  Option 3 \_\_\_\_\_  
                  Option 4 \_\_\_\_\_

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