

BYE-109065-70

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MEMORANDUM FOR: Director of Logistics

SUBJECT : Electro-Optical-Imaging Ground Facilities
Deployment Options

I understand that you are in the process of formulating some long range facilities plans for the Agency. As the Electro-Optical-Imaging Program may well have some impact on these plans, I have attached to this memorandum a summary of the four basic facilities Options which are now under study by the Electro-Optical-Imaging Program Office. Your Task Team under Jim McDonald has been briefed by the Program Office and we will be, of course, more than happy to provide any additional information you feel necessary. As overall Agency planning may well interact with Electro-Optical-Imaging facility planning, I would appreciate being kept informed on how things are moving from your perspective.



HAROLD L. BROWMAN
Director of Special Projects

Att: a/s

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Deployment Options**

This attachment describes the four basic ground facilities deployment Options now under consideration by the EOI System Program Office.

1. The EOI ground facilities consist of three system segments: the Receiving Facility (R/F), the Processing Facility (P/F), and the Operations Facility (O/F). The R/F is the ground terminal for the data communications link. It consists of several large parabolic antennas [redacted] and all of the radio frequency receiving equipment. It also contains transmitting equipment for the purpose of communicating back through the same relay network to the imaging satellite. The R/F has a major data interface with the P/F and also a communications interface with the O/F. Since the R/F contains extremely sensitive R/F equipment, the location of this facility must be selected based on electromagnetic environmental considerations. It has been determined that a location closer than [redacted] would not be feasible. The location of the R/F is also impacted by data security considerations, cover considerations and the availability of real estate for the large antenna structures required.

2. The P/F takes the incoming digital data stream from the R/F and performs a series of digital manipulations on this data system. The principal steps in the processing are geometrical resorting, data compression demodulation, sensitivity calibration, modulation transfer function processing, bias level setting, bad element correction, and finally reconstructing a hard copy photographic image. The current base line plan for the P/F also calls for the production of multiple copies of the imagery for dissemination to the Community and housing and support of a photo interpretation team which would function as an NPIC detachment for the purpose of initial reporting.

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3. The O/F is the nerve center of the system in the sense that all system control functions are directed from this Facility. The principal O/F functions are generation of targetting and house-keeping commands to the imaging satellite, control of the relay satellites, reduction of telemetry data from both the relay satellites and the imaging satellites, engineering evaluation of telemetry information, processing of tracking data from both the imaging satellites and the relay satellites in determination of orbital parameters, and supporting the launches of both imaging satellites and relay satellites.

4. The four ground facilities deployment Options under consideration are as follows:

Option A: Collocated Facilities.

Option B: Image Reconstruction at NPIC.

Option C: Processing Facility at Headquarters.

Option D: Processing Facility and Operations Facility
Collocated at Headquarters.

5. Option A: Collocated Facilities.

In this case, because of the location constraints applying to the R/F, the closest location under consideration is Imagery dissemination would be by hard copy via courier and requirements for time critical photo interpretation would probably have to be met by the location of an NPIC detachment in the P/F.

6. Option B: Image Reconstruction at NPIC.

In this case as in Option A, the three major ground facilities would be collocated and removed from Washington, D. C. by some distance. However, after digital processing, the image data would be recorded in digital form and later replayed over a digital data link to NPIC. The image reconstruction hardware would then be located at NPIC and imagery would be available at NPIC with relatively short delays. Hard copies for further dissemination could be handled either by NPIC or by the P/F as in the case of Option A.

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7. Option C: Processing Facility at Headquarters.

In this Option, a high data rate ground link between the R/F and the P/F becomes a critical program element. The P/F could now, however, be collocated with NPIC. (This would probably require moving NPIC from its current location.) The P/F need not be located at Headquarters but could be placed anywhere within

8. Option D: Processing Facility and Operations Facility Collocated at Headquarters.

As in Option C above, the EOI facilities could now be collocated with NPIC. Again, the Headquarters location is not critical.

9. There are a number of engineering issues which impact on the selection of the ground facilities deployment configuration. Among the principal considerations are data link costs and implementation problems, R/F location considerations, and program security and cover considerations. Also, very critical in resolving the deployment of EOI ground facilities are system interface issues, specifically, the tasking interface with the Intelligence Community and the imagery output interface with the photo interpretation elements of the Community. One key issue of particular importance is the practicality of locating a photo interpreter detachment in the P/F for time critical imagery readout.

10. A definitive time table for selecting among the ground facilities Options has not yet been laid out. However, the Program Office is hoping to focus in on a more limited range of Options prior to the initiation of Phase II of System Definition in February 1971. A firm plan must be selected in time for the systems contractors to submit firm cost proposals. This consideration requires a decision no later than June 1971.

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