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Notes from Review and Recommendations of USAF Satellite Reconnaissance
Project "SAMOS", by DDR&E COMINT/COMSEC/ELINT Advisory Group,
July 14, 1960

RIF, Jay, 10/14

General Background Information

"Any review must consider the program as a whole in order to be most effective." There is recent "evidence of a revised doctrine of the SAMOS program" from "informal discussion with members of OSAF." "However, in the meantime, national and international affairs have forced a new urgency, coupled with a frantic expectancy, for a project whose technology has been both overstated and underdone." The report attempts "to consolidate various reviews made to date."

General - Political and Management Considerations.

"International and national approval is and will continue to be a serious problem!" "The situation must be such that the program will be acceptable politically--initially, on a U. S. National basis, and later, on an international basis."

"This includes *** operational and/or executive control by an organization capable of sponsoring both military and civilian peace-time utilization, and of expeditiously and effectively exploiting the results."

"A cannot afford two R&D programs of this type." "Political approval" will depend ultimately upon the degree that the conditions for general application are met by SAMOS."

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"Military and civilian requirements are compatible in R&D." ---

"Clearer relation is needed between State, NASA, and DOD concerning exploitation of R&D results.

*** data reduction simultaneously or in cooperation with all intelligence agencies with reference material from all available sources."

"Money and effort should be used to clean up, expedite, and improve the existing programs; and greater effort should be placed on obtaining improved end results, qualitatively and quantitatively."

"All of the above indicates that the program should be under the executive control of a national organization that has an international growth potential."

"Recommendations"---

(1) "It is recommended that the DOD recommend to the NSC that executive responsibility for general guidance, operational plans and policies, and establishment of operational priority, in both the civilian and military applications of SAMOS, be placed under a new DOD executive officer (ad hoc) or under an existing office, such as the Assistant Secretary of Defense/Special Operations."

(2) "The USAF be given the task of:

(a) Managing the R&D program.

(b) Operating the military part of the operational program either openly or under cover of a civilian mission.

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(c) Making available both the raw and the analyzed data to all U. S. agencies designated by the Executive Office, whose establishment is recommended under (1) above.

(3) The Executive Officer should examine the possibility of accomplishing data reduction by a "Joint Satellite Processing and Data Reduction Center."

III General - Requirements

"It is worth noting at this point that the principle of concurrency has been observed too strictly here: the data processors should be built only after the work on the collection system has progressed at least to the point of defining the basic concepts. This was not done in Subsystem I and the consequences of the error are serious."

Concerning the effect of weather, orbit geometry, resolution and economic factors: "The feasibility of the original scheme as a warning device has been shown to be both problematic from a technical point of view and almost impossible from an economic point of view."

Note that the original warning concept of subsystem H is what put emphasis on readout rather than recovery, large funds for data processing devices, video links, digital computers, etc.

"There is still insufficient appreciation that SAMOS is a national rather than an Air Force project. The USAF owes to all interested intelligence agencies periodic and candid reports on its intentions, plans, and achievements. The SAMOS capabilities go far beyond merely providing

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intelligence information; and this fact ~~also~~ contributes further to the responsibility of the Air Force towards meeting intelligence needs other than its own intelligence requirements."

IV General - Readout

USIB considers 100' resolution unacceptable for detection and identification of missile bases under construction. E-1 use for intelligence therefore is not comparable to its R&D test value.

"It is fundamental to this program that the recovery problem be solved at all costs, independently of any operational take." (if so, then a solution can be obtained in that to meet these requirements).

V General - Recovery

"Simplified payloads launched by abundant and presumably reliable THOR vehicles (should) be promptly devised for prolific studies of object recovery from orbits in space." This "should involve both land and water recoveries."

"We believe that one of the fundamental reasons why recovery has not been successful up to now, and if successful, unlikely to be continuously successful, is the process through which the Air Force has gone in achieving the desired result." "*** over and over, the influence on the research and development recovery program introduced by the necessity for some kind of usable results, has blocked the technical progress of the main contractor."

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All contract situation should be created where the solution of re-entry problems is reasonably ~~decoupled~~ decoupled from modifications of the payload.

"The present regime resembles efforts to develop Faraday's capacitor for the first time during the construction of a giant computer."

VI Weather -

Recovery is better than readout for exploitation of good weather. 70 mm pan camera recovered after 24 hours has 6 to 18 times coverage of E-2 for same length of time because of readout limitations.

VII General - Photographic

Publicity has seriously jeopardized utility of system. Plan for all releases should be approved at Executive level and enforced.

E-2 is technically obsolete--its limitations are economically and politically unacceptable.

Prefer relatively short life recovery to 30 day recovery (E-5). "More consistent with weather (coverage of large cloud-free areas in 24-72 hours), political problems (psychological effect of a continuously orbiting reconnaissance vehicle over long periods of time)".

RECOMMENDATIONS

E-1 and F-1 remain as is, expedite launch if possible, priority on ~~recovery~~ but not at expense of ferret.

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Limit E-2 to 4 and terminate at end of CY 61.

Initiate studies and technical development programs to allow for future readout system if required.

Increase emphasis on early availability of recoverable system, reduce emphasis on appropriate ground processing, reproduction and data reduction systems.

Develop smaller camera packages of higher resolution, smaller dual payloads, effective stereo. Use all government organizations and facilities having primary mission responsibilities in reconnaissance.

VIII Subsystem I

Recommendations -

Precede further work by test and evaluation to classify subprojects into following categories:

(a) Those items which are, or appear likely to be, better than similar devices available for general use. Complete and make available to systems other than SAMOS.

(b) Those items which are, or appear likely to be indispensable and available to supply minimum capability for interpretation of interim data of E-2--complete.

(c) Those items which are, or appear likely to be indispensable for future handling of recovery payloads--

Continue, if already initiated, provided they are general in scope and do not limit ultimate system performance.

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(d) Items which do not meet a, b, c and those that are in the
ELINT—suspend.

Base simulation on "realistic rather than idealistic basis."

"It is recommended that the entire intelligence community participate
in all aspects of the ~~xxx~~ Subsystem I program, and that evaluation of the system
take into consideration all other programs, both special and conventional."

IX ELINT/COMINT

Subsystem F Recommendations -

Put greater emphasis on payloads. Reduce the number of Atlas Agenas,
and use Thors (with or without clustering Sergeant missiles) as much as
possible for R&D tests.

Fly as many of the 3 F-1 payloads as necessary, singularly or with E-1,
to get one successful for 36 hours at earliest possible date.

Fly as many of the 4 F-2's as necessary to get two successful orbits
with Thors.

Initiate a vigorous R&D program to develop improvements, modifications
and extensions, etc., to achieve USIB requirements and provide for at
least one flight with these capabilities in the revised development plan.

X Management Notes:

"Further problems were introduced by the assignment of the management of
SAMOS to a group that, eminently successful in the administration of ICBM,

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extended the same techniques to a different project. The fact that the R&D techniques for this project had to be very different was not, and is still not, fully recognized. The knowledge of reconnaissance, techniques, and systems in BMD was limited to a very small number of people. For this reason in particular, the management group found it difficult to establish a position of leadership and became responsive to a number of outside forces."

"The fact is that, within the USAF, there are officers and civilians with a very high degree of technical competence whose services were neither sought nor welcome. There is also within USAF a well-developed R&D management capability for projects of this type."

"For the above reasons, it is viewed with alarm the creation of a new organization, either outside or within the Air Force, that does not use the talents available at WADD, Rome, ADC, and Hq USAF. It would also be of concern if much confidence were placed upon the ability of an unproven and not-yet-staffed organization like Aerospace in establishing immediately an effective and efficient engineering supervision over the project." "Several months will be necessary before Aerospace's influence should be reckoned with."

RECOMMENDATIONS

1. "Despite errors of present USAF management group, lessons have been learned, things are improving--make existing organizations work rather than make radical changes at this time.

2. Reorganize BMD with more officers with responsibility in positions consistent with the high priority of the project.
3. Bring WADD and RADC into the direct management structure, give their advice greater weight, revise administrative procedures to permit response to special projects on a timely basis. If this not acceptable, reassign appropriate staff sections of these organizations to BMD.
4. Keep in mind policies, guidance and decisions by USAF in judging Lockheed performance.

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