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DEPARTMENT OF THE AIR FORCE
DIRECTORATE OF SPECIAL PROJECTS (OSAF)
AF UNIT POST OFFICE, LOS ANGELES, CALIFORNIA 90045



4 November 1965

REPLY TO
ATTN OF:

SUBJECT: Comments on Alternate Management Arrangements for the New
Photographic Satellite Search and Surveillance System

TO: Director, NRO (Dr. Flax)

1. As requested by your 27 October memorandum on this subject, here are my comments and recommendations on the 15 October Task Group report on the above subject.
2. In any consideration of management arrangements for any projects of the National Reconnaissance Program, I believe that the overall objective should be, unequivocally, the strongest, most effective management structure possible. I cannot see how any avoidable degradation to this objective can be accepted responsibly, in the light of the national importance of these projects, nor the basis of any assignment be, instead, as has been proposed so often in past discussions on this subject, one of maximum utilization of resources, or the equitable distribution of projects or tasks, or the preservation of separate organizational identity and/or prerogatives of the participating agencies.
3. I believe that the following principles are mandatory requirements of any management plans under which the above objective can be met:
 - a. Overall project responsibility and corresponding authority, including responsibility and authority for overall system engineering and system integration, must be delegated to a single person who is organizationally and geographically located and appropriately chartered with respect to the resources involved, such that he can effectively control all such resources as necessary to carry out this overall responsibility.
 - b. This overall project management responsibility and authority must be delegated to the person referred to above, as head of his NRO element; no management responsibility or authority should be retained by the parent agency as such (as, for instance, the Air Force has no management responsibility or authority over NRO projects assigned to SAFSP).

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c. The person having this overall responsibility, and any (properly cleared) personnel he designates (from his office, his SE/TD contractor or his supporting resources) must have unrestricted access to all contractors and facilities participating in the project, and all information concerning all aspects of the project. He must have authority to determine need-to-know, for these personnel, for any information concerning the project, and authority to grant any project clearances necessary for this information, to personnel he determines to meet published BYEMAN clearability requirements.

d. For projects where divided management is directed, the person having this overall responsibility must be delegated corresponding authority over all participants in both agencies, established by specific directives in each agency, to all personnel who are, or may be, concerned.

4. In addition to the above basic considerations, there are three practical factors which bear on the question at hand:

a. Any management plan adopted should be considered capable of preventing the known difficulties which have periodically plagued the management of the CORONA project during the last several years. Although these problems have receded during periods of success, they have flared up sporadically, usually, but not always, at times of technical changes in the project, and when mission failures have occurred. These problems have been caused by inter-agency difficulties which are the direct result of the present management arrangement for this project. In this regard, even the most difficult of contractor interface problems can be less deleterious than an inter-agency impasse. The former can be solved at the working level, but the latter cannot, and the frequent escalation of working-level problems to higher echelons inevitably results in serious delibitation of the overall project management, and prevents the attainment of viable rapport which is essential to effective joint endeavor.

b. The CORONA project is a very poor management model for any new project. Both the circumstances which originally made split management of this project necessary and the factors which made the development eventually successful have long since vanished. The project survives under the present management arrangement only because it has gradually been developed into a high level of reliability, after considerable difficulties spread over a number of years. It has reached this point

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and survives in spite of, not because of, its present management structure. This project development was initiated with a very simple, single camera, and has very gradually evolved over more than five years of flight and numerous difficulties into the present two-camera payload, with an auxiliary indexing camera and a dual recovery capability. It is still extremely simple in comparison with, and not at all representative of, the proposed system for which a management plan is presently being sought. There is no overall systems engineering or overall system integration, aside from work performed, without overall supervision, by a common contractor.

c. It should be noted that the interfaces on existing satellite reconnaissance include several different variations. For instance, in GAMBIT, the OCV contractor is responsible for the environmental control of the camera, the camera is literally inserted into the OCV, and integrated by the OCV contractor, not the camera contractor; it is not integrated separately into an autonomous module structure, as in the case of CORONA (and, to date, we have never had a single GAMBIT camera failure or seriously degraded camera performance in 22 launches). Also, the recovery system is the responsibility of the OCV contractor in both CORONA and GAMBIT, but is the responsibility of the camera contractor in the case of GAMBIT-CUBE. The reasons that these interfaces were selected for these existing projects have no necessary connection with selection of the interface for new projects; what should govern this choice is how well the selected interface fits the type and complexity of the project in question; and whether it will permit the most effective overall system engineering and systems integration under the circumstances which must apply.

5. Before commenting on the alternate management plans, I have a few observations on the report as a whole: I agree that the Task Group identified alternatives that span the range of possibilities, and that their report can serve a useful purpose in the task of defining a workable management plan. However, the overall effort of the Group was marred by departing from its charter to consider its task as one of developing "management approaches applicable to any system undertaking * * *," as noted in par IIa, rather than concentrating on the specific project in question. In this, and other respects, the Group did not follow the 11 August Agreement, which clearly considers this particular project different from any other new project possibilities (in the latter case, among other points, it specifies determination of sensor responsibility by the Executive Committee; in the case of this project, it specifies that the CIA will be responsible for the optical sensor subsystem after certain events have transpired). The Task Group also considered arrangements which are excluded by the Agreement, and in other

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instances, read things into the Agreement which simply are not there. The Group also embraced wide extremes of arrangements which it considered workable, while dismissing what it "generally felt" to be the best way to manage a project with no more specific justification than "all things considered, despite its appeal, the Task Group does not recommend this management arrangement" (IIIb(4)). Yet, other admittedly less desirable arrangements are treated in much greater detail and considered feasible and workable. More effort apparently was made to get agreement between the three Group members than to justify the matters agreed upon. The range of these excursions and the inconsistencies between the Group's stated conclusions and supporting rationale is such as to render the fact of Task Group agreement, and its recommendations, per se, of questionable value; the worth of its conclusions and recommendations must be determined by the validity of the stated supporting rationale, and not the fact of Group unanimity on any particular point.

6. My judgment on the relative strength and weakness of the alternate plans considered by the Task Group is summarized below (sub-paragraph titles refer to corresponding titles within the report):

a. "Overall System Responsibilities in the NRO" (i. e., DNRO and NRO Staff. I agree that this is totally unworkable and should receive no consideration.

b. "Fully Integrated System Project Office"

(1) I agree with the concept.

(2) I agree with the Task Group that this is the best way to manage a system project, and that there are no significant factors mitigating against such an arrangement.

(3) For reasons which I note in the last paragraph of this letter, I believe that in this concept, the total responsibility for the system should be assigned to SAFSP.

c. "Co-System Project Directors"

(1) I cannot agree with this concept. The only way that the DNRO can hold Co-SPD's "jointly and equally responsible" for overall system matters, such as system engineering and integration, is to do all overall jobs himself -- a patently impossible task. There is just no

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such thing as joint responsibility of different people in different agencies of the government concerning management of different aspects of a single project. This is not a responsible management arrangement -- it is a retreat from it. There must be some one in charge, with overall responsibility and commensurate authority over all aspects of the system, and this person must be organizationally and geographically located and chartered with the resources and time to carry out the task. For a new project, unencumbered with historical carry-over arrangements, I can see no rational basis for deliberate selection of this type of management. The relatively elaborate detail with which the Task Group presented this option only partially illustrates the complexity that would be involved in attempting to implement this scheme. And in spite of this involved arrangement, there still would not be a single authoritative project manager, and no effective overall system engineering and integration.

(2) In working out their proposed assignment of responsibilities under this plan, the Task Group oversimplified some important matters as, for instance, the proposed division of responsibilities at the STC in IIIc(6). The proposed division is obviously based upon consideration of relatively simple systems and interfaces; the on-orbit operation is not this clean-cut for new, more complex systems. There is too much interaction possible between payload, power, stabilization, programming, command and control, etc. And choosing a team chief by mutual agreement for each orbital operation, as proposed, is utterly absurd.

(3) One of the biggest and most significant "cons" was omitted entirely by the Task Group in par IIIc(9): There is simply no way in which responsible overall system engineering, system integration, and project direction can be done under this plan.

d. "The Segregated System Project Office"

(1) As described in the report, this plan is the same as the Co-SPD plan with two minor and two major modifications. The minor modifications are the re-naming of the Co-SPD of one agency as the APD, and the assignment to the SPD of a Deputy SPD by the agency which has the APD. The first major difference is the assignment of total responsibility for the system to the SPD. The second major difference is the assignment of responsibilities for specific sub-systems to separate organizations who are "held responsible to" the SPD. This sounds good, but the plan has a fatal flaw: there is simply no provision

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whereby it can be carried out in practice. The complete separation across the country, between the SPD and the APD is the same arrangement that presently exists in the CORONA project, which greatly accentuates any discordant tendencies by emphasizing organizational positions and organizational prerogatives, even on problems which should be simply solved. Even the designation of the SPD as having overall project management is similar; the DNRO previously designated SAFSP as having this overall responsibility, but the tremendous separation of the two groups, and the restrictions imposed by the CIA on access to payload data and contractors completely prevented the overall responsibility from being carried out in practice. There is nothing in the plan as described that would necessarily result in any difference in this case. If the DNRO cannot direct CORONA project level details, (such as making complete payload technical data available at the STC during on-orbit operations, as he tried but was unable to do except when he was personally present), how can the lower level SPD be expected to do it?

(2) I do not see any virtue in the DSPD arrangement described for this plan. The work which occasions his presence is being done elsewhere, at his parent agency under the control of the APD. He is at best a supernumerary liaison official, at worst just another echelon to go through; it would be much better for the SPD and his people to have direct access to the APD.

(3) The changes noted above do not solve the deficiencies of the Co-SPD plan; the assignment of overall responsibility has been stated, but in a way and under constraints which preclude it being effective. The Co-SPD plan admits that no one is in effective overall charge; this one claims that there is some one in charge, when, in actuality, he is not.

e. "Assignment of FOSS Responsibilities"

(1) The Task Group ignored some aspects of overall systems engineering and integration in recommending where the system interfaces should be established, and specifying that the camera sub-system should be integrated into a sensor module as a unit. For large, long lifetime vehicles, such as the ten-foot-diameter 24-day vehicle planned for this project, it may be desirable to integrate a number of other vehicle sub-system components within the same module. In any case, it should be noted that the sensor has not yet been selected from four

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contenders, with considerable variation between the designs, and the vehicle has not been selected, and essential overall systems engineering has not yet been accomplished. It is certainly not obvious that the camera module is the best interface approach; it is clear that it is not the only workable approach.

(2) I can see no reason why the camera sub-system cannot be treated as we do now on GAMBIT, where the camera contractor provides the camera, with fine environmental control, and the OCV contractor integrates it into the OCV, and provides coarse environmental control. This arrangement is exactly in accord with the 11 August Agreement, as well as successful current practice on a rather complex system; it is also the simplest inter-agency interface that is consistent with the Agreement.

(3) I, therefore, do not agree with any of the three "options" as written in par IVd of the report. CIA-OSP should be responsible for the camera sub-system. SAFSP should be responsible for the RV and OCV, and for integrating the camera sub-system and every thing else into the OCV.

(4) The new system will use programming, and command and control equipment which will be consistent with the existing GAMBIT and GAMBIT-CUBE equipment and associated STC resources. Clearly, SAFSP should have the responsibility for directing the operations at the STC.

f. "Summary-Conclusions"

(1) Of the plans described in the report, I believe that only the plan called "Fully Integrated System Project Office" can meet the fundamental objective of responsible, effective overall management. I do not agree with either of the two arrangements considered workable by the Task Group; neither can possibly provide really effective management, in my opinion.

(2) I do not agree with the Task Group on the responsibility for the camera module. The CIA should be assigned the camera sub-system only, with SAFSP responsible for RV, OCV, and the integration of all sub-systems, including integration of the camera sub-system, into the OCV. This is a workable technical interface, as proven on GAMBIT, and it is the simplest inter-agency interface since it avoids any requirement for common contractors serving both the Air Force

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and the CIA, which, while of benefit in the absence of effective overall system engineering and integration, has nevertheless contributed substantially to the inter-agency conflicts and impasse on the CORONA project. Moreover, it is the only arrangement fully consistent with the 11 August Agreement.

7. On balance, I think that there are only two managerial approaches to divided management of this project which have any chance of meeting the objective described in par 1 of this letter.

a. The first, which is described by the report as the "Fully Integrated System Project Office," involves assigning to SAFSP the CIA personnel who would be responsible (to SAFSP, not the CIA) for the optical sensor sub-system. These personnel would serve in the integrated project office at SAFSP on a normal inter-agency transfer basis; joint service in the same sense as joint service in the JCS. They would serve as individuals, fully and solely responsible to the supervisors in their duty office, who would rate their performance of duty exclusively.

b. The second approach is one which is not mentioned by the Task Group report, in spite of the Group's obvious concern with the preservation of organizational identity. This plan would be identical with that described in par 7a, above, with this difference: the CIA personnel would not be assigned to SAFSP, they would remain assigned to the CIA, but they all would be co-located at SAFSP, under a CIA supervisor, who would be responsible to the SPD. The co-located personnel would include all technical and contracting personnel who work on the CIA responsibilities for the system development and operation; all such CIA personnel located at contractor plants or other facilities concerned (except the NRO Staff) would be responsible exclusively to the senior CIA person in the SPD. This plan would require the complete delegation of the CIA responsibilities to their people referred to above, including specific direction that they are to respond to all direction received from the SPD. Periodic CIA-OSP review of the results of this management would be obtained by the inclusion of appropriate CIA officials in DNRO reviews of this project. Administrative matters only, such as audits, travel expenses, pay, etc., would be handled by CIA-OSP. This plan would not be as effective as that described in par 7a, but it is the only workable alternative that I can see. It would allow preservation of CIA organizational identity, if

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that is considered important enough to be worth some added complication in management. If actually implemented as I have described, it would do so in a manner which would preserve a single overall project manager. It permits assignment of responsibility for engineering development of the sensor sub-system to the CIA component located at SAFSP. This is unquestionably within the meaning of the 11 August Agreement, which uses the terms "the CIA or DOD components" in specifying sensor development responsibility in par Dd.

d. I recommend the plan described in par 7a. I believe the plan described in 7b is a less effective and less desirable alternative, but acceptable, provided that it is implemented fully as described, including full delegation of all technical and contracting responsibilities.

8. In addition to my views outlined above, I submit that the assignment of project management responsibilities should never be made on the basis of who thought of what idea first. It is not the identification of the historical birth of ideas that is at issue; it is the effective management of the development and operation of a new, complex, satellite reconnaissance system. Clearly, the only valid criteria are existing experience, competence and resources of the type required for this job. I agree completely with the 11 August Agreement's explicit stipulation that the allocation of development responsibilities will be made "with a view to ensuring that the development, testing and production of new systems is accomplished with maximum efficiency by the component of the government best equipped with facilities, experience and technical competence to undertake the assignment." SAFSP represents almost the total of such facilities, experience and technical competence that this government has in satellite reconnaissance, and is uniquely qualified under these criteria for assignment of overall project responsibility and the other tasks I have recommended herein.



JOHN L. MARTIN, JR
Brigadier General, USAF
Director

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