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DEPARTMENT OF THE AIR FORCE
OFFICE OF THE SECRETARY

MEMORANDUM

October 26, 1970

NOTE TO COLONEL SWEENEY AND DR. NAKA

SUBJECT: "Skunk Works" Management

The memorandum to the right is intended to compliment Colonel Hartley's memorandum of October 16, copy attached.

I think that there is a tendency to view "skunk works" as the answer to the Systems development and acquisition problems of today. My contention is that the reason that "skunk works" is successful is because it is so unique, challenging and rewarding. For this reason, I have great concern that if the concept is universalized, it will negate the very reason for its success. The memorandum to Dr. McLucas urges great care in "skunk working" all programs.

Recommend that you coordinate on the memorandum.

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Major, USAF

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(S) NATIONAL RECONNAISSANCE OFFICE
WASHINGTON, D.C.

THE NRO STAFF

October 26, 1970

*Bud -
Discussed with Boss -
he needs specifics -
i.e. numbers, examples
results - not
generalities*

MEMORANDUM FOR DR. MC LUCAS

SUBJECT: Additional Thoughts on the "Skunk Works" Concept

In his October 16 paper, Colonel Hartley offered some very pertinent remarks concerning the value of the specialized management, engineering shop, or "skunk works" concept. He cited three major factors as being key to the success of this management philosophy. First, and most essential, is the cooperative use of streamlined contracting and program management procedures by industry and the government. Second, is the selection of highly qualified and highly motivated people to do the job. Third, is working within a streamlined organization with limited numbers of people involved.

I would like to draw your special attention to the second and third points, since much of the major focus seems to have been centered upon the first factor as a response to recent criticism of present systems acquisition methods.

The main reason for the unqualified successes of the "skunk works" is that the projects which have been accomplished were uncommon, unique and largely classified. They were by-and-large short-lived and closed ended. In other words, the working environments which were created for these projects were special, and unencumbered by the traditional reviews, controls and central decision making. The original SPO concept also produced this favorable work environment until the control and decision mechanism overwhelmed the program managers with reviews and committees

** Dr Mc Lucas says you are pre judging the AFSC steady. Informally he advised, "Dr Stansone, Ken Ryan, Dr Fort ~~SECRET~~ Ken Brown think the*



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and permitted a far lesser amount of dedication on the parts of the SPO organization. Over the years, the SPO staffs have grown to the point where it is no longer a unique and special job assignment and the important necessity of providing a high sense of job accomplishment has been forgotten.

Unless careful attention is paid to the main reason underlying the success of the "skunk works" - the unique and special job environment - any amount of streamlined procedures will not correct the ills prevalent in today's systems acquisition philosophy.

There is great danger in attempting to pull the entire spectrum of systems development and procurement under the umbrella of "skunk works." If "skunk works" is made too common, then the real factors for its past success will no longer be possible to attain.


Major, USAF

* Gen Brown was briefed by Gen King -
Monday the 26th. In attendance was ***
Sam Phillips. Brown stated he had been
tasked by Dr Mc Lucas to conduct study.
Phillips commented - he reviewed all types
of mgt arrangements before structuring
the Apollo team and concluded the "skunk
works" would have decided the U.S. MINT,
and still would have guaranteed the job done.

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C.



16 October 1970

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MEMORANDUM FOR DIRECTOR, NATIONAL RECONNAISSANCE OFFICE

SUBJECT: Specialized Management Concept

During his speech to the Armed Forces Management Association on 20 August 1970, Mr. Packard cited Lockheed's "Skunk Works" as an exceptionally effective approach to obtaining military weapon systems. Although it is not common knowledge, a wide range of military equipment and complete systems as well have been procured under the specialized management, or "Skunk Works" concept, not only from Lockheed but also from more than 30 other major contractors.

Most people with whom we deal are generally aware of the specialized management concept but unfamiliar with the essentials of the system. This paper outlines some of the more important aspects of the specialized management technique and cites advantages to be gained through selective use of this approach on an expanding scale.

A basic and most essential ingredient of the Skunk Works approach is the cooperative use of streamlined contracting and program management procedures by both industry and the government. The specialized management concept requires the elimination of every non-essential activity. Committee reviews, reports, etc., are limited or entirely omitted in order to produce a quality item, quickly and economically. Documentation and, in fact, all forms of paperwork are held to an absolute minimum. The contractor is given a specific achievement goal, and after mutual agreement on time, method, and money matters, is permitted to proceed toward the goal with a minimum of government red tape. To date, although many mega-dollars of effort have been managed under this concept, audit results indicate that no contractor has tried to "gouge" the government. This has been accomplished not only through the integrity of the contractors, but also as a result of strong and effective internal management controls exercised directly by the government program manager. Controls employed may vary with the specific project, but always include basic techniques such as system performance reviews, audit analyses, and especially close fiscal surveillance.

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Another key factor is selection of people. Highly motivated, well-qualified people, representing both the contractor and the government, who must be given the responsibility and authority needed to do the job without going through multi-layer coordination actions and stereotyped approval procedures. The government Project Director, as well as the contractor's Project Director, should report directly to the actual decision-making authority. The typical Air Force SPO is organizationally located at a buying division with many layers of management between the SPO director and the actual decision makers. By having direct access to the ultimate authority, the program director in special projects is not subjected to unneeded reviews by intermediate committees with no authority to act. This arrangement precludes being "helped to death."

Equally important is streamlining the organization to limit span of control and enhance direct management capability. While a standard Air Force SPO may be staffed with 200 to 300 people, we have managed complex projects with two to 20-man SPO's and a limited amount of Headquarters assistance. This approach places a great deal of responsibility and authority in each individual, but at the same time the contractor knows precisely to whom he must go, and with whom he can resolve problems on an expedited basis. Additionally, austere manning of the government team conveys to the contractor the correct tenor of the program. A small government SPO does not mean that the contractor must increase manning to accomplish the required tasks. As a matter of fact, a lesser number of government SPO personnel reduces the number of "marketing" teams needed within the contractor's organization. Also, when fewer people are involved, coordination becomes much easier.

During the mid-1950's and early 1960's, aircraft and other systems produced under the specialized management concept far exceeded world altitude, speed, and other performance records, but security constraints prevented public release of the knowledge. The "Skunk Works" approach creates the proper attitude and atmosphere to encourage scientific breakthroughs rather than stifling progress with unnecessary red tape. Mr. Packard's advocacy of the specialized management concept for acquiring military hardware on a timely and economical basis has a firm foundation in successful past accomplishments handled the "Skunk Works" way. Some idea of the scope of these achievements may be comprehended from the following examples:

F-80 -- Only 23 engineers and 100 shop people in Contractor's organization during prototype development.

U-2 -- First aircraft was delivered within seven months of contract go-ahead. State-of-the-art advances incorporated in original design of the aircraft, 14 years later are still ahead of the field in many respects.

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SR-71 -- R&D and production of the entire fleet accomplished on schedule and well within budgetary target.

Fuels -- Exotic fuels developed for U-2, A-12, SR-71 engines; capable of superior performance at high speed and altitude, represent a quantum jump in technology.

A-12 -- Another example of a giant step in advanced design was achievement of Mach 3 speeds with this aircraft in five years less time than it took to achieve the same performance with the B-70.

AGENA "D" -- Requirement for engineering drawings for this project was reduced from an original demand for 3900 to only 350 by use of the "Skunk Works" concept; and with major dollar savings as a direct result.

[REDACTED] -- Completed [REDACTED] worth of various special electronics projects in a compressed time span and with no cost overruns.

It is conventionally accepted that the ponderous methodology of the normal Armed Forces Procurement approach is an irreducible array of checks and balances necessary to safeguard the interests of the government. However, actual past performance evidences the fact that the reverse is often true. In the procurement of new systems or equipments which, by reasons of security, situational complexity, or urgency of national need were required within compressed time frames, the specialized management or "Skunk Works" approach successfully produced quality equipment on a timely basis, and in many cases more economically than could have been obtained under standard procurement practices.

It would appear that a real effort should be exerted within DoD to simplify the normal weapon system procurement system and in Mr. Packard's words "avoid the C-5As and get more "Skunk Works."

[REDACTED]
FRANK W. [REDACTED], JR.
Colonel, USAF
Director, Program D

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DEPARTMENT OF THE AIR FORCE
OFFICE OF THE SECRETARY

MEMORANDUM

October 16, 1970

NOTE FOR COL HARTLEY

Frank

Some quick observations on your paper on "Skunk Works."

- Very well thought out, but very biased toward Skunk Works concept.

- He makes an excellent point on the matters of excessive reviews and endless documentation,

- Some companies do get rich from Skunk Works project mg't, but they do not seem to take advantage and cheat the gov't..

- There is great glamor working in a Skunk Works operation. Would this be lost if the concept was spread out more? Motivation and job accomplishment is not matched elsewhere in the Air Force. If Skunk Works were the norm much of the glamor and desire would be lost.

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- You should offer maybe comments on how to limit the scope of the numbers of projects included in Skunk Works. This is the central issue. It is clear that the advantages in a limited scope are great, but how about an expanded scope?

- RAND is finding out that concurrency is not the answer. Also they see that too many people with their "finger in the pie" causes more cost in time and dollars.

- The original normal SPO concept, for a while, was effective until the excessive layers of management were interjected.

EDWIN F. SWEENEY
Colonel, USAF

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HEADQUARTERS UNITED STATES AIR FORCE
THE INSPECTOR GENERAL
SPECIAL PROJECTS

Date 15 Oct 70

MEMORANDUM FOR COL SWEENEY

Attached memo is intended for the boss.
I showed it to Bob Naka and would
appreciate your comments.

Frank

DEPARTMENT OF THE AIR FORCE

OFFICE OF THE UNDER SECRETARY

MEMORANDUM

Frank,

Good paper

I made some
comments.



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Most people with whom we deal are generally aware of the specialized management concept but unfamiliar with the essentials of the system. This paper outlines some of the more important aspects of the specialized management technique and cites advantages to be gained through selective use of this approach on an expanding scale.

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Another key factor is selection of people. Highly motivated, well-qualified people, representing both the contractor and the government, who must be given the responsibility and authority needed to do the job without going through multi-layer coordination actions and stereotyped approval procedures. The government Project Director, as well as the contractor's Project Director, should report directly to the actual decision-making authority. The typical Air Force SPO is organizationally located at a buying division with many layers of management between the SPO director and the actual decision makers. By having direct access to the ultimate authority, the program director in special projects is not subjected to unneeded

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