~~SECRET~~ [redacted]

1 April 1959

MEMORANDUM FOR: Chief, Security Section, DPD-DD/P

THROUGH : Chief, Administrative Branch, DPD-DD/P

SUBJECT : War College Speech to be Given by Major General Bernard Schriever re: Projects DISCOVERER and SENTRY.

1. Attached hereto, for your information and record, is a draft of a speech prepared for Major General Bernard Schriever, Commander, Ballistic Missile Division. The speech is scheduled for delivery early April before a Secret cleared audience at the War College, Maxwell Field, Alabama.

2. [redacted], BMD, was the author of the attached paper and he indicated that his references for that portion involving DISCOVERER was the CORONA Cover Plan, however, he considered official coordination a matter that was desired by Project Headquarters.

3. I have reviewed the speech and can find no objection in the text. Your comments would be appreciated soonest to enable the preparation of a suitable reply to BMD.

[redacted]
Chief, Cover Section
DPD-DD/P

Attachment: (1) Text of Speech

[redacted]

~~SECRET~~

[redacted]

COPY

WAR COLLEGE SPEECH GIVEN BY MAJOR GENERAL BERNARD SCHRIEVER

I propose in the next few minutes to give you a brief description of two of the Air Force projects that were split out from the old WS 117L project: DISCOVERER and SENTRY; and to follow that with some observations as to the management implications that exist in the current political-military-technological situation.

Although the ARPA and NASA efforts (both with and without Air Force participation) encompass many space probes, lunar and planetary satellite efforts, the major continuous program type space effort at AFBMD involves four systems: DISCOVERER, SENTRY, MIDAS and a communications satellite. DISCOVERER is an R&D effort with bio-medical and advanced research aspects, while the SENTRY is an R&D effort leading to a satellite reconnaissance capability, and the MIDAS is a program to use satellites to detect and trigger the alarm in the event of hostile ballistic missile action.

The DISCOVERER and SENTRY programs are both aimed at establishing a polar orbital capability. They conveniently distinguish themselves by their boost vehicles. The DISCOVERER employs the THOR 15,000 lb. booster with a Bell-Hustler 15,000 lb. thrust second stage. The SENTRY uses the ATLAS 360,000 lb. booster with the Bell-Hustler second stage. These programs also are distinctive as to timing and character. The DISCOVERER is limited to an R&D effort comprised of some 10 or more West Coast launchings during calendar year 1959,

[redacted]

with others to follow; whereas the SENTRY does not fire initially until about the second quarter of calendar year 1960. These SENTRY firings will initiate the first R&D test firings aimed at developing an Air Force satellite reconnaissance capability. Although this effort is aimed at solving the problems which will permit earliest achievement of the reconnaissance objective, by-products of these efforts without a doubt will solve or partially solve other known and unknown problems that face us in the general area of space frontier exploration.

Specific SENTRY development objectives include equipment to allow the accomplishment of the following:

a. Perform terrain mapping to proper accuracies.

b. Detect new targets and verify known targets.

c. Monitor and analyze electronic signal emmissions.

d. Determine location and character of defenses.

e. Assess technological gains and evaluate military and industrial strength.

f. Reconnoiter military movements and assess weapon damage.

g. Accomplish general construction surveillance.

h. Collect weather data.

At the moment these are stringent objectives and pose many technical problems. The development of suitable photographic equipment is yet to be accomplished. To give you some idea of the difficulty of the task it is like trying to photograph the belfry in Boston's old North Church from the Empire State Building. Dispite the difficulty of the task, there is no doubt of their military usefulness nor of the necessity to proceed with an orderly, rapid, and determined effort to assure earliest attainment. Viewed in the light of a national objective to

maintain a posture of deterrence, earliest SENTRY operational capability becomes an obvious necessity. The exact plan for this operational date is TOP SECRET, but I can assure you that it will be as early as it can possibly be made.

Prerequisite to the initiation of SENTRY R&D flights is the necessity to create a capability to reliably put a vehicle in a predicted orbit. Although it is a distinct and separate program, DISCOVERER, with its readily available THOR booster provides an ideal orbital test vehicle. Thus, we find that while the current state of equipment and technique developments preclude immediate pursuit of SENTRY R&D objectives, we can make use of the terrestrial orbital development that is to take place in the DISCOVERER Program. When we compare the nominal number of DISCOVERER vehicles addressed to the relatively sophisticated orbital development problem, against the 90 odd ATLAS missiles and the 60 odd THOR missiles that were devoted to vehicle development in the IR and ICBM programs, the size of the development task before us comes into sharp focus.

Although it is a large order, the objective of the DISCOVERER program than is to employ as soon as possible the largest satellite vehicle that technology permits as a development tool in obtaining a reliable orbital capability. This is a progressive development program whose goal is to continually improve the capabilities and useful life span of the satellite so that througout the program increasingly advanced development techniques and innovations may be conducted.

The DISCOVERER flight test program is designed to yield actual environmental information as well as system performance characteristics. It will also serve to check out the associated tracking and acquisition instrumentation. Tracking and acquisition stations for this series of flights are located at [redacted]. During these tests, performance evaluations of major subsystem components and subsystem will be effected. These evaluations progress from relatively simple flight dynamics investigations through booster separation tests; then to vehicle propulsion, guidance and stabilization during coast; and from there through transition to orbit, tracking, telemetering data links, and finally to capsule separation and re-injection of the capsule into the atmosphere followed by aerial or surface pickup and examination.

The achievement and improvement of orbital capability, which I have just covered, is the first of three immediate objectives of the DISCOVERER Program. The remaining objectives are:

a. The development of a reliable capsule recovery system including techniques and procedures.

b. Execution of non-recoverable advanced engineering tests.

As youmay have determined from reading news accounts of the DISCOVERER I launch, on February 28th of this year, we experienced some difficulty in acquiring and tracking this vehicle. This low fidelity acquisition typifies the osort of things we are attempting to find and correct in this program. As another example, we feel

that there is considerable empirical work yet to be done in the area of vehicle stabilization before we can fire costly vehicles and their payloads with the proper measure of operational confidence.

Dispite the acquisition difficulty, the February firing bolstered considerably our confidence in the theoretical computations and planning that preceded it. On the other hand, the launch difficulties experienced with the first DISCOVERER in January tempers the enthusiasm of success with the realistic fact that there is a challenging R&D effort ahead of us.

Thinking of the remaining DISCOVERER objective, and also projecting into the future possibilities of a true manned space flight; we are hoping to gain fundamental flight environment information as it affects living specimens. There are included in the DISCOVERER Program a number of bio-medical flights in which there will be employed a recoverable capsule. General [redacted] Special Assistant for Bio-Medical Sciences to the Commander, ARDC, and his people are cooperating with AFBMD on the DISCOVERER flights with the objective of putting living specimens into space, observing their impulses under certain conditions, recapturing the specimens and assessing their condition first hand. There are a number of this type flight planned for execution this year. As a matter of fact, the (next-last*) flight during this month (is-was*) the first of the series.

In anticipation of these bio-medical flights, we have pulled together the necessary aircraft, equipment, and people to constitute a recovery capability. These people will be stationed at the

*Choice, depending on when talk is given and whether flight ahs taken place.

predetermined recovery area out near Kaena Point, Hawaii, and will effect either an aerial or water recovery after the capsule has been ejected from orbit and descends to a suitable parachute opening altitude. The initial entry into the lower atmosphere will involve ablative protection during the deceleration, following which a parachute will deploy for the remainder of the descent. Simultaneous with parachute opening, chaff will be dispensed so that search and pickup aircraft may home in to the descending capsule. First aerial recovery trys will be at approximately 13,000 feet employing C-119 aircraft with special air snatch equipment. If this is not successful, under pickup by one of three Destroyers will be made.

The first tests of this series will involve live mice as the living specimens. As techniques and knowledge improve, it should be possible to advance to primate specimens. Depending on the initial successes and problems encountered, there may have to be some ad lib type altering of the program.

Though moderately sensational, these experiments are extremely introductory in nature, and are timewise, considerably remote from a manned space flight. Yet, in these flights, undoubtedly lies the answers to questions which must be answered prior to a sustained manned flight capability.

Once such a capability is realized, the possibilities for both scientific and military exploitation of space activities rapidly multiply. With a manned vehicle, the remote controlled situation is transferred to a decision-making situation which introduces a

variety of experimental and operational possibilities that would otherwise not accrue or require expensive weighty equipment to perform.

To say the least, the future implications and vistas which stem from our current technological position in orbital and space effort are varied and numerous. The political and military implications are likewise rather forceful and somewhat self evident. A casual reference to the great volume of unclassified space literature including current space and air trade journals reveal a fantastic array of strategic possibilities. The programs that are actually being studied or pursued by the various government sponsors lend a high degree of credence to these journalistic reports. As you can well appreciate it is important if not inescapable that public interest has been aroused in these programs. The fact that there is a general awakening in all strata of public industrial and private life to the space activities can provide a preferred basis for moving logically and intelligently into the space era we are approaching. To the most casual student of military aspects of space technology, it is immediately apparent that we are in the midst of a technological explosion, in the sense that many old ideas are finding a new and fertile field in which to germinate and come to fruition. Additionally, there is a general scramble in industry to push back the scientific frontiers. Private capital as well as public monies are being expended in the haste to get in on the ground floor and establish a preferred position in space technology. Generally speaking, this is a healthful situation; however, it presents another problem which faces the Air Force and other federal agencies involved in space work today. This problem is neither new nor startling but it does promise to be more

intense than in the recent past. I refer to the problem of selecting the proper programs, out of the many that are available, to assure that the nation's political and military postures are favorable.

As we saw earlier we are in a rapidly expanding technology and under such conditions we will find many pressures arising on all sides to alter existing programs with new innovations or to cancel programs in favor of newer and completely different concepts. It is obvious that we must maintain a sufficient degree of flexibility in our planning to accommodate significent product improvement breakthrough; however, a continually changing program that attempts to keep pace with the latest technological innovation will never come to fruition. We therefore must recognize that we are in a situation where pressures will originate not only from conceptual and technical advancements but also from an international political source. It is now and will continue to be a challenging and difficult job to respond to these influences and at the same time assure that the nation gets its true dollar value in terms of defense capability.

In this regard, although we are still predominantly in an era of manned aircraft, strategic delivery systems; because of weapon system development lead times, some of us find ourselves in a position of taking actions of an R&D nature that clearly shape the force structure of the future. While the Air Force will undoubtedly rely, for a long time to come, on the mixed delivery force concept, we must keep alert to recognize and react to the need for delicate shifts (in either direction) to maintain the proper balance in our

inventory of weapons. As time goes on there will be an increasing number of exotic and attractive strategic systems and it will become more difficult to determine and maintain the proper force balance. We must, in discharging our responsibilities as responsible federal officials, assure that our actions are based on sound assessment of the proper political military and technical factors.