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ANNUAL REPORT

TO THE

PRESIDENT'S FOREIGN INTELLIGENCE
ADVISORY BOARD

ON ACTIVITIES OF

THE NATIONAL RECONNAISSANCE PROGRAM

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NRO review(s)
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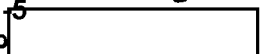
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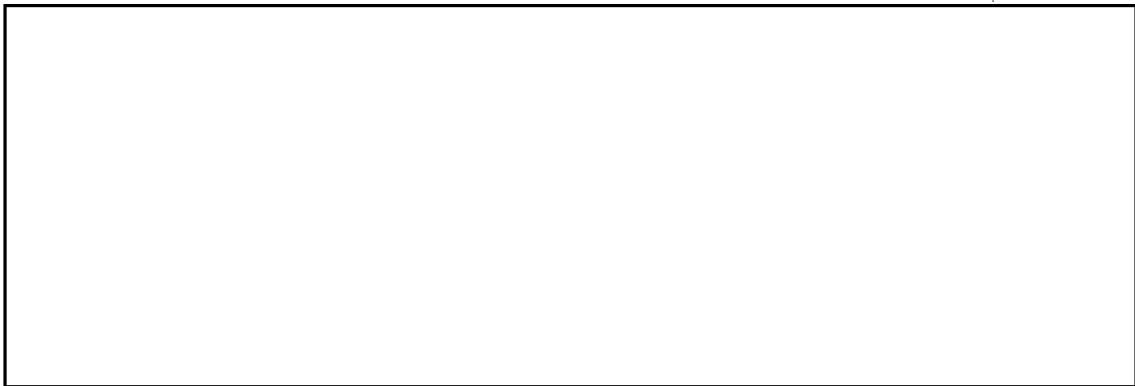
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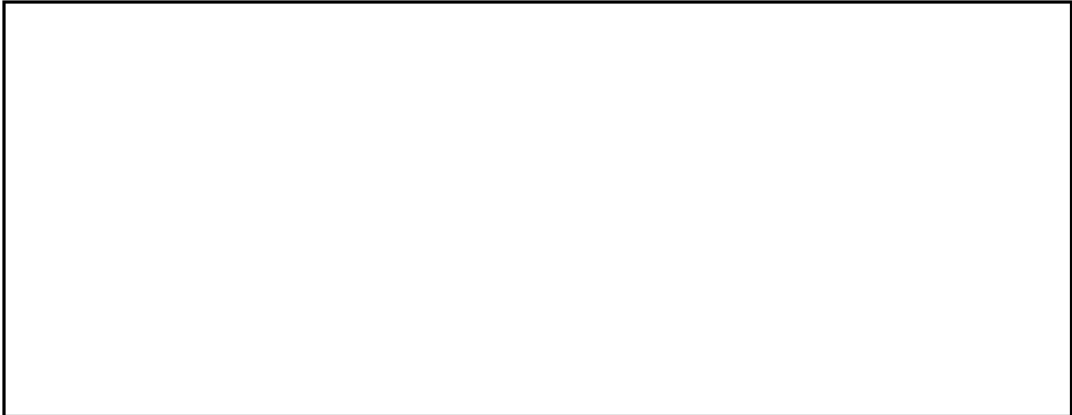


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I. ORGANIZATION AND FUNCTIONS OF THE NATIONAL RECONNAISSANCE OFFICE

A. Since the last Semi-Annual Report to the Board, in May 1965, the following significant actions have occurred which affect the organization and operation of the National Reconnaissance Program.

1. On August 11, 1965, the fourth in a series of DOD/CIA agreements concerning participation and responsibilities in the National Reconnaissance Program was signed by the Deputy Secretary of Defense and the Director, Central Intelligence. The new agreement specifies, in summary, that:

The Secretary of Defense is ultimately responsible for management and operation of the National Reconnaissance Office and the National Reconnaissance Program.

The Secretary of Defense will review and finally approve the National Reconnaissance Program budget.

The Director, Central Intelligence will:

Establish collection priorities and requirements

Review and approve the NRP budget

Provide security policy guidance

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The Executive Committee * will:

* NRP Executive Committee membership is shown on Figure 1.

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Recommend appropriate level of effort to the
Secretary of Defense

Approve or modify the NRP

Approve allocation of responsibility and funds for
research and development and specific
reconnaissance programs

Assign operational responsibility for manned overflights

Review major NRP elements

The Director, National Reconnaissance Office will (subject
to guidance of and review by the Executive Committee):

Manage the National Reconnaissance Program

Execute the National Reconnaissance Program

Initiate, modify, redirect or terminate all NRP
research and development programs

Prepare a comprehensive NRP budget

2. On September 1, 1965 Mr. James Q. Reber, of the Central Intelligence Agency, was appointed Deputy Director of the National Reconnaissance Office vice Mr. Eugene Kiefer, who had departed on February 13, 1965. Mr. Reber was formerly Chairman of the USIB's

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Committee on Overhead Reconnaissance (COMOR). He brings to the NRO a wealth of knowledge and experience in the satellite and aircraft reconnaissance area.

3. On September 30, 1965, Dr. Alexander H. Flax replaced Dr. Brockway McMillan as Director, National Reconnaissance Office, Dr. Flax also serves as Assistant Secretary of the Air Force for Research and Development.

B. The National Reconnaissance Office Organizational Environment

The NRO commits its satellite and aircraft reconnaissance assets directly and solely against intelligence requirements and priorities established by the United States Intelligence Board. The NRO submits plans and schedules for both satellite and aircraft reconnaissance overflights directly to the 303 Committee for approval. The President's Foreign Intelligence Advisory Board regularly reviews and provides guidance on National Reconnaissance Program plans and activities.

Figure No. 1 shows the organizational environment of the National Reconnaissance Office.

Figure No. 2 shows the organization of the National Reconnaissance Office.



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NRO elements are located as follows:

The Director and Deputy Director, NRO and the
NRO Staff -- The Pentagon, Washington ..

The Director, Program A (Satellites) --
El Segundo, California

CIA Aircraft and Satellite activities are managed
from Washington -- but utilize numerous other
operating locations both in the United States and
overseas

The Director, Program C (Satellite SIGINT Payload) --
The Pentagon, Washington

The Director, Program D (Aircraft) --
The Pentagon, Washington

C. The NRO Organization:

The NRO Staff and its Director, Brigadier General James T.
Stewart, located in the Pentagon, is charged with assisting the Director,
NRO and the NRO Program Directors as required. The Staff numbers
25X1 people, the majority of whom are involved in around-
the-clock operation of the Satellite Operations Center. Additionally, the
Staff includes personnel who handle security, communications,
administration, personnel, advanced planning, policy, and satellite
and aircraft operational and technical matters.

The Director, Program A, Brigadier General John L. Martin, Jr.,
maintains his headquarters in El Segundo, California. General Martin's
organization deals primarily with satellite photographic and SIGINT
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reconnaissance, including systems readiness and checkout, launching and orbital control and recovery of the payload packages. Program A is also responsible for management of the Special Projects Production Laboratory at Westover Air Force Base, an organization which assists in the processing of photographic reconnaissance products. Additionally, Program A is charged with supervision of a number of advanced research programs intended to extend existing reconnaissance capabilities. In this latter function, General Martin is supported by the Space Systems Division (Air Force) as well as the Aerospace Corporation.

The Central Intelligence Agency has recently reorganized its reconnaissance program structure (see Figure No. 2). The CIA Reconnaissance Program Director and his staff are involved primarily in aircraft reconnaissance and in certain satellite sensors; however, that agency also provides some covert contractual and procurement functions for the National Reconnaissance Program, and is involved in certain research and developmental efforts for both aircraft and satellite reconnaissance projects. The U-2 continues as the CIA's primary aircraft reconnaissance vehicle but bears little resemblance to the 1956 version, since both aircraft performance characteristics

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and intelligence collection systems capabilities have been improved continually. The follow-on to the U-2, OXCART, is now considered as limited operationally ready and a full operational ready status is expected to be achieved within the very near future. CIA's Washington based reconnaissance staff and detached locations are manned by

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[redacted] people.

Admiral Rufus Taylor, the Director of NRO Program C, maintains his headquarters in Washington and is responsible for

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providing the [redacted] payload. Admiral Taylor's

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staff consists of [redacted] people.

Brigadier General Leo P. Geary, the Director of NRO Program D is also located in Washington. He employs [redacted] people on his Washington staff, but also is supported by [redacted] additional persons located at the Aeronautical Systems Division, Edwards Air Force Base [redacted]

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Program D is responsible for management of the TAGBOARD drone aircraft system as well as for provision of Air Force support, required by CIA, for the IDEALIST and OXCART programs.

Under a special arrangement, the Joint Reconnaissance Center (of the Joint Chiefs of Staff) exercises operational control of certain aircraft overflight programs for the Director, NRO. At present,

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[redacted]

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programs in this category include TROJAN HORSE (U-2's over Vietnam), GOLDEN TREE (U-2's over Cuba) and BLUE SPRINGS (147B drones over Vietnam).

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THE NRO ORGANIZATIONAL ENVIRONMENT

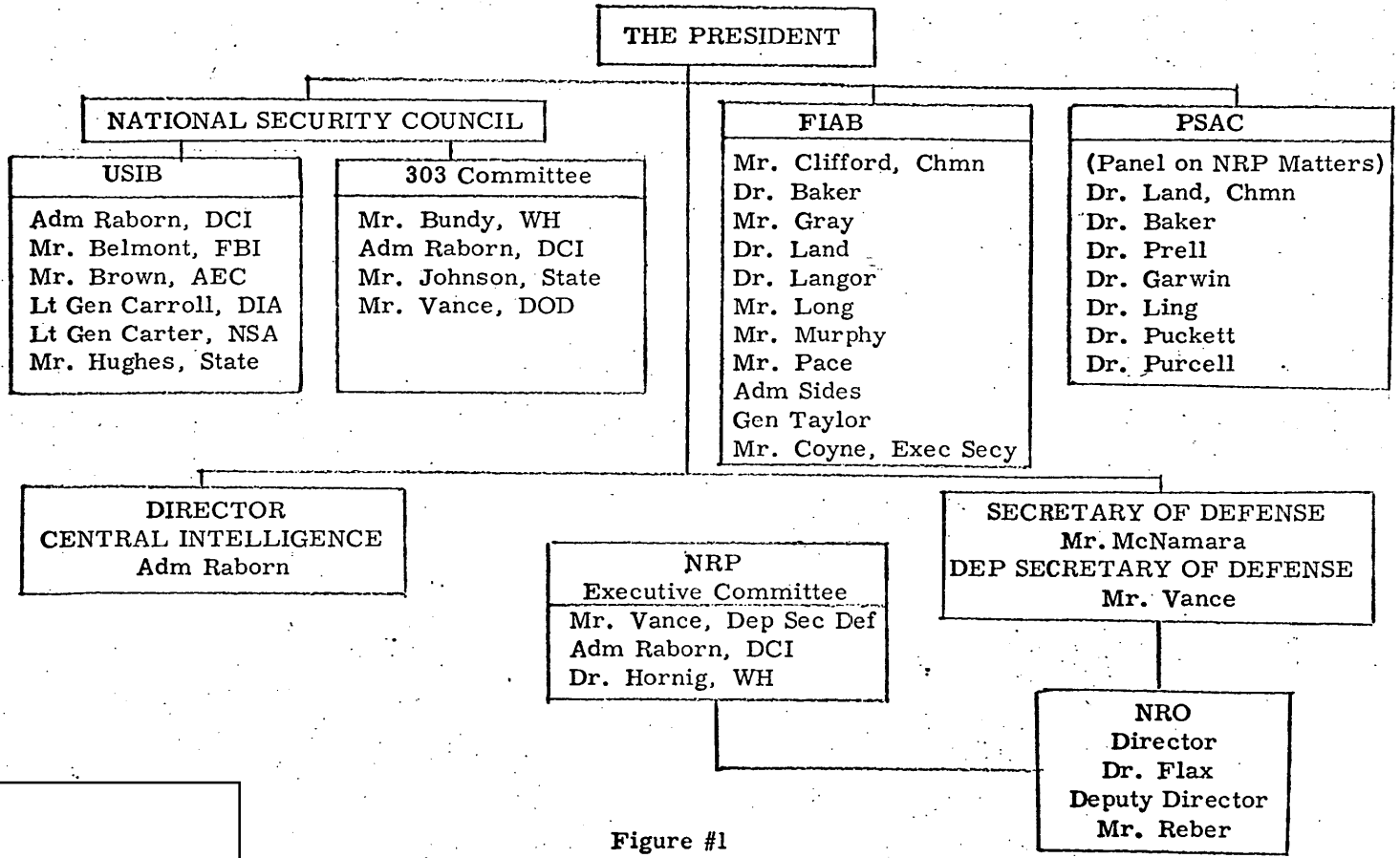


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NATIONAL RECONNAISSANCE OFFICE

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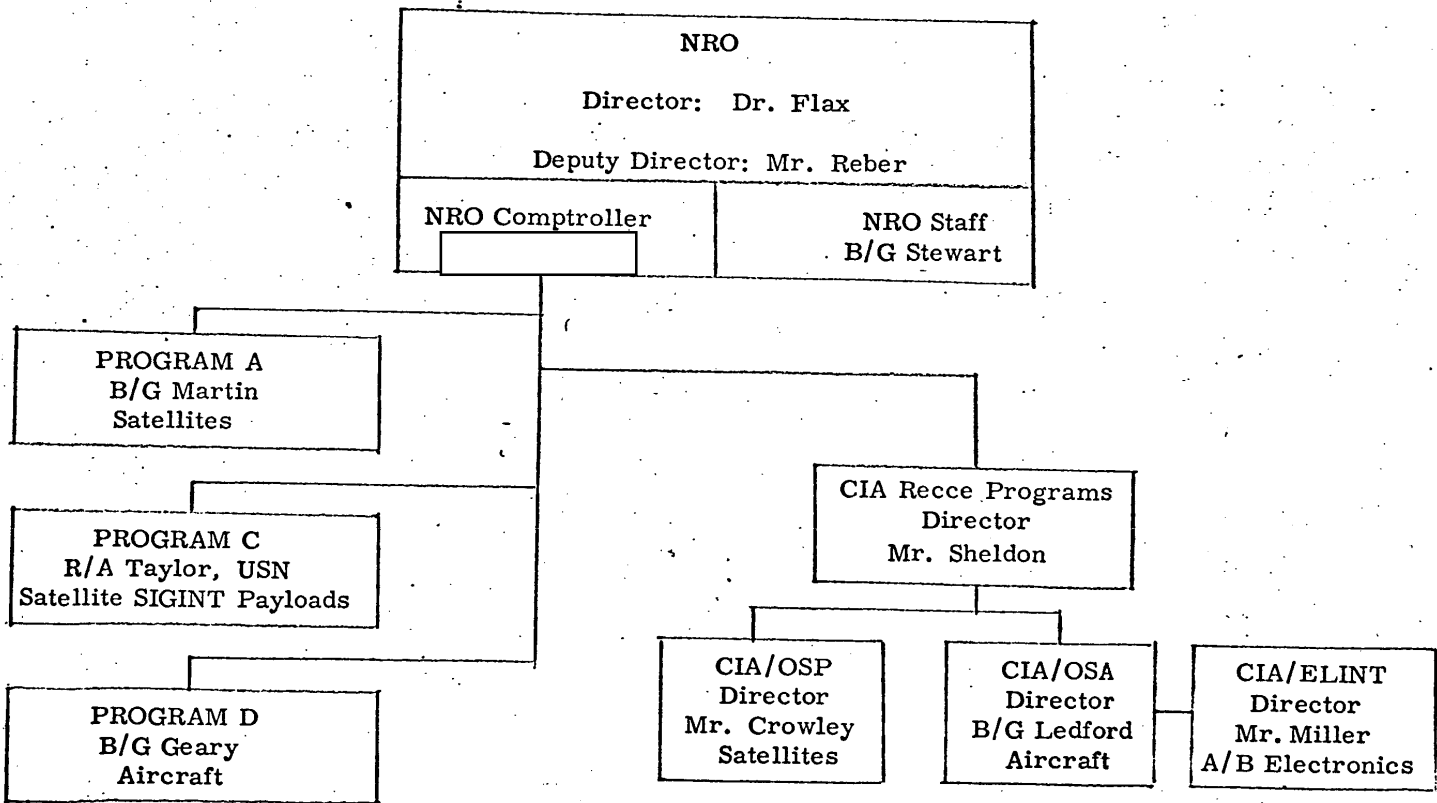


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II. RESOURCES

A. Manpower: The National Reconnaissance Office employs experts in all its areas of reconnaissance endeavor, including: satellite photographic and signal intelligence collection, aircraft photographic and SIGINT collection, and technicians who supervise the processing, interpretation and dissemination of these products. Supporting forces include specialists in a wide variety of all scientific, industrial and military fields.

In its continuing search for the best talent available, the National Reconnaissance Office draws upon the manpower resources of a number of agencies such as the Department of Defense (the U. S. Army, U. S. Navy, U. S. Air Force), Central Intelligence Agency and the National Security Agency.

B. Budget: Because of the sensitivity of its mission, the National Reconnaissance Program financial program is handled partly as classified open ("white") and partly as classified covert ("black"). The pages which follow show the National Reconnaissance Program financial costs, and the level of activity on which these costs are estimated, through 1971:

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III. NATIONAL RECONNAISSANCE PROGRAM REQUIREMENTS

The DOD/CIA Agreement of August 11, 1965, for Reorganization of the National Reconnaissance Program is almost identical to its predecessors with regard to requirements. Specifically, it states that:

"The National Reconnaissance Program shall be responsive directly and solely to the intelligence collection requirements and priorities established by the United States Intelligence Board. Targeting requirements and priorities and desired frequency of coverage of both satellite and manned aircraft missions over denied areas shall continue to be the responsibility of USIB, subject to the operational approval of the 303 Committee. "

In actual practice, the Board has continued to use its Committee on Overhead Reconnaissance (COMOR) to carry out the bulk of its staff work in the requirements area. The COMOR mission is to provide a "focal point for the coordinated development of foreign intelligence requirements for flight over denied areas." An informal and direct day-to-day working relationship exists between the COMOR and the NRO Staff on targeting and other matters of mutual concern.

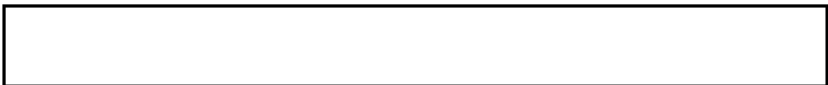
Two requirements documents of particular significance were
25X1 prepared by COMOR and approved by USIB during the past year. On

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April 15, 1965 the Board issued its "Requirements for Present Satellite Image-Forming Sensors" (USIB D-41.14/229) which sets forth targets and frequency of coverage to guide the NRO in the operation of the KH-4

(CORONA)



This 25X1

basic document is supplemented on a mission-to-mission basis with specific guidance which reflects the ever-changing intelligence needs.

On May 15, 1965, the Board issued its "Updating of Current Satellite SIGINT Requirements" (USIB-D-41.14/246) which sets forth targets and frequency of coverage in the areas of Electronic Order of Battle, General Search, and Directed Coverage to guide the NRO in the operation of its SIGINT satellites for the present and near-term periods.

Several modifications have been made to this document since it was issued.

Numerous requirements and requirements-associated documents presently are in work under the auspices of the USIB. These include a long-term image-forming sensors requirements document, a cost-effectiveness analysis of the satellite SIGINT program, a paper on crisis management, and a paper on the significance of and need for very high resolution photography. All of these are significant items to the present and/or future NRO Program and the NRO participates in their preparation.



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Over the past year, a close rapport has developed between the NRO and the USIB/COMOR, facilitating the activities and efforts of both organizations. Improved communications and better understanding of mutual problems, have led to improved requirements and to an improvement in the intelligence product acquired by the NRO in fulfillment of national needs.

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IV. COLLECTION OPERATIONS

This section of the report describes satellite and aircraft reconnaissance collection activities of the National Reconnaissance Program during the period November 1, 1964 to October 31, 1965.

A. Satellite Collection:

CORONA (Photographic Search and Surveillance): There were fourteen CORONA launches during this reporting period; Twenty-seven capsules were recovered (see Figure No. 3). These missions were operated primarily against surveillance targets, but also included search and mapping and charting operations. (Figure No. 4 shows CORONA coverage through December, 1965).

The most significant program improvement, other than the demonstrated reliability of the dual recovery system, was the extended mission lifetime of CORONA. Several ten-day missions were conducted during the year. On the February mission a record proportion of cloud-free photography was obtained -- 80% during the first half of the operation and 70% during the second half.

In order to extend CORONA mission life even further -- up to fourteen days -- the DNRO approved appropriate modifications in both the THOR booster and the AGENA stage. The first of these extended life systems is scheduled to fly in July 1966.

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NRO SATELLITE PERFORMANCE DETAIL - CORONA

MISSION														
RECOVERY														
CAMERA														
OCV														
AGENA														
THOR														
	J-13 2 NOV	J-14 18 NOV	J-15 19 DEC	J-16 15 JAN	J-17 25 FEB	J-18 25 MAR	J-19 29 APR	J-20 18 MAY	J-21 9 JUN	J-22 19 JUL	J-23 17 AUG	J-24 22 SEP	J-25 5 OCT	J-26 28 OCT

LEGEND			
	MISSION		RECOVERY-CAMERA-AGENA-THOR
	Complete recovery capsule useful photography obtained		Hardware performed properly
	No useful photography obtained		Hardware failed
			Partial success
			No test of this hardware

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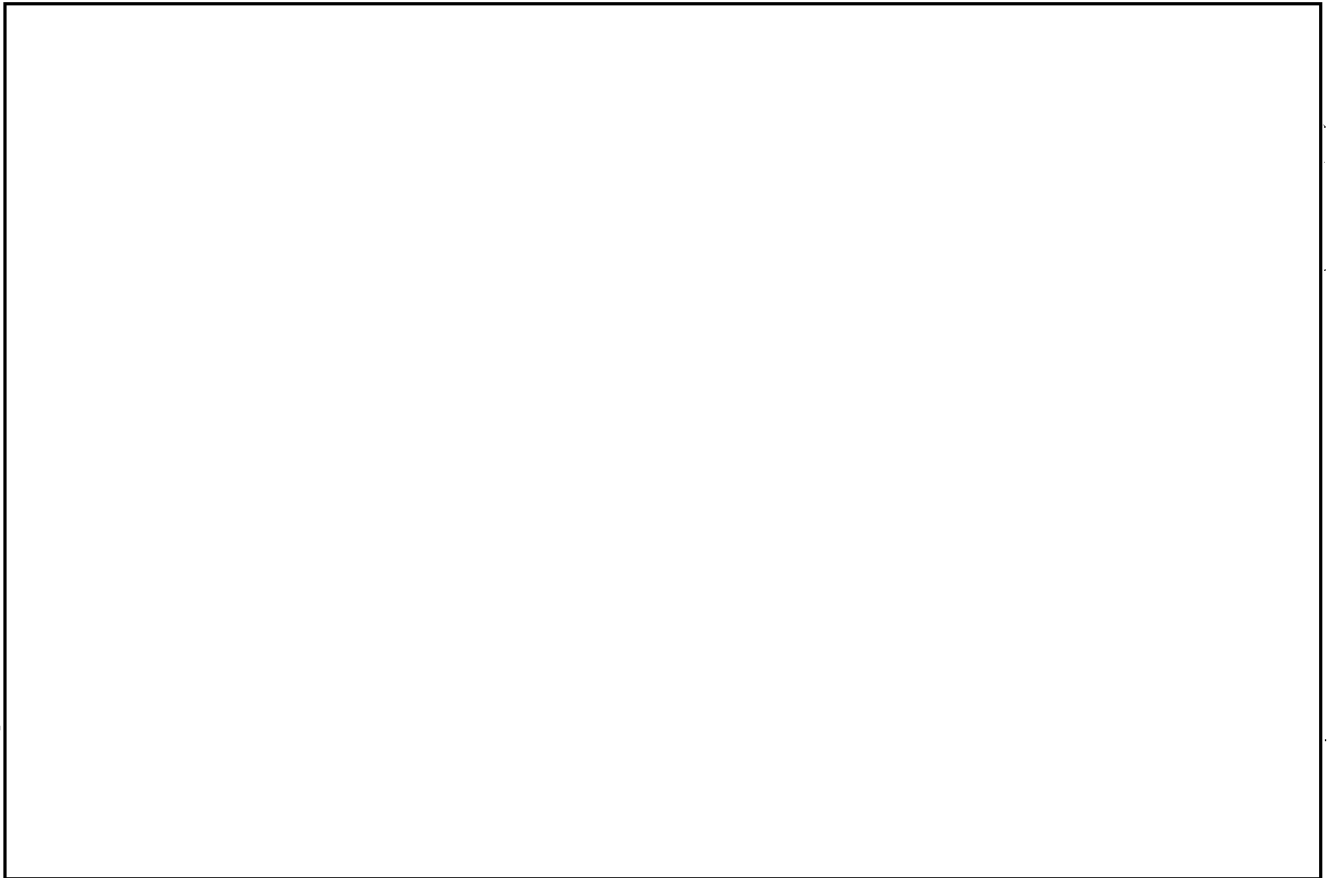
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To improve the quality of CORONA photography, basic camera modifications are being made which will permit the satellite to operate at altitudes as low as 80 nautical miles vs the present 100 nautical miles. The first of these new cameras is scheduled for flight in April 1967.

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Satellite reconnaissance continues to be the major source of intelligence information for assessing the Soviet threat to this nation, for planning national defenses, and for preventing technological



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surprise. Detailed information on the value of NRP satellite (and aircraft) reconnaissance systems during this reporting period is contained in the Reconnaissance Annex of the Defense Intelligence Agency's Annual Report to the PFIAB.

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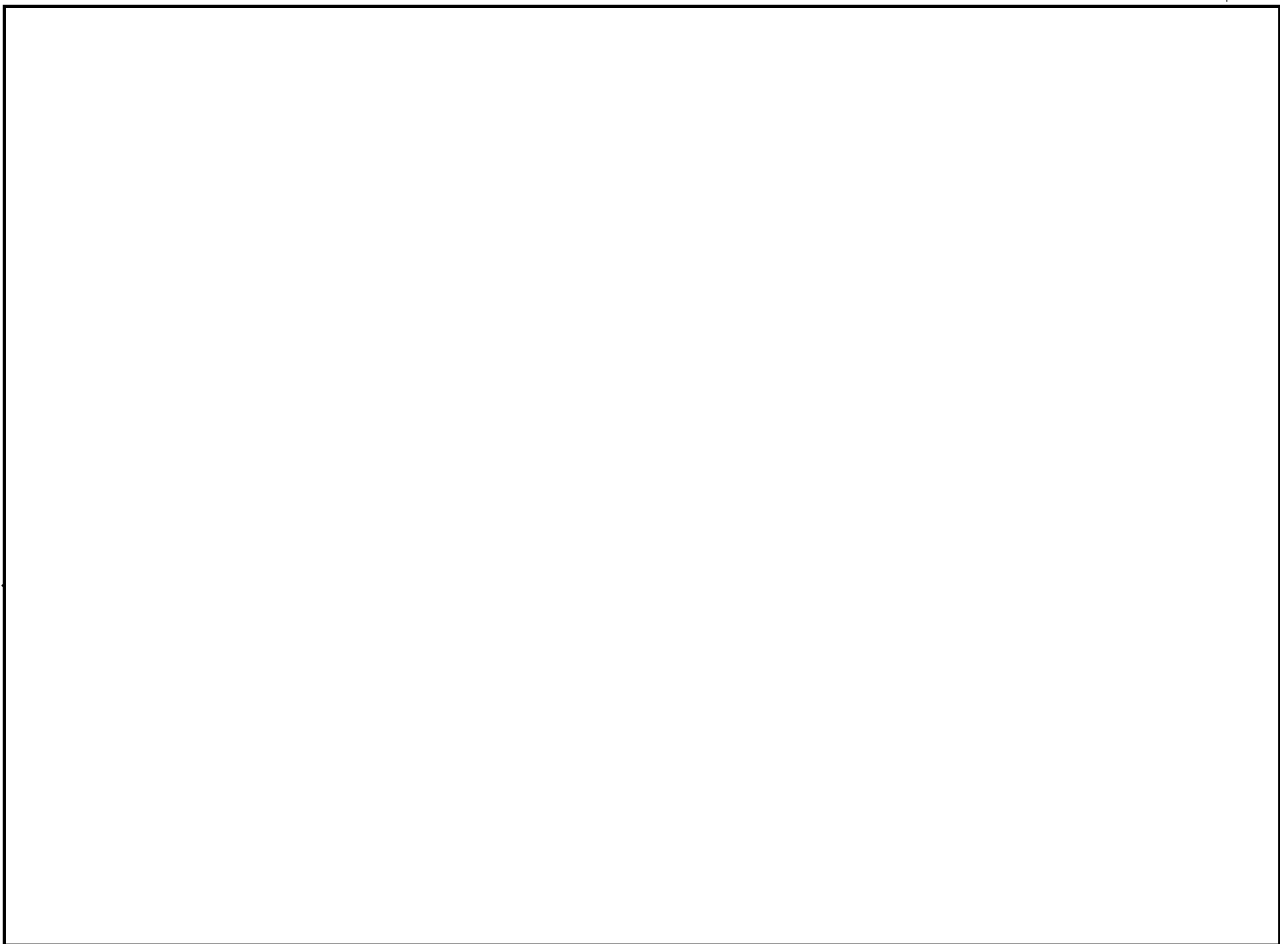
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C. METEOROLOGICAL SEARCH:

Project 417 is designed to collect early morning weather data over the Sino-Soviet land mass. The 417 satellites serve as "weather scouts" for programming those satellite photographic missions scheduled for the same areas around midday.

The 417 satellite is a simple, reliable, spin-stabilized satellite, providing television pictures of cloud masses. These pictures are programmed remotely and are received later (or read out) by one of two SAC operated stations in the United States. During the past year, four

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417 satellites were launched. Two of these plus one launched in June 1964 are currently operating; however the latter is now nearing the end of its operational usefulness.

Starting in March 1965, all 417 satellites have used a semi-automatic spin control system in which solar power, rather than spin-up rockets, supplies the necessary energy. The new semi-automatic spin control system is able to maintain a spin rate within .25% of that desired.

In April 1965, a readout station was established in South Vietnam. This station has provided a meaningful test of the usefulness of satellite weather data in tactical situations and has served as the basis for updating military meteorological satellite requirements.

Project 417 ground station equipment is now being installed in Hawaii; in January 1966, 417 satellites will provide weather support for NRO recovery operations in that area. All 417 satellites launched since March 1965 have the capability to read out directly to South Vietnam and Hawaii stations in addition to performing their primary "weather scout" mission in support of the NRP.

The 417 satellite launched in September 1965 flew the first infrared high resolution radiometer. This simple equipment, which provides an IR sample through the center of the television picture, has been very successful in indicating the altitude of cloud tops and bases to within about 2000 feet.

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The next two 417 launches are scheduled in January and March 1966. In August 1966, an Improved 417 series of satellites will be launched. These satellites will use two improved television cameras for gap free coverage of the Eurasian land mass.

On July 1, 1965, management responsibility for Project 417 was transferred from the NRP to the Air Force. The primary mission of Project 417 has not changed and the Project will continue to provide early morning weather data in support of the National Reconnaissance Program.

D. AIRCRAFT RECONNAISSANCE OPERATIONS:

IDEALIST: Project IDEALIST is concerned with CIA U-2 operations over such areas as Southeast Asia, the Sino-Indian border, China, and North Korea.

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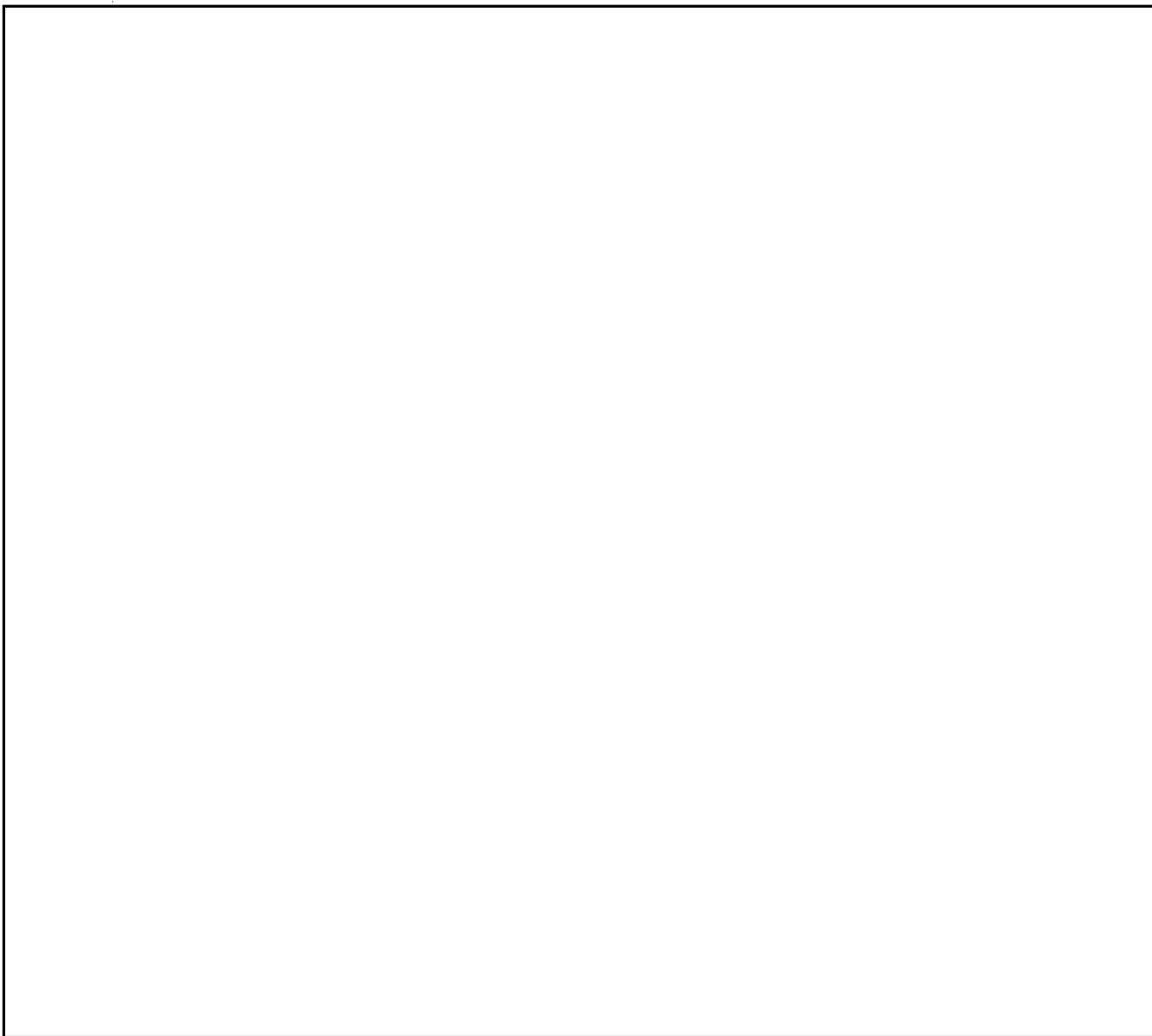
During this year, 36 IDEALIST missions have been conducted against high priority USIB targets. Operations were generally hampered by unusually prolonged periods of bad weather. Even so, the total missions flown were only twelve short of the forecast rate of four per month.

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GOLDEN TREE: The Department of Defense operation of U-2's over Cuba requires six to eight missions per month to fulfill USIB collection and surveillance requirements. The aircraft operate from Barksdale Air Force Base, Louisiana and are flown by SAC pilots. During the past twelve months, 87 missions were flown.

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TROJAN HORSE: An alert force of two U-2's is maintained by the Strategic Air Command at Bien Hoa, South Vietnam. Flight operations are conducted at the rate of about 25 flights per month. Primary targets are in North Vietnam and South Vietnam, but the Vietcong supply lines through Laos and the border area of Cambodia are also covered.

These SAC U-2 aircraft are equipped with the J-57 engine, rather than the J-75 engine installed in CIA aircraft. A study has been made to determine the desirability and costs of converting all aircraft to the CIA (standard) configuration and the seven SAC aircraft will be equipped with the improved engine. The higher thrust engine will provide a four to five thousand foot altitude increase, making the aircraft less vulnerable to attack.

BLUE SPRINGS: The BLUE SPRINGS program involves the operation of 147 type drones in Southeast Asia. The primary effort of the drone operation has been directed toward targets in North Vietnam rather than China. This shift in the theater of operations was caused by two factors: the long period of unfavorable weather in South China, and the introduction of numerous surface-to-air missile sites in North Vietnam. The 147 drone has proven highly productive in this hostile environment. Drone mission photographs were used to identify twenty-two

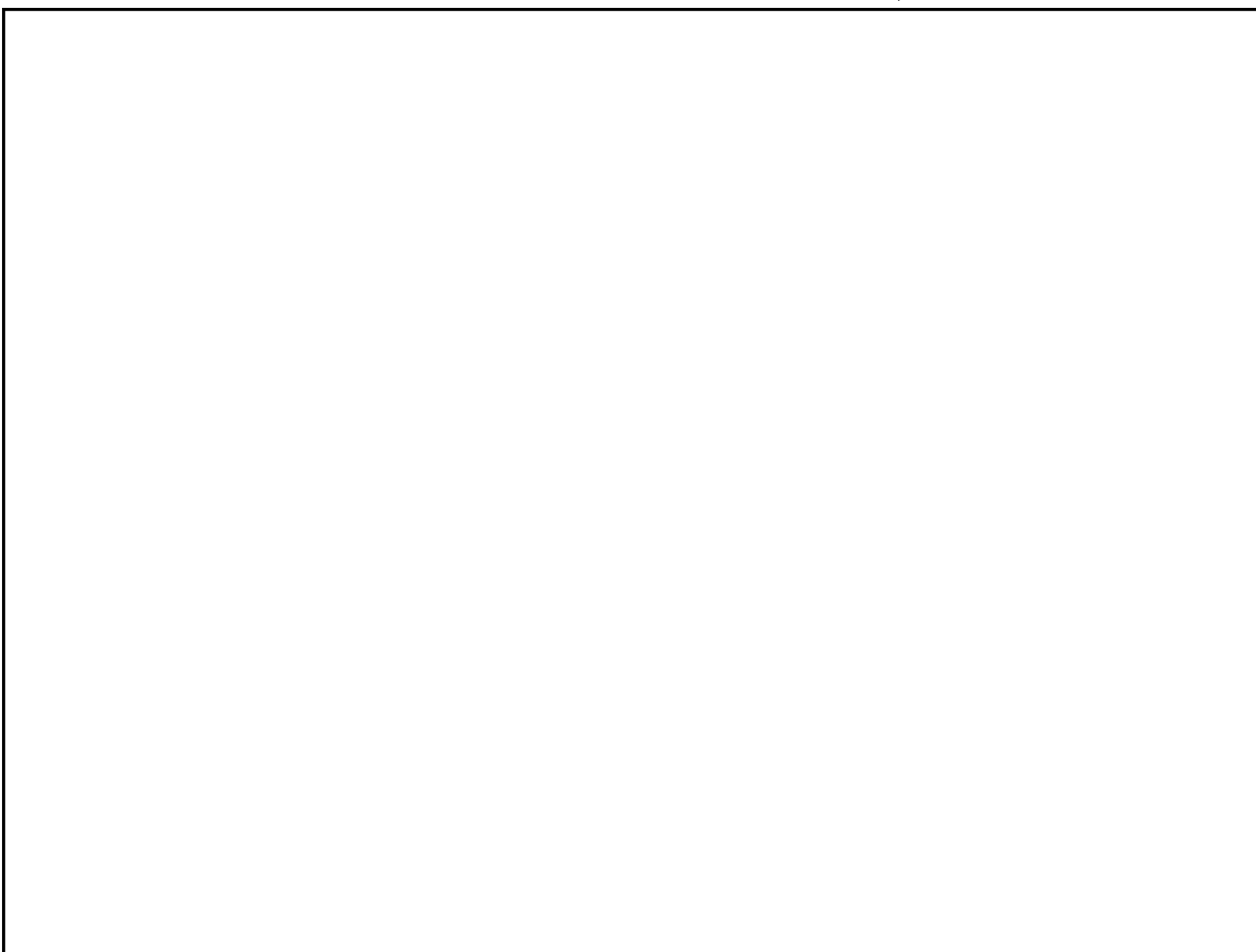
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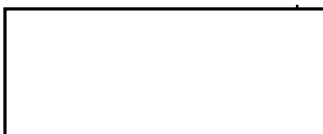
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of the known thirty-five SAM sites near Hanoi. Three drones were modified for a low-level capability to permit operation beneath low (monsoon) cloud cover. Although all three aircraft malfunctioned prior to reaching their targets, the concept of low-level flight appears valid, and twelve additional low-level drones are being built.

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In order to increase the altitude capability of the drone, a higher thrust engine was installed. This model, the 147-G, was flown operationally on October 31 and was successful. A contract has been



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signed for the 147-H model aircraft which will have increased altitude, range, and coverage capability. The 147-H is expected to be in operation about July 1966.

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December 1964 marked the completion of the Air Force Special Photographic Processing Laboratory's (AFSPPL) long-range building and processing equipment installation program which began in late 1962. The facility now has available three high-speed Eastman Kodak DALTON duplicators capable of continuously processing over one-quarter million linear feet of duplicate film product (per day) in any standard film width required, plus one Eastman Kodak TRENTON original negative processor capable of producing 25,000 feet of processed original negative film per day.

The Eastman Kodak BRIDGEHEAD facility, completed in September 1964 devotes much of its technical capability to the processing of original negative material and to the preparation of qualitative product analysis designed to maintain densitometric standards and to achieve the maximum information read-out potential.

With the AFSPPL assimilating much of the bulk-film duplication workload, the National Reconnaissance Program has now improved the balance between timeliness and quality of the finished photographic product.

In February 1965, the National Reconnaissance Office conducted an Operational Readiness Inspection of AFSPPL to evaluate that facility's ability to process and produce an original CORONA mission. Employing a duplicate negative of CORONA Mission 1015-1 loaded into a capsule,

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the simulation was completely realistic. After a slow start due to fluctuating control stock standards, the AFSPPL performed well and is considered qualified to produce CORONA mission material at any time on a contingency basis.

Certainly some of the most impressive, yet unsung, operations of the Southeast Asia struggle lie in the remarkable performance of the Pacific theater's photographic reconnaissance production groups. The 13th Reconnaissance Technical Squadron/SAC TROJAN HORSE Photographic Processing Center (PPC) at Tan Son Nhut, Saigon, and the Fleet Intelligence Center Facility Pacific (FICPACFAC) Naval Air Station, Cubi Point, Philippine Islands, have continued to support the rapidly expanding COMUSMACV and CINCPAC reconnaissance requirements.

By February 1965, approximately one year after the National Reconnaissance Program commenced in that area, the 13th Reconnaissance Technical Squadron had produced over 3.5 million feet and FICPACFAC over 6.5 million feet -- a combined total of over 10 million feet of photographic processing.

The National Reconnaissance Office has maintained a continuous equipment and material upgrading program in the Pacific theater and has sponsored a rotating Eastman Kodak Company technical production

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and quality control team in the Pacific theater to provide training and assistance wherever and whenever needed.

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VI. RESEARCH AND DEVELOPMENT ACTIVITIES

This section describes the major research and development activities, including study projects, being conducted by the National Reconnaissance Office:

OX CART/BLACK SHIELD: The OXCART vehicle is a high speed, high altitude, manned reconnaissance airplane. Although this program is still in the developmental phase, the aircraft is expected to be operationally ready in the very near future. The primary development problem has been that of matching engine inlet airflow with propulsion performance. A new electronic inlet control solved the major flow disturbance problem. Engine, aircraft, and systems reliability is now being demonstrated to a point where an early declaration of full operational readiness is expected.

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The original concept of conducting all OXCART operations [redacted] is now being amended, since the A-12 will not possess the originally planned range capability [redacted]. The reduced range capability requires use of a forward staging base for operational missions. Kadena Air Force Base, Okinawa has been selected as the operational deployment base for missions over China, North Korea, and Southeast Asia. Construction of the necessary support facilities was scheduled for completion in December. Sealift of many

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of the support items began in October. At the present time, there does not appear to be any reason why the aircraft could not be deployed in January 1966 for use against targets in China and Southeast Asia. Final preparations are being made to complete the aircraft validation and support facilities for a January deployment.

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As of October 31, [redacted] flights totaling [redacted]

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[redacted] were accomplished. The aircraft has reached a maximum altitude of 90,000 feet and a speed of Mach 3.29. Six flights have been made, [redacted] with at least two hours of Mach 3.1 cruise, to demonstrate aircraft and system performance capabilities. All three camera systems are meeting design objectives for quality of photographic product, although the Hycon camera has received only a limited amount of testing to date.

SKYLARK: Five OXCART aircraft were prepared to operate at a reduced performance capability for contingency operational use over Cuba. These planes could fly at Mach 2.8 and 80,000 feet. All flights were to operate [redacted] in order to enhance the security of the program. Although no specific requirement has been stated for OXCART coverage of Cuba, the capability exists to operate [redacted]

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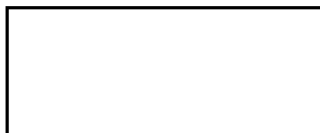
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TAGBOARD: The supersonic drone (TAGBOARD) program continues as a flight test and development program. Early in the year, successful mated flights were made to Mach 2.4 and air retrieval of the payload was demonstrated. As the speed in the mated configuration was increased, two major problems emerged. First, flutter was noted on the elevons of the drone (this condition has been corrected). Secondly, separation of the nose cone prior to engine light was causing damage to the drone wing leading edge and to the engine as pieces of the cone lodged in it. The nose cone is now fabricated of a lighter weight material and a collector ring has been installed inside the inlet to trap debris.

Early successes in aerial retrieval of the payload were followed by retrieval performance below acceptable levels. After the parachute system was redesigned, there were three successive recoveries. Two additional retrieval tests are scheduled to complete the confidence testing.

Only limited camera tests have been accomplished in a D-21 (TAGBOARD Drone) hatch fitted to an M-21 (A-12 Carrier) vehicle. The camera produced excellent results at flight conditions of Mach 2.8 and 70,000 feet. Future tests will go to higher speeds and altitudes.



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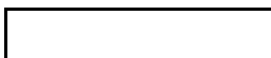
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Tests conducted in the mated configuration showed the M-21 range performance to be significantly less than predicted. To overcome this deficiency, the M-21 has now been modified with an electronic air inlet control and fitted with the 34,000 pound thrust engines. Approximately four to six flights will be required to optimize the new engine inlet settings and to determine aircraft range characteristics.

The next significant milestone to be reached in the program will be that of drone separation from the "mothership" and cruise flight

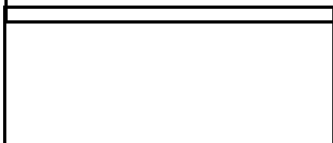
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FOLLOW-ON DRONE: Between August 20 and November 15, 1964, 15 drone reconnaissance missions were flown in South China and proved to be of great value in the assessment of CHICOM air order-of-battle and assessment of major CHICOM activities. In view of the reasonable success of the 147-B system and the need for future program definition, the Deputy Secretary of Defense requested a study of requirements for a follow-on drone aircraft reconnaissance system.

The subsequent study defined desired performance characteristics as: 2000-mile range, 75,000-foot penetration altitude,

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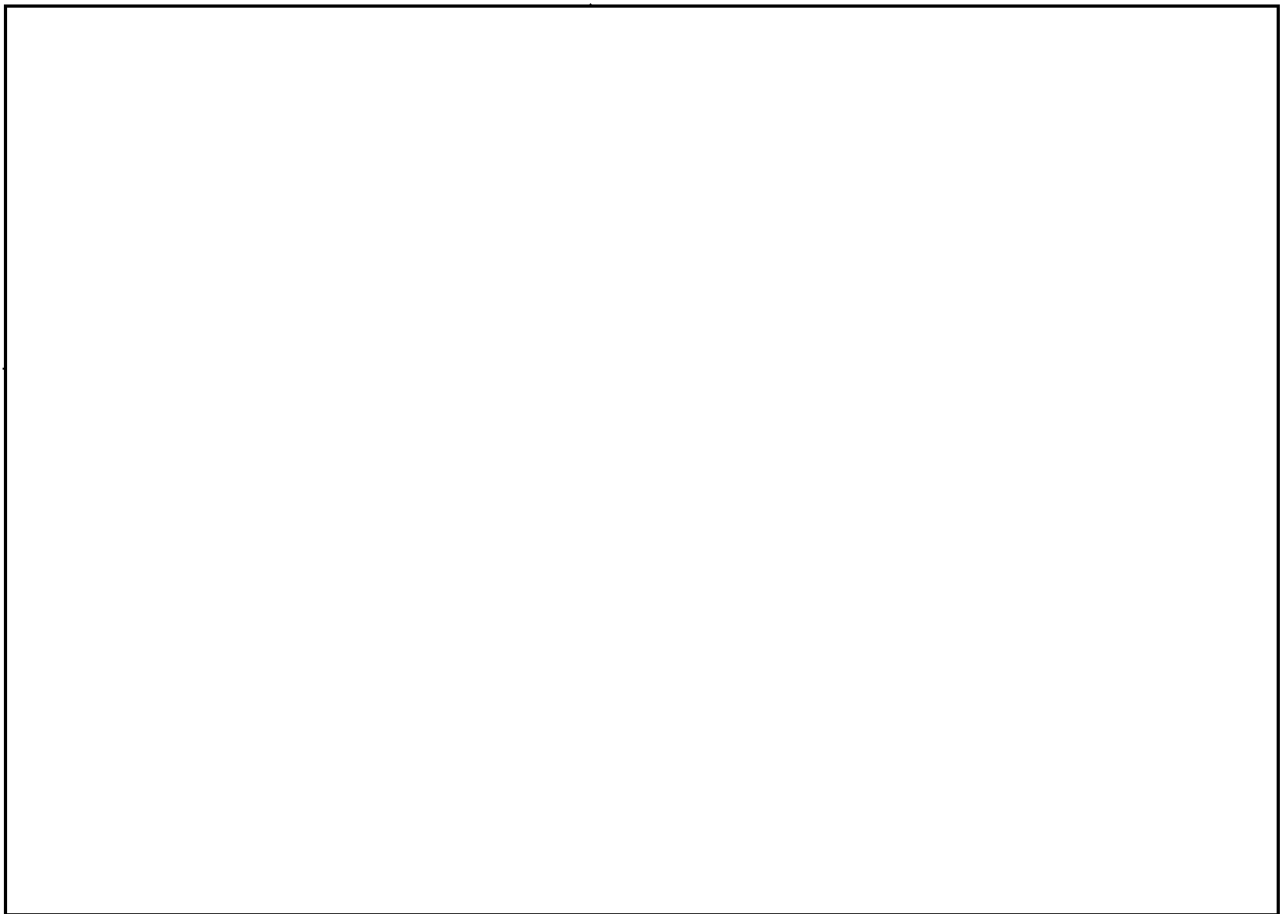
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The Deputy Secretary of Defense has reviewed this study and directed the preparation of a Technical Development Plan for the drone system. In addition, he directed a comprehensive analysis of the operational vulnerability of the follow-on drone versus the 147-H drone and a cost/effectiveness comparison. The Technical Development Plan will be completed by December.



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