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CONTROL SYSTEM

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ACTIVITY REPORT  
OFFICE OF SPECIAL ACTIVITIES  
MAY 1966

I. OX CART

A. DEVELOPMENT SUMMARY AND PROGRESS

1. AIRFRAME

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a. A Configuration Control Board meeting was held [redacted] on 10 May, at which time the decision was made to install new cockpit panels in all the A-12 aircraft. These panels comprise some new advanced instruments and a general rearrangement affording better flight information and visibility as requested by the operational pilots.

b. High altitude, low KEAS flight testing was initiated with Aircraft #121. This envelope extension is necessary to extend the overall range and altitude of the aircraft and to reduce the vulnerability.

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c. Negotiations were completed with [redacted] [redacted] which resulted in implementation of the Automatic Flight Control System improvement program.

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d. Preliminary data from flight tests with the "tilted spike" have not revealed substantially improved inlet performance. Data analysis is still underway.

A test program is being set up at the Lockheed Rye Canyon facility to investigate the effect of inlet duct leakage on inlet and, therefore, aircraft performance. Recent reports indicate that inlet duct visual inspections reveal substantial improvement potential through elimination of certain leakage areas. The test program will help define the magnitude of this potential improvement.

2. PROPULSION

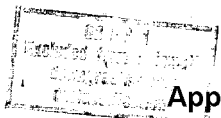
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a. The first phase of 34K (34000 lb. thrust) engine flight testing was successfully completed with a confirmation of the optimum internal bleed bypass transition rate and Mach number.

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b. Corrective action is underway for the resolution of a recently emerged mechanical problem involving the engine starting bleed pilot valve. This problem has resulted in several instances of one engine die-out after landing when the throttle has been retarded to the "idle" position.

3. PAYLOAD

Six camera test missions were flown in May. Three of these missions were with Type I configuration. Two of the three Type I missions were completely successful. The third had a malfunction after 13 minutes of operation which involved an experimental V/H limiting circuit. This limiting circuit modification was one developed by [redacted] Since that occurrence all configurations now have factory designed and fabricated limiting circuit boards. The remaining three missions were flown with Type II cameras. Only one of these missions was successful. It was the first flight of configuration #1 since its return from the factory for overhaul due to smoke damage. Both of the unsuccessful missions of Type II were on configuration #2. Both of these involved premature camera shutdown attributed to excessive temperatures in the Q bay. Prior to shutdown each configuration operated - in one mission for 35 minutes and on the other for approximately 30 minutes. The aircraft and configuration people are continuing to analyze this interface problem.

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4. AIRCRAFT FLIGHT TEST SUMMARY

<u>Aircraft</u>	<u>Flights May</u>	<u>Time May</u>	<u>Total Flights</u>	<u>Total Time</u>
121	8	10:39	228	234:43
122	-	-	157	169:39
123	-	-	78	136:10
124	13	21:20	471	834:05
125	4	4:40	172	271:35
126	-	-	104	169:16
127	5	9:15	148	237:55
128	2	7:10	129	234:20
129	-	-	157	182:43
130	6	12:30	120	191:38
131	-	-	78	121:13
132	4	7:55	99	159:07
133	-	-	9	8:17
<b>TOTALS</b>	<u>42</u>	<u>73:29</u>	<u>1950</u>	<u>2950:41</u>

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B. OPERATIONAL SUMMARY AND PROGRESS

1. EMERGENCY CAPABILITY (SKYLARK):

No change.

2. CONTINGENCY PLANNING - FAR EAST (BLACK SHIELD):

No change.

3. ALTITUDE SEPARATION FOR FLIGHTS ABOVE 60,000 FEET:

A meeting was held on 24 May at Los Angeles ARTCC to discuss procedures for reporting altitudes of flights above 60,000 feet. Attending were representatives from AFRDR, Headquarters FAA, Los Angeles ARTCC, [ ] Operations and Project Headquarters. As a result of this meeting, FAA representatives in coordination with Project Headquarters have developed a coded altitude reporting procedure which will go into effect on or about 1 July 1966.

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On 11 May Aircraft 128, piloted by Project Pilot [ ] diverted to McCoy AFB Florida due to Stability Augmentation System Malfunctions. Pre-packaged recovery kits and required support personnel were flown to McCoy AFB. Maintenance was performed and return Ferry Flight to [ ] was accomplished on 14 May without further incident.

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5. GREY STAR CPX:

On 11 May a CPX was conducted to exercise the notification procedures for radar suppression and weather scout support for BLACK SHIELD Operations. 313 Air Division, Kadena AB and all supporting commands were exercised. No major problem areas were evident.

6. AIR FREIGHT:

A Take Handling exercise was conducted by Project Headquarters on 2 May. BLACK SHIELD timing was utilized and take from a training mission was moved from [ ] to Eastman Kodak for processing and NPIC for evaluation.

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7. A-12 AIRCRAFT:

No change.

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8. A-12 FLIGHT PROGRESS:

All performance statistics as reported in the November report remain unchanged with the following exception:  
Average A-12 Time-Detachment Pilots - 272 Hours.

II. IDEALIST

A. DEVELOPMENT SUMMARY AND PROGRESS

Detailed performance evaluation of the Lockheed U-2R proposal was continued during this time period. No major significant discrepancies between LAC and Headquarters are indicated.

B. GENERAL SUMMARY/OPERATIONAL

1. There were two Agency U-2 overflights during the month of May:

a. Mission C116C was flown on 5 May 1966 over the Taiwan Straits. The pilot received extensive 13A activity whenever the aircraft was within 20NM of the China Mainland resulting in considerable deviation from the planned route. There was no fighter activity observed on this mission.

b. Mission C126C was flown on 15 May 1966 over Southwest China. The mission progressed as briefed up to the Kunming area. At this point the pilot received System 13 activity followed in close order by OSCAR SIERRA and System 12 activity. During evasive action the pilot looked into his driftsight and observed two definite SAM trails and a possible third. The remainder of the mission was flown without incident.

2. The flame out test program was not flown during the month of May but will be resumed on 26 June.

C. PRODUCT IMPROVEMENT

1. GPL Doppler (with ASN-25 Computer): The GPL Doppler (with ASN-25 Computer) was installed in Article 359 on 14 May 1966. This particular installation was aimed at assuring proper performance of the redesigned power supply in an unpressurized environment. Pilot's reports on the operation of this equipment were requested in connection with other

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prescribed mission tasks. The initial doppler "check-out" was flown on 20 May 1966 in Article 359. The flight was premarking a test of the "B2" camera configuration, with the doppler requirements added on. The following highlights were the results of this doppler test:

a. The doppler was activated at take off. At the first turn point, cross track error was zero and mileage to go was 2NM in error. These tracks were primarily east and west. The equipment was activated on two additional legs oriented primarily north and south. These legs incorporated a 90 degree - 270 degree turn. Maximum deviation was 3NM of cross-track and 5NM mileage to go.

b. Throughout the flight, the system went into "memory" when the bank angle approached 12 degrees. This is not considered significant and is acceptable. The system also went into "memory" while over water in the vicinity of Catalina Island. That area is noted for calm water condition which is not conducive to doppler operation.

c. Engineering discussions led to the conclusion that the computer system should be calibrated by flying a triangular course terminating at known points. This requirement was scheduled for a 24 May flight. If this later mission proved successful, a simulated operational mission would subsequently be flown using the doppler system for navigation from take off to landing.

d. The second doppler test was performed on 24 May with the intent of using the data collected on this mission for calibration of the equipment. A triangular course was planned with legs of approximately 200NM. The doppler malfunctioned on four of the six legs. On the other two legs, satisfactory results were obtained. Driver comments indicated satisfaction with the system when operational. The "memory" light did not come on in standard turns while the system was operational. Flight altitude was Plus 20.

2. "H" System Flight Test Program: The "H" Configuration, S/N 001, was flown in Article 359 on seven missions between 7 April and 17 May 1966, the primary objective being to determine if "Offset Aiming" would provide a successful technique for acquisition. Two basic methods of the Offset

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Aiming Techniques were tried and proven successful. Variations of the "Point and Heading" and "Two Point" tracking were also tried successfully. Another variation of the tracking technique used successfully was tracking on targets which were left or right of vertical.

III. ISINGLASS

No change.

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Cys 1, 2, 3, 4 - C/P&PS/DD/S&T

Cy 5 - D/SA

Cy 6 - D/FA/OSA

Cy 7 - D/TECH/OSA

Cys 8, 9 - PS/OSA

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