

BYE-108177-70

Copy 10 of 14

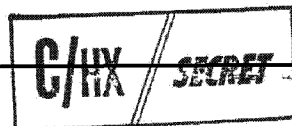
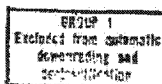
28 August 1970

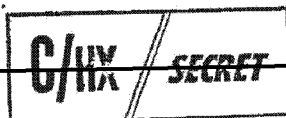
MEMORANDUM FOR: Director of Special Projects

SUBJECT : Photo Reconnaissance Systems Report No. 55

I. CORONAA. Accomplishments

1. The PET Team met at NPIC on 25 and 26 August to evaluate Mission 1111. The PEIR twx has been prepared. In summary, NPIC reported that the PI suitability for Mission 1111 ranged from good to poor with the larger portion in the good to fair category. NPIC stated that the image quality variability was attributable to the variations in acquisition altitude (88 nm to 147 nm) and to adverse weather conditions (cloud cover approximately 30%). The PET concurred with the NPIC comments and noted that Mission 1111, except for weather and altitude variations, produced the most consistently fine imagery of any CORONA system flown. A major contributor to the fine performance of this system was that the focus was extremely crisp on both cameras throughout the Mission. Clear weather imagery held together well at 100X magnification and CORN target readings were magnification limited at 100X by available increments of the light table microscopes. The MIP's of 105 assigned to both 1111-1 and 1111-2 were considered extremely good for the acquisition altitudes. An NPIC comparison of camera system resolution based on CORN analysis showed that Mission 1111 was equal to or superior, in achieved on-orbit resolution, to Mission 1104 and 1106. Those are the only two Missions which have achieved higher MIP's. The mean level on-orbit resolution of both forward and aft cameras was estimated at near the peak level of this system's (CR-12) capability (120 - 160 l/mm).

HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY



SUBJECT: Photo Reconnaissance Systems Report No. 55

2. The Dual Data Signal Conditioner (DDSC) mods are continuing. Four have been completed and the remaining units should be accomplished during the next reporting period.

3. DISIC/PMU mods are in progress.

4. Collimator block preparations are in final phases. Consoles are being installed and preliminary checkout of the block is in progress. Expected completion date is 1 September 1970.

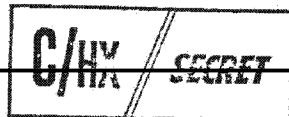
B. Future Activities

Next flight date is scheduled for 18 November 1970.

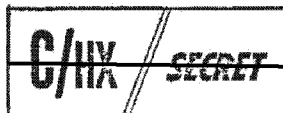
C. Projected Status

1. CR-13. Block preps.
2. QR-2. Backup preps - holding.
3. CR-14. Storage preps.
4. CR-15. Functional preps.
5. CR-16. Receiving inspection.
6. CR-8. Still at Itak to negate corona discharge on one camera. Optimistic ship date is 4 September.

BYE-108177-70
Page Two



HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY



SUBJECT: Photo Reconnaissance Systems Report No. 55

II. HEXAGON

A. General

1. The thermal/dynamic tests of a film stack, which are designed to determine if a 250 psi core pressure will allow film stack deformation to occur during thermal/vac system tests, have been initiated. Preliminary results of the 40°F tests indicate no deformation beyond spec limits of the stack nor decrease of the core pressure. The stack will be returned to 70°F over the weekend, a complete configuration check will be made, and the high temp (100°F) test will be initiated. If this series of tests shows no deterioration because of temperature changes, the stack will be despoiled to 25K feet and the test repeated. This latter configuration more accurately represents the film when 47°F system tests are conducted in Chamber "A".

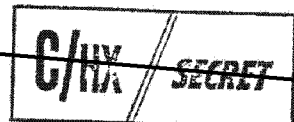
2. The dynamic tests of an oversize (66.6"D) film stack with a core pressure of 520 psi have begun. A low level (0.25 "g") resonance search indicated a high level of structural integrity of the stack. A full configuration check will be made today and a qual level (2.5 "g") test will be conducted Monday. Successful completion of this test is considered as demonstration of feasibility of caging deletion. An overtest to determine margin (4 "g") will take place by 4 September 1970.

3. The P3-1 take-up was bought off at RCA on 25 August. As a result of the Government refusal to accept this take-up several weeks ago, RCA has considerably improved their quality control organization. The head of quality control now reports to the vice-president, and RCA has improved their test coverage. A roller rundown test has also been implemented as part of acceptance.

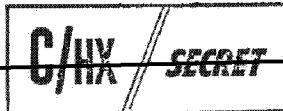
4. The two film rolls for S/N 003 reload are planned for delivery 31 August. Delivery had been planned for 28 August, but a light streak which appeared after processing was discovered at two points in the second roll. The streak extended for the first 3,100 ft.

BYE-108177-70

Page Three



HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY



SUBJECT: Photo Reconnaissance Systems Report No. 55

and for about 1,000 ft. at the 85,000 ft. point. These defects will be cut out and the roll rewound. The first calibration roll was wound at 37 lbs. builder roller force and 7 lbs. film tension and has an average core pressure of 260 psi. The middle calibration roll was wound at 37 lbs. builder roller and 10 lbs. film tension and had an average pressure of 475 psi. At this writing the final calibration roll core pressure is not known. EK brought out that the film winding conditions are changed to tune the spooling machine rather than affect the core pressure.

5. The chemical waste disposal method at the West Coast processing was checked to ensure that a pollution problem similar to Danbury's would not occur. The waste in Danbury was dumped untreated into two ponds behind the building. The West Coast lab's waste is piped through an appropriate sewer system to a treatment plant. Several other labs in the LMSC complex use the same system. No problem is expected here.

6. HEXAGON Operations Performance Evaluation (HOPE) software specification has been completed and should be available for SETS early next week. Anticipated completion date for this software is Mid-November 1970.

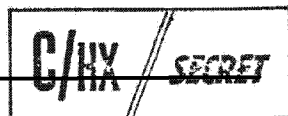
7. Final HEXAGON Reports Control Manual (RCM) inputs are being prepared by WCPO personnel. These inputs will be transmitted to the SOC via courier not later than 3 September.

8. Version 18.6 of the 360 operating system has been in production since 24 August. Progress in converting to this system is highly satisfactory. Currently OSDEBE must be modified to operate in the new environment. The modification will be completed prior to 4 September. Until the modification is complete, IEBGENER will be used to copy magnetic tapes and to duplicate card decks.

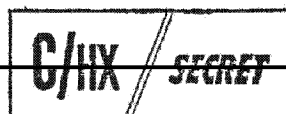
9. Current dates for availability of the CALCOMP plotter:

Hardware - 4 September
Software - 18 September

BYE-108177-70
Page Four



HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY



SUBJECT: Photo Reconnaissance Systems Report No. 55

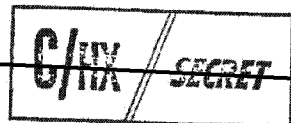
This should enable us to have a plotting capability by 22 September. A programming class to explain the plotter functions and the associated software will be conducted the week of 9 September.

10. A meeting was held at SSC on 27 August to review the problems associated with the latest 003 failure and to establish a course of action. After reviewing the situation, P.E. was instructed to proceed with the following:

- a) Replace 003 Side "A" platen with Side "A" platen from 002. This will provide an improvement in smear performance of about 4 to 1.
- b) Replace all black boxes except the MFA box, which was scheduled for replacement after Chamber "A" tests. These boxes will be replaced and tested prior to commencing acceptance tests.
- c) Replace the 003 supply with the 002 supply.
- d) Rerun all chamber acceptance tests at 70°, 47°, and 93°.

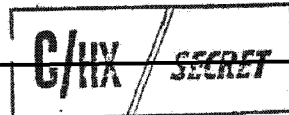
Based upon the above changes, a revised schedule was prepared which indicates time lines through 26 October for the shipment date.

11. A review was held with [redacted] of SSC on the Field Inspection Reports listed in the West Coast Project Office report on QA problems in the field. The review indicated that there were some problems between the QA organization at Danbury and the QA organization in the field in the way of assuring adequate communication of changes. Many of the items reported by the field were, in fact, changes or information on drawings which had not been followed by the field but which were correct according to the drawings. A number of the items were an engineering problem rather than a QA problem; i.e., the items were in accordance with the drawings which were provided to QA for audit but were not consistent with the configuration of the system. These have all been corrected through ECO's.



BYE-108177-70
Page Five

HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY



SUBJECT: Photo Reconnaissance Systems Report No. 55

12. SSC stated that they were planning to go to Boller & Chivens for encoders 1 and 3 vice continuing with the DRC contract. This decision was based on evaluation of proposals submitted by B&C and DRC which indicated that B&C could manufacture and deliver the follow-on encoders for approximately on-half million dollars less than DRC. It is planned to authorize P.E. to proceed with this change in make/buy.

III. MODEL STATUS

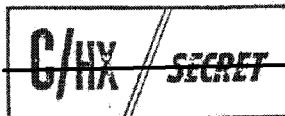
A. Development Model (SDV-III)

1. After a delayed start due to supply loading (into the MS) problems, an attempt was made to run the creep test to pull the splice through. The system tracking had to be controlled by hand (to prevent ESD). The film path was inspected and the film was found to be leaving the supply exit vestibule in an offset condition on the "A" side. However, after several creep runs the offset coming out of the supply disappeared and tracking during two subsequent creep runs was O.K. The next test scheduled was the horizontal baseline. The system entered an ESD condition on the "A" side after the second sequence due to a tension problem. A review of the T.M. data indicated a take-up problem. The forward most RV heat shield and cannister were removed, and the film was observed to have jammed against the side of the take-up. After documenting the condition of the film, the film was removed from the TU. Roller alignments were checked, and another attempt was made to run the system. The film started to mistrack and the system was shut down.

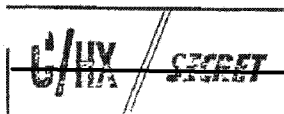
2. After a review of the test data, another run was made; this time the system tracked properly. It should be noted that mistracking occurred in this same TU during FS buildup. The WCPO is concerned over the system tracking problems and no one answer can explain the various problems encountered during FS buildup and system test. Several potential contributors are listed below:

BYE-108177-70

Page Six



HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY



SUBJECT: Photo Reconnaissance Systems Report No. 55

- a) steerer malfunctions
- b) roller alignments
- c) film stack problems
- d) builder roller parallelism and pressure
- e) roller wrap angles
- f) splice problems

13. Perkin-Elmer is investigating the cause of the large mean smear at the 55° collimator during tests of S/N 003. One possible cause is the modulation computer (LA2). The cause needs to be determined and corrective action taken before chamber testing recommences.

B. SV-1 (S/N 003)

Midsection

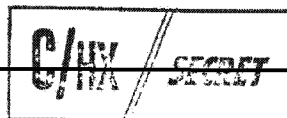
1. S/N 003 has been removed from the chamber. Electronic box and supply replacement is underway. The acceptance test sequence will be rerun. The following electronic boxes will be replaced:

2A1	-	Platen Servo Recycle
2A3	-	Metering Capstan Electronics
3A1 A & B	-	Film Drive Capstan Elec.
6A2	-	Supply Servo
8A1	-	Uncage Command and Control
15A1	-	Interface Sig. Condit. & Control Unit (ISCCU)
16A1	-	Data Logic and Fuse Box
13A1	-	Sequencer

P.E. does not now plan to change the 1A1 box for reasons that the Project Office feels are invalid. This change is necessary to control phasing of the Optical Bars. Unless a valid reason is presented to the P.O. by COB today for not changing this box, they will be directed to make the change.

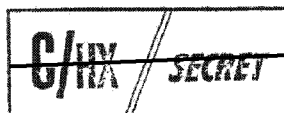
The 17A1 (Measurement Filter Assembly) will not be available until 15 Sept., which means it must be retrofitted after chamber tests.

The "A" side platen is being taken from S/N 002 and will be put in S/N 003.



BYE-108177-70
Page Six ~~Six~~ Seven

HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY



SUBJECT: Photo Reconnaissance Systems Report No. 55

2. Current schedule shows P.E. will commence in-air tests on 8 September.

3. The two film roll remnants in S/N 003 were examined and found to be in very good shape.

Forward Section

Assembly of the S/N 003 forward section is underway with RV No. 4 and articulator no. 3 now installed in the F/S structure. Retrofit of active articulator is in progress. MWC has completed RV retrofits and TUA's have been reinstalled in RV's.

C. SV-2 (S/N 002)

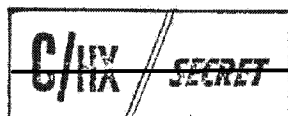
1. Acoustic testing of the TCA was completed this week. During the past test inspection of the TCA, Perkin-Elmer found a significant amount of what appear to be sand in one of the crossovers and looper. The thought is that sand was introduced when looper covers were sand-blasted during a rework cycle. They have not found any sand in bearings which have been examined. P.E. is cleaning the elements of the TCA and they feel they can successfully do so and proceed with a minimum impact.

2. Both the supply assembly and platen "A" are being removed from S/N 002 for use in S/N 003. The schedule impact has not yet been determined.

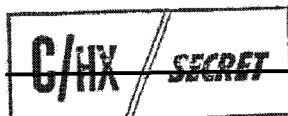
IV. Meetings Requiring Participation of Headquarters Personnel

<u>Date</u>	<u>Subject</u>	<u>Attendees</u>
<u>SBAC</u>		
4-11 Sept	SDV III Testing	<input type="text"/>
10 Sept	SCF/PAD Interface Subgroup Meeting	Johnson

BYE-108177-70
Page Eight



HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY



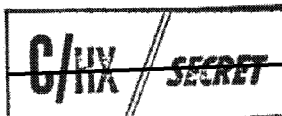
SUBJECT: Photo Reconnaissance Systems Report No. 55

<u>Date</u>	<u>Subject</u>	<u>Attendees</u>
<u>WCPO</u>		
3 Sept	HSSOP Review	Johnson
<u>EK</u>		
3 Sept	Chemistry Review	<input type="text"/>
<u>P.E.</u>		
2 Sept	Chamber "A" Data Review	<input type="text"/>
<u>Hqs.</u>		
31 Aug	Test Program Review	<input type="text"/>
2 Sept	Test Program Review	<input type="text"/>

TPA/PRS/OSP

Distribution:

Cy 1 - D/OSP
Cy 2 - DD/OSP
Cy 3 - D/PRS/OSP
Cy 4 - EO/OSP
Cy 5 - C/D&AD/OSP
Cy 6 - CS/OSP
Cy 7 - C/PAD/OSP
Cy 8 - C/SB/OSP
Cy 9 - C/SS/OSP
Cy 10 - RB/OSP
Cy 11 - PRS/File
Cy 12 - PRS/Chrono
Cy 13 -
Cy 14 -



BYE-108177-70
Page Nine
HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY

Unclassified



14 00040850D

OSP REGISTRY FILE COPY

BYE-108293-70
Copy 10 of 14
11 September 1970

MEMORANDUM FOR: Director of Special Projects

SUBJECT : Photo Reconnaissance Systems Report No. 57

I. CORONAA. Accomplishments

1. The spare and CR-8 dual data signal conditioners (DDSC) have been modified, QR-2's DDSC will probably be modified when it is removed from backup status.

2. The DISIC PMU command box modifications have been completed. The transfer box and the PMU controller modifications are completed through CR-15.

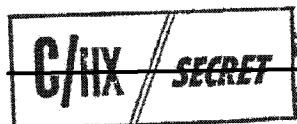
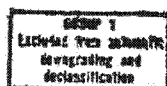
3. DISIC measurements have been completed, and evaluation is in progress.

4. CR-8 was delivered to Bldg. 152 on 10 September.

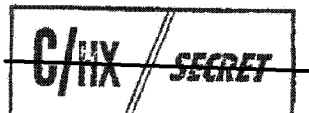
5. Autronic timers have successfully completed their qualification tests. Two flight timers have been delivered and are in acceptance. These will replace the Haydon timers in all future systems.

B. Problems

There are indications at this time that one of the newly moved collimators is providing less than desirable results. This is being evaluated.

HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY

Unclassified



SUBJECT: Photo Reconnaissance Systems Report No. 57

C. Projected Status

1. CR-13. Demate.
2. QR-2. Backup.
3. CR-14. Block test.
4. CR-15. Functional test.
5. CR-16. Acceptance tests.
6. CR-8. Storage.

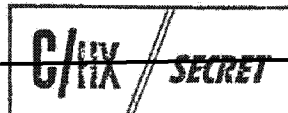
II. HEXAGON

A. General

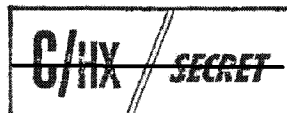
1. The HSSOP Meeting at the WCPO on 3 September concluded with agreement being reached on all but two items which relate to a better calculation of rewind length. SSC is to resolve the questions and provide an ECP with the new changes to the HSSOP Specification in approximately two weeks. At that time all the ECP's to HSSOP will be approved/disapproved, as appropriate. Implementation of improvements being incorporated in the HSSOP Spec will be dependent upon future discussions between the SSPO and

2. The vibration tests of an unsupported 66.6" diameter film stack have been completed with no loss of film stack integrity. These results indicate that the elimination of caging devices on the supply is feasible. A vibration test of the fully loaded Engineering Model supply, sans caging devices, is the next phase of the program. Perkin-Elmer is preparing an update of their proposal for this phase.

BYE-108293-70
Page Two



HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY



SUBJECT: Photo Reconnaissance Systems Report No. 57

3. The film stack being used for the temperature effects test was inadvertently exposed to a high RH after the 40°F test. An increase in core pressure indicated that the film had absorbed water. The stack has been reequilibrated to 48% RH and the core pressure has returned to the original values. Perkin-Elmer is to remove 5,000 feet of material and inspect for emulsion sticking. If none is evident, it will be assumed that the film has not been affected and a high temperature (100°F) test will be conducted.

4. The Hqs. comments to the SSC revised Quality Assurance Plan are in typing. The Quality Assurance Plan must be revised prior to inclusion as a reference in the follow-on contract work statement.

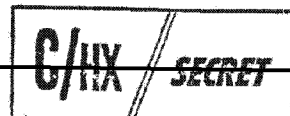
5. The 9-10 September exercises of the TUNITY Software at the STC were surprisingly successful. Although the results have not been fully evaluated, no major problems are evident.

6. The 9-10 September meeting, held with SP-7, [redacted] Hqs., and WCPO on inputs to the HEXAGON Reports Control Manual had not major problems. A number of minor problem areas were worked out.

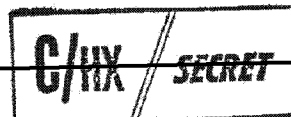
7. The West Coast computer facility now operating, using version 18.6 of the 360 operating system. A seminar was conducted for the 13 people that will be using the CALCOMP system to familiarize them with the various plotting software. A set of programs is being put together to be used as a benchmark test for compatibility with the Hqs. computer center. October 1 is target date for completion of this task.

8. On 9 September a briefing was presented to the Land Panel on the status of the acceptance testing of the First Flight Sensor Subsystem. The SPO (Col. Buzard) also presented the status of testing and system qualification of SDV-III and the completion of launch facilities.

BYE-108293-70
Page Three



HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY



SUBJECT: Photo Reconnaissance Systems Report No. 57

9. A schedule was set up with SSC for completing the items required to enter into negotiations. This included revision of the Midsection CEI Specification, negotiation of an agreed-upon method of determining in orbit performance for fee purposes, and revision of the Perkin-Elmer Work Statement to reflect additional Government requirements.

10. Arrangements were made for an FBI investigator to investigate suspected sabotage occurring in the Danbury facility. The investigator is now in the process of questioning personnel involved in working in the general area in which the sabotage occurred. The investigation has disclosed that the actual damage may have been greater than originally determined and that some cases of damage had been discovered but not been disclosed to the management.

11. Discussions were held between Gen. King, Mr. Crowley, Col. Buzard, and Mr. Patterson on the schedule for HEXAGON flights. This review was held to discuss the response to a TWX received from the NRO. It was the consensus of the group that the 17 December launch date could not be met and that the most likely date would be around mid-February to mid-March. It was further the consensus that maximum effort should be applied in getting the development model and the first flight model through test in preparation for the first flight. No decision was reached regarding the use of CORONA's to supplement HEXAGON launches in order to provide a greater assembly and test span on the West Coast and an early availability of a backup vehicle. This area needs to be resolved, as it will effect the expenditure of manpower during Fiscal Year 1971 and 1972.

B. Model Status

Development Model (SDV-III)

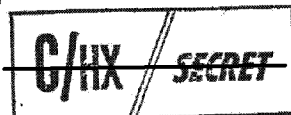
Horizontal baseline testing began on 9 September, following the replacement of the "A" P-servo box and the "A" and "B" platen drive cables. Initial operation revealed no system anomalies. Preparations are underway for continuation of horizontal baseline operations.

BYE-108293-70

Page Four



HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY



SUBJECT: Photo Reconnaissance Systems Report No. 57

SV-1 (S/N 003)

Midsection

P.E. has completed the in-air tests in Chamber "A". The photo data is being evaluated. Electrical adjustments to minimize the mean in-track and cross-track smear will be made, and some of the in-air tests will be repeated. Assuming no delays, in-vacuum chamber testing will start on 13 September. There are approximately 56,000 feet of film left on the "A" side and 85,000 feet on the "B" side. P.E. is forecasting a 29 September ship with no allowance for problems. There were some take-up AGE steerer tracking problems this week. The problems were traced to misaligned rollers in the AGE articulator. The rollers were reshined, and testing is continuing.

Forward Section

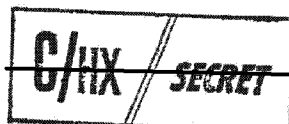
Preparations are underway for the functional testing of RV-4. This activity has been delayed due to a damaged articulator-steerer unit and a 4 RVTS electrical problem. The latter appears to result from an instrumentation ground loop and is expected to be resolved today. RV-5 was returned to MWC on 8 September for TUA removal and return to RCA for rework and repair.

SV-2 (S/N 002)

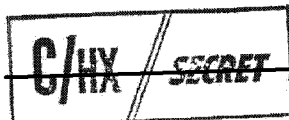
The supply has been reloaded, and the crossover stops have been installed. The supply is being installed in the midsection today. Fine tension sensor rollers, with both acceptable runout and low mass unbalance, were installed in platen "A". The metering capstan error was reduced to 0.04 inches per second as a result. The above is bench test data. P.E. has not yet been successful in putting together a camera with low metering capstan errors. The "B" side metering capstan error is 0.08 inches per second.

BYE-108293-70

Page Five



HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY



SUBJECT: Photo Reconnaissance Systems Report No. 57

III. ADMINISTRATIVE

A. Meetings Requiring Participation of Headquarters Personnel

<u>Date</u>	<u>Subject</u>	<u>Attendees</u>
-------------	----------------	------------------

P. E.

17 Sept	S&M IFWG	
17 Sept	Meetings of the Servo Group and Tracking/Alignment Group of the Special Task Force	

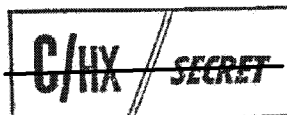
HQS

14 Sept	CEI Spec Review		Kohler
16 Sept	Monthly Technical Review	Staff	
17 Sept	MACFACT Negotiations	Patterson, Burks,	
18 Sept	Incentive Determination for Follow-On (in-house review)	Patterson,	
			Burks

B. Training

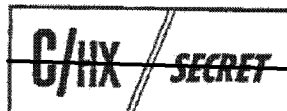
1. is attending the Mid-Career Executive Development Course through 9 October.
2. will attend the George Washington University on a full time basis starting 21 September to complete his EE Bachelor Degree.
3. will join PRS on approximately 1 October, depending on an agreeable transfer date with NPIC. He will be initially assigned to group replacing

TPA/PRS/OSP



BYE-108293-70
Page Six

HANDLE VIA BYEMAN
SYSTEM ONLY

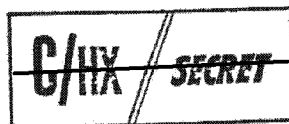


SUBJECT: Photo Reconnaissance Systems Report No. 57

Distribution:

Cy 1 - D/OSP
Cy 2 - DD/OSP
Cy 3 - D/PRS/OSP
Cy 4 - EO/OSP
Cy 5 - C/D&AD/OSP
Cy 6 - CS/OSP
Cy 7 - C/PAD/OSP
Cy 8 - C/SB/OSP
Cy 9 - C/SS/OSP
Cy 10 - RB/OSP
Cy 11 - PRS/File
Cy 12 - PRS/Chrono
Cy 13 -
Cy 14 -

BYE-108293070
Page Seven



HANDLE VIA BYEMAN
CONTROL SYSTEM ONLY