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MEMORANDUM FOR: Chief, Plans and Development Staff, NPIC

ATTENTION: [redacted] STAT

SUBJECT: Imagery Evaluation, 118-A Camera (Type IV)

REFERENCE: NPIC Project 22107-6

1. General:

a. In response to reference requirement the Photographic Analysis Group (PAG) NPIC, has conducted and concluded a limited evaluation of imagery obtained with the 118-A (HR-333) camera system under the OXCART test program. The purpose of the evaluation was to determine the amenability of 118-A imagery to the various analytical functions performed, and equipment utilized, in the exploitation of operational reconnaissance imagery.

b. The evaluation was limited in that the relatively small number and limited types of targets covered by the test mission precluded a complete exercising of PAG resources. However the functions performed by PAG in mission scanning, target identification, location and preliminary analysis were evaluated by comparing the 118-A camera system to that of the HR73-B (B-mount) camera system. The general procedures to be followed, the equipment utilized and the overall utility of the two systems is determined to be quite similar.

2. Discussion: The results of the PAG evaluation are summarized below under two major "Test Objectives" encompassing the areas listed above.

a. Objective 1: Determine the amenability of 118-A imagery to the functions involved in mission scanning and target location.

(1) Utilizing a two-man team, the scanning of the test imagery was completed with no difficulty. The method for accomplishing the task most expeditiously, is to employ two 9 x 18 inch light tables placed side by side. The film is positioned on the light tables in such a manner as to insure viewing of the two halves of the split-frame format in the same orientation along the flight line.

(2) The most practicable film packaging for rapid scanning and flexibility is by employing 200 foot reels (133 frames) and separating the right and left sides of the format as is currently done with most of the B-mount imagery.

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(3) The ground area coverage afforded by this camera system is considered to be adequate. However, due to the gap of approximately 0.5 inches between the right and left sides of the film package loss of photographic coverage in the vertical position occurs. At an operational altitude of 90,000 feet, this loss represents a ground distance width of approximately 900 feet.

(4) The mission data presented on the imagery format is considered adequate. The inclusion of the geographic coordinates of the aircraft are very helpful to the photo interpreter and proved to be reliable. The lack of a camera position indicator on the right half of the format was a hindrance to rapid exploitation as it necessitated frequent referral to the left side of the format.

(5) Titling data consisting of mission number, date, frame number, indication as to right or left side of the format and security classification as presented on the test imagery is an absolute requirement. In the event of a malfunction of the automatic frame counter, the illegibility of the write-in mission number, or illumination failure in either of the data windows or the lack of all of the above cited titling data would significantly increase the time required to obtain the information.

(6) The most feasible method of obtaining photo reference data on imaged targets is by the use of the Universal Grid (Number One). By positioning the grid with the 0/0 line intersection at the lower left hand corner of the frame with respect to the titling data in readable position, X-Y grid values are obtained. This procedure would be followed for either side of the format and would reduce possibility of error.

b. Objective 2: Determine the amenability of 118-A imagery to include target recognition, identification, analysis, mensuration and reporting.

(1) The 118-A imagery has no unique characteristics affecting the recognition, identification or preliminary analysis except when stereo viewing is required to perform these tasks. Stereo viewing can be accomplished by the simple expedient of cutting stereo pairs of the selected target(s) from a work copy of the film. A second method which is suitable for a "quick" analysis not requiring high resolution, is to procure stereo pairs through the use of the Polariod copy camera which is available in PAG.

(2) No problems are anticipated in obtaining mensuration throughout the entire 118-A format as long as the INS tape containing the necessary data is furnished along with the film to the Technical Intelligence Division (TID), NPIC.

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(3) The exploitation equipment and reporting procedures currently utilized in PAG are readily adaptable to the 118-A imagery.

3. Summary and Conclusions: The PAG evaluation of the 118-A test imagery has revealed no critical shortcomings with regard to either the sensor system or to the PAG capabilities to exploit such imagery. Two problem areas which might detract from the efficiency with which the 118-A imagery may be exploited were identified. Most serious is the possible loss of priority target ground imagery on vertical exposures resulting from the gap in photographic coverage due to the split format. The other problem area lies in the difficulty in readily obtaining stereo viewing throughout the format. Three advantages of this camera system were noted. First is the similarity to the B-mount camera system with which all photo interpreters in PAG are familiar. Second is that all necessary equipment for exploitation of the imagery is readily available in the PAG area. The third advantage to the system and a highly desirable one is the relatively large scale and high resolution potential of the imagery.

4. Recommendations: Based on the assumption that the most rapid exploitation possible consistant with accuracy will be required and that the timeliness of the information derived may be extremely critical, the following recommendations are submitted:

a. Packaging of the imagery should be on 200 foot spools.

b. To minimize loss of critical target imagery on vertical exposures, operational flights should be planned to insure that priority targets be imaged just to the right or left of nadir.

c. That the camera be modified to include a position indicator on the right hand portion of the format as well as the left.

d. That titling data and mission data as included on the test imagery be retained.

e. That a "work copy" duplicate positive be reproduced during original film processing so that necessary stereo pairs can be rapidly prepared for initial exploitation phases.

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Colonel, USA
Assistant for Photographic Analysis, NPIC

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