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Ad Hoc Committee for J-3 System Capabilities
Minutes for Meeting #5
Date: 10 June 1968
Location: National Photographic Interpretation Center
Prepared by: [redacted]
Attendees: [redacted]

Mr. Alkofer (EK)

[redacted]

* Attended only during discussion related to polarizer filters and color film.

Review of Mission 1103 Bi-Color - [redacted] and [redacted]

[redacted] gave the COMIREX a Bi-Color status briefing on 6 June 1968. They were advised that the exploitation techniques employed to date have not been as successful as originally anticipated, and that as a result of a meeting held at NPIC on 5 June 1968, a redirection of effort has been established. A three-man National Committee composed of [redacted] CIA, Chairman; [redacted] NPIC Photo Interpreter; and [redacted] NPIC/TSSG was established to review the Bi-Color analysis procedure and to report the suggested equipment, technique, and procedure for analyzing Bi-Color to COMIREX by 1 August 1968. The National Committee is not willing to accept orthoprinting as the best technique without first looking at all available equipment. Therefore, the National Committee report will probably be delayed.

As a result of the 5 [redacted] community meeting held at NPIC, ACIC has been tasked to attempt orthoprinting with an optical device known as GZ-1 vice the electronic scanner orthoprinter AS-11C (See Attachment 1). Also, AMS has tried the Unimace printer. [redacted] suggested that Bi-Color prints be attempted with the Electronic Color Printer at Westover Air Force Base.

Questions

1. [redacted]-What is the best method of gathering Bi-Color information from a PI standpoint? Answer--The ARES has the advantage of being a real time device, but is not economically feasible and results in a resolution loss. A group of ARES machines is not considered a suitable solution. However, a combination of equipment will probably always be needed and the ARES is promising because of the real time advantage.

2. [redacted]-What schedule has the National Committee or others concerned developed for Bi-Color analysis? Answer--The National Committee was originally to report by 1 August, but that date will probably not be met due to the various equipment to be tested.

[redacted] prepared a TWX (as a result of the 5 June community meeting) that tasked DIA/AMS and DIA/ACIC to perform some additional work and report within six weeks following DIA approval. [redacted] originally advised COMIREX that the 1 August date selected for the National Committee report was extremely optimistic.

Discussion

It was concluded that those involved with Bi-Color exploitation are extremely interested in making the technique a success. A healthy attitude is being maintained by all concerned.

Final Review of Exposure Report - [redacted] and Alkofer

The problems associated with finalizing the exposure report have been solved. The report, J-3 Systems Capability Report No. 2, is scheduled for distribution to the community on 21 June 1968.

Evaluation of SO-230 on Mission 1102, 1046 - [redacted] and Alkofer

A TWX [redacted] giving the results of the NPIC analysis of SO-230 has been prepared for the community. In brief, the characteristics of SO-230 and 3404 were found to be comparable under in-flight conditions with the exception that the speed of SO-230 is twice that of 3404. Alkofer reported that EK

is experimenting with a change to the curl characteristics of SO-230 to make it match the curl of 3404. Also, Alkofer reports that the emulsion lift-off problem has not been solved. Further SO-230 comments will be made by Schoessler at the 1103 PET meeting. [redacted] reiterated that SO-230 will not again be flown until the emulsion lift-off problem is solved.

Evaluation of Wratten 12 Filter on Mission 1103 - [redacted]

Four passes of Mission 1103 were scheduled to have flown with the Wratten 12 filter. Due to an operational priority, only two passes were taken. These two passes were both 60 to 70 per cent obscured by weather. It is concluded that more data will be needed for a final analysis of the Wratten 12. This topic will be considered at the next Ad Hoc Committee Meeting.

Evaluation of SO-380 on Mission 1103 - [redacted]

A tag on test strip of SO-380 was flown on Mission 1103. Time has not permitted a thorough analysis; however, preliminary results show no difference between the SO-380 and 3404. Pending final analysis, NPIC will advise the community of their findings by TWX. 1105 is now scheduled for a full load of SO-380 with a tag on strip of SO-121 in one instrument.

Flight Plans for Mission 1104 - [redacted]

[redacted] advised that 1104 will be flown with a Bi-Color capability and will have a 1600 foot tag on strip of SO-180 on one instrument. The 3400 sun line test is postponed until winter. See Attachment 2 for J-3 test plan. He confirmed that Alkofer was arranging for the proper filters for SO-180 and requested that [redacted] insure that the horizon camera have the appropriate alternate filter for SO-180.

[redacted] described tha planned targets for the SO-180 evaluation. These fall into three basic categories:

a. Atomic Energy Facilities

b. Buried antennas

c. Agricultural targets

[redacted]

The atomic energy facilities will consist of state side photography to be used to establish a comparison between known facilities and photography of the same facilities recorded on SO-180 from satellite altitudes. Also, similar tests will be flown with aircraft over the same targets to establish a comparison between the SO-180 from an aircraft and from a satellite. The Telecommunications Branch of ORR is concerned with the identification of buried antennas and their locations. Four locations of antennas of this type are planned targets for the SO-180 tests. These targets and coordinates follow:

Svobodnyy - 51.48 N 128.01 E
Barano-Orenburgskoye - 44.19 N 131.30 E
Anastasyevka - 48.36 N 135.38 E
Kremovo - 44.01 N 132.20 E

The Office of Economic Research provided OSP a selection of agricultural targets appropriate for SO-180 engineering evaluation. The following excerpts are taken from [redacted]

"Collection of imagery from these targets will:

a. Facilitate the monitoring of the condition of autumn-harvested crops in the specified areas of Communist China and analogous areas of Taiwan, Japan, and the U.S., for which ground truth is available. (The August timing of Mission 1104 precludes collection against winter wheat in the North China Plain, the harvesting of which will have been completed.)

b. Survey the water level of reservoirs and soil moisture conditions as a check against collateral weather information."

[redacted] will provide [redacted] AP operations personnel and NPIC with maps indicating the desired coverage. [redacted] are arranging to brief [redacted] Chairman, COMIREX, on the engineering evaluation plan for 1104. COMIREX guidance regarding the duplication requirements from the SO-180 engineering passes over operational territories will be requested. The dupes can be color or black and white (with a loss of resolution). [redacted] Final duping requirements will be established after consultation with COMIREX.

[redacted]

Special Briefing (arranged by [redacted] On Use of Polarizers With Color Films - [redacted], [redacted], briefed The Ad Hoc Committee on their work with polarizers and color film.

Approximately a year and a half ago, [redacted] processed material from Air Force flight tests. Looking at this material, the Air Force concluded that the polarizer was of zero value. A [redacted] physicist studied the atmospheric particles and spectral problems and concluded that the Air Force had failed to achieve results with the polarizer because it was not oriented in the proper plane. Independent flight tests by [redacted] show that the polarizer does enhance imagery under certain conditions. Rayleigh scattered particles (molecules) are especially susceptible to polarizer filters. Aerosal particles are of various composition and size and contain only a small percentage of polarized light. The polarizer is least helpful with aerosal particles. The polarizer film is especially helpful when shooting long-range oblique photography into the sun and is ideal for penetrating water. For operational use, [redacted] has developed an automatic sensing device that properly orients the polarizer filter. The physical size of this device is approximately 4" by 4". The [redacted] aircraft will be used to conduct some SO-180 tests under an existing OSA contract. [redacted] and [redacted] are coordinating.

As a separate topic [redacted] confirmed that the Electric Color Printer at Westover will accept an input as large as 9" by 9" and will produce an output as large as 20" by 20". Each copy is individual, thus the last takes as long as the first, that is, approximately six minutes.

Action Items

1. [redacted] will request orthoprints from ACIC for Westover to use in preparing electronic color prints.

2. [redacted] and [redacted] will schedule Kodachrome II vs SO-121, and SO-180 flight tests with OSA. EK and [redacted] will work jointly on these tests.

[redacted]

3. [redacted] will insure that the proper filter is selected for the horizon camera on Mission 1104.

4. [redacted] will determine whether SO-180 will fly in the forward or aft camera.

5. All previous action items are closed with one exception. Attempts to locate the VELA reports have not been successful. [redacted] is taking this action item.

The previous minutes reported that "3400 with the appropriate processing would equal the speed of 3401. The added advantage is that 3400 is of finer grain." [redacted].

[redacted]

Minutes Approved: [redacted] Chairman

Attachments: a/s

[redacted]

CURRENT PLANS FOR SYSTEMS CAPABILITY EFFORT

10 JUNE 1968

FLIGHT	TEST	DESCRIPTION
CR-1	FILTER	21, 23A, 25 1-1/3 STOP RANGE; DENSITY COMPARISON
CR-2	BI-SPECTRAL POLARIZER SO-230	W/25 + SF-05 POLOCOAT, 20° ANGLE
CR-3	BI-SPECTRAL WIDE BAND FILTER SO-380	W/25 + SF-05, OPERATIONAL WRATTEN No. 12 - ULTRA THIN BASE FILM
CR-4	SO-180 BI-SPECTRAL	COLOR INFRARED FILM W-25 _ SF-05
CR-5	SO-121	EKTACHROME COLOR

1. FILTER EVALUATION

- BASIC OBJECTIVE: SEE WHAT DIFFERENCES OCCUR IN OPERATIONAL PHOTOGRAPHY WITH THE WRATTEN NO. 12, 21, 23A, AND 25 FILTER

A. SUBJECTIVE EVALUATION

B. MTF ANALYSIS OF IMAGE QUALITY

C. TRADEOFF BETWEEN EXPOSURE TIME AND ATMOSPHER

2. EXPOSURE ANALYSIS

- BASIC OBJECTIVE: DETERMINE:
  1. IF SLIT CHANGED PROPERLY
  2. IF WE EXPOSE PROPERLY
  3. COMPARISON BETWEEN TARGETS AND TERRAIN DENSITIES

A. SUBJECTIVE EVALUATION

B. DENSITY VERSUS FREQUENCY ANALYSIS

C. EXPOSURE ANALYSIS WITH HIGH PRIORITY TARGETS

D. COMPARISON OF TARGETS AND TERRAIN DENSITIES

3. BISPECTRAL PHOTOGRAPHY

- BASIC OBJECTIVE: TEST THE OPERATIONAL FEASIBILITY OF OBTAINING BISPECTRAL PHOTOGRAPHY FROM MISSION PHOTOGRAPHY

A. SUBJECTIVE ANALYSIS OF TARGETS WITH RESPECT TO TONAL DIFFERENCES, (NPIC)

B. OBTAIN GOOD BISPECTRAL PRINTS

C. IMAGE QUALITY ANALYSIS OF SF-05 IMAGERY

D. TEST BEST METHOD OF OBTAINING BISPECTRAL IMAGE

4. POLARIZER FILTER

- BASIC OBJECTIVE: DETERMINE THE EFFECTIVENESS OF A POLARIZER AS A HAZE-CUTTING FILTER

  A. IMAGE QUALITY ANALYSIS

  B. ATMOSPHERIC EFFECTS AS A FUNCTION OF SOLAR ALTITUDE AND AZIMUTH.

  C. DETERMINE EFFECTIVE FILTER FACTOR

  D. SUBJECTIVE ANALYSIS OF TONAL RENDITION

5. SO-230

- BASIC OBJECTIVE: COMPARE SO-230 WITH 3404 IN AN OPERATIONAL MISSION

  A. FILM SENSITOMETRIC CHARACTERISTICS (FOG, GAMMA, SPEED, FILTER FACTORS)

  B. FILM IMAGE QUALITY ANALYSIS (MTF, RESOLUTION)

  C. SUBJECTIVE EVALUATION OF FLIGHT FILM

  D. SYSTEM RESOLUTION

  E. TONE REPRODUCTION COMPARISON

6. SO-380

- BASIC OBJECTIVE: TEST SO-380 IN THE SYSTEM

  A. FILM SENSITOMETRIC CHARACTERISTICS (FOG, GAMMA, SPEED, FILTER FACTORS)

  B. FILM IMAGE QUALITY ANALYSIS (MTF, RESOLUTION)

  C. SUBJECTIVE EVALUATION OF FLIGHT FILM

  D. SYSTEM RESOLUTION (MTF/AIM)

  E. LAB CHAMBER TESTS

  F. LIMITED DIMENSIONAL STABILITY ANALYSIS

7. SO-180

- BASIC OBJECTIVE: OBTAIN MISSION PHOTOGRAPHY WITH CAMOUFLAGE COLOR FILM

  A. SUBJECTIVE ANALYSIS OF INFORMATION CONTENT

  B. TONE REPRODUCTION ANALYSIS

  C. RELATIVE IMAGE QUALITY (RESOLUTION, MICROPHOTOGRAPHS)

8. NIGHT PHOTOGRAPHY

- BASIC OBJECTIVE: DETERMINE IF ACTIVITY CAN BE DETECTED AT NIGHT

  A. SUBJECTIVE ANALYSIS

  B. STATIC ANALYSIS

  C. THEORETICAL ANALYSIS OF NIGHT DETECTION CAPABILITY

PREPARATION OF [illegible] / [illegible]

PREPARED BY: [redacted]

DISCUSSED WITH:

FUNCTION	DATA FLOW	OPERATION TIME	AVAILABILITY OF EQUIPMENT	REMARKS
TARGET FORMAT SELECTION (1)	FORE BI-COLOR O.N. OR D.N. 100 l/mm +			
RECTIFICATION (2)	GAMMA I - TRANSFORMING PRINTER RECTIFIES & ENL. APPROX 2X OUTPUT D.P. ON 9" [illegible] APPROX. 50 l/mm	5 MIN. FOR SETUP & SCAN (10 MIN. FOR 2) PLUS PROCESSING	14 UNITS IN OPERATION - ACIC - AMS - NRTSC - OTHER	50 l/mm ON OUTPUT NEAR CENTER SCAN
ENLARGE (3)	ENL. AREA CHIP; ENL. AREA CHIP		EK. - 10-20-40 OR EQUIV.	
TARGET STEREO CHIPS PREP. (4)	FORE BI-COLOR D.P. CHIP 6" IN FLT. 4" CR. FLT. → STEREO PAIR ← AFT BI-COLOR D.P. CHIP 6" IN FLT. 4" CR. FLT.			
STEREO MODEL SET-UP & PROFILING OF 3D MODEL (5)	STEREO PLOTTER PROFILES FOR RELIEF [illegible] ZEISS C-8 WILD A-7, A-8 MAN[illegible] ← 2,5-3 HRS. AS-11C HAMCE AUT[illegible] ← 1.5-2 HRS.	2,5-3 HRS. 1.5-2 HRS.	MANUAL - AMS ACIC USGS ETL ETC. AUTO AS-11-C (ACIC) HAMCE (AMS)	IF USING AUTO OMIT STEPS (2) (6) (7)
PROFILE STORAGE (6)	INPUT X, Y, Z DAT[illegible] TO ZEISS SG-1 STORAGE PROFILE OUTPUT		1 - ACIC 1 - ETL 3 - AMS	
ORTHO - PHOTO PRINTING (7)	INPUT PROFILE DATA BI-COLOR CHI[illegible] ← ZEISS GZ-1 ORTHOP[illegible] 4X ENL.	1.5-2 HRS.	1 - ACIC 1 - ETL 1 - AMS * * 2nd ON ORDER	
FORMING COLOR RECORD (8)	FORE 24"x36" BI-COLOR D.N. ORTHO-PRINT → SUPER-IMPOSE COLOR 24"x36" ← [illegible] 24"x36" [illegible] D.N. ORTHO-PRINT			COLOR PRINT 8X ORIGINAL