Attachment 1 to

[redacted]

25X1A

[redacted]

Dear Bob:

25X1A

We have made the practical test suggested by [redacted], using a number of filter combinations.

Unfortunately, it looks as if two filters above 500 mμ cannot be used because the differences in spectral reflectance are not great enough to discriminate with broad-band filters.

Nevertheless, it does look like the combination of a 47B+2E, used with either a 21 or a 25, will give good discrimination, even including the effects of the atmosphere. The spectral model indicates that, for the haze which most frequently occurs, and the two records given an exposure such that high reflectance neutrals will be equal in density, the LogE separation between the 47B+2E and 21 filter combination will still be about .15 units (a density difference of about .4).

The effect of varying degrees of haze will be less than we had originally expected, since the spectral reflectance of the uranyl nitrate in crystalline form is apparently higher below 500 mμ than the absorption spectra we looked at originally. I am enclosing the spectral reflectance values for the crystal sample we measured.

The filter factor for the 2E+47B combination is in excess of 10. However, practical tests indicate a factor of 8 is adequate to allow first-class data reduction. The exposure scale is so compressed that even a little less exposure would probably be possible. We will examine this problem a little more closely.

I am sending this information to [redacted] at your request. 25X1A
Should you have further questions, please contact me.

JSA:atr
Encl.

[redacted]

25X1A

Uranyl Nitrate

REFL	VAL		350 →							2613
.425	.429	.442	.443	.445	.441	.433	.422	.415	.400	REFL
.397	.396	.394	.394	.402	.404	.409	.422	.437	.454	REFL
.461	.467	.475	.477	.485	.492	.498	.498	.534	.584	REFL
.600	.598	.608	.618	.620	.621	.621	.620	.623	.625	REFL
.625	.625	.624	.624	.624	.623	.624	.626	.626	.628	REFL
.626	.625	.625	.625	.625	.625	.625	.624	.624	.624	REFL
.624	.624	.623	.623	.623	.623	.623	.623	.623	.623	REFL
.620	.619	.615	.615	.613	.612	.611	.611	.611	.611	REFL
.611	.611	.611	.611	.611	.611	.611	.611	.611	.611	REFL
.609	.609	.603	.600	.600	.599	.598	.598	.598	.597	REFL
.597	.596	.595	.595	.592	.585	.584	.582	.582	.581	REFL
.581										REFL

Reflectance values are corrected for the Mg O standard - they run horizontally from 350 mu to 900 mu in increments of 5mu.

Next 1 Page(s) In Document Exempt

SUMMARY OF SO-180 & SO-340 [redacted] MARKING

25X1

25X1

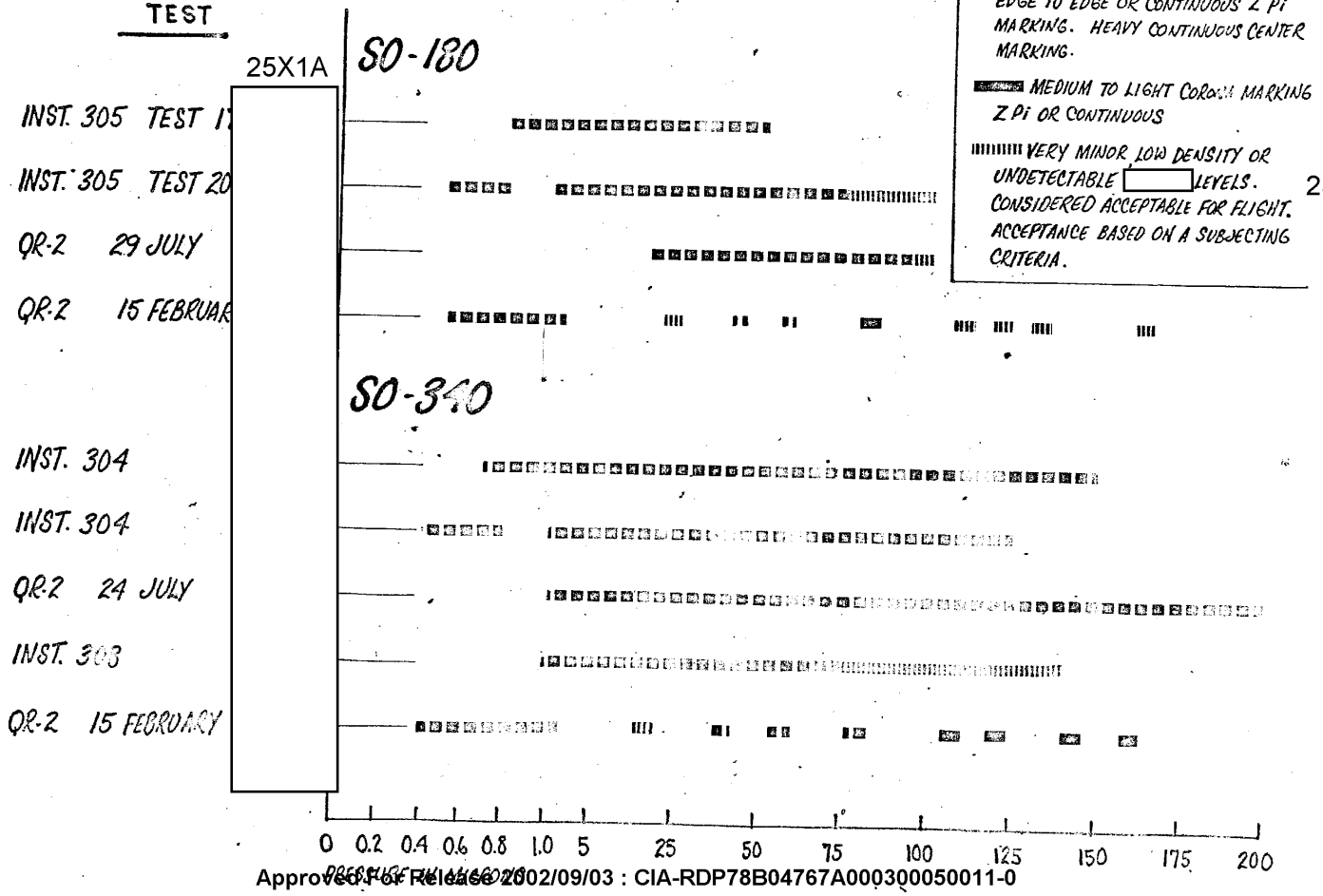
25X1

Attachment 2 to

25X1

TOP SECRET

TOP SECRET



25X1

25X1A

CURRENT PLANS FOR SYSTEMS CAPABILITY EFFORT

6 MARCH 1968

FLIGHT	TEST	DESCRIPTION
CR-1	FILTER EXPOSURE	21, 23A, 25 1-1/3 STOP RANGE; DENSITY COMPARISON
CR-2	BISPECTRAL POLARIZER SO-230	W/25 + SF-05 POLOCOAT, 20° ANGLE "FASTER" 3404 TYPE FILM
CR-3	BISPECTRAL WIDE BAND FILTER SO-380	W/25 + SF-05, OPERATIONAL WRATTEN NO. 12 ULTRA THIN BASE FILM
CR-4	SO-180 SO-340*	COLOR INFRARED FILM NIGHT (TRI-X EMULSION)

TENTATIVE

CR-5	SO-121	COLOR
CR-6	POLARIZER	WINTER, PROPER AXIMUTH
CR-8**	THROUGH FOCUS	STEPPED GLASS FILTER

*3400 SUN LINE TEST MAY BE SUBSTITUTED.

**CR-8 SCHEDULED AHEAD OF CR-7

1. FILTER EVALUATION

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

A. SUBJECTIVE EVALUATION

B. MTF ANALYSIS OF IMAGE QUALITY

C. TRADEOFF BETWEEN EXPOSURE TIME AND ATMOSPHERICS

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 IMAGES

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

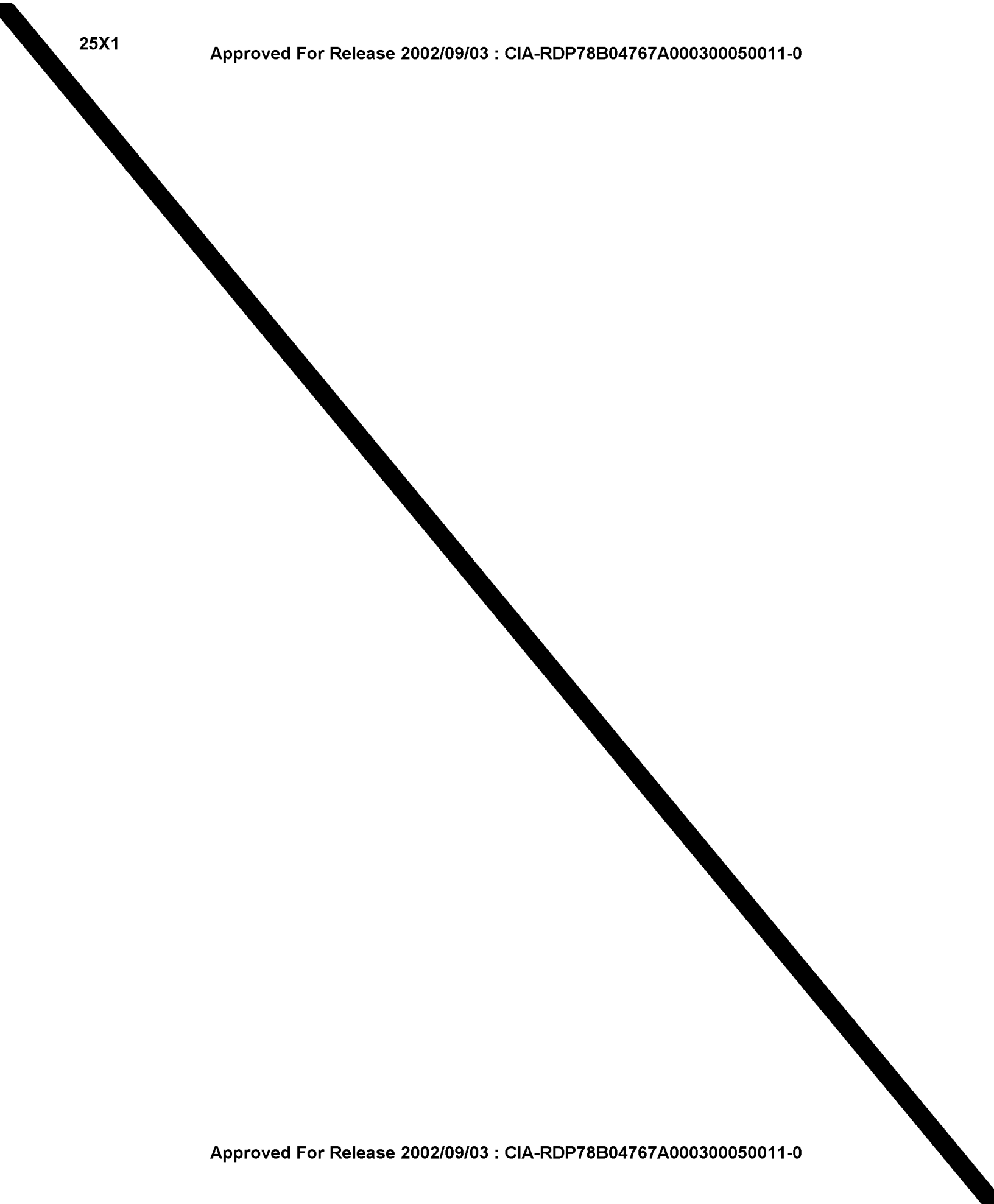
  F. LIMITED DIMENSIONAL STABILITY ANALYSIS

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



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