

Itel



ITEM CLASSIFICATION

Vehicle

Re-entry capsule no.

Cassette No.

Camera No. 20

Date of launch 20th 8, 1961

Time of launch 2130 Z

Date of Recovery July 10, 1961

Time of Recovery

Location

Additional Remarks

Declassified and Released by the NRO
in Accordance with E. O. 12958
on NOV 26 1997

SECRET

SIC Width

DC Step No.

Actual Exposure

1500

seconds

Timing P/S Frequency

160 cps

OPTICS

HYAC II LENS SERIAL NO.

HLE-C

Wratten No. 25 Filter (Schott, NCSA)

Operational Focal Length

23.794

inches

Resolution - Figure of Merit*

FCIG Acceptance

109.5

lines/mm

Itek Pre-vibration

104

lines/mm

Itek Post-Vibration

110

lines/mm

Other

4K

94.0

lines/mm

*See attached Resolution Data

HORIZON OPTICS - Wratten No. 25 Filter (Goertz Data)

PORT (Left) (Take-up)

STARBOARD (Right) (Supply)

Exposure Time

1250 sec

1250 sec

Effective Aperture

f/6.8

f/6.8

Serial No.

799944

799940

Equivalent Focal Length (EFL)

89.25 mm

89.25 mm

Back Focal Length

81.58 mm

81.58 mm

Flange Focal Length

86.91 mm

86.91 mm

Angle Off Axis

0° 2-1/2° 15° 22-1/2° 0° 2-1/2° 15°

Min. Resolution on Super XX

44

39

34

25

51

39

31

lines/mm

Radial Distortion (EFL)

10°

009 mm

20°

042 mm

Tangential Distortion (EFL)

(Max. Vector)

003 mm

SECRET



Lens No. H10-0021

Date 7/13/60

HYAC II PHOTOGRAPHIC RESOLUTION
 (HIGH CONTRAST - SO 1213 EMULSION)
 - RESOLUTION IN LINES/MM -
 TANGENTIAL / RADIAL

FOCAL POSITION	LEFT				RIGHT		
	2 1/2°	2°	1°	0°	1°	2°	2 1/2°
Focal Increments = 0.0012 Inches ↓ Away From Lens	119/106	119/106	119	133/119	119	119	133/119
	106	133/106	133/119	133	133/119	133	119/106
	106	119	133/119	133/119	119	106/133	119
	119/106	119	106/119	133	133/119	106/133	119
	119/106	119/133	119/106	133	119/106	106/119	106/119
	106/119	119	119/133	106/119	106/119	106/119	106/119
	106/119	106/119	106/119	106	106	67/94	106/106
	106/119	94/106	106/119	106/94	85	67/94	67/106

Operational Flange Focal Distance 24.684 Inches
 Operational E. F. L. 23.994 Inches
 Distortion Less Than 5 microns at 3°

Test Performed By _____
 Approved By _____

Date 7/13/60
 Date _____



SECRET

NO

**INSTRUMENT OPTICAL ALIGNMENT
AND COLLIMATION PROCEDURES
DATA SHEET**

LOCKHEED AIRCRAFT CORPORATION
MISSILE SYSTEMS DIVISION

PROCEDURE

1007

1 OF 1 SHEETS

PREPARED

[Redacted]
9/9/60

TEST CASE

DESIGN CASE

RELEASE

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REVISIONS

SYM	DATE	DESCRIPTION	FOR TEST	FOR DESIGN

[Redacted]

SECRET

CAMERA SERIAL NO. 20 DATE 7 MAY 61
 LENS SERIAL NO. HCL-8-21 LOCATION L/H
 SHUTTER SPEED 1/1000 FILM TYPE 017

I - IMV DIRECTION
 S - SCAN DIRECTION

PROGRAM 6	STEP 1						STEP 4						STEP 8								
	START		4.5		CENTER		5.4		END		7.0		18°		0°		30°				
	18°	0°	30°	18°	0°	30°	18°	0°	30°	18°	0°	30°	I	S	I	S	I	S			
EXPOSURE	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	
No. 1	90	90	80	90	80	90	90	90	102	80	102	102	102	102	102	102	114	114			
2	80	80	80	90	90	102	90	90	80	102	102	102	102	102	90	102	90	90			
3	90	102	90	90	102	102	102	114	90	114	102	102	90	102	90	102	102	114			
4	102	102	90	102	90	114	90	102	90	102	90	90	90	90	102	102	102	102			
5	90	102	90	102	102	114	90	90	90	90	80	102	90	102	102	102	102	102			
6	90	102	80	102	80	90	80	90	90	102	90	90	90	102	90	102	102	102			
7	90	90	80	114	90	90	90	90	90	102	102	90	90	102	90	102	102	102			
8	80	90	80	102	90	102	90	90	90	102	102	90	90	90	102	102	90	102			
9	80	102	80	90	80	114	90	90	90	90	90	90	90	90	80	102	90	102			
10	80	90	90	102	90	90	90	90	90	102	90	90	90	102	90	102	102	102			
TOTAL																					
AVERAGE	87	95	84	98	89	107	90	92	88	100	92	103	92	98	93	102	100	103			

FIGURE OF MERIT 94.8
 (Average of all Positions)

CONDUCTED BY 

SECRET

TITLE

LOCKHEED

TEST PROCEDURE

INSTRUMENT OPTICAL ALIGNMENT
AND COLLIMATION PROCEDURES
DATA SHEETS

LOCKHEED AIRCRAFT CORPORATION
MUSKOGEE STREET
ANN ARBOR, MICHIGAN

SHEET 3 OF 3 SHEETS

Film Evaluation Check List

Type Test

Inst. No. 20

HATS _____

Date of Test 7 MAY 61

MAB _____

PAD _____

Other RESOLUTION & THEO.

Type Film 1221 & T-19

Processing NORMAL

Frequency lamps OK

Fiducial lamps OK Right OK Left OK

Digitote lamps OK

Digitote operation OK - TEST

Remarks FIGURE OF MERIT 94.8

by _____ date 5-7-61

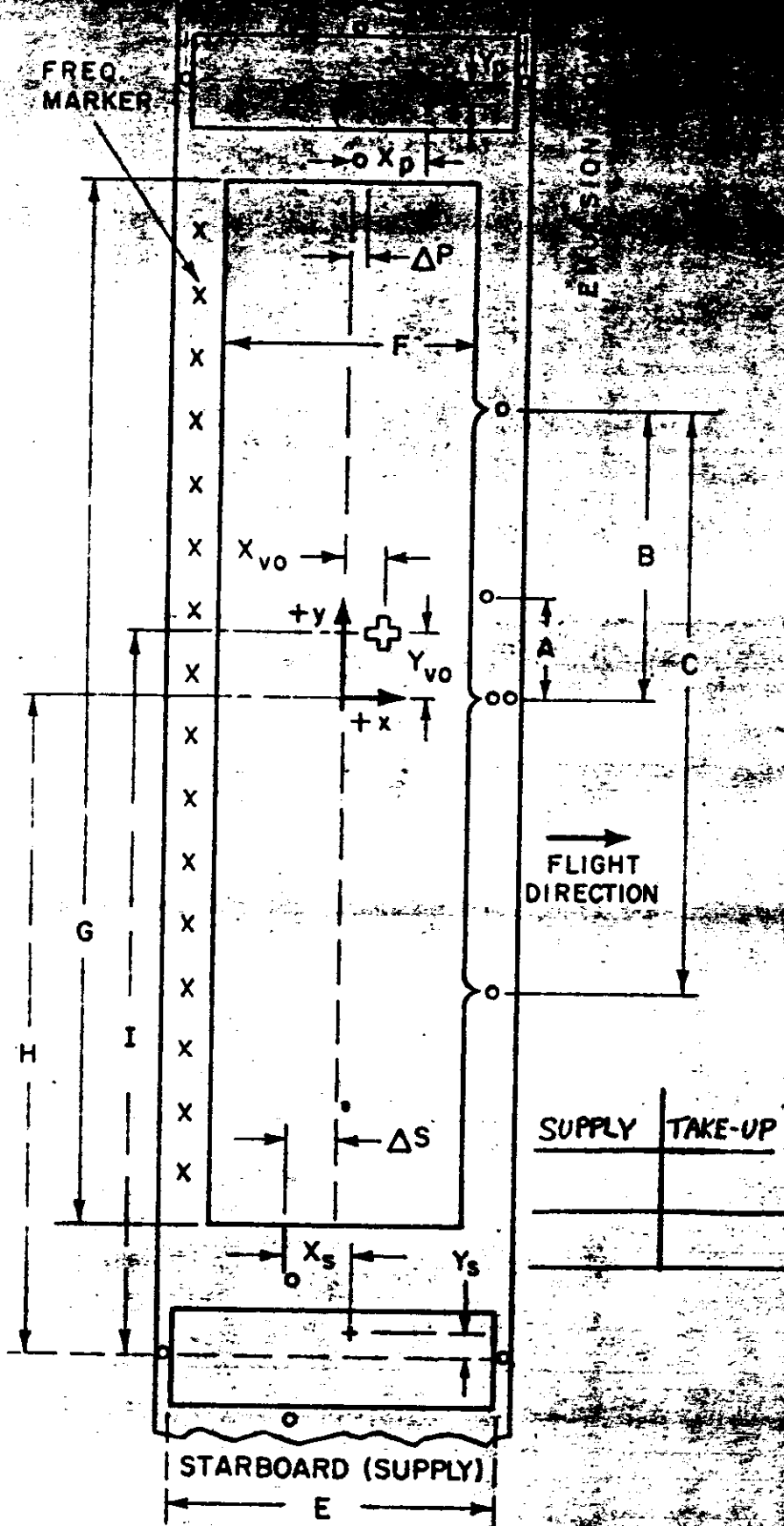
APPROVED:

Optics Engineer _____ 5-7-61

Engr. Supervisor _____

QC _____

SECRET



$X = -4.77$ $Y = 1.06$

Vertical Offset

$X_{vo} = 2.425$ $Y_{vo} = -1.2$

Shrinkage Measurements (mm)

- A 76.307
- B 355.859
- C 211.691
- D 56.49
- E 56.54

Format Dimensions
(Inches)

- F 54.084
- G 294.115

of Format Locations (mm)

Discrepancies (mm)	
Δ	Δ
Δ	Δ

Test Vibration
ments of Test



SECRET

FORMAT # 1
AERIAL SCENE
NO HORIZON
RECORDING

HORIZON RECORDING FORMAT
(#2 PICTURE) TAKE-UP SIDE
RECORDS EVERY OTHER CYCLE
(LEFT SIDE)

REAL TIME FORMAT
#1 PICTURE-RECORDS
EVERY CYCLE

FORMAT # 2
AERIAL SCENE

160 CPS TIMING PIPS

70° PANORAMIC SCAN 29.325 IN.

SHRINKAGE
MARKER

FLIGHT
DIRECTION

FILM TRANSPORT

FORMAT # 3
AERIAL SCENE
NO HORIZON RECORDING

VEHICLE TIME
FORMAT #2 PICTURE
RECORDS EVERY CYCLE

SKY
EARTH

SHRINKAGE
MARKER

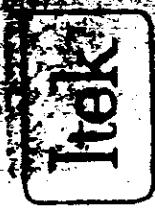
CAMERA SERIAL NO

HORIZON RECORDING FORMAT
SUPPLY SIDE-RECORDS EVERY
OTHER CYCLE (RIGHT SIDE)

NOTE:

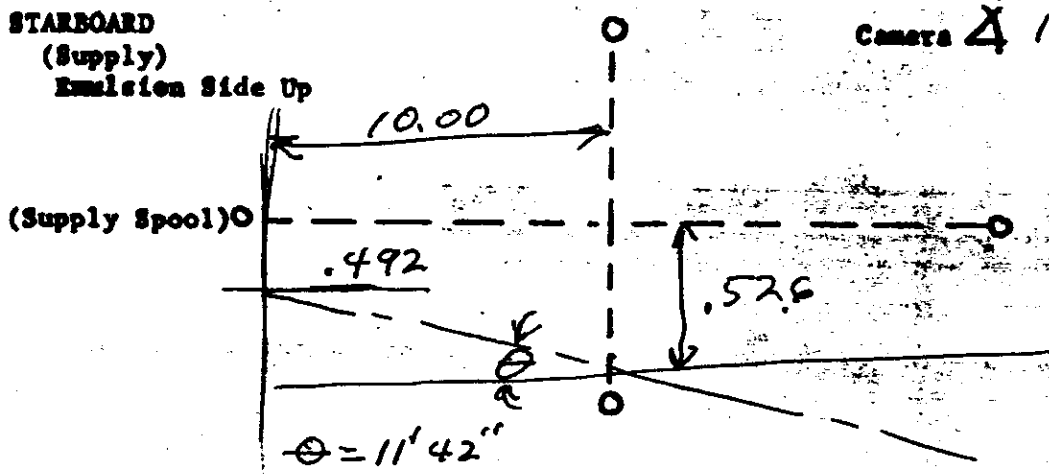
1. Film used is 16mm based (E.K. SO-1100 and EK-50-1100)
2. Each exposure has a minimum 10% overlap at Nadir along Flight direction.

SECRET



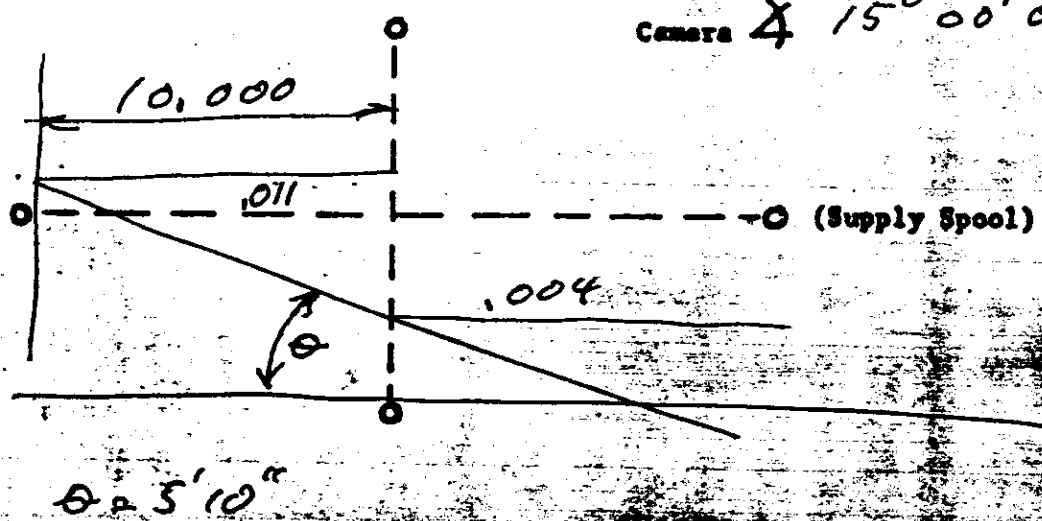
STARBOARD
(Supply)
Emulsion Side Up

Camera Δ $15^{\circ} 20' 06''$

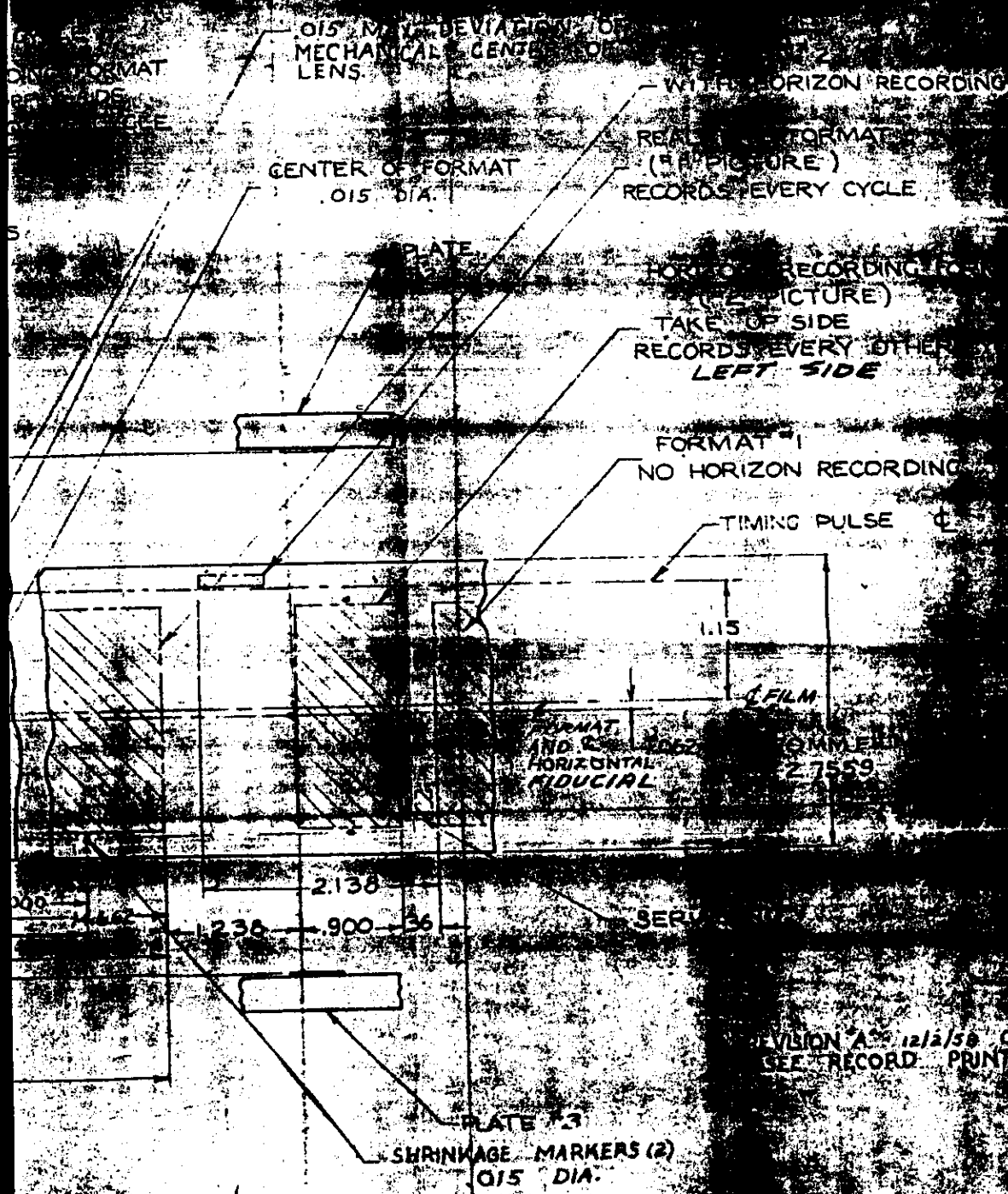


PORT
(Take Up)

Camera Δ $15^{\circ} 00' 09''$



~~SECRET~~



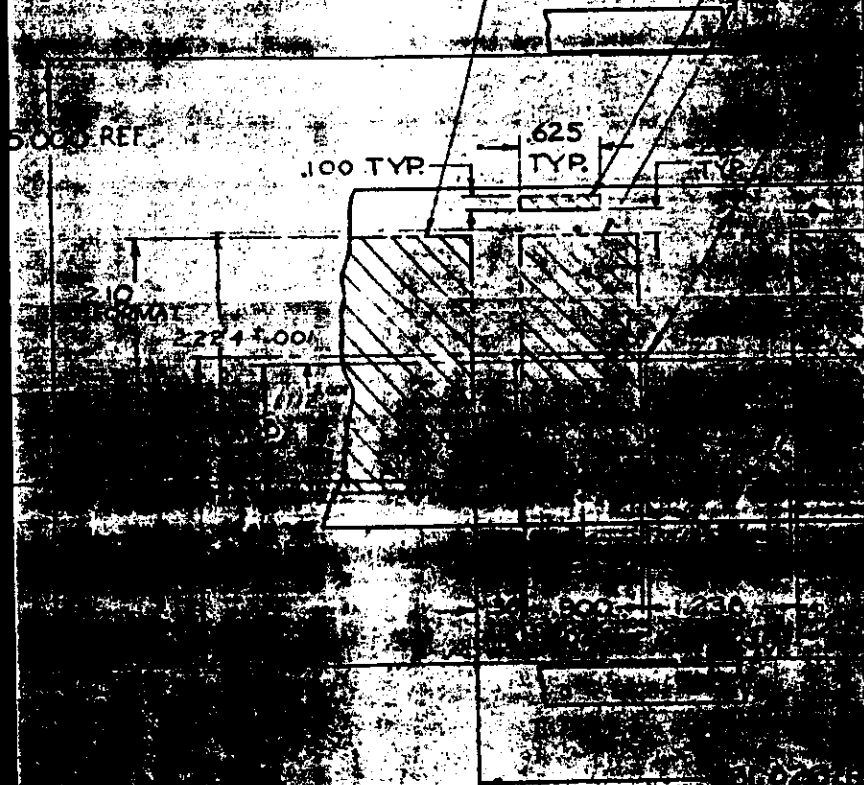
LOOKING THRU BACK OF FILM
 FORMAT LAYOUT

ITEK Corporation
 Boston, Mass.

DOWN BY _____
 CHD. BY _____ 10-31-58

REVISION A 12/2/58 GR
 SEE RECORD PRINT

FORMAT
SINO EDRIZ
RECORDING



VIEW 100
10