12/2/65

D R A F T 23 March 1965 EJM:rf

552A Control Cabinet

MECHANICAL FUNCTIONS

Control Panel:

- ✓Magnification Selector ✓
- ✓Color coded to objective head ✓
- ✓Interlock feature switch ✓
- ✓Correct marking (color code)
- ✓Function smoothly

Scanning Motion:

- ✓Proper [illegible]tion ✓
- ✓Chann[illegible]l c[illegible]pling ✓
- ✓Chann[illegible] selector ✓
- ✓Speed proper
- ✓Smoothness - Stop-Start
- ✓Speed ranges - Left-Right

Zoom Control:

- ✓Proper head
- ✓Correct direction
- ✓Excessive coast
- ✓Manual drive

ILLUMINATION

General:

- ✓ ON-OFF switch ✓
- ✓ Dimming control ✓
- Light levels

High Intensity:

- ✓ Left ✓ Right ✓
- ✓ Dimming
- Light level

COUNTERS

- Operation "Y" LEFT COUNTER HANGS
- ✓ Zero Set-Reset
- Proper count for movement - measure

FILM CONTROLS

- ✓ Looping check switch position
- Return - Manual withdraw and lock BARS NUDGE & WONT RETURN
- ✓ Loop forming left-right
- ✓ Film holddown
- ✓ Time 15-20 sec

UNEVEN ILLUMINATION IN RIGHT EYEPIECE

Dots do not coincide in superimposition

Right yellow and white dot center off

Left yellow and white dot center off

white dot a little off.

WONT HANDLE 9½" 1½ MILLIMICK

OPTICAL SYSTEM NOT COMPLETED

LEFT IMAGE ROTATION

OPTICAL TRAIN CHECKOUT

Check control of eyepiece assembly for function and operation.

Eyestations	Normal	✓
	Reversed	✓
Image Enhancer switch operation ON - OFF		✓
Channel Selector	Stereo	✓
	Superimpose	✓
Left Image Selector	Off	✓
	Normal	✓
	Reversion	✓
Right Image Selector	Off	✓
	Normal	✓
	Reversion	✓
Image Rotation Dials 0° to 360°	Operation	✓
	Stops	✓

0° Set Up Check

Eyepiece optics in superimposed mode normal image selector straight edge set up on platen X axis both channels within .001 in 6 inches (use carriage travel and dot to run out straight edge). In turn dial normal to reversion mode, an image of offset straight edges should remain parallel within 1 for any combinations of normal or reversion modes in either channel.

Interpupillary Adjustment 52mm to 73mm — ✓ 54 - 74 mm ✓

With Image Enhancer off, focus eyepiece to obtain sharpest image of fiber bundle pattern on end of fiber cable for both eyepieces. Turn Image Enhancer on. Check fine phasing control for center position with sharpest image of Air Force Resolution Chart at midposition of fine phasing control rotation. Introduce AGR reticle into system. Check size (1 multifiber

approximately 4 arc minutes).

		LEFT	RIGHT
1-4 arc minutes required at all system magnifications	Maximum	_____	_____
	Minimum	_____	_____

DOT CENTERING CHECK

Turn on Image Enhancer. Set up 4 arc minute dia. dot (1 multifiber) and cross hair reticles at field stops. Is dot on center? Estimate center error in the following modes with center reticles at field stops. Maximum allowable error is to be 4 arc minutes with any combination.

		ERROR (ARC MINUTES) Normal Eye Sta.	Reversed Eye Sta.
Run zoom magnification through range	Left	_____	_____
	Right	✓	✓ 1 & THIRD
Rotate Image	Left	_____	_____
	Right	_____	_____
With image selectors Normal to Reversal, rotate image in four 90° steps between trial for test.	Left	_____	_____
	Right	_____	_____
With channel selector Stereo to Superimpose, judge center distance on dots, in Normal to Reversion, in rotation and at zoom extremes, each channel, 4 arc minutes error maximum any combination.	Left	_____	_____
	Right	_____	_____
Check intensity control of reticle		✓	
Can dot be seen relative to open gate high intensity maximum setting?	Left	✓	✓
	Right	✓	✓

Check centering of each objective lens by indexing turret. Use highest magnification objective lens for centering. ± 2 minutes maximum error for other lenses (line width cross hair reticle set up in field stop).

	ERROR (ARC MINUTES)	
lens	Left	Right
1.6-6.8X	_____	_____
29X-12X	_____	_____
101-43X	_____	_____
30X-128X	_____	_____

Check zoom control for each mignification.

Image to remain on center and in focus throughout full range of zoom without changing objective focus. See resolution optical system below.

✓ Zoom shall not coast after power cut off.

✓ Zoom shall be capable of manual control.

✓ Zoom dials properly oriented for correct indication of zoom limits.

✓ Check system magnification at low and high ends of each range.

OBJECTIVE LENS RANGE		L E F T		R I G H T	
Low	High	Low	High	Low	High
1.6	6.8X				
2.9	12X				
10.1	43X				
30	128X				

Overlap of magnifications for each range

LEFT	RIGHT
____	____
____	____
____	____
____	____

Independent focus control for each objective ✓

Resolution of optical system using Air Force Resolution Charts

Focus objective at high end only. Do not refocus at low end

	OBJECTIVE LENS RANGE		L E F T				R I G H T			
	Low	High	Low	Req.	High	Req.	Low	Req.	High	Req.
Std. A.F. Target	1.6	6.8X	13	13(3/5)	50.7	54(5/6)	10.1	13(3/5)	50.7	54(5/6)
	2.9	12X	22.6	24(4/5)	80.6	93(6/4)	22.6	24(4/5)	93	93(6/4)
200X Reduced A. F. Target	10.1	43X	80.6	80(2/5)	250	300(0/5)		80(2/5)	280	300(0/5)
	30	128X	220	224(0/2)	~~560~~ 640	640(1/5)	220	224(0/2)	640	640(1 1/4 /5)

Eye station capable of adjustment of ± 3 inches in vertical and horizontal planes with lock.

Eye station capable of rotation of 30 degrees about "X" axis with lock.

[redacted]

US AIR FORCE RESOLUTION TARGET

Lines Per Millimeter

Group No.	-2	-1	0	+1	+2	+3	+4	+5	+6	+7
1	.250	.500	1.00	2.00	4.00	8.00	16.0	32.0	64.0	128
2			1.12	2.24	4.49	8.98	18.0	36.0	71.8	144
3			1.26	2.52	5.04	10.1	20.1	40.3	80.6	161
4			1.41	2.83	5.65	11.3	22.6	45.2	90.4	181
5			1.58	3.17	6.34	12.7	25.4	50.7	101.4	203
6			1.78	3.56	7.11	14.2	28.5	56.9	113.8	228

Multiply lines/mm value given in above table by magnification ratio of system to obtain true value of resolution.

CHART OF RESOLVING POWER VALUES WHEN ORIGINAL TARGET, U.S.A.F. 1951 IS OPTICALLY REDUCED 200 TIMES

Group No.	Target No.	Resolving Power (Lines/mm)
-2	1	50.0
	2	56.2
	3	63.0
	4	70.6
	5	79.2
	6	89.0
-1	1	100
	2	112
	3	126
	4	141
	5	158
	6	178
0	1	200
	2	224
	3	256
	4	282
	5	318
	6	356
1	1	400
	2	450
	3	504
	4	566
	5	636
	6	712

ILLUMINATION CHECKS

General illumination levels (ft.-lamberts) measured at film plane

	Low	High
Left	___	____
Right	___	____

High Intensity illumination (maximum brightness) measured at film plane.

	Left	Right
Color Temperature	____	_____

High Intensity illumination level (foot-lamberts) measured at eyelens

Left ___ Right ____

Color temperature at 50% level measured at film plane

Left ___ Right ___

Temperature above ambient for film with average density of 2 left in high intensity light path for 30 minutes. Use 30-128X range at maximum brightness setting and with new lamps in light source

Left _____ degreesFabove ambient

Right _____

FILM HOLDDOWN AND TRANSPORT

		5"	9 1/2"
Vacuum pull down time	Left		
	Right		
Across both formats			

Torque required to operate film transport _____

Two independent systems of film spooling.

Looping capability single film _____

Loop holding capability. Advance film with fixed loop.

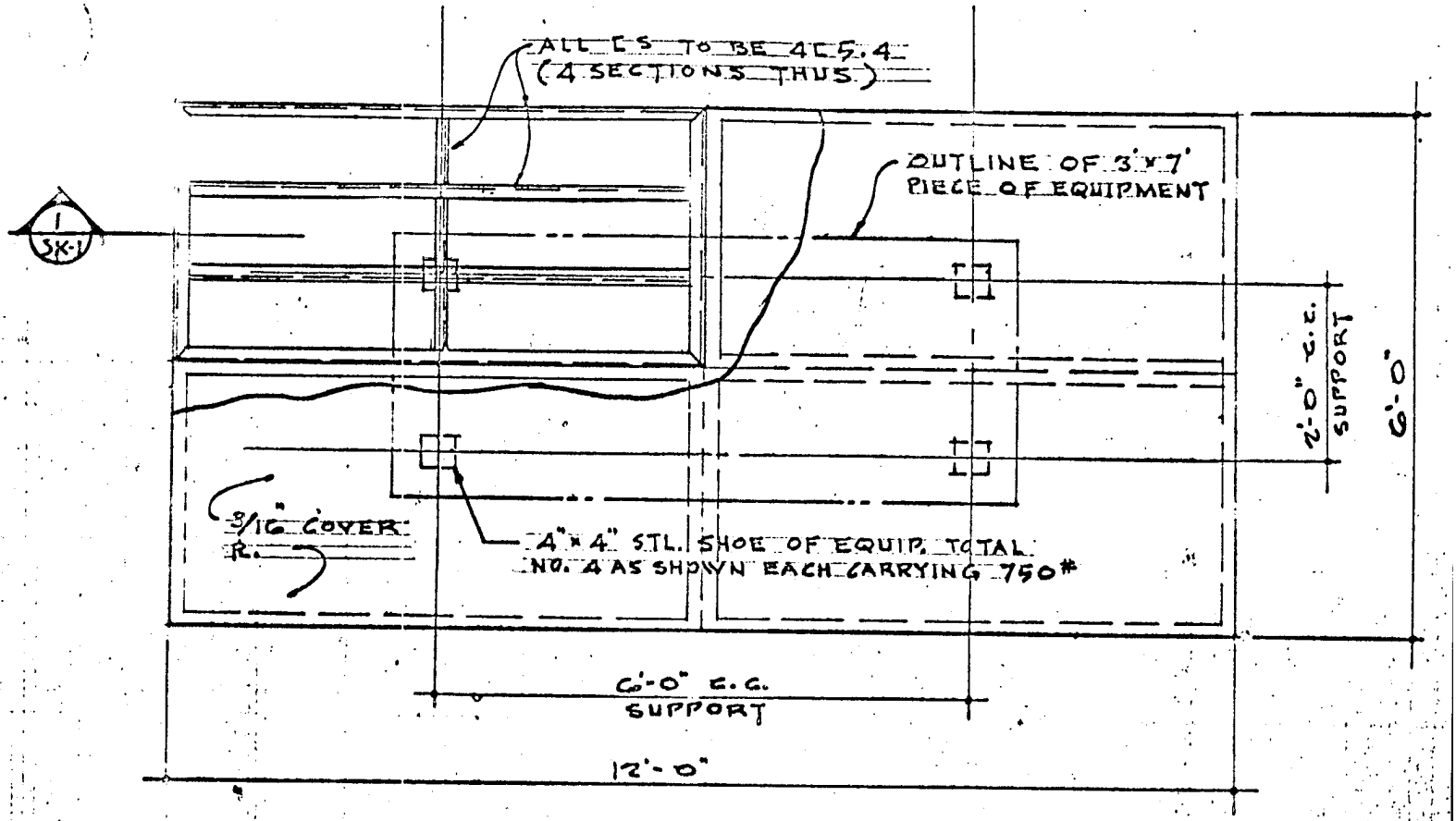
		LEFT	RIGHT
Operation of film brakes after high speed film advance with fully loaded 500 ft. spools	Inboard		
	Outboard		

Operation of looping mechanisms to thread film _____

BY F.V.S. DATE 5/28/60 SUBJECT STEEL BASE SHEET NO. SK-1 OF

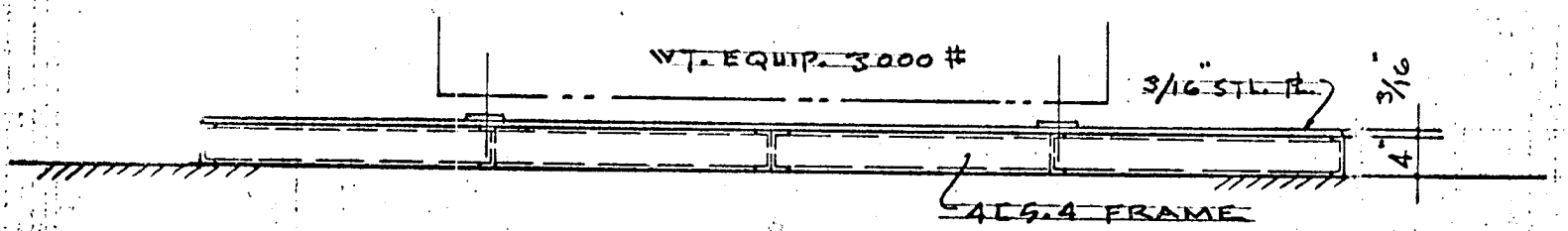
CHKD. BY DATE ARMY FLOOR SUPPORT SK. JOB NO.

FLOOR SS2A-102



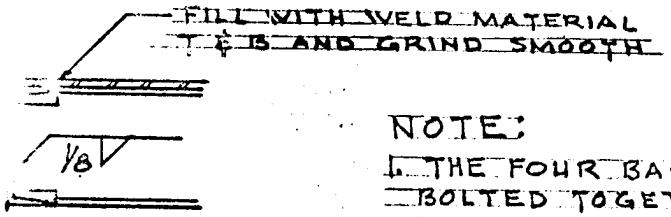
PLAN

SCALE: 1/2" = 1'-0"



ELEVATION

SCALE: 1/2" = 1'-0"



SECTION

SCALE: 1 1/2" = 1'-0"

NOTE:

1. THE FOUR BASE SECTIONS MAY BE BOLTED TOGETHER IF DESIRED
2. 3/16" COVER PL. TACK WELD TO FRAME AFTER LATTER IS IN PLACE
3. CORNERS OF L FRAME TO BE MITERED. ALL WELDS TO BE GROUND SMOOTH

SPAD 5TSA

991294
B-Pre Cont

Mech- Functions

1. What is difference between 2 + 4?

LAG IN MOTION IN BOTH HEADS BUT VERY BAD IN LEFT (STARTING PULSE)

~~MOTION SPEED INCORRECT~~ MOTION SPEED NOT EQUAL @ SAME MAG LEFT FASTER THAN RIGHT (RIGHT TENDS TO NOT START)

BUZZER NOT AT BACK RT BACK CORNER LEFT FORMAT

CHECK ALL MICROSWITCHES FOR BUZZERS FRONT LEFT

COUNTERS CANT CHECK

FILM CONTROL DIDNT "

NEED "CROSSHAIR EYEPIECE"

DOT RETICLE CHECK ON IMAGE

LEFT SIDE HIGH MAG

WONT SUPERIMPOSE FROM 128X → 43X → 12X

43X → 12X

OK AT LOW MAG

CANT CHECK RIGHT SIDE BECAUSE OF FOCUS

MACH [redacted] SPAD/552A

REEL BRACKET FWD R/H CANNOT BE ADJ FOR 70mm

CENTER ROLLERS WONT RETURN CAUGHT IN CENTER

STATINTL

TRANSMITTAL SLIP	DATE
TO:	
ROOM NO.	BUILDING
REMARKS: FOR [redacted]	

RING STAND

FILE #97294

FROM:		
ROOM NO.	BUILDING	EXTENSION

FORM NO. 241 1 FEB 55 REPLACES FORM 36-8 WHICH MAY BE USED. GPO : 1957—O-439445 (47)