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TSSG/ESD/TEB-16--70
19 June 1970

MEMORANDUM FOR THE RECORD

SUBJECT: Trip to [redacted] 1540 Light
Table Prototype Project

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1. On 8 June 1970, [redacted] RED/TSSG and I visited [redacted]
[redacted] to inspect the engineering modifications
which were made on the [redacted] prototype 1540 Light Table. [redacted]
representatives contacted were: [redacted]
[redacted] Washington area representative.

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Upon inspection of the equipment, it was found that all discrepan-
cies which were noted as a result of T&E and operational evaluation were
not corrected. However, the two major problems, the gross focus and Y
motion fail safe, which had caused the equipment to be unacceptable had
been redesigned. The equipment, as presently configured, is shown in
the attached photographs.

GROSS FOCUS CONTROL

The microstereoscope pod Z motion mechanism which is used to
provide gross adjustment of the optics for the different focus ranges of
the various microstereoscope, is now completely reconfigured. This
device uses a chain and sprocket method to raise and lower the pod
holder. In addition, a slip clutch is employed so that the optics
cannot be driven into the light table surface and damaged. A hand crank
is provided to change the gross focus adjustment. This control must be
rotated 3 turns to provide 1 inch of ΔZ motion. The pod holder may
also be manually raised by lifting, as this motion overcomes the slip
clutch. The design of the Z motion control appears sound from a
technical standpoint.

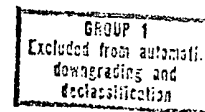
Y MOTION FAIL-SAFE

An acceptable fail safe for the Y carriage motion has been
incorporated. An electro-mechanical clutch, which locks up the Y
carriage, is energized by a mercury switch when the table is tilted
2 or 3 degrees. This action can be defeated only after an aircraft
type "arming" toggle switch is energized, and an illuminated push
button, located on a panel at the right of the pod holder, is depressed.
(See photos)

CARRIAGE MOTIONS

The Y carriage motion has been improved. The original drive motor
has been replaced by a motor of greater capacity. The carriage motion

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and speed controls have been relocated on a panel at the right of, and adjacent to the pod holder. The controls are convenient and easy to use.

Carriage Speeds:

A. Minimum usable

<u>Full Tilted</u>	<u>Not Tilted</u>
+Y _≅ 15 secs./in., -Y _≅ 1.5 sec./in.	+Y _≅ 14 secs./in.
+X _≅ 7 secs./in.	+X _≅ 7 secs./in.

B. Maximum usable

<u>Full Tilted</u>	<u>Not Tilted</u>
+Y _≅ 1.8 sec./in., -Y _≅ 1.5 sec./in.	+Y _≅ 1.7 sec./in.
+X _≅ .8 sec./in.	+X _≅ .8 sec./in.

The carriage rate control requires almost constant adjustment when scanning imagery because the X motion runs at about double the speed of the Y motion.

MISCELLANEOUS CHANGES (See accompanying photographs)

The table elevation and tilt control box has been relocated.

The two mechanical shade controls have been removed.

The location of the film drive motor controls have been switched with that of the illumination controls. The film drive speed controls have been replaced by larger round knobs.

The right inboard roller hinge has been redesigned so that the loading port can be manually opened.

2. On 9 June 1970 we were joined at [] and [] of IEG, and [] of DIAAP-9. These individuals examined the equipment from an operational standpoint. The equipment modifications were found to be generally acceptable. However, it was felt that the two "Gross" focusing knobs should be made more massive. In addition it was felt that the X carriage motion needed the same type of electrical locking action presently used on the Y motion fail safe, whenever the carriage drive motors are de-energized.

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3. Discussions were held with [] representatives in order to determine which additional specific fixes and modifications would be incorporated into the production model of the light table. [] representatives comments were as follows.

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FILM HANDLING

Plan to use a "T" bar arrangement with the brackets so that drive motors will slide more easily.

The exposed electrical motor wires will be redressed and tied down to the table. The quick releases for film spool bracket will be relocated downward approximately 45° from the horizontal and will utilize a straight lever arrangement (a previously used configuration).

Emergency film hand cranks will be provided. Rollers will be placed on the light box cover so that the cover can be used for split-vertical viewing.

MICROSTEREOSCOPE MOUNT AND CARRIAGE

Some means will be provided, either to give an adjustable drag to the X motion, or to lock the carriage in X when the X motor control is released.

The X carriage speed will be reduced to match that of the Y carriage when the table is operated in the horizontal position.

A pod holder of design will probably be incorporated in lieu of the fine focus mount.

MISCELLANEOUS CHANGES

The sharp edges of the film drive and light control boxes will be contoured.

A raised 2 inch lip will be placed on the rear back edge of the tables back panel.

Larger, easily lockable swivel casters will be used.

A film threading diagram will be displayed on the raised back panel.

Pictograms will be placed at the motor transport stations to show correct switch positions for the different film threading configurations.

The table elevation and tilt control box will be re-relocated. It will be moved forward slightly and mounted lengthwise.

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Test Engineer
TEB/ESD

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Distribution:

Original - TSSG/TEB

- 1 - [redacted]
- 1 - [redacted]
- 1 - [redacted] AP-9
- 1 - [redacted] RED/TSSG
- 1 - Chief, ESD

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NPIC/TSSG/ESD/TEB: [redacted] (19 June 70)

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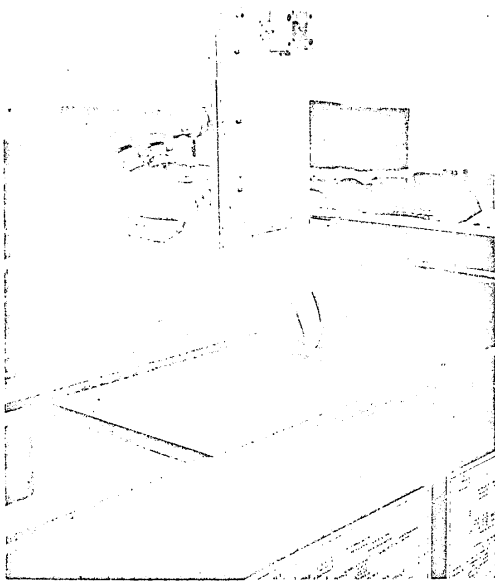


Figure 1

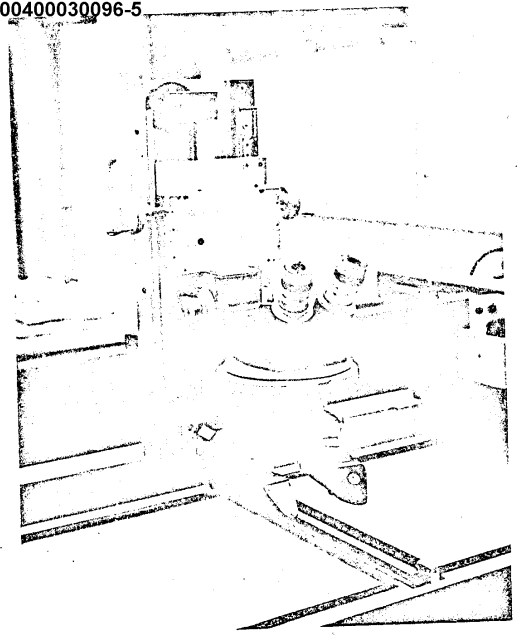


Figure 2

MICROSTEREOSCOPE "GROSS"

Focusing Mechanism

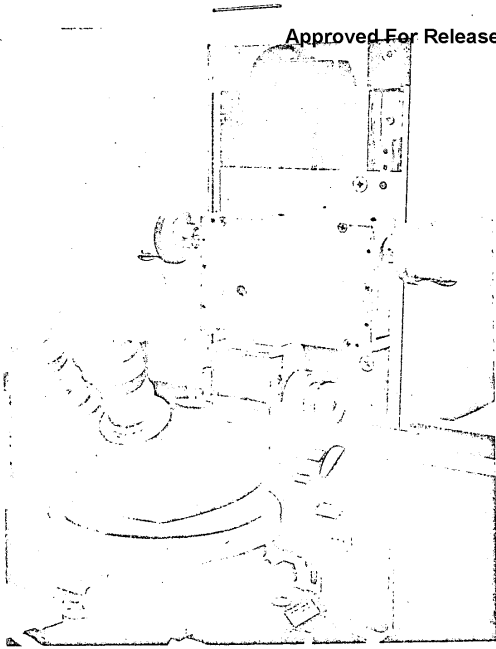


Figure 3

Carriage direction and speed controls.

Fail-safe override pushbutton.

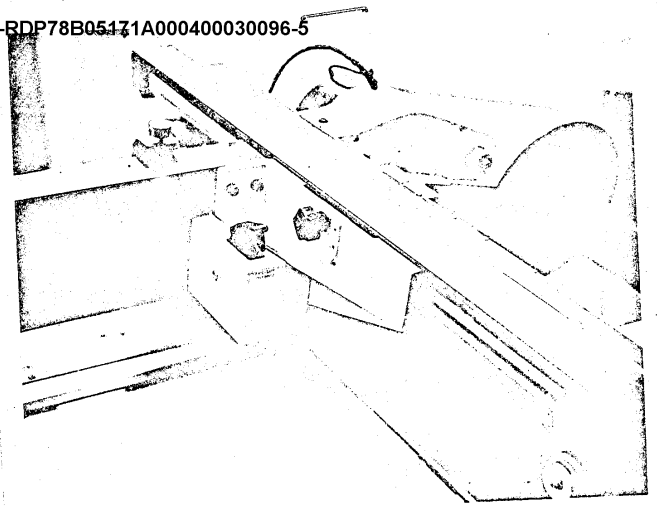


Figure 4

Fail-safe override toggle switch.

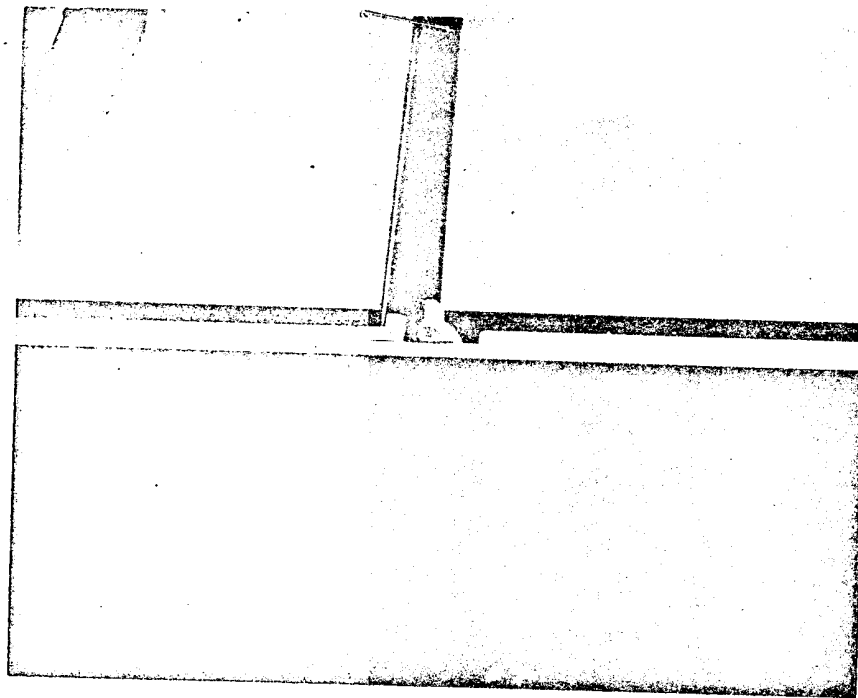


Figure 5
Inboard Roller - Open

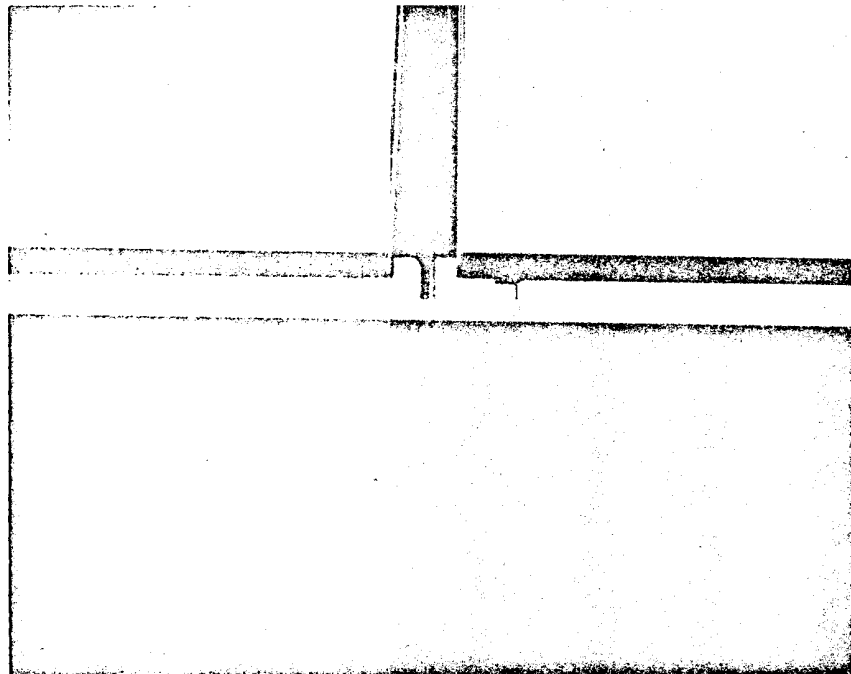


Figure 6
Inboard Roller - Closed



Figure 7
Table Elevation and Tilt Control Box

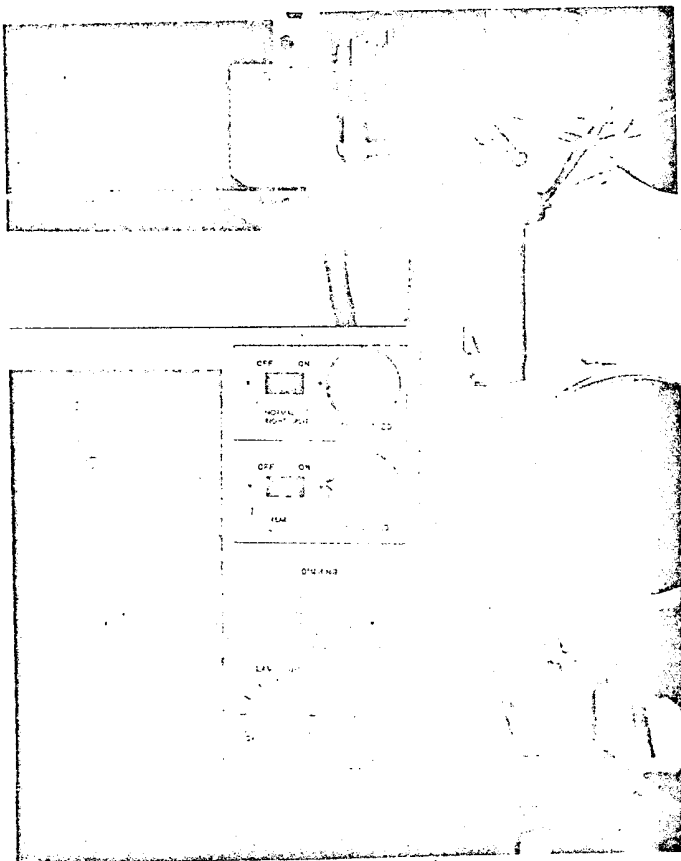


Figure 8
Motor Drive and Illumination Control Panel

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