

SECRET

RMS
50035

NPIC/TSG/RED-02-71
8 January 1971

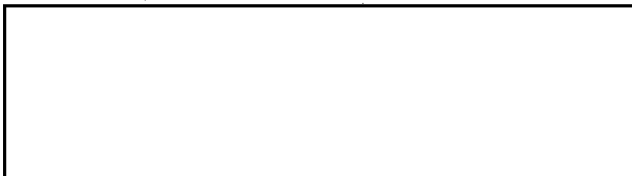
MEMORANDUM FOR: Chief, Operations Division, IEG/NPIC

SUBJECT : Loan of MLT 1540 Light Table for Training Purposes

1. MLT 1540 Light Tables S/N 003 and 004 have been delivered to your area for training purposes. These tables have not been contractually accepted as yet and, as such, are not NPIC property, and caution should be exercised so that no damage is incurred.

2. These tables are not acceptable contractually for the reasons listed in Attachment 1. Steps are being taken at this time to have these deficiencies corrected.

3. It should be reiterated that a safety hazard exists on the location and operation of the tilt switch. IEG personnel have been advised of this.



Chief, Research & Engineering Division, TSG

25

Attachment:
List of Contractual Defects

Declass Review by NGA/DoD

CONCUR: _____
Chief, Engineering Support Division, TSG

Distribution:
Original - Addressee
1 - NPIC/TSG/RED
1 - NPIC/TSG/RED/SDB

SECRET

GROUP 1
Excluded from automatic
downgrading and
declassification

THE GOVERNMENT TO TAKE FULL ADVANTAGE OF THIS INCREASED PERFORMANCE.
AS A RESULT OF THIS INCREASED BRIGHTNESS, THE REQUIREMENT OF
THE SECOND PART OF PARAGRAPH 3.1.1.1. MIGHT BE EXCEEDED BY
A SMALL PERCENTAGE POINT FOR A SMALL PERCENTAGE OF THE TABLES.
[] CONSIDERS THIS TO BE OF LITTLE CONSEQUENCE AND THEREFORE
IS SETTING CONTROLS FOR BRIGHTER OPERATION. IF THE GOVERNMENT
DESIRES, [] COULD FACTORY-SET THE TABLES TO OPERATE IN
200 TO 3,000 FT. LAMBERTS RANGE SUCH THAT ILLUMINATION WOULD
FALL WITHIN THE VARIATION REQUIREMENT. 10. [] RECOGNIZES
THE LOW RETAINING FORCE OF S/NOO1 PAD LOCKS AND RESULTING OPERATOR
INCONVENIENCE. AN IN-LINE CORRECTION HAS BEEN MADE EFFECTIVE
WITH S/NOO2 AND WE WILL FORWARD A CORRECTED MOUNT IMMEDIATELY
FOR FIELD INSTALLATION IN S/NOO1. 11. (A) THE TRACK ON THE
LEFT SIDE WAS DESIGNED TO FLOAT AT ONE END TO PROVIDE EASE
OF BRIDGE MOTION. 11. (B) THE PLASTIC PROTECTOR COVERS ON THE
Y CHAIN DRIVES WERE DESIGNED TO HAVE ADEQUATE CLEARANCE SUCH
THAT THERE WOULD BE NO DRAG ON THE SYSTEM. HOWEVER, APPARENTLY
SOME MOTION OR DISTORTION TAKES PLACE DURING SHIPMENT WHICH
CAUSES A SLIGHT INTERFERENCE. [] HAS TAKEN CORRECTIVE ACTION
TO INCREASE THE CLEARANCE AS AN IN-LINE CHANGE FOR FUTURE SHIPMENTS.
FOR DELIVERED UNITS, SLIGHT ADJUSTMENTS BY OUR FIELD REPRESENTATIVE
WILL CORRECT THIS MISALIGNMENT. 11. (C) [] HAS REVIEWED
THE DESIGN AND FEELS THAT THE POWER CORD REEL IS ADEQUATELY
ATTACHED TO THE TABLE. THE DESCRIPTION GIVEN IN PARAGRAPH 11. (C)
REQUIRES CLARIFICATION BEFORE WE CAN MAKE FURTHER COMMENT.
11. (D) THE TILT MECHANISM WHICH CONTAINS THE MERCURY SWITCH
IS THOROUGHLY TESTED, INSTALLED AND ADJUSTED PRIOR TO SHIPMENT.
THIS DEFECT APPEARS UNIQUE TO S/NOO1, AND WILL BE CORRECTED
BY OUR FIELD REPRESENTATIVE. [] SUBMITS THAT THIS DESIGN
SATISFIES REQUIREMENT. ALSO, ADDITIONAL INFORMATION IS REQUIRED
BEFORE WE CAN COMMENT FURTHER. GENERALLY WE ARE KEENLY AWARE
OF THE IMPORTANCE OF QUALITY CONTROL, AND ARE IN A CONTINUAL
REVIEW PROCESS TO ASSURE THAT STANDARDS ARE ACCEPTABLE AND
TOTALLY IMPLEMENTED. WE WILL CONTINUE TO BE ALERT TO THESE
FACTORS AND INCORPORATE IMPROVEMENTS AS REQUIRED. 12. INASMUCH
AS THE ONLY METHOD OF MEASURING THIS PARAMETER IS IN THE SOLE
POSSESSION OF OUR GOVERNMENT CUSTOMER, [] REQUESTS DETAILED
INFORMATION AS TO HOW THE MEASUREMENTS WERE TAKEN AND, IN PARTICULAR,
THE REASONS FOR THE VARIATIONS FROM TEST 1 TO TEST 2. WITH
THIS KNOWLEDGE FOR THE FIRST TIME, WE WILL REVIEW WITH OUR
SUPPLIER AND TAKE THE NECESSARY CORRECTIVE ACTION ON FUTURE
UNITS. [] HAS INCLUDED THESE SPECIFICATIONS TO OUR LAMP
SUPPLIER, AND HAVE BEEN WORKING WITH HIM FOR A LENGTHY PERIOD
IN AN ATTEMPT TO CLARIFY AND COMPLY WITH THESE DIFFICULT
PARAMETERS ATTACHMENT 2 (MAIN HEADING) ITEM 1 THROUGH 3 5 THROUGH 8
10 12 13 AND 14 HAVE BEEN CORRECTED BY OUR FIELD REPRESENTATIVE ITEM 4
THE FIRST 6 UNITS HAVE BEEN COLLIMATED AND BALANCE OF UNITS WILL BE
ACCOMPLISHED SHORTLY ITEM 9 JERKY FILM MOTION APPEARS TO BE SUBJECTIVE
IN NATURE OR OCCURRING UNDER SPECIAL CONDITIONS. WHEN MORE
DEFINITIVE INFORMATION IS AVAILABLE WE CAN MAKE EXPLICIT COMMENT.
ITEM 11, [] WILL REPLACE GLASS AS REQUIRED. ITEM 15, THIS
IS A SUBJECTIVE MATTER; PERHAPS A LIGHT SMOOTHING PROCEDURE
WITH FINE STEEL WOOL OR CROCUS CLOTH BY OUR FIELD REPRESENTATIVE
MIGHT BE APPROPRIATE CONFIRMING LETTER TO FOLLOW

[]
932A EST JAN 8 1971

Defects

1. The table tilts by lifting the back of the unit and hinging on the front. This creates a nutcracker effect at the hinge. The tilt switch is located very close to the hinge, and it has been determined that an operator could very easily suffer crushed fingers while operating the switch.
2. The Y motion is locked when the table is tilted. This system is actuated by a mercury switch. The adjustment required to provide this locking feature just after tilting starts, and to release the lock after it becomes horizontal, is quite touchy. The prototype table is just as likely to be locked in the horizontal position as unlocked. If this is relieved, the carriage may start to roll forward when tilting occurs before locking takes place.
3. Using a gauge configured to show the maximum overall width of a 6.6" film reel, it was found that interferences exist at all reel stations. Further checks on the production models available at that time showed that 23 of 24 stations checked are too narrow and will not accept the 6.822 inch dimension specified.
4. The cable which connects the focus mechanism to the power supply and electronics at the back of the table prevents the focus mechanism from realizing full travel to the back of the viewing surface.
5. Markers are provided on the table to aid in placing the motors and idlers for various film configurations. The motors have matching markers on one side. However, the motors must be used in such a way that the side not containing the marker is in view. Consequently, markers must be placed on both sides.
6. The MLT is made in two parts, an elevating stand and the light table proper. If the light table is not put on the stand at the right place, or if it shifts while being transported, the lower

Contract References

- Para. 3.6.5 (4) - Moving parts such as ventilating fans, drive belts, or gears, shall be shielded or enclosed to prevent inadvertent access by the operator.
- Para. 3.5.1.4.2 - A manual bridge furnished with a tilting stand shall be provided with an optional fail-safe override to prevent uncontrolled motion in the Y direction when the table is tilted. To move the carriage in the Y direction with the table horizontal, it shall be necessary only to release the Y friction lock. In a tilted position, a fail safe interlock shall be activated preventing Y translation unless the interlock is purposely defeated.
- Para. 2 - The table shall accommodate spools ranging up to and including the size of spool specified in Military Standard MS26565-22 loaded to capacity with film.
- Para. 3.4.1.2 - With any of the microstereoscopes fixed in the mount, and using the center of the scope as a reference, translation in the Y direction shall be adequate to cover the full 15" depth of the glass viewing surface.
- Para. 3.3.1.2 - A visual reference scale and indexing device with positive detents shall be provided to allow accurate positioning of the brackets to hold the various width spools and assure accurate tracking across the glass viewing surfaces of the film parallel to the longitudinal axis of the light table and to each other.
- Para. 2 - Provision shall be made for viewing... in-line viewing of two of the same widths, of 70mm, 5", 6.6", or 9.5" wide film.

cover is prevented from dropping by the tilt and elevating switch housing. The lower cover will not open when the table is tilted.

7. The mechanism which takes up the dead loop at the center of the table employs cable guides which hold the actuating mechanism in its track. These cable guides have profiles which prevent the looping mechanism from reversing direction at one point in its travel.

8. The lower cover latches are very difficult to operate, due to their placement and design.

9. The illumination sources are not equal within 100 fL at maximum. The left measured 3225 fL max and the right 3010 fL max.

The change in output of one side when the other is turned completely down or up should not exceed 100 fL. This change was measured to be 150 fL on the left side and 165 fL on the right side.

10. The screws holding the pod in the optics mount do not provide adequate force to prevent unwanted motion.

11. There have been instances of evidence of poor quality control. a) The bearing track on the left side was not fastened tightly. b) The plastic protector covers on the Y chain drives dragged the chain and drive elements. c) The power cord reel fell off of the unit. d) The tilt lock mercury switch was not set properly.

Para. 2 - The table shall include a simple film looping mechanism which shall allow forming a loop of film below the table in order that separated frames, on the same roll of film, may be arranged adjacent to each other for convenient stereo viewing. Looping of parallel rolls of film is not required. This mechanism shall be capable of forming a continuous film loop from 0 to 76 in.

Para 3.2.1.4 - All controls, including the film hand wheels (on the manual version), shall be positioned so they can be easily manipulated. In this respect, it is understood that the location of the controls, as supplied on the preproduction model (when accepted), will be satisfactory.

Para. 3.1.1.1 - The maximum levels of the two illumination sources shall not differ by more than 100 foot lamberts at the time of this measurement. With one of the two sources set at maximum or minimum illumination level, there shall not be a change of more than 100 foot lamberts in illumination level of that source when the illumination level of the other source is adjusted through its full range.

Para 3.5.1 - Mounting devices shall be sufficiently rigid to preclude instrument misalignment and loss of collimation of the optics with respect to the viewing surface during normal handling and operation.

Contract, Page 3, ACCEPTANCE - Final inspection and acceptance of articles shall be by demonstration of successful performance and completion of tests set forth in a mutually approved Acceptance Test Plan (ATP), which shall be provided for approval two (2) weeks prior to commencement of tests on the units of any item.

Para. 11 (continued)

12. The color rendering index (CRI), correlated color temperature (CCT), and chromaticity aim points (X, Y) were measured for each side and are listed below.

	Left Side		Right Side	
	Test 1	Test 2	Test 1	Test 2
CCT	5574	5689	5565	5706
CRI	57.69	55.28	57.53	55.93
X	0.3304	0.3278	0.3311	0.3275
Y	0.3626	0.3616	0.3659	0.3614

Contract, Page 4, WARRANTY OF SUPPLIES - All supplies furnished under this Contract will be free from defects in material or workmanship and will conform with the specifications and all other requirements of this Contract.

Para. 3.1.1.2

CCT 5000+500K
CRI ≥ 70
X 0.345
Y 0.358



TEST & EVALUATION BRANCH, ESD, TSG