Approved For Release 2005/06/23 : CIA-RDP78B05171A000400030014-5

50038

TSG/ESD/TEB-027/72
20 March 1972

MEMORANDUM FOR: Chief, Research & Engineering Division, TSG

THROUGH : Chief, Engineering Support Division, TSG
Chief, Test & Evaluation Branch, ESD/TSG

SUBJECT : Acceptance Testing of the [redacted] 1540-4 Light Table - Preproduction Model for DIA 25X

REFERENCES : a. "Technical Requirements for the Production of the [redacted] Split-Format Light Table and Mount for Various Microstereoscopes" 25X

X1 b. [redacted] Document A-1747B, 12 August 1971

1. INTRODUCTION

X1 The [redacted] 1540-4 Light Table was first submitted to ESD/TEB for acceptance testing on 13 December 1971. Tests were stopped after one day because of operational failures of the motorized optics carriage. [redacted] reworked the electrical system and the table was resubmitted for tests on 17 January 1972. Acceptance testing was completed on 15 February 1972 and the table released to DIA for operational suitability testing. At that time a verbal notification was given to TSG/RED and DIA that several specifications were not met by the contractor. 25X

2. SUMMARY OF RESULTS

2.1 Based on the requirements listed in reference (a) the following discrepancies were found:

- It was not possible to achieve the minimum required illumination level with one of the two formats.
- The sources flicker at low illumination level.
- The optics carriage will not translate over the entire Y direction of the viewing surface.
- The viewing surfaces are not parallel within permissible tolerance with the microstereoscope mount.

Declass review by NGA/DoD

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GROUP 1
Excluded from automatic downgrading and declassification

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- The focusing mechanism would not hold its focused position in every case.

- Three minor errors were found in the instruction manual.

2.2 Reference (b) is a list of specifications pertaining to the 1540-4 Table's optics carriage motorized transport requirements. Based on these requirements the following discrepancies were found:

- Minimum Operating Speed - At the minimum control setting, the transport speed varied from 0.0018 to 0.0053 in/sec. This was outside the permissible range of 0.0045 to 0.0055 in/sec.

- Time to attain set speed - Requirement was for 1.0 second or less. In general the longest times to attain a set speed were found at the slowest transport speed setting. The observed time varied from 0.42 to 4.86 seconds. (If the most favorable possible experimental errors are applied to the data the actual minimum could conceivably have been 0.31 to 3.81.)

- Time from release of control to stop - Requirement was for 0.1 second or less. Time required ranged from < 0.02 to 0.44 seconds. (Possibly 0.25 secs maximum, allowing for experimental errors.)

- The average speed of the X travel at any one setting was not equal to Y travel within the prescribed 10 percent. The best case shown was 16 percent. The worst case was a difference of 189 percent change.

- Uniformity of incremental velocities - Requirement was that incremental velocity from one 0.2 second period to the next should not change by more than ± 5 percent. Several cases were found where the percent change was greater than 50 percent. This requirement was never met in any test run made at any speed setting. When considering possible measurement error, however, this requirement was met in 28 out of 64 tests.

3. TEST DETAILS

X1 3.1 The [redacted] 1540-4 table was examined to determine conformance with specifications listed in reference (a). Listed below are those specifications which were not met along with the discrepancy.

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- Section 3.1.1.1 Illumination Level

  Specification ... "The minimum level of each of the sources shall be 200 foot lamberts."...

  Observed - Left format - Minimum value was 250 foot lamberts.

- Section 3.1.1.4 Flicker

  Specification ... "such a level as not to be visibly objectionable to the sponsor's operators at any light intensity level" ...

  Observed - There is objectionable flicker when the illumination level is set for 400 foot lamberts.

- Section 3.5.1.2 Translation

  Specification ... "translation in the Y direction shall be adequate to cover the full 15 inch depth of the glass viewing surface"...

  Observed - Length of tracks and obstructions caused by electrical cables hitting back members of the table prevent the microstereoscope mount from translating over 1 7/8 inches of the illuminated surface in the Y direction. Because of this condition future damage to electrical cables is highly possible.

- Specification ... "and the viewing surfaces be parallel within 0.015 inches over the entire translation field of the microstereoscope mount"...

  Observed - Between two specific points, one on each glass surface, a difference of 0.016 inches was measured.

- Section 3.5.1.5 Locks

  Specification ... "The focusing mechanism shall be self locking"...

  Observed - The focusing mechanism was tested with the bottom side of the microstereoscope pod approximately 4 7/8, 7, and 9 inches above the glass surface. Using a dial indicator placed between the pod and table surface, the mechanism was focused to simulated "focus" positions and the focus knob released. Ten minutes later the dial indicator was read to determine drift.

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Six tests were made at each height, three focusing "up" and three focusing "down." Except for two cases there was no drift. At the 4 7/8 inch height the pod drifted down 0.002 inch in one test and 0.005 inch in another. All tests were conducted in our 1st floor test area where ambient floor vibration is minimal.

- Section 4.1 Instruction Manual

  Specification ... "describing proper installation, operation, and maintenance"....

  Observed - Paragraph 2.6.2(i) The word "counterclockwise" should be changed to "clockwise."

  Paragraph 2.6.2(k) The word "clockwise" should be changed to "counterclockwise."

  Paragraph 2.6.3(i) The word "clockwise" should be changed to "counterclockwise.:

3.2 The table was examined to determine conformance to 14 specifications for the optics carriage listed in reference (b). The magnitude of the time and displacement increments associated with the specifications for (1) time to attain set speed, (2) time to stop, and (3) increment motion (specifications 3-6) is extremely small. Therefore, slight errors in measuring these characteristics cause large errors in the results. Such errors could have occurred when reading time and displacement data from motion picture test films. For this reason, experiment error tolerances have been applied to the observed data resulting in the following three values for each computation:

- Nominal Value - Computed using test data as read from the film.
- Minimum Value - Tolerances were provided for possible film reading errors. Data computations were made to give the "benefit of the doubt" to the contractor. Using minimum values the least failures of the equipment to meet specifications are shown.
- Maximum Value - Maximum values were computed when film reading errors were assumed opposite those which give the minimum value. The results are the worst of possible cases.

The following caveat is made regarding data provided for specifications 3-6: It is likely that nominal values given

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(tables 1-5) are closer to actual equipment performance than minimum or maximum values. The minimum values, however, are less contestable should the validity of the test data be questioned.

- o Specification 1. "X-Y minimum starting and operating speed -0.005 in/sec ± 10%". (Range 0.0045 to 0.0055 in/sec.)

  Remarks - Average operating speed was calculated using total displacement of the optics carriage in a period of approximately 7 seconds. The word "starting" in the specification was ignored because of the obvious reason that at start time the speed is zero. Time and displacement for the first second was not used in data computations. The motorized drive was set for minimum speed and not changed for 31 tests.

  Results - Average operating speeds varied from 0.0018 to 0.0053 in/sec. In 31 tests the specification was met 18 times. Test data was not satisfactory on test No. 17. (See tables 1 and 2.)

- o Specification 2. "X-Y maximum speed > 0.250 in/sec."

  Results - Specification was met (see table 5).

- o Specification 3. "Time to attain set speed 0.5 to 1.0 sec or less."

  Remarks - The criterion used was that time when the first incremental velocity (averaged over approximately 0.2 second periods) was equal or higher than the average operating speed.

  Results - From 32 tests, at minimum speed, 15 nominal values and 11 minimum values did not meet the specification (see tables 1 and 2 and figure 1).

The transport speed was then increased to approximately 0.020 in/sec and 16 tests were made. Using nominal values the specification was not met 5 times. With minimum values it was not met 5 times (see table 3).

Sixteen tests were made with the transport speed set for approximately 0.100 in/sec. Using nominal values the specification was not met 1 time. With minimum values it met the specification in all cases (see table 4).

Two tests were made with the transport speed set for maximum speed. Specification 3 was met in both cases (see table 5).

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o Specification 4. "Time from release of control to stop 0.1 sec or less."

Results

Speed Setting	Number of Tests	No. of Times Specification was not met: Nominal Value	No. of Times Specification was not met: Minimum Value
Minimum	31	18	11
0.020 in/sec	15	7	1
0.100 in/sec	16	1	0
Maximum	2	0	0

o Specification 5. "Speed of X travel of bridge equal to speed of Y travel of bridge within 10%."

Remarks - At each speed setting the maximum X or Y operating speed obtained (usually from 4 test runs) was compared with the minimum X or Y speed (e.g., max X vs. min Y or max Y vs. min X) and the percent difference was calculated. Two conditions were compared at each speed setting:

(1) X speed vs. Y speed, table horizontal
(2) X speed vs. Y speed, table tilted

Results - Did not meet specification:

Minimum Setting	Horizontal	58%	difference
	Tilted	189%	"
0.020 in/sec	Horizontal	16%	"
	Tilted	17%	"
0.100 in/sec	Horizontal	16%	"
	Tilted	16%	"

o Specification 6. "For any setting of the speed control, that time for an increment equivalent to 0.2 seconds of motion at that nominal speed setting shall not vary from the time for the previous increment by more than ± 5%."

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Remarks - The number of times that the velocity change exceeded 5% was counted for each test run and compared to the times possible. The count started for each test at the nominal time when the transport was at operating speed. This time was determined by using data determined in testing Specification 3.

Results

Speed Setting	Number of Tests	No. of Times Specification was not met: Nominal Value	No. of Times Specification was not met: Minimum Value
Minimum	31	31	19
0.020 in/sec	15	15	3
0.100 in/sec	16	16	6
Maximum	2	2	0

Specifications 7-11. All requirements were met.

Specification 12. This specification seems to be in conflict with specification numbers 1 and 6.

Specifications 13-14. All requirements were met.

[redacted] 25X1

Test Engineer
TEB/ESD

Distribution:
1 - RED [redacted] 25X1
1 - RED/SA (thru: Ch/RED)
1 - DI-8/Tech & Dev. Br. [redacted] 25X1
2 - TEB

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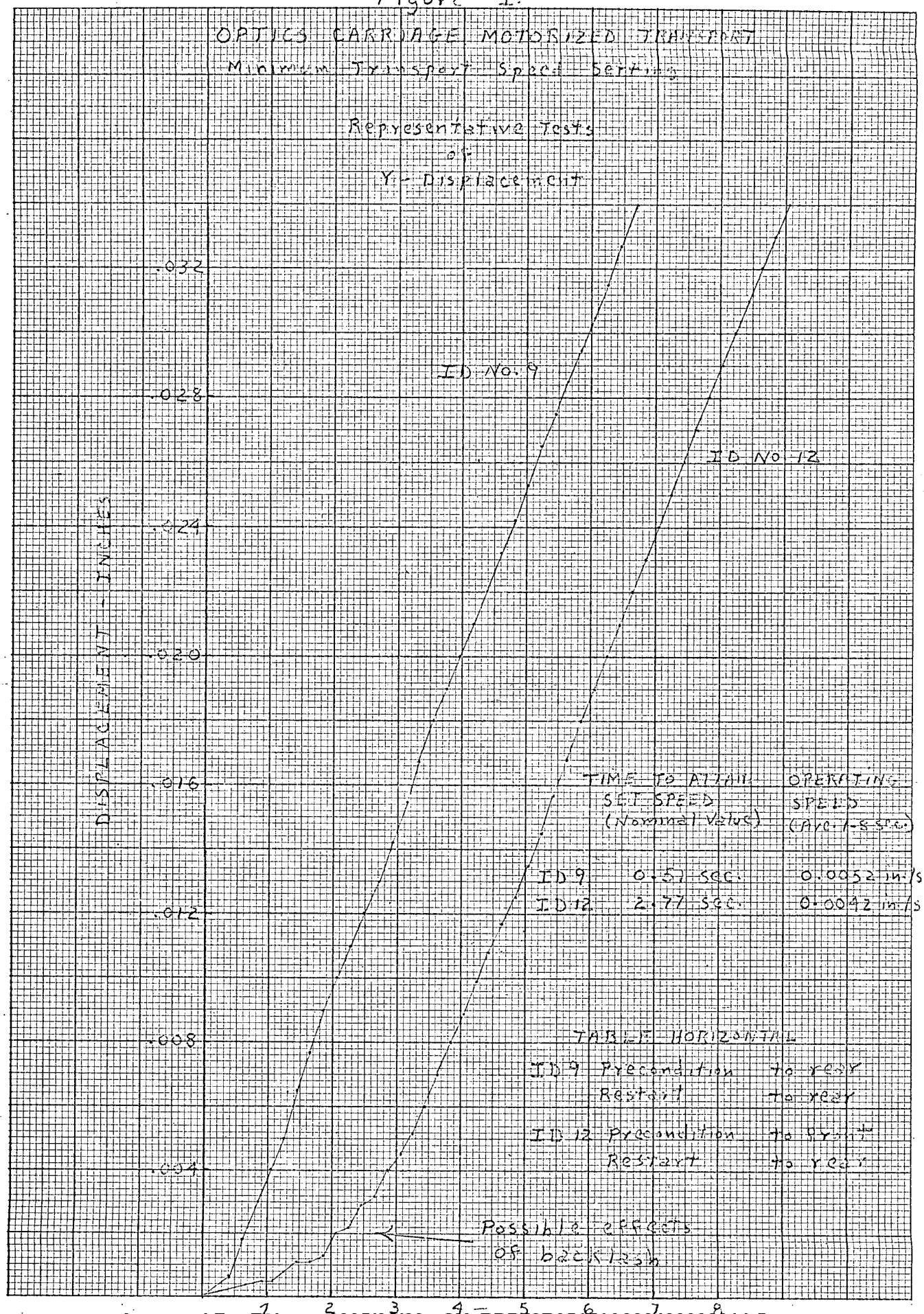
Figure 1.



BEE 20x20 TO INCH

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TABLE 1

OPTICS CARRIAGE MOTORIZED TRANSPORT

Minimum Transport Speeds Setting

** Carriage in center of Table **

TEST ID NO.	PRECONDITION DIRECTION	RESTART DIRECTION	TABLE ORIENTATION	CARRIAGE POSITION	OPERATING SPEED m./sec.	MEETS REQ. SPEC 1?	TIME TO ATTAIN SET SPEED - SECONDS - MINIMUM	TIME TO ATTAIN SET SPEED - SECONDS - NOMINAL	TIME TO ATTAIN SET SPEED - SECONDS - MAXIMUM	MEETS REQ. SPEC 3? (MIN. VALUE)	TIME TO STOP - SECONDS - MINIMUM	TIME TO STOP - SECONDS - NOMINAL	MEETS REQ. SPEC 4? (MIN. VALUE)	SPEED X TRAVEL EQUAL Y TRAVEL WITHIN 10 % (Using an average of the OPERATING SPEEDS)	MEETS REQ. SPEC 5?	INCREMENT MOTION NOT TO VARY FROM PREVIOUS MORE ±5% TIMES POSSIBLE	TIMES EXCEEDED ±5% MINIMUM	TIMES EXCEEDED ±5% NOMINAL	TIMES EXCEEDED ±5% MAXIMUM	MEETS REQ SPEC. 6? (MIN. VALUE)
1	left	left	Horizontal	center X+Y	0.0049	Yes	0.31	0.72	-	Yes	<0.02	0.02	Yes	Max X speed (horiz.) 0.0049	No	39	0	1	37	Yes
2	left	right	"	"	0.0042	No	0.65	1.19	1.91	Yes	<0.03	<0.03	Yes	Min Y speed (horiz.) 0.0031	"	39	9	37	38	No
3	right	right	"	"	0.0046	Yes	0.45	0.45	-	Yes	<0.02	0.02	Yes	*** 58 percent difference **	"	40	2	34	40	No
4	right	left	"	"	0.0047	Yes	1.19	1.75	-	No	>0.07	0.12	Yes		"	40	0	30	39	Yes
5	left	left	tilted	"	0.0052	Yes	0.43	0.60	1.31	Yes	>0.02	0.06	Yes	Max X speed (tilted) 0.0052	No	47	2	37	45	No
6	left	right	"	"	0.0043	No	0.78	0.78	3.41	Yes	<0.02	<0.02	Yes	Min Y speed (tilted) 0.0019		41	2	36	40	No
7	right	right	"	"	0.0047	Yes	0.47	0.47	-	Yes	<0.03	0.03	Yes	*** 189 percent difference **		38	4	25	37	No
8	right	left	"	"	0.0049	Yes	1.20	2.89	3.46	No	>0.11	0.33	No			26	7	19	24	No
9	to rear	to rear	horizontal	"	0.0052	Yes	0.51	0.51	1.35	Yes	>0.16	0.29	No			37	0	17	35	Yes
10	to rear	to front	"	"	0.0031	No	0.48	1.84	4.90	Yes	>0.19	0.44	No			28	0	23	27	Yes
11	to front	to front	"	"	0.0051	Yes	0.48	0.48	3.09	Yes	<0.05	0.05	Yes			40	0	27	39	Yes
12	to front	to rear	"	"	0.0042	No	1.99	2.77	5.34	No	<0.05	0.05	Yes			31	0	15	30	Yes
13	to rear	to rear	tilted	"	0.0050	Yes	0.63	0.63	4.00	Yes	>0.17	0.40	No			43	0	28	42	Yes
14	to rear	to front	"	"	0.0018	No	2.37	4.86	5.90	No	0.10	0.16	Yes			17	2	11	15	No
15	to front	to front	"	"	0.0049	Yes	0.27	0.63	2.23	Yes	<0.02	0.05	Yes			40	2	24	37	No
16	to front	to rear	"	"	0.0023	No	3.81	4.20	5.20	No	>0.16	0.39	No			21	1	15	20	No

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TABLE 2

OPTICS CARRIAGE MOTORIZED TRANSPORT

Minimum Transport Speed setting

** Carriage positioned off center of Table

TEST ID NO.	PRECONDITION DIRECTION	RESTART DIRECTION	TABLE ORIENTATION	CARRIAGE POSITION	OPERATING SPEED in./sec.	MEETS REQ. SPEC. 1 ?	TIME TO ATTAIN SET SPEED - SECONDS - MINIMUM	NOMINAL	MAXIMUM	MEETS REQ. SPEC 3? (MIN. VALUE)	TIME TO STOP - SECONDS - MINIMUM	NOMINAL	MEETS REQ. SPEC 4? (MIN. VALUE)	SPEED X TRAVEL EQUAL Y TRAVEL WITHIN 10% (Using an average of the OPERATING SPEEDS)	MEETS REQ. SPEC 5?	INCREMENT MOTION NOT TO VARY FROM PREVIOUS MORE ±5% TIMES POSSIBLE	TIMES EXCEEDED ±5% MINIMUM	NOMINAL	MAXIMUM	MEETS REQ SPEC 6? (MIN. VALUE)
17	left	left	horizontal	left X, center Y	****	TEST	WAS NOT SATISFACTORY				**	**	**	**	*	*	/ *	*	*	*
18	left	right	"	"	0.0041	No	1.26	2.11	3.74	No	>0.16	0.18	No	Max X speed (horiz.) 0.0051	NO	38	2	29	37	No
19	right	right	"	"	0.0047	Yes	0.42	0.42	6.86	Yes	>0.07	0.31	Yes	Min. Y speed (horiz.) 0.0031		40	1	34	38	No
20	right	left	"	"	0.0046	Yes	1.87	1.87	5.04	No	>0.09	0.21	Yes	*** 64 percent difference **		39	0	33	37	Yes
21	left	left	"	Right X, center Y	0.0051	Yes	0.44	0.44	2.60	Yes	>0.14	0.25	No			46	3	34	45	No
22	left	right	"	"	0.0041	No	0.78	2.27	3.75	Yes	<0.03	<0.03	Yes			36	2	32	35	No
23	right	right	"	"	0.0047	Yes	0.49	0.49	3.24	Yes	>0.07	0.12	Yes			42	1	28	41	No
24	right	left	"	"	0.0049	Yes	1.31	2.04	3.52	No	<0.04	0.04	Yes			37	1	30	36	No
25	to rear	to rear	"	Left X, Back Y	0.0050	Yes	0.63	0.82	-	Yes	>0.21	0.24	No			42	0	31	41	Yes
26	to rear	to Front	"	"	0.0031	No	0.44	4.10	4.47	Yes	<0.04	<0.04	Yes			26	1	24	25	No
27	to Front	to Front	"	"	0.0050	Yes	0.69	0.80	3.90	Yes	>0.07	0.11	Yes			47	2	36	44	No
28	to front	to rear	"	"	0.0035	No	2.43	2.99	3.92	No	<0.03	<0.03	Yes			30	1	24	29	No
29	to rear	to rear	"	Left X, Front Y	0.0052	Yes	0.40	0.75	-	Yes	>0.03	0.37	Yes			45	0	36	44	Yes
30	to rear	to Front	"	"	0.0035	No	2.13	3.06	4.17	No	>0.07	0.23	Yes			25	1	21	24	No
31	to Front	to Front	"	"	0.0053	Yes	0.43	0.43	2.66	Yes	>0.17	0.27	No			38	0	28	37	Yes
32	to Front	to rear	"	"	0.0033	No	2.54	3.30	4.24	No	>0.21	0.28	No			27	0	17	26	Yes

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TABLE 3

OPTICS CARRIAGE MOTORIZED TRANSPORT

Transport Speed Set For Approximately 0.020" / second

TEST ID No.	PRECONDITION DIRECTION	RESTART DIRECTION	TABLE ORIENTATION	CARRIAGE POSITION	OPERATING SPEED in./sec.	TIME TO ATTAIN SET SPEED - SECONDS - MINIMUM	NOMINAL	MAXIMUM	MEETS REQ. SPEC 3? (min. value)	TIME TO STOP - SECONDS - MINIMUM	NOMINAL	MEETS REQ. SPEC 4? (min. value)	SPEED X TRAVEL EQUAL Y TRAVEL WITHIN 10% (Using an average of the OPERATING SPEEDS)	MEETS REQ. SPEC 5?	5 - INCREMENT MOTION NOT TO VARY FROM PREVIOUS MORE ±5% TIMES POSSIBLE	TIMES EXCEEDED ±5% MINIMUM	NOMINAL	MAXIMUM	MEET REQ SPEC 6 (min. val
33	left	left	horizontal	center X+Y	0.0211	0.25	0.25	0.25	Yes	<0.02	<0.02	Yes	(Max Y speed (horiz.) 0.0244	No	43	0	26	42	Yes
34	left	right	"	"	0.0206	0.96	0.96	2.50	Yes	<0.10	0.19	Yes	Min. X speed (horiz.) 0.0206		42	3	19	41	No
35	right	right	"	"	—	—	—	—	DATA	NOT	USABLE		** 16 percent difference **		—	—	—	—	—
36	right	left	"	"	0.0206	0.27	0.44	0.49	Yes	<0.02	<0.02	Yes			45	2	36	44	No
37	left	left	tilted	"	0.0205	0.08	0.26	0.47	Yes	>0.06	0.24	Yes	(Max Y speed (tilted) 0.0246	No	41	0	23	40	Yes
38	left	right	"	"	0.0204	1.30	1.70	5.00	No	<0.03	0.03	Yes	(min X speed (tilted) 0.0204		33	0	16	31	Yes
39	right	right	"	"	0.0206	0.30	0.30	2.11	Yes	<0.02	0.02	Yes	** 17 percent difference **		40	0	24	39	Yes
40	right	left	"	"	0.0204	1.08	1.08	1.49	No	>0.08	0.16	Yes			31	0	16	30	Yes
41	to rear	to rear	horizontal	"	0.0239	0.30	0.30	0.30	Yes	<0.02	<0.02	Yes			41	0	23	40	Yes
42	to rear	to front	"	"	0.0244	0.74	0.96	3.08	Yes	<0.02	0.02	Yes			34	0	17	32	Yes
43	to front	to front	"	"	0.0244	0.31	0.31	2.68	Yes	<0.06	0.06	Yes			37	0	18	35	Yes
44	to front	to rear	"	"	0.0236	1.75	2.47	3.20	No	>0.02	0.21	Yes			29	0	16	28	Yes
45	to rear	to rear	tilted	"	0.0239	0.25	0.25	0.25	Yes	>0.02	0.07	Yes			44	0	28	43	Yes
46	to rear	to front	"	"	0.0245	1.12	1.12	4.05	No	>0.03	0.24	Yes			41	0	30	40	Yes
47	to front	to front	"	"	0.0246	0.26	0.26	2.03	Yes	>0.02	0.23	Yes			44	3	34	43	No
48	to front	to rear	"	"	0.0239	1.27	1.27	4.05	NO	>0.25	0.31	NO			39	0	22	37	Yes

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TABLE 4

OPTICS CARRIAGE MOTORIZED TRANSPORT

Transport Speed set For Approximately 0.100 "/second

TEST I.D. NO.	PRECONDITION DIRECTION	RESTART DIRECTION	TABLE ORIENTATION	CARRIAGE POSITION	OPERATING SPEED in./sec.	TIME TO ATTAIN SET SPEED - SECONDS - MINIMUM	NOMINAL	MAXIMUM	MEETS REQ. SPEC 3? (MIN. VALUE)	TIME TO STOP - SECONDS - MINIMUM	NOMINAL	MEETS REQ. SPEC 4? (MIN. VALUE)	SPEED X TRAVEL EQUAL Y TRAVEL WITHIN 10 % (Using an average of the OPERATING SPEEDS)	MEETS REQ. SPEC 5?	STEP SIZE - INCREMENT MOTION NOT TO VARY FROM PREVIOUS MORE ±5% TIMES POSSIBLE	TIMES EXCEEDED ±5% MINIMUM	NOMINAL	MAXIMUM	MEETS REQ SPEC 6? (MIN. VALUE)
49	left	left	horizontal	center X+Y	0.0879	0.09	0.26	3.25	Yes	<0.03	0.03	Yes	Max. Y speed (horiz.) 0.1052	No	45	0	25	44	Yes
50	left	right	"	"	0.0881	0.78	0.96	–	Yes	<0.02	0.02	Yes	Min. X speed (horiz.) 0.0879		41	0	17	40	Yes
51	right	right	"	"	0.0882	0.27	0.27	–	Yes	<0.03	0.03	Yes	** 16 percent difference **		42	0	15	41	Yes
52	right	left	"	"	0.0884	0.61	0.79	5.65	Yes	<0.02	<0.02	Yes			41	3	24	40	No
53	left	left	tilted	"	0.0890	0.26	0.26	0.26	Yes	<0.02	0.02	Yes	Max Y speed (tilted) 0.1060	No	42	0	22	41	Yes
54	left	right	"	"	0.0884	0.60	0.78	2.07	Yes	>0.05	0.07	Yes	min X speed (tilted) 0.0884		41	1	21	40	No
55	right	right	"	"	0.0878	0.27	0.27	–	Yes	<0.02	0.02	Yes	** 16 percent difference **		43	0	14	41	Yes
56	right	left	"	"	0.0885	0.62	0.62	2.59	Yes	<0.03	<0.03	Yes			42	0	26	41	Yes
57	to rear	to rear	horizontal	"	0.0931	0.27	0.27	7.22	Yes	>0.02	0.05	Yes			45	1	30	44	No
58	to rear	to Front	"	"	0.1045	0.62	0.62	3.15	Yes	>0.04	0.07	Yes			42	0	23	41	Yes
59	to front	to front	"	"	0.1052	0.27	0.27	2.13	Yes	>0.02	0.04	Yes			43	0	24	42	Yes
60	to Front	to rear	"	"	0.0943	0.62	0.62	1.50	Yes	<0.02	0.02	Yes			43	1	25	42	No
61	to rear	to rear	tilted	"	0.0934	0.25	0.42	0.75	Yes	>0.03	0.05	Yes			45	0	24	44	Yes
62	to rear	to Front	"	"	0.1056	0.44	0.44	0.99	Yes	>0.02	0.04	Yes			44	2	21	43	No
63	to Front	to Front	"	"	0.1060	0.31	0.49	0.49	Yes	>0.04	0.23	Yes			43	0	23	42	Yes
64	to Front	to rear	"	"	0.0935	0.44	1.15	4.03	Yes	>0.02	0.05	Yes			40	2	20	39	No

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TABLE 5

OPTICS CARRIAGE MOTORIZED TRANSPORT

Maximum Transport speed setting

TEST ID No.	PRECONDITION DIRECTION	RESTART DIRECTION	TABLE ORIENTATION	CARRIAGE POSITION	SPEC. 1 OPERATING SPEED in./sec.	MEETS REQ. SPEC. 2 ?	SPEC. 3 TIME TO ATTAIN SET SPEED - SECONDS - MINIMUM	NOMINAL	MAXIMUM	MEETS REQ. SPEC 3? (MIN. VALUE)	SPEC. 4 TIME TO STOP - SECONDS - MINIMUM	NOMINAL	MEETS REQ. SPEC 4? (MIN. VALUE)	SPEED X TRAVEL EQUAL Y TRAVEL WITHIN 10 % (Using an average of the OPERATING SPEEDS)	MEETS REQ. SPEC 5?	SPEC. 6 - INCREMENT MOTION NOT TO VARY FROM PREVIOUS MORE ±5% TIMES POSSIBLE	TIMES EXCEEDED ±5% MINIMUM	NOMINAL	MAXIMUM	MEETS REQ SPEC 6? (MIN. VALUE)
11.	left	left	horizontal	center X+Y	0.2569	Yes	0.26	0.45	6.93	Yes	<0.03	0.06	Yes	–	–	45	0	16	44	Yes
12.	left	right	"	"	0.2933	Yes	0.46	0.46	0.65	Yes	>0.05	0.07	Yes	–	–	37	0	15	36	Yes

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TRANSMITTAL SLIP	DATE 28 Nov 73
TO: RED	
ROOM NO.	BUILDING
REMARKS:	
FROM: TEB/ESD	
ROOM NO.	BUILDING / EXTENSION

FORM NO 241 1 FEB 55 REPLACES FORM 36-8 WHICH MAY BE USED. (47)

25X1

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