

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

MAINTENANCE AND INSPECTION SYSTEM AND MAINTENANCE RECORDS ADMINISTRATION FOR INSTRUMENT FLIGHT TRAINER DEVICES AND FLIGHT SIMULATOR DEVICES

Headquarters, Department of the Army, Washington, D. C.

9 February 1971

	Paragraph	Page
Purpose	1	1
Scope	2	1
Maintenance system	3	1
Preventive maintenance services	4	1
Flight simulator logbook and records administration	5	3
Reporting of improvements	6	12

1. Purpose. This technical bulletin prescribes the Inspection and maintenance system for Instrument flight trainer and flight simulator devices and amplifies TM 38-750 in providing instructions for maintenance of equipment records.

2. Scope. This technical bulletin is applicable to all active Army, U. S. Army Reserve and U. S. Army National Guard activities engaged in utilization and maintenance of U. S. Army instrument flight trainer and flight simulator devices.

3. Maintenance system. Maintenance of Instrument flight trainer and flight simulator devices will be accomplished utilizing the categories of maintenance as prescribed by AR 750-1 and AR 750-5.

4. Maintenance services: a. Preventive maintenance services (inspections) will be accomplished in accordance with the area sequence method as outlined in the applicable equipment technical manual.

b. The preventive maintenance inspection intervals designated in the inspection requirement section of applicable equipment technical manuals are the maximums and will not be exceeded. When unusual local conditions such as environmental conditions, utilization, periods of Inactivity, experience of maintenance personnel, etc., dictate, it is the prerogative and the responsibility of the maintenance officer to increase the scope and/or frequency of maintenance or inspections as necessary to insure safe operation.

*This technical bulletin supersedes TB AVN 23-60, 16 February 1966.

c. Scheduled preventive maintenance inspections for instrument flight trainer and flight simulator devices are identified as follows:

(1) Daily inspection. This inspection is designed for visual inspection and necessary additional checks to insure continual safe operation of the device. Unless faults found during the inspection Text Text red or desired, The daily inspection will be conducted subsequent to the last operation of the day or preceding the first operation the next day.

(2) *Periodic* inspection. This inspection is designed as a thorough and searching inspection of those items which are subject a, failure or faults at frequencies determined by experience and *reflected* at the time interval specified. Removal of access plates, panels, and partial disassembly of equipments are required to accomplish this inspection which will include checking for such items as:

- (a) Deterioration.
- (b) Proper alignment.
- (c) Travel and wear tolerances.
- (d) Proper operation of systems and mechanism.
- (4) Lubrication requirements.

NOTE

The periodic inspection requirements section will be sequenced to include oil of the requirements of the doily inspections. This will preclude the necessity of referring to any other section for the requirements necessary to accomplish the inspection being performed.

d. In addition to the above scheduled preventive maintenance inspections, certain inspections are directed which are not performed at predetermined frequencies, but are required for maintenance, administrative, and data recording purposes and result from a variety of situations affecting individual devices, and are further defined as follows:

(1) Special inspection. The special inspection requirements supplement the basic requirements of the daily and periodic inspections. Requirements that fall due at expiration of calendar intervals will be added to the requirements of the daily or periodic nearest the date of inspection is due. Other special inspection requirements will be accomplished as required by the inspection requirements section of the applicable device technical manual.

(2) *Acceptance inspection.* This inspection is required on all newly assigned instrument flight trainers and flight simulators and will be performed wish sufficient thoroughness to determine mechanical fitness for operation, completeness of equipment, and completeness and accuracy of forms and records.

(3) *Transfer* inspection. This inspection is performed by the transferring organization and will consist of the next scheduled periodic inspection. However, when circumstances warrant, the command having Jurisdiction over the transferring and receiving organization may, at its discretion, authorize transfer without accomplishment of this inspection.

e. The DA Form 2404, (Equipment Inspection and Maintenance Worksheet) will be us conjunction with the inspection requirements as specified in the applicable organizational maintenance when accomplishing the above preventive maintenance prescribed inspections. The DA Form 2404 will be maintained in accordance with the instructions prescribed for aircraft within TM 38-750.

(1) The equipment log book for instrument flight trainer and flight simulators will contain the following forms:

- (a) DA Form 2408-1 (Equipment Daily or Monthly Log).
- (b) DA Form 2408-5 (Equipment Modification Record).
- (c) DA Form 2408-12 (Army Aviator's Flight Record).
- (d) DA Form 2408-14 (Uncorrected Fault Record).
- (e) DA Form 2408-15 (Historical Record for Aircraft).
- (f) DA Form 2408-18 (Equipment Inspection List).

NOTE

For devices which have more than one individual training station controlled from a single control point (such as 2B24 Synthetic Flight Training System), a separate equipment log book shall be maintained for each station (cockpit), and one equipment log book (less DA Form 2408-12) shall be maintained for the control point and computer complex.

(2) The general rules for log book maintenance and form entries specified in TM 38-750 will be followed. However, due to the peculiarities of instrument flight trainers and flight simulator devices, the DA Form 2408-12 will be adapted to the extent specified in paragraph 5e, and the DA Form 2408-1 will be adapted to the extent specified in paragraph 5d and e.

(3) The individual immediately responsible for the operation and maintenance of the instrument flight trainer and flight simulator devices is also responsible for maintenance of the equipment records.

(4) The abbreviations, as specified in TM 38-750 in addition to those listed in AR 310-50, are authorized for use in equipment log book records for instrument flight trainers and flight simulator devices. Unauthorized abbreviations will not be used.

b. Status symbols. Status symbols are used on the maintenance records to denote the maintenance and readiness status of the instrument flight trainer or flight simulator devices. Status symbols are explained in detail within TM 38-750.

c. Use of DA Form 2408-12 (Army Aviator's Flight Records)(figs 1 and 2). The DA Form 2408-12 will be utilized to record trainees' names, type training, training time, and the power-on time of the equipment. A new form will be initiated for each day the equipment is operated. Entries on this form will be in accordance with TM 38-750 with the following exceptions:

(1) *Block 6.* Enter the trainee's last name, first initial, grade, and serial number. A complete section (four lines as divided by the heavy black line) will be used for each trainee (fig. 1).

(2) *Blocks 7, 8, 9, 10 and 11.* Blocks 7 through 11 will be utilized to record the number and type of approaches accomplished by the trainee and the recording of any other training accomplishments required by local commands. Approaches accomplished will be recorded as follows:

(a) Enter the type approach in the upper left box under blocks 7 through 11, i. e., VOR, ADF, GCA, ILS, MDF.

...the number of a special approach accomplished in the corresponding upper right box under blocks 7 through 11.

(3) **Block 12, column a.** Column a under block 12 will be utilized to record the power-on time of the instrument flight trainer or flight simulator. This data will be entered as follows:

(a) Enter in the "form" box, under block 12, column a, the time that the equipment master switch is turned on.

(b) Enter in the lower "to" box, under block 12, column a, the time that the equipment master switch is turned off.

(c) Enter the elapsed power-on time in the landing box under block 12, column a (fig. 1).

(d) When power-on time is accumulated as a result of maintenance or test, an appropriate entry will be made in block 6 and power-on, power-off and elapsed power-on time recorded in block 12 as specified above.

(e) The subtotal power-on time will be entered under block 12, column a, on the front and the reverse side of the form.

(f) The daily total power-on time will be entered in the "total landings" box under block 12, column a, on the reverse side of the form (fig. 2).

(4) **Block 12, column b.** Column b under block 12 will be utilized to record the trainee's training time. This data will be entered as follows:

(a) In the third "time" box under column b, block 12, enter the time the training period started (fig. 1).

(b) In the second "time" box under column b, block 12, enter the time the training period ended.

(c) In the last "time" box under column b, block 12, enter the elapsed training period time.

(5) **Disposition.**

(a) At the termination of the day's operation, the day's total power-on time will be transcribed on the DA Form 2408-1 daily log.

(b) The DA Form 2408-12 will be removed from the log book, filed and disposed of in accordance with TM 38-750.

d. Use of DA Form 2408-1 (Equipment Daily or Monthly Log), (as a "Daily" Log) (fig 3 and 4).

(1) The DA Form 2408-1 will be used as a "Daily" Log to maintain a record of operating time (power-on time) -rational status of the device, faults affecting readiness of the device, schedule of preventive maintenance services (Periodic Inspections) and a summary of the non-available time (down-time) to categorically include reasons therefore. A new form will be initiated on the first day of each month and will be closed-out following the last of the last day of each month. Normally only one form will be required to be initiated each month except when the quantity of lines used during the month exceeds those on the form.

(2) Block 1. Enter the nomenclature, model designation and Federal stock number of the device.

(3) Block 2. Enter the serial number of the device.

(4) Block 3. All entries in these blocks are to be made in pencil. As requirement for changes to these blocks occur, erase the original entry and update as required.

(a) **Block 3a.** Enter the identification of the next preventive maintenance service (periodic) due.

(b) **Block 3b.** Enter the hours at which the next scheduled preventive maintenance service (periodic) due. This entry is to be computed at the completion of the periodic inspection and is to be perpetuated in a block until the preventive maintenance service indicated in block 3a is completed.

(c) **Block 3c.** Leave blank unless directed to be used locally.

(5) **Block 4.** Enter an "X" in the "Daily" box.

(6) On the first day of the month, entries in columns a, c, f and g (or b, when applicable) will be made on the first line of a new form to reflect the "brought forward" information from the last entry of the previous month's form.

(7) **Column a.** Enter the calendar date (day, month and year) that entries are brought forward and/or vice versa is to be operated.

(8) **Column b.** Modify column title to read "Time Today," and enter (at the close of the day's operation) the time operated that date. This entry is to be taken from the entry contained in the "Landings - Totals" block on the DA Form 2408-12 for that date.

(9) **Column c.** Modify column title to read "Total Time" and enter the total accumulative time at the close of each day's operation. This entry should equal the sum of the previous day's "Total Time" plus the current date's "Time Today." The "brought forward" entry in this column, on the first day of the month, should be the same as that entered on the last day of the previous month's form and identical to the previous month's entry on the separate "Monthly" form. (See para 5e(8) and fig 5).

(10) **Columns d and e.** Leave blank.

(11) **Column F.**

(a) At the conclusion of the "Daily" preventive maintenance service, the device operator (not the trainee) will enter the appropriate status symbol in the "Equipment Faults" column which represents the most serious uncorrected fault detected during that inspection or as recorded on the DA Form 2408-14. If no faults exist, leave blank. Enter a checkmark in the "Is Equipment Operational" column if the device is operational. If the device is not operational, leave this column blank and enter the "X" status symbol in the "Equipment Faults," column.

(b) A change in status will be recorded whenever an operational device becomes nonoperational. This will be accomplished by the operator (not the trainee) entering his last name initial over the checkmark in the "Is Equipment Operational" column and entering the "X" status symbol in the "Equipment Faults" column. (The brief entry of description of fault will be entered in the "Remarks" block as prescribed in paragraphs 5c(16) and 1 and 2 below)

(c) Whenever the status of a device changes from a nonoperational status to an operational status during any day, a second line entry in columns a, b, c, f and g, will be required to be made during that day.

(12) **Column g.** The operator will enter his signature in this column at end of the day's operation to validate entries made by him.

(13) **Column b and i.** Leave blank unless directed to be used locally.

(14) Column j. In the appropriate sub-columns, enter the decimal equivalent of the portion of the work day during which the device was not operational. When supply "S" or maintenance, "M", as appropriate, is the cause for device being nonoperable, the entry of the time (e. g., 2 hours = ".25," or 4 hours = ".5," or all day = "1.0") nonoperable will be made as appropriate. Entries in both "M" and "S" columns are required when both were cause for the nonoperable status of the device. Entries are required in all four sub-columns whenever the device is not operational; zero "0" entries are to be used when applicable. When the device is operational all day, all sub-columns under column j will be left blank.

(15) Column k. Individuals making entries other than the operator (or the trainee) will enter signature in this column to validate entries.

(16) *Remarks* (reverse side of form).

(a) Modify this book by adding vertical lines and block identifications as shown in figure 4.

(b) Columns 6a through 6d will be used in a similar fashion as blocks 16, 17, 18 and 19 are used on the DA Form 2408-13.

1. Column 6a. Enter the status symbol which represents the seriousness of condition entered in column 6b. (Whenever a condition entered in block 6b is corrected, the individual accomplishing the corrective action will enter his last name initial over the status symbol).

2. Column 6b. Enter the fault(s) as discovered during preventive maintenance services or during operation. The fault will be followed by the name of the individual discovering the fault.

3. Column 6c. Enter the corrective action taken to correct fault entered in column 6b. When a fault is transcribed to, the DA Form 2408-14, an appropriate entry denoting such action will be entered in this column.

4. *Column 6d.* The signature of the individual accomplishing the corrective action or transcribing an entry to another form, will be entered in this column.

(17) *Disposition.*

(a) At the close out of the "Daily" log (at the end of each month), all uncorrected faults shown in column 6b must be transcribed to the new "Daily" log or transcribed to the DA Form 2408-14, employing the general Instructions pertinent to that form.

(b) At the termination of the last operation of the last day of the month, the last entry in column c will be transcribed to the new month's "Daily" log and to the monthly entry on the "Monthly" log. In addition, the sums of the subcolumns in column j will be entered in respective columns for the monthly entry on the "Monthly" log.

(c) Upon completion of above close-out entries, the DA Form 2408-1 "Daily" log will be retained and disposed of in accordance with instructions contained in TM 38-750.

e. Use of DA Form 2408-1 (*Equipment Daily in Monthly Log*), (As a "Monthly" Log) (fig 5).

(1) The DA Form 2408-1 will be used as a "monthly" log to facilitate recapitulation of data to provide an historical record for the device. A new form will be initiated upon implementation of this bulletin and upon completion of entries on all lines on the current form.

(2) Blocks 1 and 2. Complete entries in these Mocks as prescribed in paragraphs 5d(2) and (3) above

1. DATE	2. MODEL	3. SERIAL NUMBER	4. ORGANIZATION	5. STATION	12. FLIGHT DATA	
7 APR 71	2B3A	61-6	USAAYNS	FT. RUCKER, AL		
LAST NAME - FIRST INITIAL - GRADE - SERVICE NUMBER			A. ENTER DUTY SYMBOL IN UPPER LEFT BOX B. ENTER FLIGHT SYMBOL IN UPPER RIGHT BOX C. ENTER HOURS FLOWN ON LINE THEREUNDER			
FRIEDMAN, J, WO1, 396-10-3662			7 8 9 10 11 MR 2 WFL 1 OCA 2 US 1		TO	:
					TO	:
DEVICE OPERATED TO FACILITATE MAINT.					FROM	0945 09:45
					FROM	0800 08:15
					MISSION SYMBOL	LANDINGS
						1:45 1:30
					TO	:
					TO	:
					FROM	1200
					FROM	1015
CARDWELL, W, MAJ, 376-18-2001			MR 2 ADA 2		MISSION SYMBOL	LANDINGS
						1:45
					TO	:
					TO	1415 14:15
					FROM	1300 13:15
					FROM	1300 13:15
					MISSION SYMBOL	LANDINGS
						1:15 1:00
13. OTHER					SUBTOTAL (Enter on Reverse Side)	4:45

DA FORM 2408-12, 1 JAN 64

ARMY AVIATOR'S FLIGHT RECORD
(TM 38-750)

Figure 1. Army Aviator's Flight Record (TM 38-750).

6. LAST NAME - FIRST INITIAL - GRADE - SERVICE NUMBER	A. ENTER DUTY SYMBOL IN UPPER LEFT BOX					SUBTOTAL	LANDINGS	TIME
	B. ENTER FLIGHT SYMBOL IN UPPER RIGHT BOX						4:45	:
C. ENTER HOURS FLOWN ON LINE THEREUNDER					12. FLIGHT DATA			
HEMNER, D, LTC, 63121-8634	7	8	9	10	11	a. MISSIONS	b. TIME	
	NR 2	ADF 2	MS 3			TO	:	
	:	:	:	:	:	TO	:	
	:	:	:	:	:	FROM	1630 16:30	
	:	:	:	:	:	FROM	1430 14:45	
	:	:	:	:	:	MISSION SYMBOL	LANDINGS	
	:	:	:	:	:		2:00 1:45	
	:	:	:	:	:	TO	:	
	:	:	:	:	:	TO	:	
	:	:	:	:	:	FROM	:	
	:	:	:	:	:	MISSION SYMBOL	LANDINGS	
	:	:	:	:	:	TO	:	
	:	:	:	:	:	TO	:	
	:	:	:	:	:	FROM	:	
:	:	:	:	:	MISSION SYMBOL	LANDINGS		
13. OTHER					TOTALS	LANDINGS	TIME	
						6:45	:	

GPO 1964 O-781-287

Figure 2. Amy Aviator's Flight Record (TM-38-750).

1. NOMENCLATURE INSTRUMENT FLIGHT TRAINER 283A FSN 6930-751-8671				2. REGISTRATION OR SERIAL NUMBER 61-6				3. NEXT SERVICE OR LUBRICATION DUE a. TYPE 42 PE b. HOURS/MILES 4203:00 c. DATE									
4. TYPE LOG <input checked="" type="checkbox"/> DAILY <input type="checkbox"/> MONTHLY				OIL CHANGED OR ADDED (Ch or gas)		OPERATIONAL STATUS		SIGNATURE OF OPERATOR OR CREW CHIEF	SERVICE OR LUB		OTHER ACTIONS		NONAVAILABLE DAYS				SIGNATURE OF INDIVIDUAL MAKING ENTRIES OTHER THAN OPERATOR OR CREW CHIEF
DATE OF ENTRY	TIME READ - HOURS	TOTAL READING - HOURS	TOTAL FUEL ADDED (Gals)	ENGINE	TRANSMISSION	EQUIPMENT FAULTS	IS EQUIPMENT OPERATIONAL		TYPE	COMPLETE			ORG MAINT		SUPPORT MAINT		
a	b	c	d										S	M	S	M	e
SMART		147:45					✓	B. J. Jaramel									
1 APR 71	6:40	1151:25					✓	B. J. Jaramel									
2 APR 71	5:40	1160:05					✓	B. J. Jaramel									
5 APR 71	10:05	1160:10					✗						0	5	0	0	F. Hindell
5 APR 71	4:30	1164:40					✓	B. J. Jaramel									
6 APR 71	7:00	1171:40					✓	B. J. Jaramel									
7 APR 71	6:45	1178:25					✓	B. J. Jaramel									

DA FORM 2408-1, 1 May 67

REPLACES EDITION OF 1 JAN 64 AND DA FORM 2408-2, 1 APR 62 WHICH ARE OBSOLETE.

EQUIPMENT DAILY OR MONTHLY LOG (TM 38-750)

Figure 3. Equipment Daily or Monthly Log (TM 38-750).

4. TYPE LOG <input checked="" type="checkbox"/> DAILY <input type="checkbox"/> MONTHLY				OIL CHANGED OR ADDED (CA or qto)			OPERATIONAL STATUS		SIGNATURE OF OPERATOR OR CREW CHIEF	SERVICE OR LUB		OTHER ACTIONS		NONAVAILABLE DAYS				SIGNATURE OF INDIVIDUAL MAKING ENTRIES OTHER THAN OPERATOR OR CREW CHIEF
DATE OF ENTRY a	TIME READ THE HOUR TODAY b	TOTAL READING MINES c	TOTAL FUEL ADDED (Gals) d	ENGINE	TRANSMISSION		EQUIPMENT FAULTS	IS EQUIPMENT OPERATIONAL?		TYPE	COMPLETE			ORG MAINT		SUPPORT MAINT		
									b					m	s	m		
REMARKS ^b									^c REPLACED TURBINE 5 APR 71 CF to DA FORM 2408-14 7 APR 71					^d J Hindell J. Bow				
<input checked="" type="checkbox"/> TURBINE INOPERATIVE Bjaranek / NEEDS PAINT TOUCH UP Bjaranek																		

Figure 4. Equipment Daily or Monthly Log (Tm 38-750).

1. NOMENCLATURE INSTRUMENT FLIGHT TRAINER 283A FSN 6930-751-8671				2. REGISTRATION OR SERIAL NUMBER 61-6			3. NEXT SERVICE OR LUBRICATION DUE									
4. TYPE LOG <input type="checkbox"/> DAILY <input checked="" type="checkbox"/> MONTHLY				OIL CHANGED OR ADDED (Ch or qty)			OPERATIONAL STATUS		SERVICE OR LUB		OTHER ACTIONS		NONAVAILABLE DAYS		SIGNATURE OF INDIVIDUAL MAKING ENTRIES OTHER THAN OPERATOR OR CREW CHIEF	
DATE OF ENTRY	TIME -MM-SS- THIS MONTH	TOTAL READINGS -MM-SS- THIS TIME	TOTAL FUEL ADDED (Gals)	ENGINE	TRANSMISSION	EQUIPMENT FAULTS	IS EQUIPMENT OPERATIONAL?	SIGNATURE OF OPERATOR OR CREW CHIEF	TYPE	COMPLETE	OTHER ACTIONS	NONAVAILABLE DAYS				
												ORG MAINT	SUPPORT MAINT			
												S	M		S	M
DEC 70	19:20	5799:30					✓	B Jalaneck				.5	20	0	0	J Boss
JAN 71	110:00	3709:30					✓	B Jalaneck				0	5	25	10	J Boss
FEB 71	16:05	4025:35					✓	B Jalaneck				0	10	0	0	J Boss
MAR 71	22:10	4147:45					✓	B Jalaneck				.5	15	0	.5	J Boss

DA FORM 2408-1, 1 May 67

REPLACES EDITION OF 1 JAN 64 AND DA FORM 2408-2, 1 APR 62, WHICH ARE OBSOLETE.

EQUIPMENT DAILY OR MONTHLY LOG (TM 38-750)

Figure 5. Equipment Daily or Monthly Log (TM 38-750).

(3) Block 3. No entries are required in blocks 3a through 3c.

(4) Block 4. Enter an "X" in the "Monthly" box.

(5) Only one line entry is required to be made, each month, in columns a through k. This entry will be accomplished after the last operation of the last day of the month in conjunction with the establishment of a new "Daily" log for the next month.

(6) Column a. Enter the applicable month and year.

(7) Column b. Modify column title to read "Time This Month" and enter the total device operating time during that month. This entry can be computed by either, adding all of the entries appearing in column b on the "Daily" log for that month, or subtracting the prior month's "Total Time"* from the entry of the current month's "Total Time."

(8) Column c. Modify column title to read "Total Time" and enter the total accumulative time at the close of the month's operation. The entry in this column should be identical to the first entry made in column c on the "Daily" log on the first day of the month. (See para 5d(9) and (17) above and fig 3).

(9) Columns d and e. Leave blank.

(10) Column f. Enter the current status of the device as of the close of the month's operation. In the "Equipment Faults" column, enter the appropriate status symbol which represents the most serious fault existing at that time. Enter a "J" in the "Is Equipment Operational" column if the device is operational. If the device is not operational, leave this column blank and assure the "X" status symbol is entered in the "Equipment Faults" column.

(11) Column g. The operator will enter his signature in this column upon completion of all entries on that line to reflect verification of such entries.

(12) Columns b and i. Leave blank.

(13) Column j. In the appropriate sub-columns, enter the total days during that month that the device was not operable for the reasons (M or S) at the levels indicated. These entries will be computed by the addition of the appropriate entries in the identical columns on the "Daily" log for the concerned month.

(14) Column k. Individuals making entries on the line other than the operator (not the trainee) will enter signature in this column. This column may also be used by supervisory personnel to indicate verification of entries made by the operator.

(15) Remarks (Reverse side of form). This space is provided for remarks of a significant historic value which should be perpetuated as a semi-permanent record. (Historical data of a permanent nature will be entered on DA Form 2408-15).

(16) Disposition. (a). Upon completing all lines on the "Monthly" log, the last entry on the card will be perpetuated by transcribing such entry on a newly initiated form.

(b). Upon completion of the above close-out entry, the DA Form 2408-1 "Monthly" log will be retained and disposed of in accordance with instructions contained in TM 38-750.

6. Reporting of improvements. Report of errors, omissions and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded direct to Commanding General, US Army Aviation Systems Command, ATTN: AMSAV-R-M, P. O. Box 209, St. Louis, Missouri 63166.

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To be distributed in accordance with DA Form 12-31 (qty rqr blocks no. 97, 101 and 105, cumulative for all blocks) requirements for 1CA-1, 2B-3A, and 2B-12A simulators.

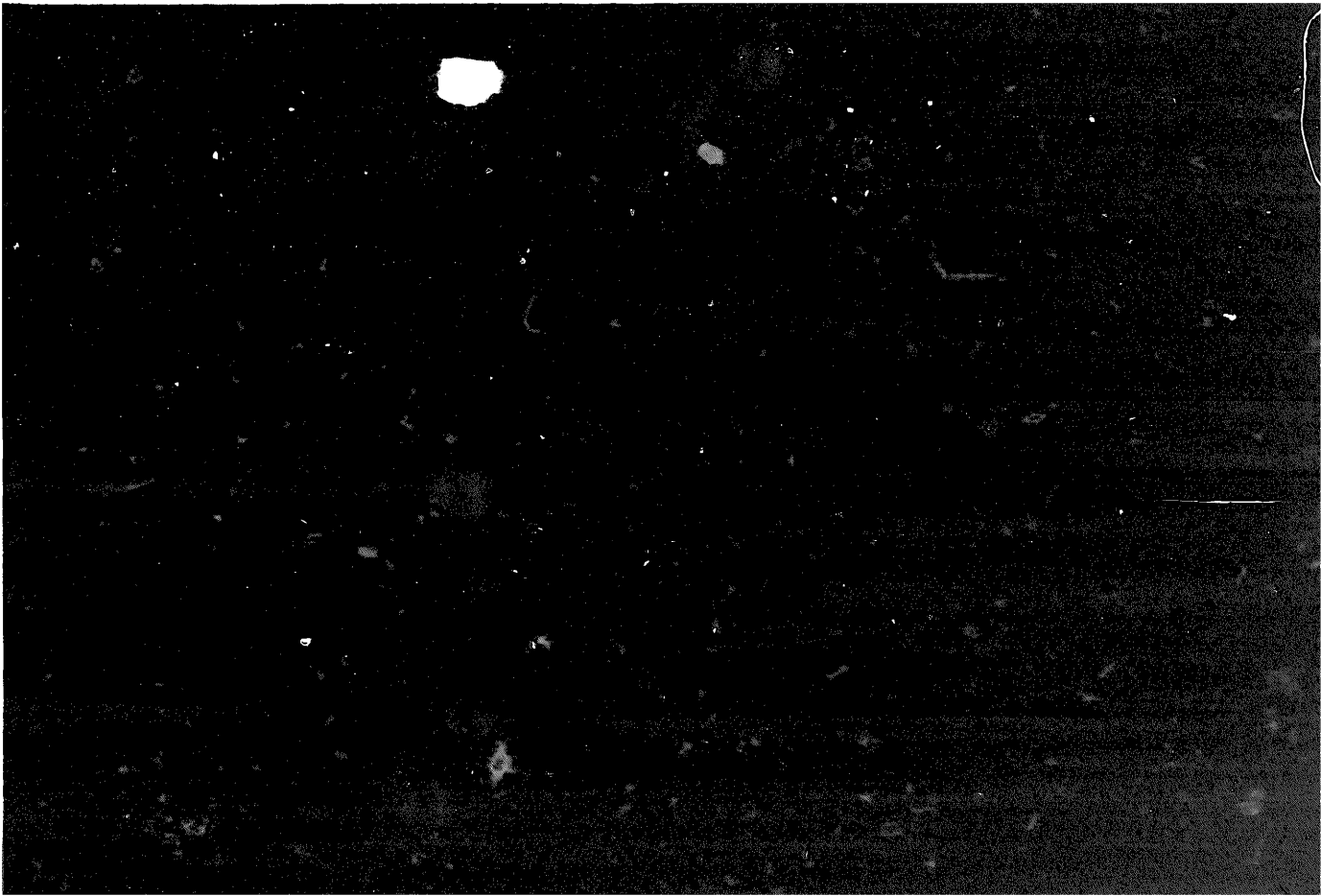
GPO 811-708

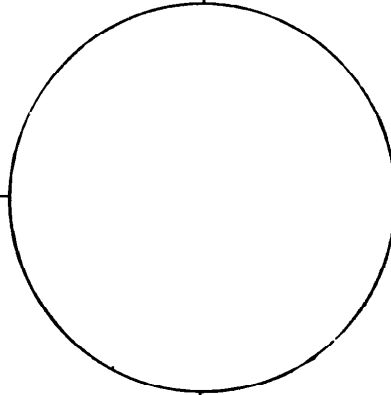
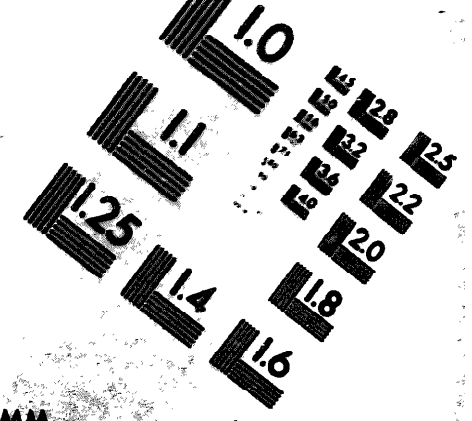
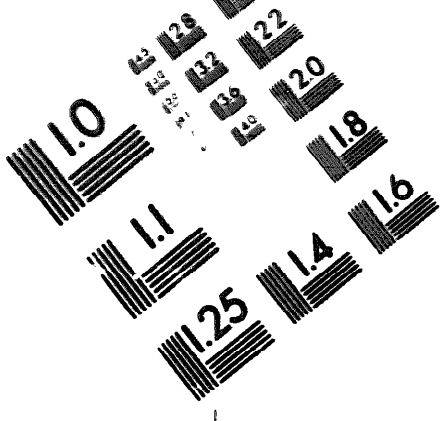
END

10-20-82

DATE







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1.0 mm (e= .81 mm)

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1.5 mm (e= 1.09 mm)

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2.0 mm (e= 1.37 mm)

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abcdefghijklmnopqrstuvwxyz
1234567890\$%&/'%# 1/2 1/4 3/4 —=+ x&@*

2.5 mm (e= 1.77 mm)

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abcdefghijklmnopqrstuvwxyz
1234567890\$%&/'%# 1/2 1/4 3/4 —=+ x&@*

1.0 mm (e= .81 mm)

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1.5 mm (e= 1.09 mm)

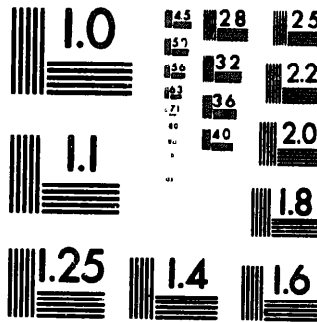
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abcdefghijklmnopqrstuvwxyz\$%&/'%# 1/2 1/4 —=+ x&@*

2.0 mm (e= 1.37 mm)

ABCDEFGHIJKLMNQRSTUUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890\$%&/'%# 1/2 1/4 3/4 —=+ x&@*

2.5 mm (e= 1.77 mm)

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abcdefghijklmnopqrstuvwxyz
1234567890\$%&/'%# 1/2 1/4 3/4 —=+ x&@*



200 MM

250 MM

