

AD-A124 954

MANUFACTURING METHODS AND TECHNOLOGY (MM&T)  
SPECIFICATIONS FOR MINIATURE CATHODE RAY TUBE(U) THOMAS  
ELECTRONICS INC WAYNE NJ F M BRUNO 31 OCT 82

1/1

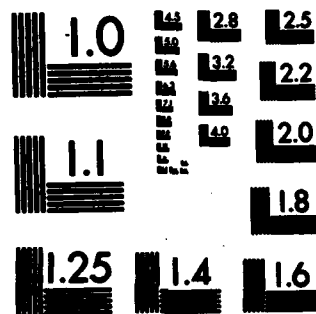
UNCLASSIFIED

TEI-A009-8 DAAK70-RD-C-0168

F/G 9/1

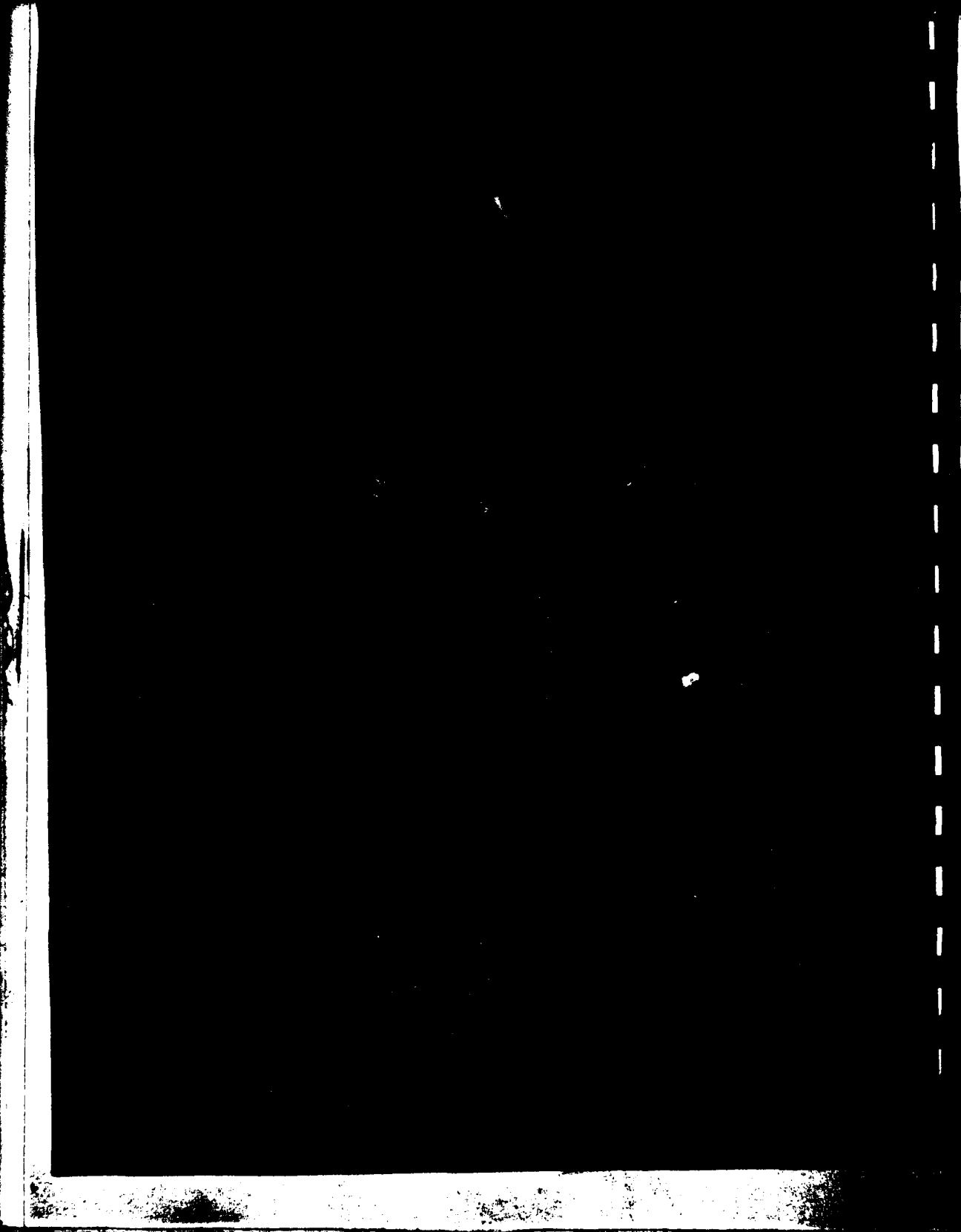
NL

END  
DATE  
FORMED  
83  
DTIC



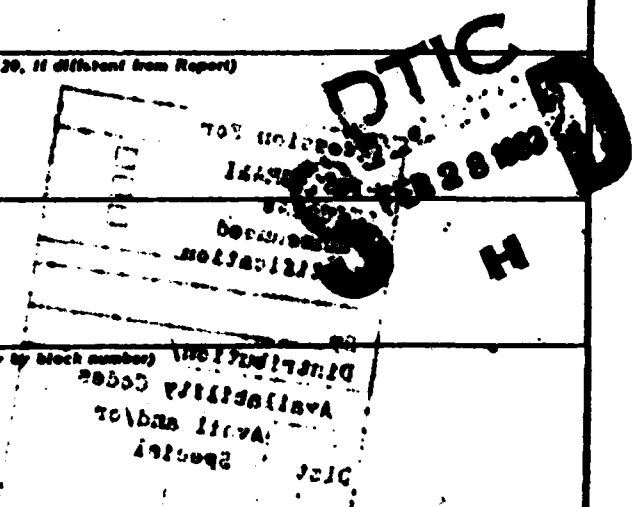
MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

AD A I 24954



END

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER <b>TEI A009-8</b>	2. GOVT ACCESSION NO. <b>AD-A114 754</b>	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) <b>MANUFACTURING METHODS AND TECHNOLOGY (MM&amp;T) SPECIFICATIONS FOR MINIATURE CATHODE RAY TUBE</b>	5. TYPE OF REPORT & PERIOD COVERED <b>Eighth Quarterly Report 1 Jul 82 - 30 Sep 82</b>	
	6. PERFORMING ORG. REPORT NUMBER	
7. AUTHOR(s) <b>F. M. Bruno</b>	8. CONTRACT OR GRANT NUMBER(s) <b>DAAK70-80-C-0168</b>	
9. PERFORMING ORGANIZATION NAME AND ADDRESS <b>Thomas Electronics, Inc. 100 Riverview Drive Wayne, NJ 07470</b>	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS	
11. CONTROLLING OFFICE NAME AND ADDRESS <b>Procurement and Production Directorate USA MERADCOM Fort Belvoir, VA 22060</b>	12. REPORT DATE <b>31 October 1982</b>	
	13. NUMBER OF PAGES <b>11</b>	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	15. SECURITY CLASS. (of this report) <b>UNCLASSIFIED</b>	
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE	
16. DISTRIBUTION STATEMENT (of this Report)  <b>Approved for public release; distribution unlimited.</b>		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) <b>Miniature cathode ray tube</b>  <i>1-in.</i>		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) <b>Two CRT assemblies for the 3rd Submission of Phase I - Engineer- ing Samples were source-tested, approved, and accepted by NV&amp;EOL. This successfully concluded the Phase I Engineering Sample requirements of the 1<sup>st</sup> MM&amp;T program. TEI began to manufacture CRT assemblies for Phase II - Confirmatory Samples, but placed a hold on production because of inconclusive results during</b>		



(Over)

10. Abstract (contd.)

pre-qualification testing. New Five-Position Test Consoles and Test Fixtures became operational. TBI's ATP (Acceptance Test Procedure) was prepared and a draft was submitted to NV&OS for review and approval.

100-85858  
CITIZEN

Decision For NTS, GRAAI DISCAS Announced Certification		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
By _____		
Distribution/		
Availability Codes		
Dist	Avail and/or	Special
A		



Manufacturing Methods and Technology (MM&T) Specifications for  
Miniature Cathode Ray Tube

EIGHTH QUARTERLY REPORT

for period

1 July 1982 - 30 September 1982

The object of this study is to develop design, performance, and test specifications for the Miniature Cathode Ray Tube (CRT) assembly suitable for use in the Integrated Helmet and Display Sight System (IHADSS) of the Army Advanced Attack Helicopter (AAH).

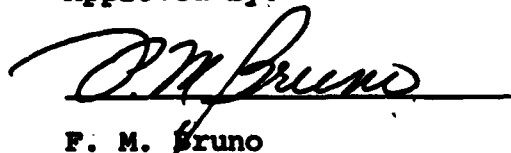
Contract Number: DAAK70-80-C-0168

Approved by:



M. L. Beasty  
Vice President - Engineering

Approved by:



F. M. Bruno  
Program Manager

Approved for public release; distribution unlimited

**ABSTRACT/SUMMARY**

Two CRT assemblies for the 3rd Submission of Phase I - Engineering Samples were source-tested, approved, and accepted by NV&EOL. This successfully concluded the Phase I Engineering Sample requirements of the 1<sup>st</sup> MM&T program. TEI began to manufacture CRT assemblies for Phase II - Confirmatory Samples, but placed a hold on production because of inconclusive results during pre-qualification testing. New Five-Position Test Consoles and Test Fixtures became operational. TEI's ATP (Acceptance Test Procedure) was prepared and a draft was submitted to NV&EOL for review and approval.

TABLE OF CONTENTS

<u>Paragraph</u>	<u>Title</u>	<u>Page</u>
	ABSTRACT / SUMMARY	2
1.0	PURPOSE	4
2.0	GLOSSARY	5
3.0	NARRATIVE AND DATA	6
4.0	CONCLUSIONS	8
5.0	PROGRAM FOR NEXT INTERVAL	9
6.0	DISTRIBUTION LIST	10

**1.0 PURPOSE**

The purpose of this Manufacturing Methods and Technology (MM&T) contract is to establish production methods and facilities required to produce the Miniature Cathode Ray Tube Assembly required for the Integrated Helmet and Display Sight System (IHADSS) of the Army Advanced Attack Helicopter (AAH).

The primary objectives are to develop vendor sources for the required individual components and establish viable production techniques to meet the necessary monthly production rate.

The product produced will be required to meet the mechanical, electrical, performance, and environmental parameters of MM&T H799838.

**2.0 GLOSSARY**

- AAH..... Advanced Attack Helicopter**
- ATP..... Acceptance Test Procedure**
- CDRL..... Contract Data Requirements List**
- COR..... Contracting Officer's Representative**
- CRT..... Cathode Ray Tube**
- EM..... Equipment Manufacturer**
- IHADSS..... Integrated Helmet and Display Sight System**
- MERADCOM..... Mobility Equipment Research and Development Command**
- MM&T..... Manufacturing Methods and Technology**
- MOD..... Modification (to Contract)**
- NV&EOL..... Night Vision & Electro-Optics Laboratory**
- PCO..... Procuring Contracting Officer**
- PERT..... Program Evaluation and Review Techniques**
- T.E.I..... Thomas Electronics, Inc.**
- TIR..... Total Indicated Range**

### 3.0 NARRATIVE AND DATA

YAAABOIO 0.5

In early July, two CRT assemblies for the 3rd Submission of Phase I - Engineering Samples were source-tested and approved by the Contracting Officer's Representative (COR) during a visit to TEI. This successfully concluded the Phase I Engineering Sample requirements of the 1" MM&T program. Because some modifications to the contract had not been included in a MOD sent to TEI, written approval for the additional modified factors was requested by letter from TEI to the Procuring Contracting Officer (PCO).

In its continuing effort to evaluate seamed versus seamless Mu-Metal shields, TEI received a quote from the vendor with high cost for both tooling and small lot. TEI therefore delayed a decision to place a purchase requisition pending further evaluation of test results with existing lap-seam shields and comparison of production costs.

Comparison data on life-testing of the P43 phosphor with fiber optic and with clear faceplates became available for 4,015 hours of testing. The respective CRT screens and faceplates had received 71.75 C/CM<sup>2</sup> of charge per unit area (Coulomb/CM<sup>2</sup>). The phosphor-aging characteristic appeared to be well within the industry-accepted value of greater than 50 C/CM<sup>2</sup> to the 50% point for P43.

See test results which follow.

### 4015 Hours Efficiency Test Results

<u>Screen Efficiency (Lumens Per Watt)</u>	<u>Non-Browning Clear Faceplate</u>	<u>Fiber Optic Faceplate</u>
Unburned Area 3/16" x 15/32"	17.74	11.3
Burned Area (Rest of Screen)	12.7	9.6
% Drop	28%	15%
Coulombs Per CM Square	71.75	71.75

Two Five-Position Burn-In Test Consoles for Qualification and/or Reliability testing were built. One was burned-in and became operational; the other was being burned-in. A Five-Position Fixture for vibration testing was built, was accepted by TEI's Quality Assurance Department, and became ready for use.

A hold was placed on production of CRT assemblies for Phase II - Confirmatory Samples because of inconclusive results obtained on pre-qualification tests. However, a kit of gun parts was being prepared and would be gun-rodged in anticipation of successful results of pre-qualification vibration tests conducted with the recently-received Five-Position Fixture mentioned above.

TEI prepared an Acceptance Test Procedure (ATP) and submitted a draft to NV&EOL for review and approval.

#### 4.0 CONCLUSIONS

Two CRT assemblies were tested and approved by NV&EOL for the 3rd Submission of Phase I - Engineering Samples. This successfully concluded the Phase I Engineering Sample requirements of the 1" MM&T program.

Although TEI had started to manufacture and test CRT assemblies for Phase II - Confirmatory Samples, a hold was placed on production because of inconclusive results during pre-qualification testing. It was anticipated that successful results would be obtained from tests run with the recently-obtained Five-Position Burn-In Test Consoles and a Five-Position Fixture for vibration testing.

TEI's Acceptance Test Procedure (ATP) was prepared for use in Phases II and III of the contract and a draft was submitted to NV&EOL for review and approval.

## 5.0 PROGRAM FOR NEXT INTERVAL

For the next quarter, TEI's plans are as follows:

1. Fabricate and test CRT assemblies for Phase II - Confirmatory Samples.
2. Maintain detailed test records for compiling into technical data items required by the contract.
3. Prepare and submit monthly status reports and also the draft and final quarterly reports.

## 6.0 DISTRIBUTION LIST

<u>ADDRESSES</u>	<u>NO. OF COPIES</u>
Hughes Aircraft Company Industrial Products Division 6155 El Camino Real ATTN: K. Fujimoto Carlsbad, CA 92008	1
Westinghouse Electric Corporation Industrial & Government Tube Division Westinghouse Circle ATTN: J. Funair MS224 Horseheads, NY 14845	1
Electron Tube Division Litton Industries 960 Industrial Road ATTN: James Wurtz San Carlos, CA 94070	1
Defense Documentation Center 5010 Duke Street ATTN: DDC-IRS Cameron Station (Bldg. 5) Alexandria, VA 22314	2 (Unclassified)
Director Night Vision & Electro-Optics Laboratory ATTN: DELNV-SI-SPT (Mr. Phil Deane) Fort Belvoir, VA 22060	5
Director U.S. Army Electronics & Development Command Night Vision & Electro-Optics Laboratory ATTN: DELNV-RM-RA (M. Pabto) Fort Belvoir, VA 22060	1
EMI GENCOM INC. 80 Express Street ATTN: Mr. Fred Belasco Plainview, NY 11803	1
Naval Air Development Center ATTN: Code 6022 (Mr. J. H. Brindle) Warminster, PA 18974	1

ADDRESSES

NO. OF COPIES

Air Force Avionics Laboratory  
ATTN: AFWAL/AAAT (Mr. John Mysing) 1  
Wright-Patterson AFB, OH 45433

Electronic Technology & Devices Laboratory 1  
ATTN: DELET-BD (Dr. Elliott Schlam)  
Fort Monmouth, NJ 07703

Rockwell International Corporation 1  
Defense Electronics Operations  
3370 Miraloma Avenue  
ATTN: Mr. Chuck McConkle  
Anaheim, CA 92803

Hughes Aircraft Company 1  
Aerospace Groups  
Electro-Optical & Data Systems Group  
Centinela & Teale Streets  
ATTN: Mr. Michael Ernstoff  
Culver City, CA 90230

Honeywell Inc. 1  
2600 Ridgway Rd.  
Minneapolis, MN 55413  
Mail Station MN17-1330

FILMEI  
— 8