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## MILITARY SPECIFICATION

### MICROFICHE; FOR ENGINEERING/TECHNICAL DATA, REPORTS, STUDIES AND RELATED DATA, REQUIREMENTS FOR

This specification is mandatory for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE.

1.1 Scope. This specification covers the detail requirements for the filming of engineering and technical data, reports, studies and related information, preparation of microfiche and reproduction copies thereof by the Department of Defense or by its contractors. Microfiche produced in accordance with the requirements of this specification shall be of the size cited herein.

#### 1.2 Classification.

\* 1.2.1 Types, Classes and Kinds. Microfiche covered by this specification shall be of the following types, classes and kinds, as specified (see 6.2):

Type I - Silver Halide Microfiche.

Class 1 - Camera microfiche (negative type) - clear line image.

Class 2 - First reproduction microfiche made from Class 1 microfiche.

Kind N - clear line image.

Kind P - dark line image.

Class 3 - Second reproduction microfiche made from Class 2 microfiche.

Kind N - clear line image.

Kind P - dark line image.

Class 4 - Third reproduction microfiche made from Class 3 microfiche.

Kind N - clear line image.

Kind P - dark line image.

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Type II - Diazotype microfiche.

Class 2 - First reproduction microfiche made from Class 1 microfiche.

Kind N - clear line image.

Kind P - dark line image.

Class 3 - Second reproduction microfiche made from Class 2 microfiche.

Kind N - clear line image.

Kind P - dark line image.

Class 4 - Third reproduction microfiche made from Class 3 microfiche.

Kind N - clear line image.

Kind P - dark line image.

Type III - Vesicular microfiche.

Class 2 - First reproduction microfiche made from Class 1 microfiche.

Kind N - clear line image.

Kind P - dark line image.

Class 3 - Second reproduction microfiche made from Class 2 microfiche.

Kind N - clear line image.

Kind P - dark line image.

Class 4 - Third reproduction microfiche made from Class 3 microfiche.

Kind N - clear line image.

Kind P - dark line image.

\* 1.2.2 Styles. The following styles apply to all Types, Classes and Kinds of microfiche and are listed to cover the various formats of microfiche and to expand the classification information in 1.2.1.

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Style 1 - Sixty (60) grid area format (See Fig. 1).

Style 2 - Ninety-eight (98) grid area format (See Fig. 4)

## 2. APPLICABLE DOCUMENTS.

\* 2.1 The following documents of the issue in effect on date of invitation for bids or request for proposals, form a part of this specification to the extent specified herein.

### SPECIFICATIONS

#### FEDERAL

|           |   |
|-----------|---|
| L-F-320   | Film, Thermal Developing  |
| L-F-330   | Film, Photographic, Black and White, General Specification for                                  |
| L-F-340   | Film, Sensitized, Wash-off Process; Diazotype, Moist and Dry Process; Brownprint Roll and sheet |
| PPP-B-636 | Box Fiberboard  |

#### MILITARY

|             |  |
|-------------|--|
| MIL-M-38761 | Microfilming and Photographing of Engineering/Technical Data and Related Documents: PCAM Card Preparation, Engineering Data Micro-Reproduction System, General Requirements for Preparation of |
|-------------|--|

### STANDARDS

#### FEDERAL

|                |  |
|----------------|--|
| Fed Std No 125 | Film, Photographic and Film, Photographic, Processed; (for permanent record use) |
|----------------|--|

#### MILITARY

|             |   |
|-------------|---|
| MIL-STD-105 | Sampling Procedures and Tables for Inspection by Attributes |
| MIL-STD-129 | Marking for Shipment and Storage                            |

(Copies of Specifications, Standards, Drawings, and Forms required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

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2.2 Other Publications. The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this specification to the extent specified herein.

\* 2.2.1 American National Standards Institute, Inc. (ANSI). Standards of the American National Standards Institute may be obtained from the American National Standards Institute, Inc. 1430 Broadway, New York, N.Y. 10018.

|             |   |
|-------------|---|
| PH1.29-1958 | Curl of Photographic Film,<br>Methods for Determining the   |
| PH2.19-1959 | Diffuse Transmission Density  |
| PH4.8-1958  | Determining Thiosulfate Content<br>of Processed Black & White<br>Photographic Film, and Plates,<br>Method for |
| PH4.20-1958 | Photographic Filing Enclosures<br>for Storing Processed Photo-<br>graphic Films, Plates and Papers            |

2.2.2 National Bureau of Standards (NBS). The Microcopy Resolution Test Chart, Standard Sample 1010, may be obtained from the Standard Materials Unit, National Bureau of Standards, Washington, D. C. 20234.

Microcopy Resolution Test Chart, Standard Sample 1010

\* 2.3 Federal Microfiche Standards (PB 167 630). The Committee on Scientific and Technical Information (COSATI) of the Federal Council of Science and Technology, the Executive Office of the President, has prescribed standards for the preparation of microfiche when microfiche copies are distributed to technical information centers. The requirements contained in this specification are compatible with, but more detailed than, those requirements contained in PB 167 630. Copies of PB 167 630 may be obtained from the National Technical Information Service, Operations Division, Springfield, Virginia 22151.

### 3. REQUIREMENTS

3.1 General. The general requirements for processed microfiche are contained in Section 3 of MIL-M-38761.

#### 3.2 Detail Requirements.

##### 3.2.1 Unprocessed Microfiche.

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3.2.1.1 Type I microfiche shall be in accordance with L-F-330.

3.2.1.2 Type II microfiche shall be in accordance with L-F-340.

3.2.1.3 Type III microfiche shall be in accordance with L-F-320 (except for size).

### 3.2.2 Processed Microfiche.

3.2.2.1 All processed Type I microfiche shall be in accordance with Fed Std No 125.

\* 3.3 Reduction Ratio. The reduction ratios used for the filming shall not exceed 20X for Style 1 and 24X for Style 2

\* 3.4 Size and Thickness. The size of the microfiche shall be 105mm + 0.00mm - 0.75mm by 148.75mm + 0.00mm - 0.75mm. Unless otherwise specified by the procuring activity, the thickness of the film shall be: Type I, 0.0057inch + or - 0.0004 inch; Type II, 0.002 inch minimum and 0.0095 inch maximum; and Type III, 0.0019 inch minimum and 0.0064 inch maximum. When the procuring activity specifies the use of backing material for title or other areas, the increase in thickness shall not exceed 0.0005 inch. The camera microfiche, when used only as a master for reproduction purposes, may exceed the overall length and width dimensions specified herein.

3.5 Corner Cuts. When corner cuts are specified by the procuring activity, microfiche with the emulsion away from the observer when the micro images are right reading shall have an upper left corner cut; microfiche with the emulsion toward the observer when the micro images are right reading shall have an upper right corner cut. The corner cut shall be made at a diagonal from points 0.125 inches in each direction from the proper corner of a right reading microfiche.

\* 3.6 Grid Area Size and Grid Line Dimensions. The minimum grid area size shall be 11.20mm horizontally by 15.95mm vertically for Style 1 and 9.75mm horizontally by 12.25mm vertically for Style 2. The location, size and dimensions of grid lines and grid areas for microfiche shall be in accordance with Figures 1 and 2 for Style 1 and Figures 4 and 5 for Style 2.

\* 3.7 Protective Coating. When specified by the procuring activity, the processed microfiche, both negative and positive, shall have a protective coating applied to the microfiche emulsion after processing. The protective coating shall be uniform in thickness so as not to adversely affect resolution of further film generations, a clear substance that will stay within clear line density tolerances and shall entirely cover the emulsion of each sheet of microfiche. The protective coating shall not contain any streaks, bubbles, lap marks, lumps, etc., or foreign material.

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\* 3.8 Document Unit Size. The maximum document unit size shall not be greater than 9 x 13 inches including the information area and the margin. The unit to be recorded in one grid area may be a complete single sheet or page or a section not larger than 9 x 13 inches of a larger sheet or page. Two or more documents smaller than the document unit size may be grouped together and recorded as one grid area provided their composite document unit size does not exceed 9 x 13 inches. Pages of technical publications larger than 9 x 13 inches may be filmed in two or more grid areas, either vertically or horizontally, as required (see 3.9.1).

### 3.9 Document unit Image.

\* 3.9.1 Each document unit image shall be centered both lengthwise and widthwise within the lines prescribing the limits of one grid area as defined in Figures 1 or 4 as applicable. Document unit images of pages larger than 9 x 13 inches shall be filmed in sections so that they read from left to right, top to bottom -- the reference point being the upper left hand corner of the printed page. Pages of technical publications larger than 9 x 13 inches may be filmed in two or more grid areas, either vertically or horizontally as required.

\* 3.9.2 Grid Areas, Row and Image Identification. The top row (A), of all sheets of microfiche, is dedicated for titling information (see Figs 2, 3, 5 and 6) and do not contain any alpha or numeric identification. For reference purposes rows and columns of grid areas that are used to record document images, are identified by letters beginning with "B" and columns of images are identified by numbers beginning with "1". The identification of individual grid areas is as follows:

a. For Style 1, the first grid area used to record images is identified as B-1 and the last grid area is F-12 (see Fig 2).

b. For Style 2, the first grid area used to record images is identified as B-1 and the last grid area is H-14 (see Fig 5).

Actual display of these letters and numbers on the microfiche is optional.

3.9.3 Pages shall not be rotated for right reading. For example, pages not exceeding 9 x 13 inches, which are printed in the original document with type reading across the 13 inch dimension shall be filmed as bound in the document.

3.9.4 It shall be the objective to avoid or minimize blank grid images in the sequence of report or other material pages. If however, a blank page is filmed, it shall be identified as a "BLANK PAGE." If a blank page is not filmed and carries a page number with the report or other material, a statement shall be placed on the top of the next page filmed "PRECEDING PAGE BLANK - NOT FILMED."

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3.9.5 Unless specified by the procuring activity distribution lists shall not be filmed.

3.9.6 All unused grid areas shall appear as clear blank transparent areas.

3.9.7 All camera and distribution microfiche shall have clear lines on dark background document images, with clear grid lines.

\* 3.10 Title Area

\* 3.10.1 Style 1, Sheet 1 and all trailer sheets thereto of each report or other material.

\* 3.10.1.1 Row A of all sheets of microfiche for each report or other material shall be dedicated for titling information (see Figs 2 and 3) and all entries shall be readable to the unaided eye.

3.10.1.2 Identification and Title Arrangement.

3.10.1.2.1 The title area is described as Row A. It shall appear as a positive (opaque on clear or on contrasting backing). Elements of the title area are:

(a) The report or other material number shall be across the upper portion of A-1 and A-2 (as shown on Figs 2 and 3) as follows:

(1) The number of the report or other material - displayed in a bold face type as close to the top edge as possible.

(2) Directly below the report or other material number shall be the security classification of the report or other material, including the marking "UNCLASSIFIED" when it pertains. Security classification markings shall not be abbreviated.

(3) If a report or other material has been assigned two numbers, the number shown shall be that of the sponsoring agency, e.g., a DOD report or other material shall show the AF number when applicable. It is permissible for another agency to eliminate and substitute its own number on subsequent microfiche copies.

(b) Title information shall include descriptive cataloging data. If space limitations preclude use of all elements, then priority of inclusion shall follow the order below:

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(1) Report or other material title

(the report or other material title may be shortened or abbreviated. However, when this is done, the short title shall be followed by "etc." to indicate that the title has been abbreviated.)

(2) Corporate Source.

(3) Corporate Source Report or other material number.

(4) Sponsoring/Monitoring Agency and Related Report or other material number.

(5) Primary Personnel Author. Secondary authors shall be indicated by "et al".

(6) Contract Number.

(7) Kind of report, whether final, 2nd quarterly, and so forth.

(8) Number of pages.

(9) Report or other material date.

(10) Foreign Language Title if sufficient space exists.

(c) The report or other material title shall be placed in Row A, Grid images 3 through 12 which will accommodate up to five lines of type script reduced 25 to 30%.

(d) The lower half of Grid Images A-11 and A-12 shall be used for entry of distribution coding of the producing agency.

\* 3.10.2 Style 2, Sheet 1 and all trailer sheets thereto of technical publications.

\* 3.10.2.1 Row A of all sheets of microfiche for each technical publication shall be dedicated for titling information (see Figs 5 and 6) and all entries shall be readable to the unaided eye.

\* 3.10.2.2 Identification and Title Arrangement.

\* 3.10.2.2.1 The title area is described as Row A. It shall appear as a positive (opaque on clear or on contrasting backing). Elements of the title area are:



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(a) The technical publication number shall be across the upper portion of A-1 and A-2 (see Figs 5 and 6) and be displayed in a bold face type as close to the top edge as possible.

(b) Directly below the publication number shall be the security classification of the publication, including the marking "UNCLASSIFIED" when it pertains. Security classification markings shall not be abbreviated.

(c) If a technical publication has been assigned both a Government and Industry number, both numbers shall be depicted.

(d) Title information shall include the following:

(1) Technical publication title (e.g., Field Maintenance Technical Manual).

(2) Technical publication number (e.g., T. O. 21-J69-46).

(3) Item model and/or part number (e.g., USAF Model J69-T-25, P/N 576800).

(4) Contractor/Vendor name (e.g., Continental Aviation and Engineering Corp.)

(5) Contract number (e.g., AF 33 (600)35528).

(6) When a technical publication supersedes or replaces another publication, the old technical publication number will be depicted.

(7) Date of publication (e.g., 25 January 1967).

\* 3.11 Document Image Area.

\* 3.11.1 First Sheet of Style 1 and Style 2 Microfiche.

\* 3.11.1.1 Grid Image B-1 shall be dedicated as clear blank space so that agencies other than the original processor may enter their own number for additional production and distribution purposes.

\* 3.11.1.2 Grid Image B-2 shall be dark line on clear background (except for Resolution Chart) and shall contain at the top an indication of the total number of microfiche required to contain that particular report, technical publication or other material, e.g., 1 of 1, 1 of 3, etc. Directly below shall be the report, technical publication or other material number legible to the unaided eye. At the bottom shall be a single NBS 1010 Microcopy Resolution Chart with clear line on dark background.

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\* 3.11.1.3 The cover, title page or other identification of the report, technical publication or other material shall be recorded in Grid Image B-3 for Unclassified Unlimited reports or other material and B-4 for all others. Succeeding pages shall be recorded in numerical sequence from left to right, grid image to grid image, and from top to bottom by row. If a second fiche (trailer sheet) is not required, the last recorded grid image shall contain the word "End" and date filmed, unless the last image page occupies the last grid image. In such cases, the "END" image shall be photographed as part of the last page of the report or other material.

\* 3.11.2 Trailer Sheets of Style 1 Microfiche.

\* 3.11.2.1 The same title information appearing in Row A of the first sheet (3.10.1.1) shall appear in Row A of all trailer sheets. Image areas are numbered from B-1 through F-12 and utilized as follows.

\* 3.11.2.2 Grid Image area B-1 shall be left blank and shall be clear.

\* 3.11.2.3 Grid Image B-2 shall be the same as B-2 of the initial microfiche except that it will be marked 2 of 2, 2 of 3, etc.

\* 3.11.2.4 For unclassified-unlimited reports pagination shall continue starting with Grid Image B-3.

\* 3.11.3 Trailer Sheets of Style 2 Microfiche.

\* 3.11.3.1 The same title information appearing in Row A of the first sheet (see 3.10.2.1), shall appear in Row A of all trailer sheets. Image areas are numbered from B-1 through H-14 and utilized as follows.

\* 3.11.3.2 Grid Image area B-1 shall be left blank and shall be clear.

\* 3.11.3.3 Grid Image B-2 shall be the same as B-2 of the initial microfiche except that it will be marked 2 of 2, 2 of 3, etc.

\* 3.11.3.4 For unclassified technical publications pagination shall continue starting with Grid Image B-3.

\* 3.11.4 The last recorded image area of the last trailer sheet of both Style 1 and 2 microfiche shall contain "END" and date of filming, in size readable to the unaided eye, unless the last image page occupies the last grid image. In such cases, the "END" image shall be photographed as part of the last report page.

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\* 3.11.5 Special Instructions for Classified and Unclassified-Limited Distribution Documents (see Fig 9). Documents or material which are classified "TOP SECRET" shall not be recorded on microfiche.

\* 3.11.5.1 Figure 7 shall appear in Grid Area B-3.

\* 3.11.5.2 The following shall appear on Row A of microfiche sheet 1, beginning after the document number which appears in Grid Areas A-1 and A-2, and making optimum use of horizontal and vertical space so as to occupy as few grid areas as possible:

(a) The security classification and "restricted Data," "Formerly Restricted Data," or the unclassified-limited distribution marking applicable to the document. Security classification markings shall not be abbreviated.

(b) The downgrading declassification group marking. This may be abbreviated, e.g., GP-1.

(c) Security documentation, if required to identify each microfiche copy of a given document.

All of the above shall be legible without magnification, exact placement within grid area and type size being in accordance with regulations of the originating agency.

\* 3.11.5.3 For documents requiring trailer sheets, the security classification and unclassified-limited distribution marking (see 3.11.5.2(a)) applicable to the document shall appear in Row A on such trailer sheets, beginning after the document number which appears in Grid Areas A-1 and A-2 and occupying as few grid areas as possible. These markings shall not be abbreviated. They shall be legible without magnification, placement within the grid areas and type size being in accordance with regulations of the originating agency. The downgrading classification group marking shall be shown in trailer sheets as required.

\* 3.11.6 Special Instructions for Classified Technical Publications (see Fig 9). Technical publications which are classified "TOP SECRET" shall not be recorded in microfiche.

\* 3.11.6.1 Figure 7 shall appear in Grid Area B-3.

\* 3.11.6.2 The following shall appear on Row A of microfiche sheet 1, beginning after the document number which appears in Grid Areas A-1 and A-2, and making optimum use of horizontal and vertical space so as to occupy as few grid areas as possible:

(a) The security classification and "Restricted Data" "Formerly Restricted Data," "Defense Information" or the unclassified-limited distribution marking applicable to the document. Security classification markings shall not be abbreviated.

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(b) The downgrading declassification group marking. This may be abbreviated, e.g., GP-1.

(c) Security documentation, if required to identify each microfiche copy of a given document.

All of the above shall be legible without magnification, exact placement within grid areas and type size being in accordance with regulations of the originating agency.

\* 3.11.6.3 For technical publications requiring trailer sheets, the security classification and the unclassified-limited distribution marking (see 3.11.6.2(a)) applicable to the technical publication shall appear in Row A on such trailer sheets, beginning after the document number which appears in Grid Areas A-1 and A-2, and occupying as few grid areas as possible. These markings shall not be abbreviated. They shall be legible without magnification, placement within the grid areas and type size being in accordance with regulations of the originating agency. The downgrading declassification group marking shall be shown in trailer sheets as required.

\* 3.12 Image Resolution. The quality of all processed microfiche shall be such that the resolution requirement listed below for the appropriate class and reduction is resolved:

|         | <u>20X</u>       | <u>24x</u>       |
|---------|------------------|------------------|
| Class 1 | 126 lines per mm | 120 lines per mm |
| Class 2 | 112 lines per mm | 108 lines per mm |
| Class 3 | 100 lines per mm | 96 lines per mm  |
| Class 4 | 90 lines per mm  | 87 lines per mm  |

\* 3.13 Background Density. Background variations within the document image area that are outside the specified limits resulting from contrast differences within the original document because of corrections, erasures, patching, aging, continuous tone or half-tone areas may be acceptable if the resulting image meets the other technical quality requirements of this specification. All densities mentioned in the specification are gross densities. The density shall be visual diffuse (Type VI B) as measured using the method described in ANSI Standard PH2.19-1959. The visual diffuse transmission density of the background of the document image on Type I microfiche shall be as listed below:

|         |        |                   |
|---------|--------|-------------------|
| Class 1 |        | 1.00 through 1.20 |
| Class 2 | Kind N | 1.00 through 1.20 |
|         | Kind P | 0.04 through 0.16 |
| Class 3 | Kind N | 0.90 through 1.30 |
|         | Kind P | 0.04 through 0.20 |
| Class 4 | Kind N | 0.85 through 1.35 |
|         | Kind P | 0.04 through 0.24 |

\* 3.14 Workmanship. Microfiche produced in accordance with this specification shall be free of scratches, holes, tears,

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finger marks, or any other defect that might adversely affect the quality of reproduction made from the microfiche.

\* 3.15 Curl and Bow. The curl or bow of a sheet of flat cut distribution microfiche when placed, convex side down, on a flat surface for at least six hours in a 70°F, 50% relative humidity atmosphere, shall have no part of the microfiche more than 0.25 inch above the surface (ANSI Standard PH1.29-1958).

\* 3.16 Technical Quality of Microfiche. Each document unit image of a microfiche shall be so exposed and processed so that every line and character on the report or other material shall be transferred to the microfiche with sufficient clarity to maintain reproducibility through the number of successive microfiche reproductions listed below and the subsequent generation of the paper print from the last microfiche reproduction for inspection in accordance with 4.4.5.

From Class 1 Microfiche 4 microfiche reproductions  
 From Class 2 Microfiche 3 microfiche reproductions  
 From Class 3 Microfiche 2 microfiche reproductions  
 From Class 4 Microfiche 1 microfiche reproduction

#### 4. QUALITY ASSURANCE PROVISIONS.

\* 4.1 Responsibility For Inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Certification, of all tests performed in accordance with this section shall be submitted to the procuring activity on a contractor's form similar to Figure 8 and in accordance with contractual requirements.

4.2 Inspection Equipment and Inspection Facilities. Inspection equipment and inspection facilities shall be of sufficient accuracy, quality and quantity to permit performance of the required acceptance inspections.

4.3 Microfiche Inspection. The lots of processed microfiche shall be sampled and inspected in accordance with MIL-STD-105 and the applicable subparagraphs hereto. Unless otherwise specified by the procuring activity, normal inspection shall be used at the start of the contract. Each type and class of microfiche shall be submitted for acceptance, inspected and accepted or rejected separately.

4.3.1 Type I Microfiche. Type I microfiche shall be inspected in accordance with Table I. For the purpose of background density test and visual inspection, an inspection lot is the total number of microfiche

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submitted for acceptance at one time. For the purposes of resolution tests, and image positioning test, an inspection lot is the number of microfiche submitted for acceptance at one time. For the purposes of the hypo residual test and reproducibility test, an inspection lot is the quantity of microfiche processed and tested.

TABLE IINSPECTION OF TYPE I MICROFICHE

| <u>Inspection</u>                       | <u>Reqt<br/>Par</u>            | <u>Test<br/>Par</u> | <u>AQL or<br/>Sampling Plan</u>          |
|---|--------------------------------|---------------------|--|
| <u>Class 1 Microfiche</u>               |                                |                     |  |
| Image Positioning                       | 3.9.1, 3.10.1,<br>3.10.2, 3.11 | 4.4.2               | )  |
| Reduction Ratio                         | 3.3                            | )                   | .65%                                     |
| Resolution                              | 3.12                           | 4.4.1               | )  |
| Background Density                      | 3.13                           | 4.5.1               | .65%                                     |
| Visual                                  | 3.14                           | 4.4.3               | Major .65%<br>Minor 2.5%<br>Control 4.0% |
| Hypo Residual                           | 3.2.2.1                        | 4.5.2               | 2 Sample<br>Units per lot                |
| Reproducibility                         | 3.16                           | 4.4.5               | 2 Sample<br>Units per lot                |
| Size                                    | 3.4                            |                     |  |
| Curl                                    | 3.15                           |                     |  |
| <u>Class 2, 3 or Class 4 Microfiche</u> |                                |                     |  |
| Resolution                              | 3.12                           | 4.4.1               | ) .40%                                   |
| Background Density                      | 3.13                           | 4.5.1               | ) .65%                                   |
| Visual                                  | 3.14                           | 4.4.4               | Major .65%<br>Minor 2.5%<br>Control 4.0% |
| Hypo Residual                           | 3.2.2.1                        | 4.5.2               | 2 Sample<br>Units per lot                |
| Reproducibility                         | 3.16                           | 4.4.5               | 2 Sample<br>Units per lot                |
| Size                                    | 3.4                            |                     |  |
| Curl                                    | 3.15                           |                     |  |

4.4 General Test Procedures.

4.4.1 Resolution Test. A document unit image in a microfiche identification target, having a density between 1.0 and 1.2 on the image of the 50 percent reflectance target, shall be examined with a Microscope having a magnification of 50 to 100 times. The pattern specified in paragraph 3.12 shall be followed to measure the resolution on the five resolution test chart images on each target image at the end of the roll. (If the camera is slightly out of focus, the copy of the chart may have other than 5 lines in some groups. This is known as "spurious resolution"

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and is usually accompanied by failure to resolve at one spatial frequency when apparent resolution occurs at a higher frequency. If there is no evidence of spurious resolution, the patterns may be examined to see if they are resolved.) The directions of the lines in both groups in the specified pattern on each of the five test charts shall be distinguishable. If the direction of the lines in either or both groups in the specified pattern on one or more of the test charts are not distinguishable or there is evidence of "spurious resolution" the resolution requirement has not been met and the roll of microfiche shall be rejected and counted as one defective.

4.4.1.1 Astigmatism in the eyes of an observer may cause two groups of parallel lines, which are oriented with the direction of the lines perpendicular to one another, to appear unequally resolved. If an observer considers the lines resolved in only one of the two groups of the specified pattern, he should rotate the image (or his viewing position) 90° about the optic axis of the microscope and view the image again. If he then finds the lines resolved in a group where they had appeared not to be resolved, this test pattern may be considered to have met the resolution requirement. When neither of the patterns appears resolved, a rotation of 45° may cause one group to be resolved. A further rotation of 90° may then permit resolution of the other group and, if so, the resolution requirement is met.

4.4.2 Image Positioning Tests. Three document unit images shall be selected without regard to quality on the microfiche. If any of these images fails to meet the positioning requirements, the microfiche shall be rejected and counted as one defective.

4.4.3 Visual Inspection of Class 1 Microfiche. Class 1 microfiche shall be inspected at any one magnification from 8X through 20X for the defects listed in Table II.

TABLE II

Classification of Visual Defects for Class 1 Microfiche

| <u>Classification</u> | <u>Defect</u>  |
|-----------------------|--|
| <u>Major</u>          | Report or other material number is not clear and distinct.<br>Characters or symbols in title area are filled in or light to the extent they are illegible.<br>Grid lines are not clear.<br>Data is obscured, illegible, or out of focus.<br>Blisters, tears, or processing stains are on microfiche.<br>Scratches are on microfiche; touching or through the document image. |



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TABLE II (Cont)

|                |   |
|----------------|---|
| <u>Major</u>   | Foreign material is in grid area; obliterating, obscuring, or defacing document unit image. Scratches, streaks, bubbles, lap marks, lumps, or foreign material is in protective coating over grid area; obliterating, obscuring, or defacing document unit image (when applicable). Document unit image is not positioned in the grid area in accordance with 3.9.1.                                |
| <u>Minor</u>   | Corner cut not correct.<br>Foreign material is in grid area; not obliterating, obscuring, or defacing document image but adversely affecting appearance of microfiche.<br><br>Scratches, streaks, bubbles, lap marks, lumps, or foreign material is in grid area; but not obliterating, obscuring, or defacing document unit image (when applicable).<br>Title information incorrect or incomplete. |
| <u>Control</u> | Finger marks, oil grease, is on microfiche.<br>Scratches are on microfiche; not touching or through the document unit image.<br>Foreign material is in grid area but not in document unit image area.<br>Dust spots on background of document unit image.<br>Scratches, streaks, bubbles, lap marks, lumps or foreign material is in, but not over document unit image (when applicable).           |

\*4.4.4 Visual Inspection of Class 2, 3 or Class 4 Microfiche.  
Class 2, 3 or Class 4 microfiche shall be inspected at any one magnification for 8X through 20X magnification for the defects listed in Table III.

TABLE III

Classification of Visual Defects for Class 2, 3 or Class 4  
Microfiche

| <u>Classification</u> | <u>Defects</u>   |
|-----------------------|--|
| <u>Major</u>          | Reports or other material number is not clear and distinct.<br>Characters or symbols in the title are filled in or light to the extent they are illegible. |



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TABLE III (Cont)

|                |  |
|----------------|--|
| <u>Major</u>   | <p>Grid lines are not clear or opaque as applicable per type and class.</p> <p>Blisters, tears, or processing stains are on microfiche.</p> <p>Scratches, are on microfiche; touching or through the document unit image.</p> <p>Foreign material is in grid area; obliterating; obscuring, or defacing document unit image (when applicable).</p>   |
| <u>Minor</u>   | <p>Foreign material is in grid area; not obliterating, obscuring, or defacing document unit image but adversely affecting appearance of microfiche.</p> <p>Corner cut not correct.</p> <p>Scratches, streaks, bubbles, lap marks, lumps, or foreign material are in grid area; but not obliterating, obscuring, or defacing document unit image (when applicable).</p>   |
| <u>Control</u> | <p>Finger marks, oil, or grease is on microfiche.</p> <p>Scratches are on microfiche; not touching or through the document unit image.</p> <p>Foreign material is in frame but not in document unit image.</p> <p>Dust spots on background of document unit image.</p> <p>Scratches, streaks, bubbles, lap marks, lumps, or foreign material are in but not over document unit image area (when applicable).</p> |

4.4.5 Reproducibility Test. Two successive document unit images shall be selected at random on the sample microfiche. After the requisite number of successive reproductions of sample microfiche are made in accordance with 3.16, paper prints shall be made using any enlargement ratio in the range of 14X through 16X. The two prints shall be examined for legibility. If both prints are not legible, the sample microfiche shall be rejected and Government acceptance of microfiche shall be stopped until corrective action satisfactory to the Government has been taken.

#### 4.5 Special Test Procedures for Type I Microfiche.

4.51. Background Density Test for Type I Microfiche. The background density test shall be performed on Type I microfiche in accordance with ANSI Standard PH2.19-1959. The combined accuracy and precision of densitometers shall be so maintained

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that measurements of diffuse density, Type VI B, defined in ANSI Standard PH2.19-1959 are within the following tolerances: +.02 density units at density levels up to and including 1.00 and +.03 density units at density levels greater than 1.00. This shall be accomplished by determining the accuracy of densitometers at least once each month at density levels in the range of 0.03 to 0.05 and 1.00 to 1.20 using standard density patches. The calibration density patches should be prepared for the types of films used in the microfiche system. Calibration is then to be made either by adjusting the densitometers used to read accurately in terms of the standard patches or by adding or subtracting the observed differences from the designated densities of these patches. Sufficient readings of calibration patches shall be made to insure conformity with the above tolerances. Microfiche shall be selected without regard to quality. A densitometer reading shall be taken on three document unit images. If one or more of the readings are outside the limits specified in 3.13, the microfiche shall be rejected. Microfiche rejected by this test shall be processed in accordance with 4.7.

4.5.2 Hypo Residual Test for Type I Microfiche. The Type I microfiche submitted in accordance with the requirements of this specification shall meet the conditions for residual hypo content as set forth by Fed Std No 125 and ANSI Standard PH4.8-1958. Samples for this test shall be taken from the processed leader of the roll of film. If one or more of the samples fail to pass the hypo residual test, the lot shall be rejected.

4.6 Inspection of Microfiche. Prior to delivery to the procuring activity, microfiche shall be inspected, image by image at a minimum of 8 diameters of enlargement. Microfiche not conforming with this specification shall be refilmed in accordance with Section 3.

\* 4.7 Certificate. The certificate, Figure 8, has been included in this specification in order that it may be copied by the contractor. As each shipment of microfiche is inspected and approved by the contractor, one of these certificates shall be filled out and mailed to the address indicated in the contract.

## 5. PREPARATION FOR DELIVERY,

5.1 Interior Packaging. When microfiche are in roll form, each reel of microfiche shall be packaged in a metal or plastic reel can or cardboard reel box, which shall be marked to identify the reel. When envelopes are specified, the microfiche shall be packed in close fitting envelopes with adhesive closure or in paper-board or fiberboard boxes, as suitable for the number of microfiches to be packed, and in a manner which shall insure arrival at destination in satisfactory condition and which shall be acceptable to the carrier at lowest rates. If a paper envelope is used, it shall have archival quality as specified in ANSI PH4.20-1958, and contain no adhesive or chemical content that would produce a degenerate effect upon the microfiche negative in storage. Stiffening boards shall be used on the top and bottom of the microfiche or stack of microfiches to prevent bending and

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damage to the microfiches. The contents of shipping containers or the shipping container itself shall be inclosed in a waterproof wrap or bag which shall be fully sealed to provide waterproof protection.

5.2 Exterior Shipping Container. The collective rolls or envelopes of microfiche shall be packed in exterior shipping containers in accordance with PPP-B-636. The microfiche shipment shall be addressed as specified by the procuring activity.

5.3 Marking of Shipments. Interior packages and exterior shipping containers shall be marked in accordance with MIL-STD-129. Interior packages containing Class 1 (camera microfiche) shall also be marked with the additional note "Avoid Finger Marking or Mishandling of this Master Camera Film."

5.4 Classified Microfiche. Microfiche of classified data shall bear the same classification as the original data. Shipment of the microfiche must, therefore, be performed according to the security regulation applicable to the contract.

## 6. NOTES

6.1 Intended Use. Microfiche acquired in accordance with this specification is intended to satisfy Department of Defense requirements for the filming of engineering/technical data, reports, studies, and related data and the preparation of reproduction microfiche.

\* 6.2 Ordering Data. Procurement documents shall specify the following:

- (a) Title, number, and date of this specification.
- (b) Quantities of types, classes, kinds and styles of microfiche required (see 1.2.1 and 1.2.2).
- (c) Delivery data and destination (s) for microfiche.
- (d) Interior and Exterior Packaging (see Section 5).
- (e) Reduction ratio (see 3.3).
- (f) Corner cut (see 3.5).
- (g) Size of envelopes.
- (h) Grid dimensions (see 3.6).
- (i) Protective coating (see 3.7).

6.3 Definitions. Definitions, applicable to various words and phrases used in this specification are contained in Section 6 of MIL-M-38761.

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\* 6.4 The margins of this specification are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

**Custodians:**

Army - El  
Navy - AS  
Air Force - 26  
Defense Supply Agency - DH

**Preparing Activity:**

Air Force - 26

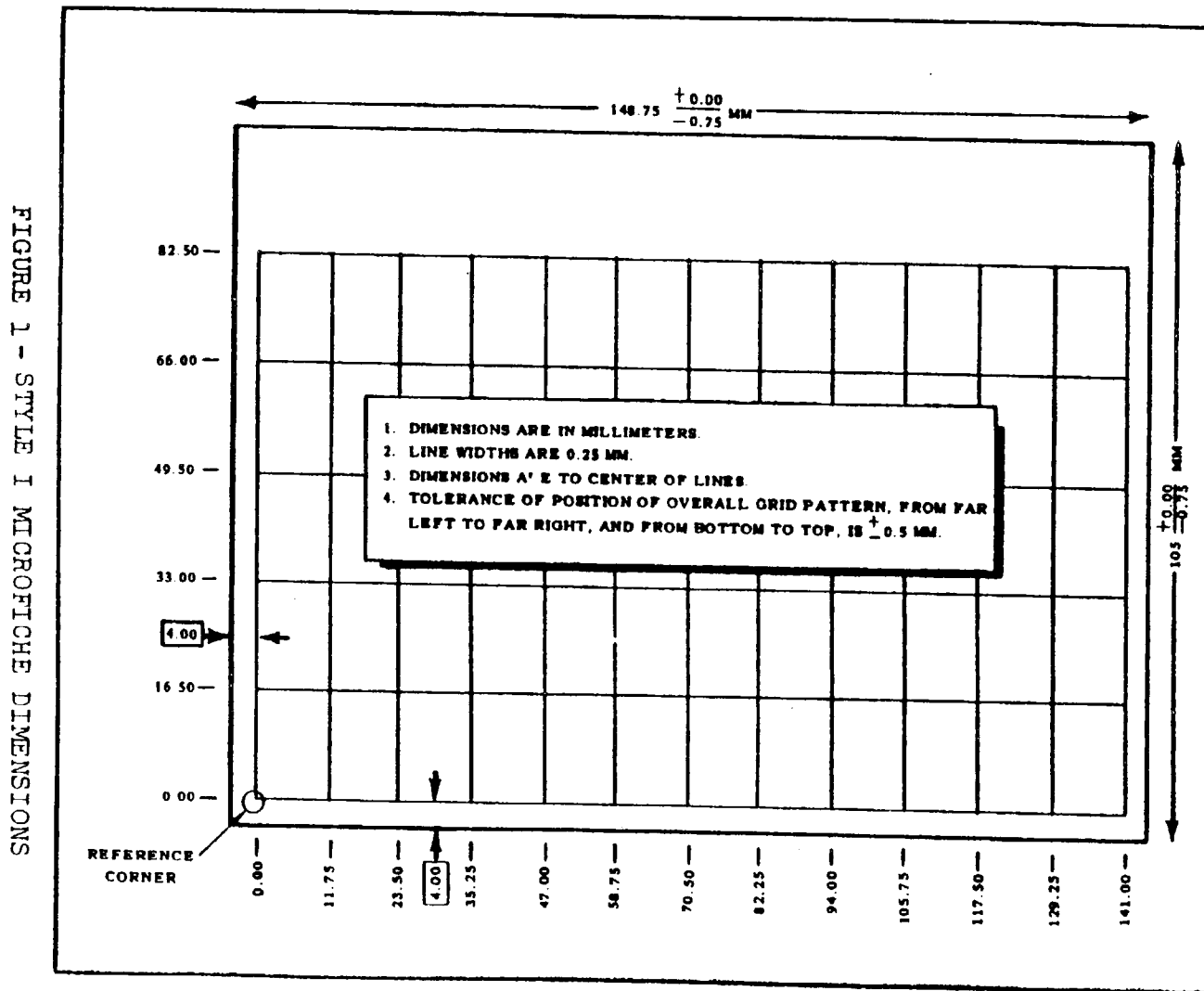
**Reviewer:**

Army - MU;ME;WC;MI;AT;AV  
Navy - OS;MC;SH;YD;SA;EC  
Air Force

Project No EDMS-0040

**USER:**

Navy - MC



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|       |  |   |   |   |   |   |   |   |   |    |                                  |    |
|-------|--|---|---|---|---|---|---|---|---|----|----------------------------------|----|
| ROW A | <b>AD 605 442</b> APPLICATION OF PERCEPTRONS TO PHOTOINTERPRETATION.<br><b>UNCLASSIFIED</b> FINAL REPT. FOR 1 JUN 63-1 JUL 64. CORNELL AERONAUTICAL<br>LAB., INC., BUFFALO N. Y. VE-1445-6-4. T. R. BABCOCK,<br>ET AL. CONTRACT NONR-3161-66. 75P<br>JUL 64. U-2-3 |   |   |   |   |   |   |   |   |    |                                  |    |
| ROW B | 1 OF 1<br>AD<br>605442   |   |   |   |   |   |   |   |   |    |                                  |    |
| ROW C | NBS RESOLUTION CHART   |   |   |   |   |   |   |   |   |    |                                  |    |
| ROW D |  |   |   |   |   |   |   |   |   |    |                                  |    |
| ROW E |  |   |   |   |   |   |   |   |   |    |                                  |    |
| ROW F |  |   |   |   |   |   |   |   |   |    | END<br>DATE<br>FILMED<br>4-12-65 |    |
|       | 1  | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11                               | 12 |

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FIGURE 2 - STYLE 1 GRID AREA COORDINATES AND ARRANGEMENT OF INFORMATION ON FIRST MICROFICHE SHEET FOR AN UNCLASSIFIED REPORT OR OTHER MATERIEL.

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TRAILER SHEET

AD 805 442  
UNCLAS-  
SIFIED

APPLICATION OF PERCEPTORS TO PHOTOINTERPRETATION.  
FINAL REPT. FOR 1 JUN 63-1 JUL 64. CORNELL AERONAUTICAL  
LAB., INC., BUFFALO N. Y. VE-1448-G-4. T. R. BASCOCK,  
ET AL. CONTRACT NONR-3161-00. 75P  
JUL 64.

U-2-3

1 OF 2  
AD  
805442  
D-4

NBS RESOLUTION CHART

FIRST SHEET

AD 805 442  
UNCLAS-  
SIFIED

APPLICATION OF PERCEPTORS TO PHOTOINTERPRETATION.  
FINAL REPT. FOR 1 JUN 63-1 JUL 64. CORNELL AERONAUTICAL  
LAB., INC., BUFFALO N. Y. VE-1448-G-4. T. R. BASCOCK,  
ET AL. CONTRACT NONR-3161-00. 75P  
JUL 64.

U-2-3

1 OF 2  
AD  
805442  
D-4

NBS RESOLUTION CHART

END  
DATE  
FILMED  
61368

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FIGURE 3 - STYLE 1 RELATION OF FIRST AND TRAILER MICROFICHE SHEETS  
FOR AN UNCLASSIFIED REPORT

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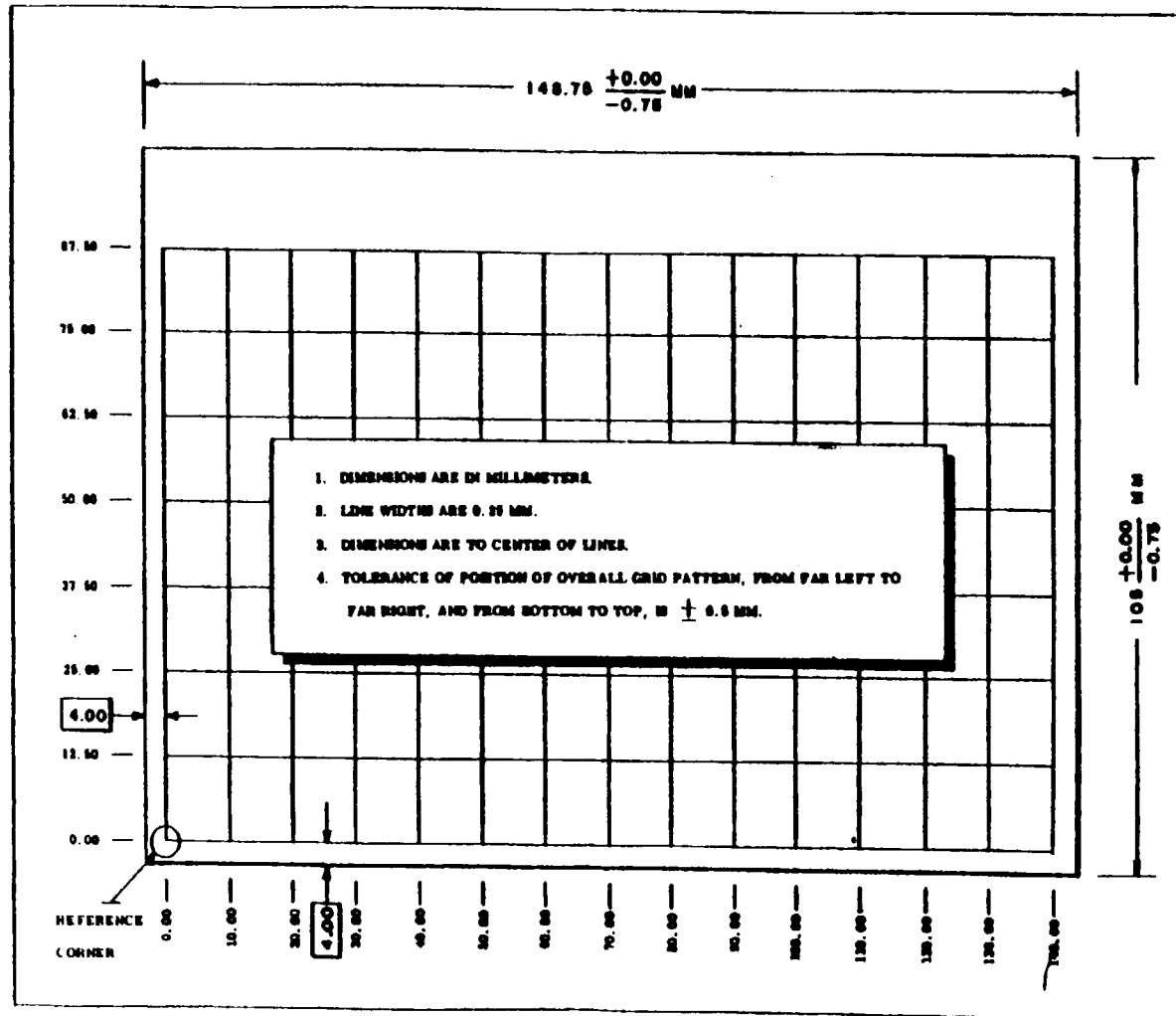
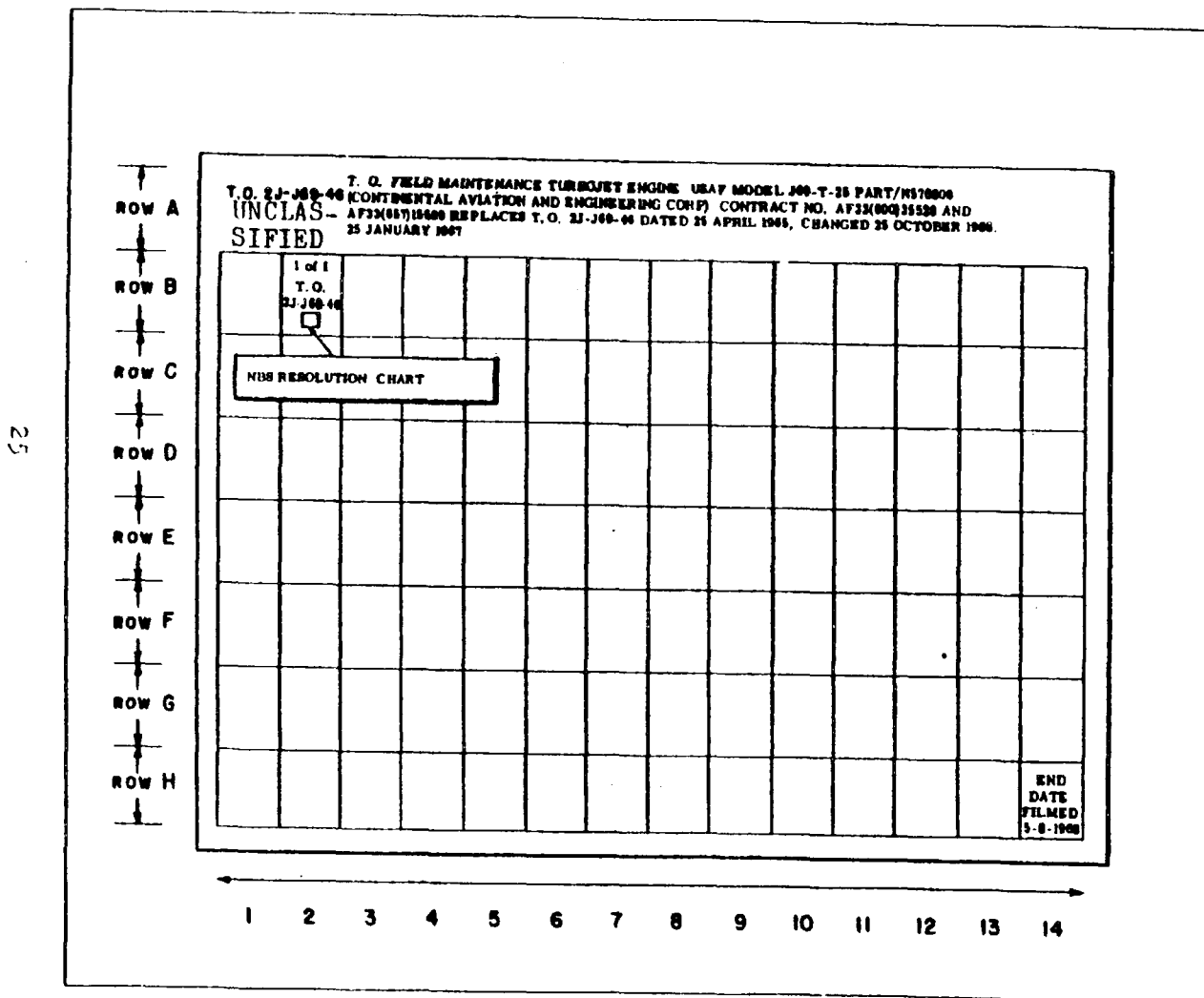


FIGURE 4 - STYLE 2 MICROFICHE DIMENSIONS





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FIGURE 5 - STYLE 2 GRID AREA COORDINATES AND ARRANGEMENT OF INFORMATION OF FIRST MICROFICHE SHEET FOR AN UNCLASSIFIED REPORT OR OTHER MATERIEL.

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The figure illustrates the relationship between the first and trailer microfiche sheets for an unclassified report. It shows two sheets, 'FIRST SHEET' and 'TRAILER SHEET', each containing an 'NBS RESOLUTION CHART'.

**TRAILER SHEET:**

1. G. FIELD BAPTISTES TUBNEY ENGINE MAP MODEL 400-V IN PART 100000  
 CONFIDENTIAL SYSTEMS AND ENGINEERING CORP. CONTRACT NO. 4700000000000000  
 AFTERWARDS REPLACES T. G. 34-100-00 DATED 10 APRIL 1960. CHANGED 10 OCTOBER 1960  
 10 JANUARY 1961

UNCLAS  
 STP 100

1. G. FIELD BAPTISTES TUBNEY ENGINE MAP MODEL 400-V IN PART 100000  
 CONFIDENTIAL SYSTEMS AND ENGINEERING CORP. CONTRACT NO. 4700000000000000  
 AFTERWARDS REPLACES T. G. 34-100-00 DATED 10 APRIL 1960. CHANGED 10 OCTOBER 1960  
 10 JANUARY 1961

NBS RESOLUTION CHART

1. G. FIELD BAPTISTES TUBNEY ENGINE MAP MODEL 400-V IN PART 100000  
 CONFIDENTIAL SYSTEMS AND ENGINEERING CORP. CONTRACT NO. 4700000000000000  
 AFTERWARDS REPLACES T. G. 34-100-00 DATED 10 APRIL 1960. CHANGED 10 OCTOBER 1960  
 10 JANUARY 1961

NBS RESOLUTION CHART

1. G. FIELD BAPTISTES TUBNEY ENGINE MAP MODEL 400-V IN PART 100000  
 CONFIDENTIAL SYSTEMS AND ENGINEERING CORP. CONTRACT NO. 4700000000000000  
 AFTERWARDS REPLACES T. G. 34-100-00 DATED 10 APRIL 1960. CHANGED 10 OCTOBER 1960  
 10 JANUARY 1961

NBS RESOLUTION CHART

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FIGURE 6 - STYLE 2 RELATION OF FIRST AND TRAILER MICROFICHE SHEETS  
 FOR AN UNCLASSIFIED REPORT

MIL-M-38748A

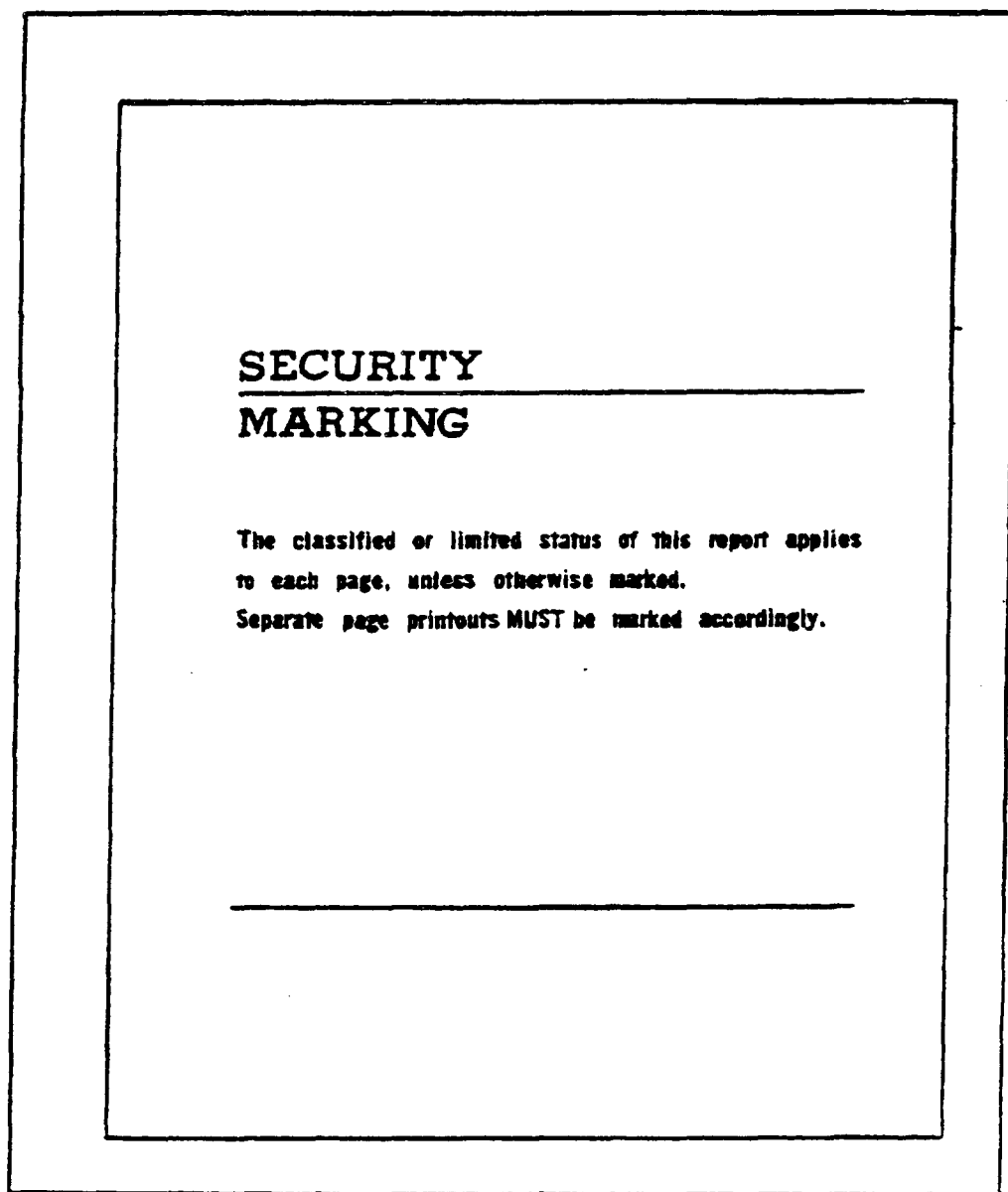


FIGURE 7 - SPECIAL NOTES

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| CONTRACTOR'S CERTIFICATE   |                          |                                      |                          |
|--|--------------------------|--------------------------------------|--------------------------|
| I hereby certify that the camera microfiche included in this shipment have been inspected and approved as meeting the quality assurance provisions checked below and all other requirements of MIL-M-38748A. |                          |                                      |                          |
| CONTRACTOR _____   |                          | CONTRACT NUMBER _____                |                          |
| INSPECTION LOT<br>NUMBER _____   |                          | NUMBER OF MICROFICHE<br>IN LOT _____ |                          |
| GOVERNMENT<br>AGENCY _____   |                          | DATE OF<br>SUBMITTAL _____           |                          |
| -----  |                          |                                      |                          |
| RESOLUTION TEST  | <input type="checkbox"/> | BACKGROUND DENSITY TEST              | <input type="checkbox"/> |
| HYPO RESIDUAL TEST   | <input type="checkbox"/> | FRAME BY FRAME CHECK                 | <input type="checkbox"/> |
| IMAGE POSITIONING  | <input type="checkbox"/> | REJECTED MICROFICHE<br>RE-FILMED     | <input type="checkbox"/> |
| SIGNATURE _____  |                          |                                      |                          |
| TITLE _____  |                          |                                      |                          |

FIGURE 8 - FORM OF CONTRACTOR'S CERTIFICATE

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The following markings when applicable, are to be placed on microfiche sheet 1 and trailer microfiche in Grid Areas A-1 and A-2 below the document or publication accession number. Optimum use is to be made of the horizontal and vertical space in these grid areas. Type size and style has not been specified because of the variety of composition equipment available. The intent is to have these markings as bold and legible as possible in the grid areas allowed with emphasis being given to the security marking CONFIDENTIAL or SECRET, although the entire marking must be legible without magnification.

- |  |  |
|--|--|
| 1. SECRET                                      | 10. CONFIDENTIAL<br>MODIFIED<br>HANDLING<br>AUTHORIZED |
| 2. SECRET<br>RESTRICTED DATA                   |  |
| 3. SECRET<br>FORMERLY<br>RESTRICTED DATA       | 11. NATO<br>RESTRICTED<br>CONFIDENTIAL - MHA           |
| 4. NATO<br>SECRET                              | 12. SEATO<br>RESTRICTED<br>CONFIDENTIAL - MHA          |
| 5. SEATO<br>SECRET                             | 13. CENTO<br>RESTRICTED<br>CONFIDENTIAL - MHA          |
| 6. CENTO<br>SECRET                             |  |
| 7. CONFIDENTIAL                                | 14. NATO<br>CONFIDENTIAL                               |
| 8. CONFIDENTIAL<br>RESTRICTED DATA             | 15. SEATO<br>CONFIDENTIAL                              |
| 9. CONFIDENTIAL<br>FORMERLY<br>RESTRICTED DATA | 16. CENTO<br>CONFIDENTIAL                              |

FIGURE 9 - CLASSIFIED AND UNCLASSIFIED-LIMITED  
DISTRIBUTION MARKINGS

FOLD

UNITED STATES AIR FORCE  
OFFICIAL BUSINESS



POSTAGE & FEES PAID  
Department of the Air Force

HQ AFLC (MMSDS)  
Wright-Patterson AFB, OH 45433

FOLD

| SPECIFICATION ANALYSIS SHEET   |                 | Form Approved<br>Dudget Bureau No. 22-R255 |
|--|-----------------|--|
| <p><b>INSTRUCTIONS:</b> This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.</p> |                 |  |
| SPECIFICATION  |                 |  |
| ORGANIZATION   |                 |  |
| CITY AND STATE   | CONTRACT NUMBER |  |
| MATERIAL PROCURED UNDER A<br><input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT  |                 |  |
| 1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?<br>A. GIVE PARAGRAPH NUMBER AND WORDING.  |                 |  |
| B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES   |                 |  |
| 2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID  |                 |  |
| 3. IS THE SPECIFICATION RESTRICTIVE?<br><input type="checkbox"/> YES <input type="checkbox"/> NO (If "yes", in what way?)  |                 |  |
| 4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)   |                 |  |
| SUBMITTED BY (Printed or typed name and activity - Optional)   |                 | DATE                                       |

DD FORM 1426  
1 JAN 66

REPLACES EDITION OF 1 OCT 64 WHICH MAY BE USED.

AFLC-WPAFB-NOV 69 3M