

Declass Review by NIMA/DOD

MICRODENSITOMETRY SUPPORT

Statement of Work

25X1A  
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1. [ ] will provide technical assistance, as required, to establish proven theory which will produce valid output from the [ ] 1032T trichromatic microdensitometer. This work will include an investigation to determine proper location of filters.

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2. [ ] will furnish documentation, in support of the theory, establishing the analysis and logic required to provide information processing routines for automatic data reduction of the microdensitometer output. These routines (to be developed by the Government) will facilitate technical and intelligence analysis of simple and multilayer emulsion films. [ ] will be required to develop limited routines in support of the foregoing and will furnish documentation (copies of working papers are understood to be acceptable) in support of these routines which will include:

- a. Complete listing of the deck for each FORTRAN program.
- b. Documentation for each FORTRAN program consisting of:
  - (1) Block diagram of the program showing the exact flow of this data and operation performed on it.
  - (2) Detailed description of all input data such as: range and number of data values; purpose, definition and values of all constants; settings on the NPIC Microdensitometer that are peculiar to the program.
  - (3) Detailed description of all output data such as: range of values; what the cause could be if the values are out of range (assuming the program is in production status; what assumption and conclusion can be drawn from the output.)
  - (4) Detailed description of all mathematical analysis methods in the program, equations and relevant diagrams.
  - (5) Description of any option in the program and any other uses the program might have.
  - (6) Glossary of terms.

Attachment 1

c. Complete set of test data for each program including intermediate calculations and the output. Whenever possible all input data to any program will be combined on magnetic tape in the format generated by the microdensitometer. The only exception might be when input to one program is output of another.

25X1A 3. [ ] will provide test objects and test routines for establishing the validity of any scan or series of scans made on the microdensitometer, as required for the specified tasks.

4. Services to be performed under this work statement shall be restricted to the approved tasks only.

25X1A 5. [ ] will provide monthly status reports on the work accomplished and the funds expended. These reports will be submitted within two weeks after the end of the reporting period.

25X1A 6. [ ] will provide a final report on the work accomplished. The rough draft of this final report will be submitted thirty days before contract termination date, and the final copies will be delivered to the customer thirty days after approval of rough draft.

TASK DESCRIPTIONS

I. Color Exposure Table Generator

This is the completion of the effective exposure table selection and generation. Without this capability, the effective exposure principle cannot be used in the computation of color MTF. This task has five subtasks as follows:

- a. Completion of the characteristic matrix program
- b. Scalar array computation and regression fitting to generate the equations relating imager color to scalar array
- c. Programming of the exposure table generator and exposure selection procedure
- d. Testing of the final color exposure generator
- e. Reporting and Documentation

III. Color Modulation Transfer Function

This phase completes the study of the properties of MTF of color emulsions initiated under previous tasks. Its objective is to provide a means for MTF generation and an analysis and interpretation of their value and meaning of such measurements in the color situation. The study will be composed of the following five subtasks:

- a. Color target generation
- b.  transform methods (edges, combs)
- c. Standard transforms (edges, combs)
- d. Analysis
- e. Reporting and Documentation

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IV. Direction Cosine and Color Tripack Calibration

This task completes work required to implement the calibration procedure established under previous efforts. The methods are well defined and all programming is completed and in operation. The following tasks remain to be accomplished to make this an operational procedure.

- a. Spectrophotometric work
- b. Direction Cosine
- c. Micro-D calibration
- d. Reporting and Documentation