

Declass Review by NGA.

TSSG/TAD-134/68
24 September 1968

MEMORANDUM FOR: Chief, Development & Engineering Division, TSSG/NPIC
ATTENTION:
SUBJECT: Modification of the 1032T Microdensitometer
REFERENCE: Memo, NPIC/TSSG/DED-1339/68, 27 August 1968

1. The three modifications to the 1032T Trichromatic Microdensitometer required by TAD are; an increase in sampling rate, a capability for control of the number of samples recorded, and an improved optical system.

2. The following answers to your questions (ref. memo) concerning these modifications are being forwarded for your information as requested:

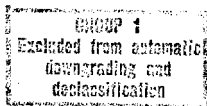
a. Smallest sampling interval required is 0.1 micron per sample.

b. The greatest sampling interval required is that which presently exists on instrument.

c. The slowest scan speed that can be tolerated at 0.1 micron/sample should be 5mm/min in the tri-color mode and 12.5 mm/min in the B&W mode, if scan speed is sampling system limited. At 1 micron/sample the existing speeds are satisfactory.

d. The present tolerance for absolute position of each sample based on the encoder pulses is satisfactory. Any interpolation between encoder pulses must be accurate to one percent of the nominal interpolation interval.

e. The tolerance required for relative position is the same as paragraph d.



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f. The shortest scan required is one word of recorded data (assuming scan is done on logic).

g. The longest scan required can be accomplished with the present instrument capability.

h. No error (in word position) in the recorded data can be tolerated. The actual mechanical reversal of scans should occur as dictated by mechanical considerations, providing turn around time is reasonably optimized.

i. The start and stop (in terms of recorded data) must be exactly repeatable to the data word. In other words, the scan will be measured in terms of the number of data words contained therein. The data words will be synchronized with the sample interval which is accurate as specified above to one percent of the subdivision interval.

j. Machine direction accuracy is not applicable — see preceding paragraph.

k. Smallest effective slit presently required to scan black and white film is 0.5 by 40 microns.

l. Smallest effective slit presently required to scan color film in the trichromatic mode or in the black and white mode is 1 by 40 microns.

m. See paragraph l.

n. Smallest effective spot presently required to scan black and white film is one micron in diameter.

o. Smallest effective spot presently required to scan color film in the trichromatic mode or the black and white mode is two microns in diameter.

p. See paragraph o.

q. The types of color film that we will analyze in the trichromatic mode and/or the black and white mode may include; SO-108, SO-121, SO-271, SO-276, SO-180, SO-151, SO-282, 5021, 5029, 5030, and 5033.

R. See # 2

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r. See paragraph q.

s. From a TAD/ISAB viewpoint, the justification of fund expenditures for each of these modifications would be dependent on the NPIC standard for quality of work and its corresponding dollar value. These modifications were requested for reasons stated in memorandum TSSG/TSD-040/68. To reiterate, the present sample rate does not meet the requirements of current analysis techniques, the present scan length produces excessive and unnecessary recorded data, and the color focus problem produces data which preclude any valid evaluation of color materials. Each of these discrepancies tends toward inefficient operation of the instrument and no attempt to improve the situation indicates a lackadaisical attitude of professionalism. In keeping with the recently expounded concern of the NPIC management for a more objective evaluation of materials, the ISAB believes that obtaining these modifications represents one step in the right direction. Because the reasons for requesting the modifications are invariant with respect to management, justification to the DDI would entail only a repetition of what has been stated in this and past memoranda. Because the ISAB does not have a capability to evaluate the cost of one electronic circuit versus another, we cannot specify a maximum expenditure of funds but can only agree with the least expensive modification which meets our requirements, and ultimately with the dictates of NPIC management. The ISAB is aware of a [redacted] proposal from [redacted] (May 1967) for modification of the sample rate only, [redacted] proposal from [redacted] (November 1967) for modification of both the sample rate and scan length, and discussions concerning modification of the optics at a cost less than [redacted]. The ISAB confidently relies on the expertise of DED to decide upon the best approach to resolve the problems.

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Chief, Technical Analysis Division
NPIC/TSSG

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