

APPENDIX I

IMAGE CONVERTER TUBE SPECIFICATIONS¹³

Table II lists some of the more important electrical and optical characteristics of this tube. All voltages are referred to the cathode and an anode voltage of 15,000 volts, the maximum rating, is assumed. An acceleration potential of 30,000 volts can be used if the anode is pulsed with this voltage for periods of time not exceeding one second.

Shutter speeds attainable with this tube are limited by the ability of the external circuitry to supply good square-wave pulses of sufficiently short time. With adequate pulse-forming circuits, the minimum exposure time is limited by electron transit time. The calculated transit time of electrons between cathode and ultor for 15 kilovolts on the ultor is about 5×10^{-9} seconds. Since the electrons are defocused if they are not beyond the influence of the gating grid when its voltage returns to the cut-off value, loss of resolution becomes noticeable at exposure times in the order of 10^{-8} seconds.

The distortion characteristics and the spectral response of the photocathode and phosphor screen are shown in Fig. 20 and Fig. 21. The phosphor screen has a short persistence, decaying to ten per cent of maximum in about 0.4 milliseconds.

Table II. Specifications of C73435B Image Converter Tube

Photocathode

Diameter	1.375 inches
Sensitivity, at 4400 Å	0.016 $\mu\text{a}/\text{mw}$

Control Grid

Cut-off Potential	-100 volts
Operating Potential	170 to 190 volts
Cathode to Grounded Grid	28 μf

Electronic Lens

Type	Electrostatic
Magnification	0.71
Nominal Operating Potential	1400 V

Deflector System

Type	Electrostatic, one axis only
Deflection Factor	1100 to 1200 volts per inch per plate

Anode (Phosphor Screen)

Diameter	3 inches
Operating Potential	15 KV (max)
Phosphor	P11
Resolution (referred to cathode)	17 line-pairs/mm
Conversion Gain at 4400 Å	12 min.

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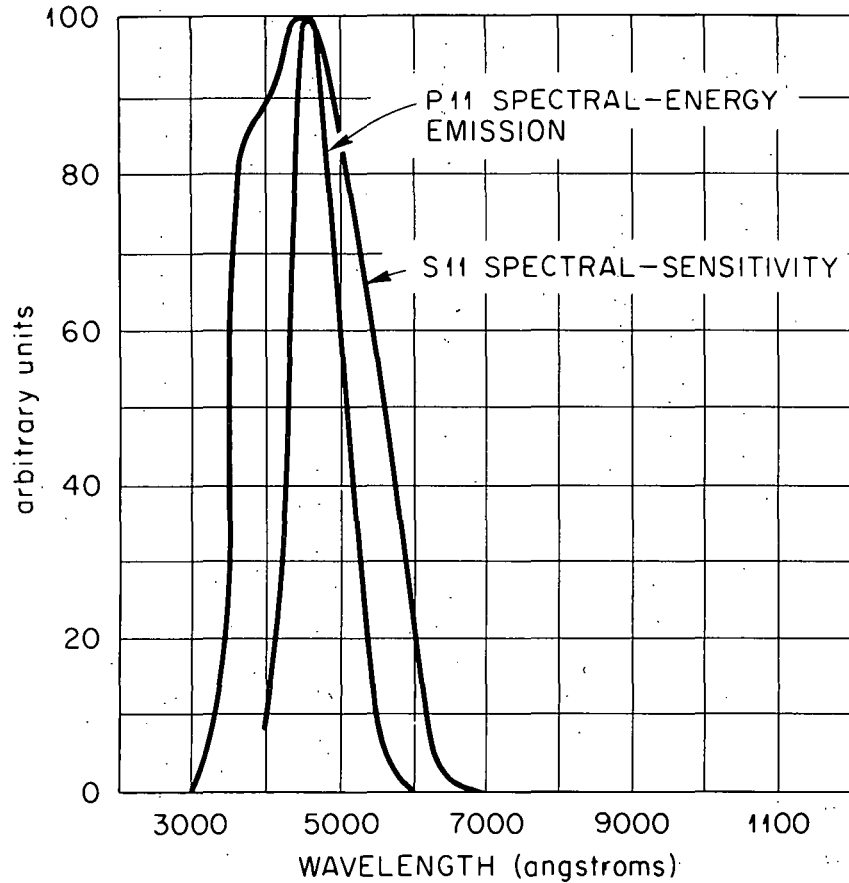


Fig. 20. Spectral Characteristics of the Photocathode and Fluorescent Screen Used in the Image-Converter Tube.

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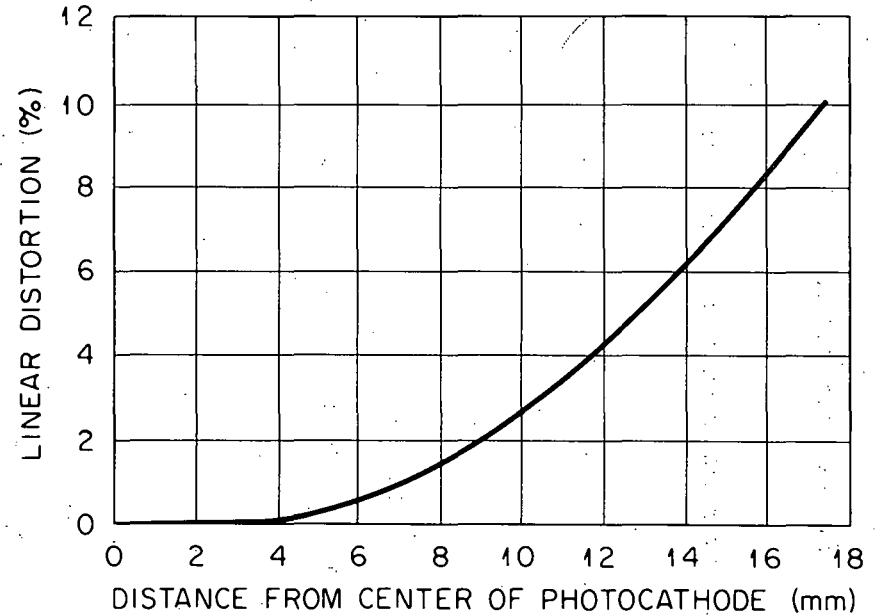


Fig. 21. Distortion Characteristics of the C73435 Converter Tube.