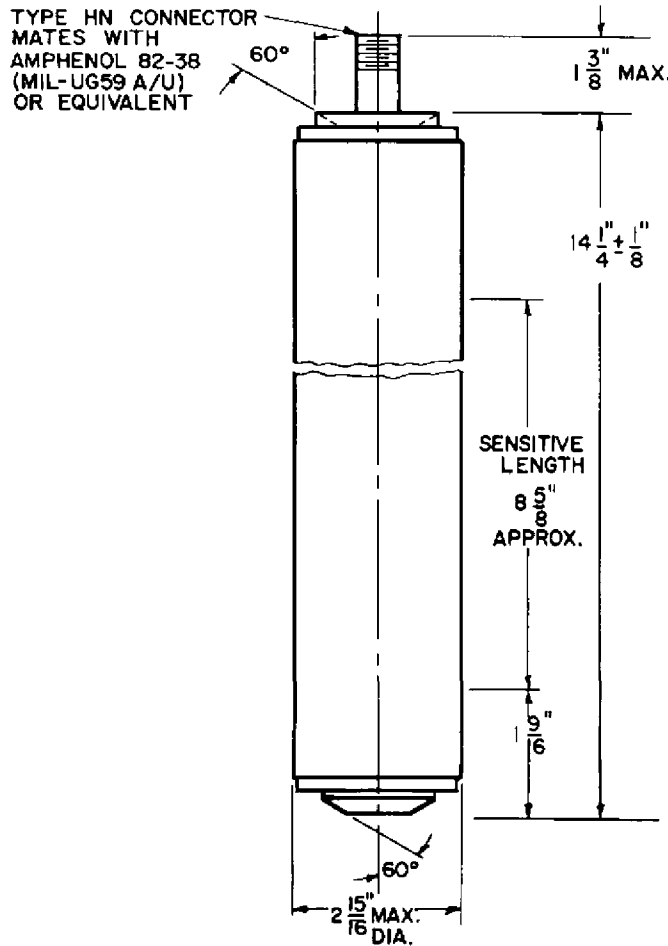


August 4, 1958

BF₃ PROPORTIONAL COUNTER TYPE WL-7243

The WL-7243 is an aluminum body proportional counter designed to detect thermal neutrons in the flux range from 8×10^{-2} to 8×10^3 neutrons/cm²/second.⊕ This counter is extremely rugged and will operate in any position and at ambient temperatures up to 175° F.

The WL-7243 is fitted with an "HN" type connector and consists of three individual proportional counters, each 1" in diameter and 10-5/8" long and filled with BF₃ enriched to 96% with Boron-10 isotope. The sensitivity of the WL-7243 is approximately 13 counts/neutron/cm² at an operating voltage of 2000 volts. The pulses arising from incident gamma photons are sufficiently small that they normally can be biased out by the amplifier.



MECHANICAL:

Maximum Diameter	2-15/16	Inches
Maximum Overall Length	15-3/4	Inches
Approx. Sensitive Length	8-5/8	Inches
Net Weight	3-1/8	Pounds
Shipping Weight, approx.	8	Pounds

MATERIALS:

Body	Aluminum
Center Electrodes	Tungsten
Insulation	Polystyrene & Alumina
Gas Filling	BF ₃ enriched 96% B-10

MAXIMUM RATINGS:

Absolute Maximum Values			
Voltage Between Electrodes	2500	max.	Volts
Operating:			
Thermal Neutron Flux	8×10^3	max.	nv
Temperature	175	max.	° F
Non-Operating:			
Thermal Neutron Flux	4.0×10^9	max.	nv
Gamma Flux	10^4	max.	R/hr
Temperature	175	max.	° F

TYPICAL OPERATING CHARACTERISTICS:

Voltage Between Electrodes, approx.	2000	Volts
Neutron Flux Range	8×10^{-2} to 8×10^3	nv
Multiplication Factor	500	
Sensitivity	13 counts/n/cm ²	
Plateau Length	Minimum of 200 volts with overall slope of 4% or less.	
Output Pulse	Minimum of 10^{-3} volts with inherent rise time of less than 5×10^{-8} seconds.	

⊕ When in flux levels exceeding the recommended operating range, the tube should be shunted with a maximum resistance of 1.5 megohms and the operating voltage removed.

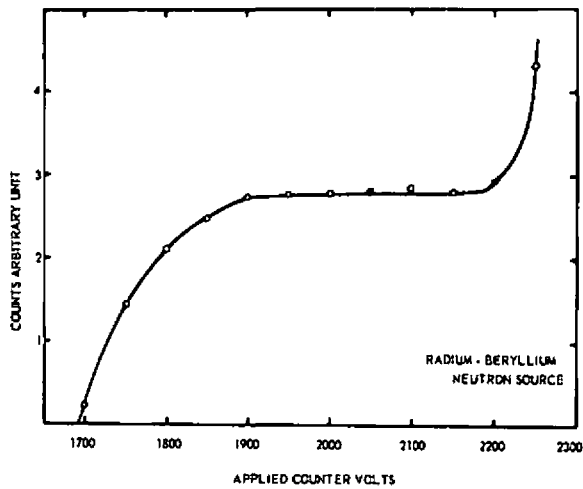
⊕ The WL-7243 has passed military specification MIL-S-901 for shock and MIL-Std-167 (Type 1) for vibration.

⊕ With high speed circuitry, the counter may be operated to 8×10^4 nv.

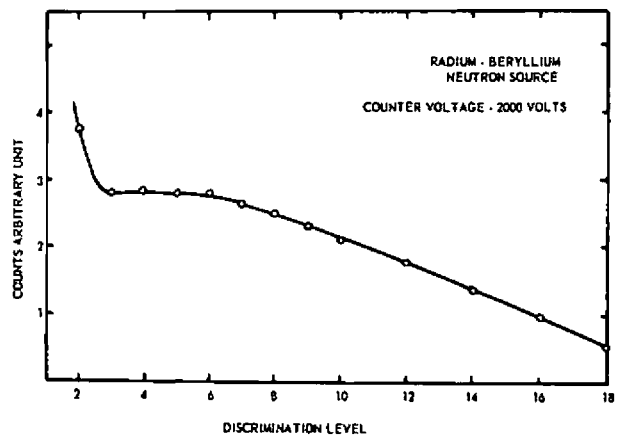
NOTE: This tube may not be immersed in water and high humidity environments should be avoided since they may impair performance.

from JETEC release #2263, Aug. 25, 1958

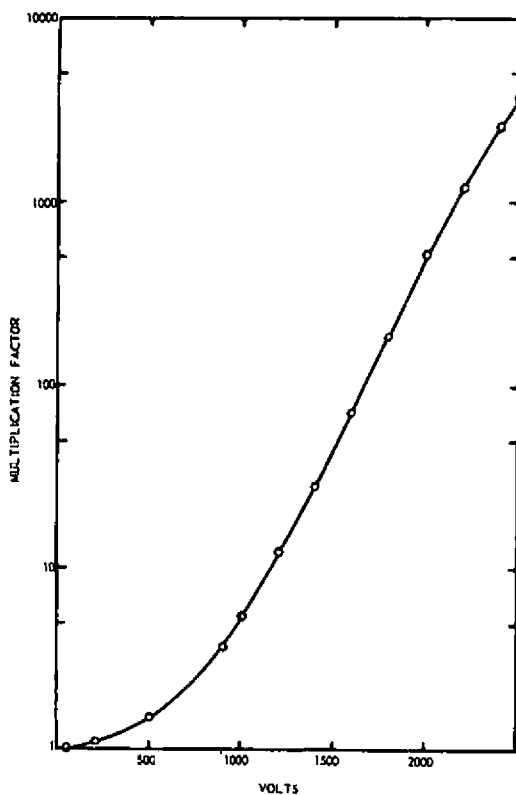
Neutron & Radiation Detection Section



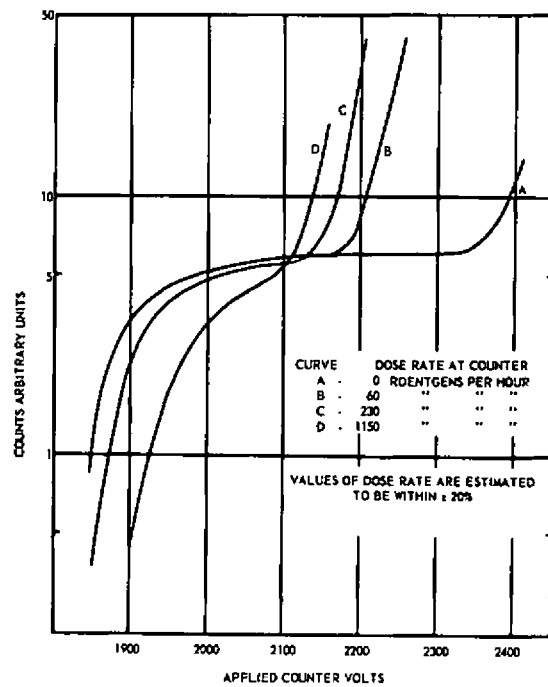
VOLTAGE CURVE FOR BF_3 COUNTER



INTEGRAL BIAS CURVE FOR BF_3 COUNTER



MULTIPLICATION CURVE FOR BF_3 COUNTER



NEUTRON RESPONSE OF BF_3 COUNTER