December 26, 1956

WL-6937
UNCOMPENSATED IONIZATION CHAMBER

The WL-6937 is a BF_3 filled uncompensated ionization chamber of guard ring construction for the detection of thermal neutrons in the power range of reactor operation. It is filled to 250 mm-Hg with BF_3 enriched to 96% with the Boron-10 isotope. The sensitivity of the chamber is approximately 4×10^{-14} amperes per unit neutron flux.* It is extremely rugged and may be operated at temperatures up to 80°C.

The tube has an all-aluminum body three inches in diameter, an overall length of fourteen inches, and is provided with type "HN" connectors for cable fittings.

GENERAL DATA

MECHANICAL:

Overall Length	14"
Diameter	3"
Weight (approx.)	2½ pounds
Sensitive Length (approx.)	7"
Insulating Materials	Polystyrene & Alumina
Body Material	Aluminum

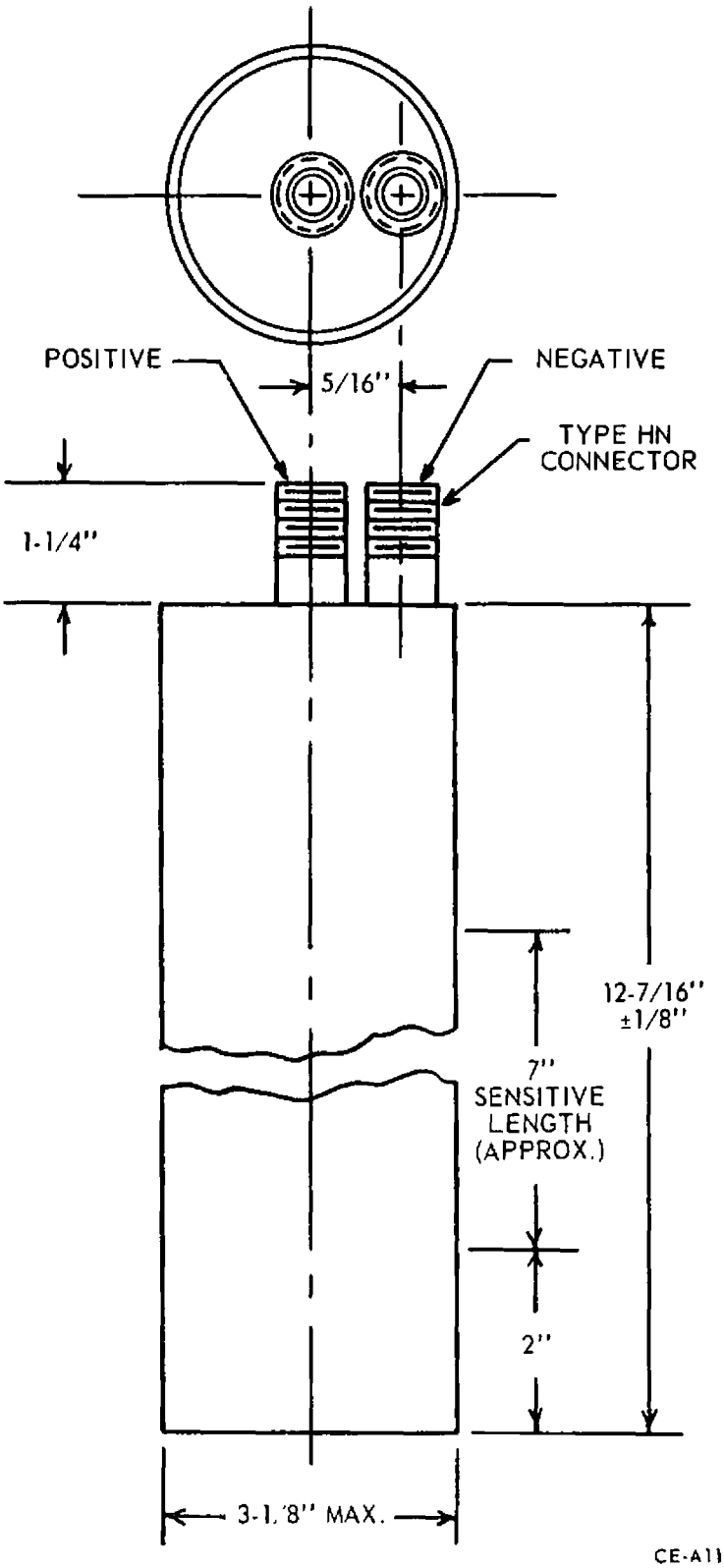
OPERATIONAL:

1. Neutron Flux	2.5×10^9 n/cm²/sec
Saturated Output	10^{-4} amperes
Operating Voltage for Saturation	200 volts (min.)
2. Neutron Flux	1.5×10^{10} n/cm²/sec
Saturated Output	6×10^{-4} amperes
Operating Voltage for Saturation	600 volts (min.)

* Unit neutron flux equals one neutron per cm^2 per second.

from JETEC release #1827, Jan. 14, 1957

Westinghouse



Release No. 1827A
May 8, 1961

The 6937 detector has been qualified as meeting requirements of MIL-STD-167, Mechanical Vibrations of Shipboard Equipment. As defined in Section 1.3 of the specification, all detectors are classified as Type 1, equipment intended for shipboard use which must be capable of withstanding the environmental conditions which may be encountered aboard Naval vessels. The equipment to be used is optional with the manufacturer, providing it meets the conditional requirements for amplitude and frequency defined in the specification. The test procedure calls for an Exploratory Test to determine resonance frequencies, if any; a variable frequency test; and an endurance test. In each of the tests, the detectors must be vibrated in each of the three principal directions of vibration.

Exploratory vibration is conducted at an amplitude of 0.010 inches from 5 to 33 cps in 1 cps steps, remaining 15 seconds at each step.

The variable frequency test is conducted from 5 to 33 cps in 1 cps steps of 5 min. duration. The amplitude shall be 0.030 inches in the 5 - 15 cps range, 0.020 in the 16 - 25 range, and 0.010 in the 26 - 33 range.

The endurance test is run at the resonant frequencies determined in the exploratory test, or if none, at 33 cps for two hours in each position. The amplitude will be determined by the frequency of vibration as in the variable frequency test.

Acceptance is based upon satisfactory electrical and nuclear operation upon the completion of the endurance test and ability to perform as indicated by noise generation measurements during the variable frequency and endurance tests.

The 6937 detector has been qualified as meeting the requirements of MIL-S-901, Shockproof Equipment, class HI (High Impact), shipboard application, tests for. As defined in Section 3.1.2 of the specification, all detectors are tested as type C which means that they are considered individual devices. For the purpose of test, the detectors are classified by weight and all detectors fall into the light category (250 pounds and below) per Section 1.2.1. Tests on equipment falling into the above-defined classes are tested on a lightweight shock-testing machine (BUSHIPS Drawing 10-T-2145-L) utilizing a 400 pound hammer. In the tests the detectors are subjected to three blows parallel to each of the three principal axes, the three blows for each direction to be with heights of hammer drop of one foot, three feet and five feet. This gives a total of nine blows of the hammer. The degree of acceleration is determined by the characteristics of the equipment.

The prime criteria for acceptance is the ability to perform during or after the test; however, none of the parts shall become detached from the apparatus.