

ORNL INSTRUMENT EVALUATION SUMMARY

Eberline ASP-2e with NRD

Description: The Eberline ASP-2e is microprocessor-based count rate meter for use with an external probe/detector. The instrument/probe combination evaluated included Eberline's Neutron Rem Detector (NRD).

Ranges Evaluated: Autoranging digital rate and analog dose rate meter

Report Date: December 2001

General Comments:

1. Confidence intervals used to ascertain whether results are conclusive or inconclusive are determined using the 0.95 quantile of the student's t distribution (95% confidence interval).

RADIATION RESPONSE

Probe Surface Sensitivity: N/A

ELECTRONIC and MECHANICAL REQUIREMENTS and TESTS

Line Noise: N/A

INTERFERING RESPONSES TEST RESULTS

Radio Frequency/Microwave: No susceptibilities were indicated throughout the scan from 100 kHz to 1000 MHz amplitude modulated with 1 kHz at 80%. Field intensity was 20 volts/meter throughout the evaluation.

Electric Fields: Not performed.

Magnetic Fields: No response abnormalities were observed when exposed to a 10 Gauss DC field and 60 Hz (1.26 Gauss) AC field in two orientations.

Interfering Ionizing Radiations: Not performed. Note – Gamma interference is performed during normal calibration at 10 R/hr using a ^{137}Cs field.

ENVIRONMENTAL FACTORS

Temperature: The unit was tested over a temperature range of $-10\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$. Mean readings determined at 10° increments were in tolerance throughout the test. The unit did have slightly high readings at $+40$ and -10°C .

Temperature Shock: Unit tested became slightly more erratic after exposure to rapid temperature changes of 22 to -10, -10 to 22, 22 to 50, and 50 to 22 (°C). The additional variability in each response caused some mean readings to be slightly out-of-tolerance high. Additional information is available upon request.

Humidity: No susceptibilities were observed during and after exposure to 95% RH at 30 °C for eight hours and upon return to 40% RH for 4 hours at 22 °C.

Vibration: All mean readings were in tolerance after exposure to 15 Hz and 28 Hz, each at an amplitude of 2 G, in three orientations relative to the vibration surface.

Mechanical Shock: Not performed.