

ORNL INSTRUMENT EVALUATION SUMMARY

Thermo Eberline E600 Multipurpose Survey Meter with Ludlum 42-41 (Priscilla) Probe

Description: The Thermo Eberline E600 Multipurpose Survey Meter is a dose rate instrument that measures alpha, beta, gamma, x-ray, and neutron. The instrument tested was configured with a Ludlum 42-41 (Priscilla) probe.

Ranges Tested: N/A

Report Date: January 14, 2004

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.

Energy Response: N/A

Response Linearity: Count rate linearity was evaluated using an unmoderated neutron source ^{252}Cf . Specific results are in the test report.

ELECTRONIC and MECHANICAL REQUIREMENTS and TESTS

Line Noise: N/A

Power Line Variations: N/A

Conducted Radio Frequency: N/A

INTERFERING RESPONSES TEST RESULTS

Radio Frequency/Microwave: Susceptibilities were observed when exposed to an RF scan from 20 MHz to 4000 MHz at 20 ± 2 volts/meter amplitude modulated with 1 kHz at 80%. Specific results are in the test report.

Electric Fields: Not performed.

Magnetic Fields: Susceptibilities were observed when exposed to a 10 Gauss DC field in both orientations relative to the magnetic field emission lines. Specific results are in the test report. No susceptibilities were indicated when exposed to the 60 Hz (1.26 Gauss) AC field in two orientations.

Interfering Ionizing Radiations: Susceptibilities were indicated when exposed to an attenuated ¹³⁷Cs source 100 mR/h and 500 mR/h. Specific results are in the test report.

ENVIRONMENTAL FACTORS

Temperature: Susceptibilities were observed over the temperature test range of -10 to 50 °C (+14 to +122 °F). Specific results are in the test report.

Temperature Shock: Susceptibilities were observed when exposed to rapid temperature changes from 22 to -10, -10 to 22, 22 to 50, and 50 to 22 (in °C). Each change was performed within five minutes. Specific results are in the test report.

Humidity: Not performed.

Vibration: Not performed.