

ORNL INSTRUMENT EVALUATION SUMMARY

NuSAFE Backpack

Description: The NuSAFE Backpack is a portable radiation search tool for detecting neutron and gamma particles.

Ranges Tested: N/A

Report Date: November 19, 2003

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: Not performed.

Response Linearity: Not performed.

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 100 kHz to 1000 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. Susceptibilities were indicated when exposed to the 60 Hz (1.26 Gauss) AC field in two orientations. Specific results are in the test

report.

Interfering Ionizing Radiations: Not performed.

ENVIRONMENTAL FACTORS

Temperature: Susceptibilities were observed in gamma readings over the temperature test range of -10 to 50 °C (+14 to +122 °F). Specific results are in the test report. No susceptibilities were observed in neutron readings over the temperature test range of -10 to 50 °C (+14 to +122 °F).

Temperature Shock: Not performed.

Humidity: Not performed.

Vibration: No susceptibilities were observed when exposed to harmonic loading of 2g applied for 15 minutes in the frequency range of 10 to 30 Hz.