

# ORNL INSTRUMENT EVALUATION SUMMARY

## Bicron Surveyor M with pancake GM probe

**Description:** The Surveyor M is a four-range portable instrument that utilizes a pancake GM probe to measure count rates. The ranges are X 1 (0 - 500 cpm), X 10 (0 - 5000 cpm), X 100 (0 - 50000 cpm), and X 1000 (0 - 500000 cpm). The X 1000 range is not used for this instrument/detector combination.

**Ranges Tested:** X 10

**Report Date:** April 12, 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:** Not performed.

### INTERFERING RESPONSES TEST RESULTS

**Radio Frequency Fields:** Some susceptibility was indicated at approximately 50 MHz during the scan from 100 kHz to 1000 MHz at 20 ( $\pm 2$ ) volts/meter modulated with 1 kHz at 80%. No susceptibilities were indicated at 1800 and 2450 MHz at 20 ( $\pm 2$ ) volts/meter. Susceptibility was indicated by decreased response. Specific results and frequencies are available upon request.

**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.

## **ENVIRONMENTAL FACTORS**

**Temperature:** Results obtained using the mean responses were acceptable over the temperature range of -10 °C to +50 °C (14 °F to 122 °F). In general, the instruments tested became more erratic at temperatures that were  $\pm 10$  °C.

**Temperature Shock:** Results obtained using the mean responses were acceptable for all temperature shock combinations (22 to -10, -10 to 22, 22 to 50 and 50 to 22 in °C). In general, the instruments tested became more erratic when exposed to temperature shocks from 22 to -10 °C.

**Humidity:** Acceptable results when exposed to a relative humidity level of 95% (non-condensing) for eight hours, and upon return to 40% for 4 hours at  $30 \pm 2$  °C.

**Ambient Pressure:** Not performed.

**Vibration:** Not performed.