ORNL
INSTRUMENT EVALUATION SUMMARY

Canberra Dover Radiac Set UDR-13A

Description: The Canberra Dover Radiac Set UDR-13A is a portable radiation detector used for detecting Neutron/Gamma radiation dose and Gamma dose rate.

Ranges Tested: N/A

Report Date: April 4, 2003

General Comments:

1. Two devices, serial numbers 0209022 and 0209024 were subjected to testing.
2. 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: Test not performed.

Energy Response for Neutron: The dosimeters were exposed to a D_2O-moderated and unmoderated ^{252}Cf source with both devices mounted on a standard 40x40x15-cm polymethylmethacrylate (PMMA) phantom. Response was low in both cases. Specific results are available in the test report.

Response Linearity: Test not performed.

ELECTRONIC and MECHANICAL REQUIREMENTS and TESTS

Line Noise: Test not performed.

Power Line Variations: Test not performed.

Conducted Radio Frequency: Test not performed.

INTERFERING RESPONSES TEST RESULTS

Radio Frequency/Microwave: All readings were within the acceptance range when each device was exposed to an RF scan from 0.1 MHz to 1000 MHz at **20±2** volts/meter amplitude modulated with 1 kHz at 80%. There were no susceptibilities to report.

All readings were within the acceptance range when each device was exposed to an RF scan from 20

MHz to 1000 MHz at **50±2** volts/meter amplitude modulated with 1 kHz at 80%. There were no susceptibilities to report.

Electric Fields: Not performed.

Magnetic Fields: No susceptibilities were observed when exposed to a 10 Gauss DC field in both orientations relative to the magnetic field. No susceptibilities were indicated when exposed to the 60 Hz (1.26 Gauss) AC field in two orientations.

Interfering Ionizing Radiations: Test not performed.

ENVIRONMENTAL FACTORS

Temperature: No susceptibilities were observed over the temperature test range of -10 to 50 ºC (+14 to +122 ºF).

Temperature Shock: No susceptibilities were observed when exposed to rapid temperature changes from 22 to –10, -10 to 22, 22 to 50, and 50 to 22 (in ºC). Each change was performed within five minutes.

Humidity: No susceptibilities were observed when exposed to a relative humidity level of 95% (non-condensing) for 24 hours.

Vibration: Test not performed.