

ORNL INSTRUMENT EVALUATION SUMMARY

Xetex Telescan

Description: The Xetex Telescan is a seven-range portable instrument that utilizes two compensated GM detectors to measure dose rates from 0.1 mR/hr to 1,000 R/hr. The ranges are X 0.1 mR/hr (0 - 1 mR/hr), X 1 mR/hr (0 - 10 mR/hr), X 10 mR/hr (0 - 100 mR/hr), X 100 mR/hr (0 - 1000 mR/hr), X 1 R/hr (0 - 10 R/hr), X 10 R/hr (0 - 100 R/hr), and X 100 (0 - 1000 R/hr).

Ranges Tested: X 1 mR/hr, X 10 mR/hr, and X 1 R/hr (environmental only)

Report Date: April 12, 1996

General Comments:

RADIATION RESPONSE

Probe Surface Sensitivity: Not performed

ELECTRONIC and MECHANICAL REQUIREMENTS and TESTS

Line Noise: N/A

INTERFERING RESPONSES TEST RESULTS

Radio Frequency Fields: Results were acceptable for both ranges tested during the frequency scan (0.3 to 35 MHz) and 140 MHz. Frequency intensity was 50 volts/meter.

Microwave Fields: Results were acceptable for both ranges tested at test frequencies of 915 MHz and 2.45 GHz at 0.4 Watts/meter² and 2.0 Watts/meter² respectively.

Electric Fields: Results were acceptable at 5000 volts/meter, and 60 and 400 Hz at 100 volts/meter.

Magnetic Fields: Results were acceptable at 10 Gauss (10 Oersted).

Interfering Ionizing Radiations: Not performed.

ENVIRONMENTAL FACTORS

Temperature: When operated on the X 1 and X 10 mR/hr range, each Telescan was acceptable over the temperature range of -10 to +50 °C (+14 to +122 °F). One Telescan, operating on the X 10 mR/hr range, had one off-scale high reading while exposed to 0 °C. The remaining 9 readings were within tolerance. When operated on the X 1 R/hr range, one Telescan became erratic at 10°C (50 °F), was stable at 0 °C, and went out-of-tolerance high and erratic at -10 °C (+14 °F). The other Telescan responded out-of-tolerance low at 0 and -10 °C.

Temperature Shock: Results were acceptable when operated on the X 1 mR/hr range after exposure to rapid (within 5 minutes) temperature changes of 22 to -10, -10 to 22, 22 to 50, and 50 to 22 (in °C). When operated on the X 10 mR/hr range, one telescan was acceptable at all temperature changes and the other pegged off-scale high when shocked from -10 to 22 °C. It remained off-scale high until the test was complete. When operated on the X 1 R/hr range, both instruments went out-of-tolerance high after being shocked from 22 to -10 and remained unacceptable until the temperature was returned to 22 °C. Fifteen minutes after being shocked from 22 to 50, one instrument went 0.1 R/hr low, but recovered by the next data collection interval 15 minutes later. This telescan was also slightly erratic at different points during the test.

Humidity: Results from each range only one telescan was tested on X 10 mR/hr) tested were acceptable when exposed to relative humidity levels of 40% to 95% at 22 ± 2 °C. One unit was somewhat erratic when operated on the X 1 R/hr range, and although mean responses were within tolerance, the results obtained at the second 40% test point could be considered inconclusive.

Ambient Pressure: Not performed.