

# ORNL INSTRUMENT EVALUATION SUMMARY

## Thermo Electron RMP Large Area Probes

**Description:** The Thermo Electron RMP Large Area Probes are large area scintillation-based radiation detectors.

**Ranges Tested:** N/A

**Report Date:** June 11, 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).
2. Three models were tested. The models were an APB6 for Alpha detection, DP8B for Alpha and Beta detection and BP17B for Beta detection.

### RADIATION RESPONSE

**Probe Surface Sensitivity:** N/A.

**Energy Response:** N/A

**Response Linearity:** N/A

### 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 10 kHz to 1000 MHz at  $20 \pm 2$  volts/meter amplitude modulated with 1 kHz at 80%. Specific results are available 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 available in the test report.

**Interfering Ionizing Radiations:** Not performed.

## **ENVIRONMENTAL FACTORS**

**Temperature:** No susceptibilities were observed in the DP8B model over the temperature test range of -10 to 50 °C (+14 to +122 °F). Susceptibilities were observed in the BP17B and AP6B models over the same temperature range. Specific results are available in the test report.

**Temperature Shock:** No unacceptable responses were observed in the DP8B model 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. Susceptibilities were noted in the BP17B and AP6B models during the test. Specific results are available in the test report.

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

**Vibration:** Not performed.