

J99(G83)

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Proposal Abstract J99(G83)

1. Arms Control Problem:

Nuclear weapons - comprehensive test ban

2. Verification Type:

Remote sensors - sampling

3. Source:

Sweden. "Working paper: International Surveillance of Airborne Radioactivity (ISAR)". CD/403, 11 August 1983.

See also: - Sweden. "An international system for the detection of airborne radioactivity from nuclear explosions". CD/257, 8 March 1982.

4. Summary:

This paper discusses the design and cost aspects of a system to monitor airborne radioactivity, proposed in working paper CD/257, which could be used to verify a comprehensive test ban. Developments in techniques for analysing radiation from dispersed remnants of a nuclear explosion have replaced an older time-consuming procedure with a method employing a single measurement using a germanium detector. This new method permits the detection of debris from a nuclear explosion and a determination of the time since the explosion, with a high degree of certainty.

A system for the International Surveillance of Airborne Radioactivity (ISAR) should consist of 50-100 fully equipped sampling stations and about six regional measurement stations. Sampling stations would cost approximately \$20,000 (US) to establish and \$10,000 annually to operate. A regional laboratory (of the same size as the Swedish measurement laboratory) would cost approximately \$700,000 to establish and \$300,000 for operations annually (costs of premises not included). The whole international system would thus cost less than \$10 million to establish and less than \$3 million to operate each year. This system would establish facilities which could be shared by data centres involved in the collection and analysis of seismic data for monitoring a comprehensive nuclear test ban treaty.

A meteorological study conducted in the winter 1982-83 by the University of Stockholm suggested an arrangement for collection stations which would ensure even distribution of sampling and a similar detection probability at points all over the globe.