

## PREFACE

The genesis of this research project was the consensus United Nations General Assembly Resolution 48/75L of 16 December 1993 calling for a non-discriminatory, multilateral and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices. Discussions are currently in progress to establish negotiations on such a "cutoff" treaty. At this time, the scope and nature of the prohibitions to be contained in the treaty are not agreed, nor are the consequent verification requirements entirely clear.

To better understand the verification aspects of a "cutoff" treaty, an analysis of possible diversion scenarios was undertaken under the Department of Foreign Affairs' Verification Research Program. The results of this analysis are not intended to be definitive; rather, they give an initial indication of the utility of the model and analytic procedure used, as well as provide a preliminary insight into the verification implications of a "cutoff" agreement. More accurate and detailed findings, potentially of greater operational utility, could be obtained by undertaking new iterations of the analysis that employ improved data.

The preliminary findings of this "bottom-up" analysis indicate that potential cost-savings for both the IAEA and individual national verification bodies could emerge from an evaluation of the frequency of inspections (and other verification activities) in terms of their relative value in reducing diversion risks. This prioritization process could improve verification cost-effectiveness.

The Department of Foreign Affairs and International Trade wishes to acknowledge the work performed in the preparation of this report under contract by David J. Winfield and Robert H. Campbell of Atomic Energy of Canada Limited, Chalk River Laboratories.

This is a report of the results of a research project. It is being shared with interested parties as part of a long-standing Canadian policy to make such research findings available to assist in negotiations and to promote a dialogue on these important issues. The views expressed herein do not necessarily represent those of the Canadian Government.