Technology Against Terrorism: The Federal Effort

July 1991

OTA-ISC-487 NTIS order #PB91-219998 GPO stock #052-003-01246-4





CONGRESS OF THE UNITED STATES OFFICE OF TECHNOLOGY ASSESSMENT Recommended Citation:

U.S. Congress, Office of Technology Assessment, *Technology Against Terrorism: The Federal Effort, OTA-ISC-481* (Washington, DC: U.S. Government Printing Office, July 1991).

For sale by the Superintendent of Documents U.S. Government Printing Office, Washington, DC 20402-9325 (order form can be found in the back of this report)

Foreword

The United States has been a prime target of international terrorism for at least two decades. In the 1980s, several terrorist attacks had a particularly powerful effect in mobilizing public opinion and government action. These were the bombings of the U.S. Embassy and of the U.S. Marine Barracks in Beirut in 1983, and the destruction of Pan American Flight 103 over Lockerbie, Scotland in 1989. The Federal Government reacted in both cases by devoting more attention and resources to developing strategies and tools to defend U.S. lives and interests against such outrages. Unless underlying causes are eliminated, terrorist attacks will continue. Since they may change in type and scope, the United States must be prepared to deal with a wide range of eventualities. The widespread availability of sophisticated weapons makes the challenge of counterterrorism all the more difficult.

In 1989, the Senate Committee on Governmental Affairs; the Senate Subcommittee on Terrorism, Narcotics, and International Operations of the Senate Committee on Foreign Relations; and the Senate Committee on Commerce, Science, and Transportation, together with its Subcommittee on Aviation, requested the Office of Technology Assessment to investigate the status of research on technological means to protect ourselves against terrorist threats. A later endorsement of the study was received from the Senate Select Committee on Intelligence.

This report is the first of two in response to these requests. A classified version was transmitted to Congress on September 24, 1990, and an unclassified summary was released to the public separately on February 26, 1991. It deals with the Federal research and development effort in countering terrorism, and with the state of attempts to use technology to aid in detecting and preventing attempts to introduce explosives aboard aircraft. A review of the relevant R&D programs in many agencies is provided. The second report of this study will be released in late summer 1991.

The help and cooperation of many scientists and officials from the Departments of Defense, Energy, Justice, State, Transportation, and Treasury, and the Intelligence Community are gratefully acknowledged.

The Use of Technology in Countering Terrorism Advisory Panel

Marvin Goldberger, Chair Director, Institute for Advanced Study Princeton, New Jersey

Peter F. Bahnsen Executive Vice President MLI International, Ltd.

Terry Bearce Program Manager on Low Intensity Conflict Los Alamos National Laboratory

Homer Boynton Managing Director for Security American Airlines

L. Paul Bremer Managing Director Kissinger Associates

Chris Chicles C.H. Chicles & Associates

Arthur Donahue President Softworld Marketing, Inc.

Lee Grodzins Department of Physics Massachusetts Institute of Technology

Chris Hatcher Department of Psychiatry University of California, San Francisco

Carolyn Imamura Pacific Basin Development Council

Wilfred A. Jackson Airport Operators Council International

Jim Jacobs Director, Nuclear Security Systems Sandia National Laboratory Brian Jenkins Managing Director Kroll Associates

Michael K. Johns President Johns & Bhatia Engineering Consultants, Ltd.

Donald Kerr President EG&G, *Inc.*

Joseph Krofcheck President Yarrow Associates

Robert Kupperman Senior Advisor Center for Strategic and International Studies

Richard Porter Aerospace Services International, Inc.

Billie H. Vincent Aerospace Services International, Inc.

Stanley Wiener Professor of Internal Medicine University of Illinois, Chicago

Joshua Lederberg (ex officio) Rockefeller University Vice chairman, Technology Assessment Advisory Council

NOTE: **OTA appreciates** and is grateful for the valuable assistance **and thoughtful** critiques provided by the advisory panel members. The panel does not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents.

The Use of Technology in Countering Terrorism **OTA Project Staff**

Lionel S. Johns, Assistant Director, OTA Energy, Materials, and International Security Division

Alan Shaw, International Security and Commerce Program Manager

Anthony Fainberg, Project Director Michael B. Callaham Kevin Dopart¹ Deborah L. Kyle² Russell L. Maxwe11³ Edith Page⁴ Peter H. Rose⁵

Administrative Staff

Jackie Boykin Louise Staley Donna Reynolds

Contractor

Yonah Alexander

¹On assignment from OTA*s Science, Education and Transportation Program. ²Department of Commerce Science and Technology Fellow, 1989-90. 30 assignment from Sandia National Laboratories.

⁴On assignment from OTA's Science, Education, and Transportation Program. ⁵AAAS Fellow, 1989-90.