

PREFACE

A. THE MCTL

The **Militarily Critical Technologies List (MCTL)** is a detailed and structured compendium of the technologies DoD assesses as critical to maintaining superior U.S. military capabilities. DoD develops the MCTL with participation of other agencies of the United States Government, U.S. industry, and academia and updates it on an ongoing basis. In the past, the MCTL was published in one document. The MCTL is being published in three documents. Three parts of the MCTL will cover weapons system technologies, technologies associated with weapons of mass destruction, and developing technologies. These three documents provide the opportunity to highlight different technologies and technology levels.

B. USES OF THE MCTL

The action plan accompanying the 23 January 1995 Deputy Secretary of Defense Tasking Memorandum stated that the MCTL is used as a:

- Technical foundation for U.S. proposals for export control in the New Forum,* Missile Technology Control Regime, Nuclear Suppliers Groups, Australia Group, and other nonproliferation regimes.
- Technical reference for licensing and export control by Customs Officials, DoD, DOS, DOC, and DOE.
- Technical reference for contracts and scientific papers by government, industry, and academia.
- Technical reference and guide for intelligence collection.

In addition, the MCTL:

- Provides background and support for international cooperative activities.
- Supports development of technology transfer policy, technology release guidelines, and specific proposals or controls to be implemented by multinational organizations.

The MCTL is not an export control list.

- There may be items in the MCTL that are not on an export control list.
- There may be items on an export control list that are not in the MCTL.

The MCTL is to be used as a reference for evaluating potential technology transfers and technical reports and scientific papers for public release. The information must be applied using technical judgment. It should be used to determine if the proposed transaction would result in transfer that would permit potential adversaries access to technologies, not whether a transfer should or should not be approved.

C. ORGANIZATION OF THE MCTL

The three parts of the MCTL are the following:

Part I, “Weapons Systems Technologies,” (published in June 1996) details those critical technologies with performance parameters that are at or above the minimum level necessary to ensure continuing superior performance of U.S. military systems.

Part II, “Weapons of Mass Destruction Technologies,” (this document) addresses those technologies required for development, integration, or employment of biological, chemical, or nuclear weapons and their means of delivery. This document is not oriented to U.S. capabilities. Rather, it addresses technologies that proliferators might use to develop WMD. It provides technical information to assist various entities of the DoD to develop, support, and execute counterproliferation initiatives.

Part III, “Developing Critical Technologies,” (to be published in 1998) will contain a list of technologies which, when fully developed and incorporated in a military system, will produce increasingly superior performance or maintain a superior capability more affordably.

The format of Parts II and III, insofar as possible, is consistent with the MCTL, Part I.

* Note: The Wassenaar Arrangement (initially called the New Forum) is the successor organization to COCOM, and is named for the city in The Netherlands where the arrangement was formalized.

D. THE MCTL PROCESS

The MCTL process is a continuous analytical and information-gathering process which updates the MCTL by adding information and refining existing documents to provide thorough and complete technical information. In addition, the Technology Working Groups (TWGs), which are part of the MCTL process, provide a reservoir of technical experts in many disciplines that can be called upon to assist in time-sensitive and quick-response tasks.

The TWGs comprise about 500 technical experts from both government and the private sector. In general, TWG members are drawn from the military services, DoD and other federal agencies, industry, and academia. A balance is maintained between public officials and private sector representatives. TWGs maintain a core of intellectual knowledge and reference information on an array of technologies. The data is used as a resource for many projects and other assignments, and TWG members are available to the national security community as technical experts. Working within an informal structure, TWG members strive to produce precise and objective analyses across dissimilar and often disparate areas. Currently the TWGs are organized to address 20 basic technology areas:

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| Aeronautics Systems | Marine Systems |
| Armament and Energetic Materials | Materials |
| Biological Systems | Medical Systems |
| Chemical Systems | Navigation Systems |
| Directed and Kinetic Energy Systems | Nuclear Systems |
| Electronics | Power Systems |
| Ground Systems | Sensors and Lasers |
| Information Systems | Signature Control |
| Information Warfare | Space Systems |
| Manufacturing and Fabrication | Weapons Effects and Counter-measures |

E. MCTL PART II METHODOLOGY

For each part of the MCTL, sets of task-organized experts are supplemented with other experts when required. Their efforts are focused on technology areas according to the particular task assignments. For Part II, “Weapons of Mass Destruction Technologies,” there were six task-organized TWGs corresponding to the six sections of the document: Means of Delivery, Information Systems, Biological Weapons, Chemical Weapons, Nuclear Weapons, and Nuclear Weapons Effects.

The TWGs applied the following guidance in selecting technologies for inclusion in this document—identify and assess technologies required for the development, integration, or employment of biological, chemical, or nuclear weapons and their means of delivery. The technologies detailed in Part II are those selected by the TWGs after technical analyses and application of professional judgment. Fundamentally, Part II views technologies from the perspective of a foreign proliferator. It describes technologies that may provide alternative means to achieve a military capability. Emphasis is placed on technologies that a proliferant country might use. It is recognized that a proliferator might obtain key items surreptitiously or through illegal acquisition. The TWGs recognize that small numbers of WMD can be obtained by theft or be provided by another country. The TWG did not focus on these possibilities because they involve transfer of weapons, and not transfer of technologies to build weapons.

F. LEGAL BASIS FOR THE MCTL

The Export Administration Act (EAA) of 1979 assigned responsibilities for export controls to protect technologies and weapons systems. It established the requirement for an MCTL. The EAA and its provisions, as amended, were extended by Executive Order 12924 (19 August 1994), which was continued on 15 August 1995, 14 August 1996, and 13 August 1997.

The legislation and execution directive are amplified and implemented by DoD Directives 2040.2 and 5105.51 and by the Deputy Secretary of Defense letter dated 23 January 1995.