

ALL-VOLUME OVERVIEW i

**CHAPTER 1
PRC Acquisition of U.S. Technology**

CHAPTER SUMMARY 2

THE STRUCTURE OF THE PRC GOVERNMENT 4

COSTIND: The CCP’s Use of Corporations for Military Aims 8

CCP Supremacy Over the State, the PLA, and the Economy 9

DEVELOPMENT OF THE CCP’S TECHNOLOGY POLICIES 10

The 863 and Super-863 Programs: Importing Technologies for Military Use 10

Biological Warfare 11

Space Technology 11

Military Information Technology 11

Laser Weapons 12

Automation Technology 12

Nuclear Weapons 12

Exotic Materials 12

The 16-Character Policy: ‘Give Priority to Military Products’ 13

The PRC’s Use of Intelligence Services to Acquire U.S. Military Technology 19

METHODS USED BY THE PRC TO ACQUIRE ADVANCED

U.S. MILITARY TECHNOLOGY 20

The ‘Princelings’ 22

Acquisition of Military Technology from Other Governments 25

Russia 25

Israel 25

The United States 26

Joint Ventures with U.S. Companies 27

Acquisition and Exploitation of Dual-Use Technologies 30

Front Companies 33



Direct Collection of Technology by Non-Intelligence Agencies and Individuals 36

Illegal Export of Military Technology Purchased in the United States 42

PRC Purchase of Interests in U.S. Companies 44

Methods Used by the PRC to Export Military Technology from the United States 46

PRC Incentives for U.S. Companies to Advocate Relaxation of Export Controls 48

**THE PRC’S EFFORTS TO ASSIMILATE
ADVANCED U.S. MILITARY TECHNOLOGY 51**

**U.S. GOVERNMENT MONITORING OF PRC TECHNOLOGY
ACQUISITION EFFORTS IN THE UNITED STATES 53**

**CHAPTER 2
PRC Theft of U.S. Thermonuclear Warhead
Design Information**

CHAPTER SUMMARY 60

**PRC THEFT OF U.S. THERMONUCLEAR WARHEAD
DESIGN INFORMATION 66**

THE PRC’S NEXT GENERATION NUCLEAR WARHEADS 69

**THE IMPACT OF THE PRC’S THEFT OF U.S. THERMONUCLEAR
WARHEAD DESIGN INFORMATION 72**

Mobile and Submarine-Launched Missiles 72

Acceleration of PRC Weapons Development 73

Effect on PRC Nuclear Doctrine 77

Multiple Warhead Development 77

Proliferation 78

Russian Assistance to the PRC’s Nuclear Weapons Program 78

HOW THE PRC ACQUIRED THERMONUCLEAR WARHEAD



**DESIGN INFORMATION FROM THE UNITED STATES:
PRC ESPIONAGE AND OTHER PRC TECHNIQUES** 80

**HOW THE U.S. GOVERNMENT LEARNED OF THE PRC'S
THEFT OF OUR MOST ADVANCED THERMONUCLEAR
WARHEAD DESIGN INFORMATION** 83

The “Walk-In” 83

**THE PRC'S FUTURE THERMONUCLEAR WARHEAD
REQUIREMENTS: THE PRC'S NEED FOR NUCLEAR
TEST DATA AND HIGH PERFORMANCE COMPUTERS** 84

**U.S. GOVERNMENT INVESTIGATIONS OF NUCLEAR
WEAPONS DESIGN INFORMATION LOSSES** 87

Investigation of Theft of Design Information for the Neutron Bomb 87

Investigation of Thefts of Information Related to the Detection of Submarines
and of Laser Testing of Miniature Nuclear Weapons Explosions 87

Investigation of Theft of Design Information for the W-88 Trident D-5
Thermonuclear Warhead 90

Investigation of Additional Incidents 91

**THE DEPARTMENT OF ENERGY'S COUNTERINTELLIGENCE
PROGRAM AT THE U.S. NATIONAL WEAPONS LABORATORIES** 92

NOTIFICATION OF THE PRESIDENT AND SENIOR U.S. OFFICIALS 95

CHAPTER 3

High Performance Computers

CHAPTER SUMMARY 98

HIGH PERFORMANCE COMPUTERS 102

**MILITARY OBJECTIVES CONTRIBUTE TO THE PRC'S
INTEREST IN HIGH PERFORMANCE COMPUTERS** 106



U.S. HIGH PERFORMANCE COMPUTERS HAVE THE GREATEST POTENTIAL IMPACT ON THE PRC'S NUCLEAR WEAPONS CAPABILITIES	107
Existing PRC Nuclear Weapons	107
New PRC Nuclear Weapons	109
Nuclear Weapons Stockpile Stewardship	110
TRANSFER OF HPC TECHNOLOGY CAN BENEFIT PRC INTELLIGENCE CAPABILITIES	112
Sensors for Surveillance, Target Detection, and Target Recognition	112
Sensor Platforms for Aerial and Space-Based Reconnaissance	113
Cryptology	113
TRANSFER OF HIGH PERFORMANCE COMPUTER TECHNOLOGY TO THE PRC COULD CONTRIBUTE TO THE MANUFACTURE OF WEAPONS OF MASS DESTRUCTION, MISSILES, AND OTHER WEAPONS	114
Missiles	114
Chemical and Biological Weapons	114
Information Warfare	115
TRANSFER OF HIGH PERFORMANCE COMPUTER TECHNOLOGY TO THE PRC COULD SUPPORT ATTAINMENT OF OTHER PRC MILITARY OBJECTIVES	116
Command, Control, and Communications	116
Meteorology for Military Operations	117
Cartography for Military Operations	117
Military Training Systems	118
NATIONAL SECURITY IMPLICATIONS OF HIGH PERFORMANCE COMPUTER USE BY THE PRC MILITARY	118
U.S. EXPORT POLICY HAS GRADUALLY RELAXED CONTROLS ON HIGH PERFORMANCE COMPUTERS	119
Some Reviews That Contributed to High Performance Computer Policy Changes in 1996 Have Been Criticized	121



The Stanford Study 121
Defense Department Review of Military Applications for HPCs 123
Institute for Defense Analyses Technical Assessment 125
Defense Department Proliferation Criteria 126
Details of the 1996 High Performance Computer Export Control Policy Changes 127
Export Administration Act Provisions and Export Administration Regulations
 Currently Applicable to High Performance Computers 129
The Second Stanford Study 131
Arms Export Control Act Provisions and International Traffic in Arms
 Regulations Currently Applicable to Computers 131

CONCERNS OVER HIGH PERFORMANCE COMPUTER EXPORTERS' ABILITY TO REVIEW END-USERS IN THE PRC PROMPTED THE REQUIREMENT FOR PRIOR NOTIFICATION 132

The U.S. Government Has Conducted Only One End-Use Check
 for High Performance Computers in the PRC 134
Some U.S. High Performance Computer Exports to the PRC
 Have Violated U.S. Restrictions 137
 New World Transtechnology 138
 Compaq Computer Corporation 139
 Digital Creations 139
 Lansing Technologies Corporation 139

HIGH PERFORMANCE COMPUTERS AT U.S. NATIONAL WEAPONS LABORATORIES ARE TARGETS FOR PRC ESPIONAGE 140

U.S. National Weapons Laboratories Have Failed to Obtain Required Export
 Licenses for Foreign High Performance Computer Use 140
PRC Students Have U.S. Citizen-Like Access to High Performance
 Computers at the National Weapons Laboratories 141

MANY TYPES OF COMPUTER TECHNOLOGY HAVE BEEN MADE AVAILABLE TO THE PRC THAT COULD FACILITATE RUNNING PROGRAMS OF NATIONAL SECURITY IMPORTANCE 142



THE PRC HAS A LIMITED CAPABILITY TO PRODUCE HIGH PERFORMANCE COMPUTERS	144
U.S. HIGH PERFORMANCE COMPUTER EXPORTS TO THE PRC ARE INCREASING DRAMATICALLY	144
THE PRC IS OBTAINING SOFTWARE FROM U.S. AND DOMESTIC SOURCES	146
POTENTIAL METHODS OF IMPROVING END-USE VERIFICATION	147
Tagging	148
Technical Safeguards	149
Other Possibilities	150
TECHNICAL AFTERWORD: Changing High Performance Computer Technology Is Making Export Control More Difficult	152

CHAPTER 4

PRC Missile and Space Forces

CHAPTER SUMMARY	172
INTRODUCTION	174
THE PLA’S BALLISTIC MISSILE FORCES	176
Development of the PLA’s Ballistic Missile Forces	176
<i>The Soviet Union’s Contribution to the PLA’s Ballistic Missile Force</i>	176
<i>The Role of Qian Xuesen in the Development of the PRC’s Ballistic Missile and Space Programs</i>	177
<i>Development of the PLA’s Intermediate- and Short-Range Ballistic Missiles</i>	179
The PLA’s Current ‘East Wind’ Intercontinental Ballistic Missiles	182
The PLA’s Future ‘East Wind’ Intercontinental Ballistic Missiles	185
The PRC’s Medium- and Short-Range Ballistic Missiles	187



Stolen U.S. Technology Used on PRC Ballistic Missiles 191
The PRC’s Strategic Forces Doctrine 192
The PRC’s Opposition to U.S. Missile Defenses 194
The PRC’s Acquisition of Foreign Ballistic Missile Technology 196
The PRC’s Indigenous Ballistic Missile Design Capabilities 197
PRC Missile Proliferation 198
 Iran 198
 Pakistan 199
 Saudi Arabia 199

THE PRC’S MILITARY AND CIVIL SPACE PROGRAM 199

The PRC’s Commercial Space Launch Program 206
The PRC’s Future Space Launch Capabilities 209
PRC Space Weapons 209
The PRC’s Manned Space Program 210
The PRC’s Communications Satellite Programs 210
 The PRC’s Use of Foreign Components on Communications Satellites 213
 The PRC’s Reliance on Western Communications Satellites 215
 PRC Use of Very Small Aperture Terminals (VSATs) 216
The PLA’s Reconnaissance Satellite Program 217
The PRC’s Other Military Satellite Programs 218
 The Asia-Pacific Mobile Telecommunications (APMT) Satellite 219
 The Role of PLA General Shen Rongjun and His Son in APMT 223

**SIMILARITIES BETWEEN THE PRC’S BALLISTIC MISSILE
AND ROCKET TECHNOLOGY 225**

Background 225
Propulsion Systems 227
Airframes 228
Ballistic Missile and Rocket Stages 228
Guidance Systems 228
Ground Support 230
Systems Integration 231
Payload 231
Conclusion 232



NOTES 234



