

**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**

<b>ADVANCED U.S. MILITARY TECHNOLOGY . . . . .</b>	<b>51</b>
--	-----------

**U.S. GOVERNMENT MONITORING OF PRC TECHNOLOGY**

<b>ACQUISITION EFFORTS IN THE UNITED STATES . . . . .</b>	<b>53</b>
---	-----------

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

<b>CHAPTER SUMMARY . . . . .</b>	<b>60</b>
----------------------------------	-----------

**PRC THEFT OF U.S. THERMONUCLEAR WARHEAD**

<b>DESIGN INFORMATION . . . . .</b>	<b>66</b>
-------------------------------------	-----------

<b>THE PRC’S NEXT GENERATION NUCLEAR WARHEADS . . . . .</b>	<b>69</b>
---	-----------

**THE IMPACT OF THE PRC’S THEFT OF U.S. THERMONUCLEAR**

<b>WARHEAD DESIGN INFORMATION . . . . .</b>	<b>72</b>
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



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



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

## **CHAPTER 4**

### **PRC Missile and Space Forces**

<b>CHAPTER SUMMARY</b> .....	172
<b>INTRODUCTION</b> .....	174
<b>THE PLA’S BALLISTIC MISSILE FORCES</b> .....	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





**ALL-VOLUME OVERVIEW .....i**

**CHAPTER 5  
Satellite Launches in the PRC: Hughes**

**CHAPTER SUMMARY ..... 2**

**OPTUS B2, APSTAR 2 LAUNCH FAILURES: PRC GAINS  
SENSITIVE KNOWLEDGE FROM HUGHES INVESTIGATIONS ..... 6**

**THE PROHIBITION AGAINST TECHNOLOGY TRANSFER  
IN FOREIGN LAUNCHES ..... 8**  
International Traffic in Arms Regulations and the U.S. Munitions List ..... 8  
Department of Defense Monitoring Role ..... 9

**OPTUS B2 ..... 10**  
The Optus B2 Licenses ..... 10  
The Optus B2 Fails To Achieve Orbit ..... 12  
Failure Investigation Teams ..... 14  
Failure Investigation Begins ..... 14  
Hughes’ Export Administrators Deal with the Licensing Question ..... 17  
A ‘Political’ Business Solution ..... 21  
The Optus B3: Hughes’ Efforts to Improve the Long March Continue ..... 36

**APSTAR 2 ..... 40**  
The Apstar 2 License ..... 40  
The Apstar 2 Failure ..... 40  
Failure Investigation Teams ..... 42  
Failure Investigation Schedule ..... 42  
The Need for a License ..... 42  
Commerce Department Conference ..... 46  
Same Fairing Failure Identified by Hughes ..... 47  
A ‘Political’ Business Solution, Again? ..... 48  
The Commerce Department Approves Data Release to the PRC ..... 50



Hughes Tries to Get the PRC to Accept Its Findings .....	51
CIA Analyst Visits Hughes .....	56
A ‘Consolidated Solution’ .....	58
Final Failure Investigation Report Released to the PRC by the Commerce Department ...	60
Implementing the ‘Consolidated Solution’ .....	64
U.S. Government Actions Following the Apstar 2 Launch Failure .....	66
Defense Department Assessments of Damage to National Security .....	68
<i>Damage to National Security from the Apstar 2 Failure Investigation</i> .....	69
<i>Damage to National Security from the Sharing of Coupled Loads Analysis</i> .....	72
<i>Damage to National Security from Providing the PRC with</i> <i>Information Concerning Deficiencies in the Fairing, and</i> <i>Resultant Improvements to PRC Rockets and Ballistic Missiles</i> .....	73
<i>Other Information Learned by the PRC, and Defense Department Reaction</i> .....	74
State Department Assessments of Damage to National Security .....	75
Damage to National Security Identified by the Select Committee’s Technical Consultant .....	85
<b>CHARLIE TRIE, THE PRC, AND HUGHES ELECTRONICS</b> .....	87
<b>FURTHER INVESTIGATION WARRANTED</b> .....	88
<b>TECHNICAL AFTERWORD: Nose Fairings on Rockets and Ballistic Missiles</b> .....	90

## CHAPTER 6

### Satellite Launches in the PRC: Loral

<b>CHAPTER SUMMARY</b> .....	96
<b>INTELSAT 708 LAUNCH FAILURE: LORAL INVESTIGATION PROVIDES</b> <b>PRC WITH SENSITIVE INFORMATION: OVERVIEW OF EVENTS</b> .....	100
The PRC’s Launch Failure Investigation .....	107
The Asia Pacific Telecommunications Insurance Meeting .....	107
The PRC’s Creation of an ‘Independent Review Committee’ .....	108
The Independent Review Committee’s Meetings .....	109
The Independent Review Committee’s Report .....	110



Substance of the Preliminary Report ..... 110

The Report Goes to the PRC ..... 112

Defense Department Analyst Discovers the Activities  
of the Independent Review Committee ..... 113

Loral and Hughes Investigate the Matter ..... 114

The Aftermath: China Great Wall Industry Corporation Revises Its  
Findings on the Cause of the Accident ..... 114

U.S. Government Assessments of the Independent Review  
Committee’s Report, and Referral to the Department of Justice ..... 115

**DETAILS OF THE FAILED LONG MARCH 3B-INTELSAT 708 LAUNCH  
AND INDEPENDENT REVIEW COMMITTEE ACTIVITIES** ..... 116

Background on Intelsat and Loral ..... 116

*Intelsat* ..... 116

*Loral Space and Communications* ..... 117

*Space Systems/Loral* ..... 118

*Intelsat 708 Launch Program* ..... 118

The Intelsat 708 Launch Failure ..... 119

*Events Leading Up to the Creation of the Independent Review Committee* ..... 121

*The Government Security Committee Meeting at Loral* ..... 124

The Apstar 1A Insurance Meeting ..... 128

The April 1996 Independent Review Committee Meetings in Palo Alto ..... 129

*Meeting on April 22, 1996* ..... 129

*Meeting on April 23, 1996* ..... 131

*Meeting on April 24, 1996* ..... 132

United States Trade Representative Meeting on April 23, 1996 ..... 132

The April and May 1996 Independent Review Committee Meetings in Beijing ..... 134

*Meeting on April 30, 1996* ..... 134

*Members’ Caucus at the China World Hotel* ..... 134

*Meeting on May 1, 1996* ..... 138

The Independent Review Committee Preliminary Report ..... 140

*Writing the Report* ..... 140

*Loral Sends the Draft Report to the PRC* ..... 140

*The Contents of the Draft Report* ..... 141



<i>Notification to Loral Officials That a Report Had Been Prepared</i> .....	142
<i>Loral Review and Analysis of the Independent Review Committee Report</i> .....	143
The Final Preliminary Report is Sent to the PRC .....	144
<i>Another Copy of the Report is Sent to Beijing</i> .....	145
Loral Management Actions After Delivery of the Report to the PRC .....	146
Defense Department Official Discovers the Activities	
of the Independent Review Committee .....	147
<i>Meeting with the Defense Technology Security Administration</i> .....	148
<i>Meeting with the State Department</i> .....	148
<i>Reynard's Telephone Call to Loral</i> .....	149
Loral Management Discovers the Independent Review Committee	
Report Has Been Sent to the PRC .....	150
Loral's 'Voluntary' Disclosure .....	151
<i>Investigation by Loral's Outside Counsel</i> .....	151
<i>Loral Submits Its 'Voluntary' Disclosure to the State Department</i> .....	151
The PRC Gives Its Final Failure Investigation Report .....	157
Assessments By U.S. Government Agencies and Referral to the Department of Justice ..	158
<i>Defense Department 1996 Assessment</i> .....	158
<i>Central Intelligence Agency Assessment</i> .....	159
<i>Department of State Assessment</i> .....	159
<i>Defense Technology Security Administration 1997 Assessment</i> .....	159
<i>Interagency Review Team Assessment</i> .....	160
Outline of What Was Transferred to the PRC .....	161
<i>Independent Review Committee Meeting Minutes</i> .....	161
<i>Independent Review Committee Preliminary Report</i> .....	162
Loral's Inaccurate Instructions on Releasing Public Domain Information to Foreigners ..	162
<i>Instructions to the Independent Review Committee</i>	
<i>Regarding Public Domain Information</i> .....	162
<i>State Department Views on Public Domain Information</i> .....	164
The Defense Department Concludes That the Independent Review Committee's	
Work Is Likely to Lead to the Improved Reliability of PRC Ballistic Missiles .....	164
The Cross-Fertilization of the PRC's Rocket and Missile Design Programs .....	166
The Independent Review Committee Aided the PRC in Identifying the Cause	
of the Long March 3B Failure .....	167



The PRC Implemented All of the Independent Review Committee’s Recommendations . 168  
The Independent Review Committee Helped the PRC Improve the Reliability  
of Its Long March Rockets ..... 171

**AFTERWORD: U.S. COMPANIES’ MOTIVATIONS  
TO LAUNCH SATELLITES IN THE PRC ..... 172**

**CHRONOLOGY OF KEY EVENTS ..... 176**

**TECHNICAL AFTERWORD: Technical Aspects of Technology Transfer  
During the Loral Failure Investigation: Background ..... 194**

## **CHAPTER 7**

### **Protecting Sensitive Information at PRC Launch Sites**

**CHAPTER SUMMARY ..... 218**

**PROTECTING SENSITIVE INFORMATION AT PRC  
LAUNCH SITES: BACKGROUND ..... 220**  
U.S.-PRC Bilateral Agreement ..... 220  
Export Licenses for PRC Launching of U.S. Satellites ..... 220  
Defense Department Monitors ..... 222

**UNAUTHORIZED ACCESS ALLOWS OPPORTUNITIES TO GAIN  
INFORMATION CONCERNING U.S. SATELLITES AND  
OTHER CONTROLLED TECHNOLOGY ..... 222**

**INADEQUACY OF CURRENT SAFEGUARDS ..... 227**

**SAFEGUARDING U.S.-BUILT SATELLITES AND U.S. ROCKET  
TECHNOLOGY AT PRC LAUNCHES ..... 237**  
Country-to-Country Agreements ..... 237  
Export Licenses ..... 237



<b>THE DEFENSE DEPARTMENT’S RESPONSIBILITIES FOR SAFEGUARDING U.S. TECHNOLOGY AT LAUNCHES</b>	238
<b>DEFICIENCIES OBSERVED IN THE CURRENT SYSTEM</b>	239
U.S.-PRC Technical Discussions Occur Prior to the Issuance of Export Licenses	239
Technology Transfer Control Plans and Security Plans Vary Throughout the Space Industry	239
Temporary Assignments of Defense Department Monitors Disrupt Continuity of Launch Site Security	240
An Inadequate Number of Defense Department Monitors Is Assigned to PRC Launches	242
Uneven Prior Technical Experience of the Defense Department Monitors	244
Inadequate Headquarters Review of Monitor Reports	245
Lack of Headquarters’ Support	246
Lack of Intermediate Sanction Authority	247
Conflicting Industry Priorities	249
Satellite Manufacturers, Not the Defense Department, Supervise Site Security Personnel	250
Reliance on Private Contractor Security Is Inadequate	250
Insufficient Numbers of Security Guards at PRC Launch Sites	252
<b>CORRECTING SECURITY DEFICIENCIES</b>	253
The 1999 Defense Authorization Act	254
<b>EXCERPTS FROM DEFENSE DEPARTMENT MONITORS’ REPORTS OF SECURITY LAUNCHES OF U.S. SATELLITES</b>	255



# **CHAPTER 8**

## **The Role of Commercial Space Insurance in Technology Transfer to the PRC**

<b>CHAPTER SUMMARY</b> .....	268
<b>THE ROLE OF COMMERCIAL SPACE INSURANCE IN TECHNOLOGY TRANSFER TO THE PRC</b> .....	270
Insurance Aspects of the Long March 3B-Loral-Intelsat 708 Failure .....	270
The Formation of the Independent Review Committee .....	276
The April 15-16, 1996 Insurance Meeting in Beijing .....	289
The Space Insurance Industry’s Involvement in the Release of the Independent Review Committee’s Interim Report .....	292
<b>CHRONOLOGY OF KEY EVENTS</b> .....	298
<b>TECHNICAL AFTERWORD: The Commercial Space Insurance Industry</b> .....	300
<b>NOTES</b> .....	312



**ALL-VOLUME OVERVIEW .....X**

**CHAPTER 9**

**Statutory and Regulatory Controls: The Export of Our Militarily Sensitive Technology**

**CHAPTER SUMMARY ..... 2**

**STATUTORY AND REGULATORY CONTROLS:**

**THE EXPORT OF OUR MILITARILY SENSITIVE TECHNOLOGY ..... 6**

Export Administration Act ..... 6

National Security Controls ..... 9

Foreign Policy Controls ..... 10

Short Supply Controls ..... 10

**CONTROLS MAINTAINED IN COOPERATION WITH OTHER NATIONS ... 11**

COCOM (Coordinating Committee on Multilateral Export Controls) ..... 11

Wassenaar Arrangement ..... 14

Australia Group ..... 17

Missile Technology Control Regime ..... 18

Nuclear Suppliers Group ..... 19

**ENHANCED PROLIFERATION CONTROL INITIATIVE ..... 20**

**EXPORT ADMINISTRATION REGULATIONS ..... 21**

**ARMS EXPORT CONTROL ACT ..... 24**

**INTERNATIONAL TRAFFIC IN ARMS REGULATIONS ..... 24**

**OMINBUS TRADE AND COMPETITIVENESS ACT OF 1988 ..... 25**

**ECONOMIC ESPIONAGE ACT OF 1996 ..... 25**





## **EXPORT LICENSES FOR MILITARILY SENSITIVE TECHNOLOGY:**

<b>DEPARTMENT OF COMMERCE</b> .....	26
Export License Processing Until December 1995 .....	27
License Processing Since Executive Order 12981 in December 1995 .....	29
Pre-License Checks and Post-Shipment Verifications .....	31
Roles of Other Departments and Agencies in Commerce’s	
Export Licensing Policy .....	32
<i>Department of State</i> .....	32
<i>Department of Defense</i> .....	33
<i>Central Intelligence Agency</i> .....	34
Enforcement .....	34
<i>Voluntary Disclosures</i> .....	35
<i>Penalties for Violation of the Export Administration Regulations</i> .....	35
<i>Penalties Under the 1979 Act (Expired Since 1994)</i> .....	35
<i>Administrative Sanctions</i> .....	36
<i>Penalties Under the International Emergency Economic Powers Act</i> .....	37
<i>Customs Enforcement</i> .....	37
Commodity Classification Requests Under the Commerce Control List .....	37

## **EXPORT LICENSES FOR MILITARILY SENSITIVE TECHNOLOGY:**

<b>DEPARTMENT OF STATE</b> .....	39
Procedures for Referral to Other Departments and Agencies of Requests	
to Export U.S. Munitions List Items .....	39
Commodity Jurisdiction Process .....	41
Registration of Exports .....	42
Congressional Oversight and Required Reports .....	42
Foreign-Origin Items with U.S. Content .....	43
Enforcement .....	44
<i>Penalties for Violations of the Arms Export Control Act and ITAR</i> .....	44
<i>Voluntary Disclosures</i> .....	45
BLUE LANTERN Checks .....	45

## **EXPORT CONTROL POLICY TOWARD THE PRC** .....

Background .....	46
Launch of Satellites on PRC Rockets .....	47



Satellite Launches in the PRC Following Tiananmen Square ..... 49

Missile Proliferation Sanctions on the PRC ..... 53

U.S. Munitions List Changes Regarding Satellites ..... 55

*Relaxation of Satellite Export Rules* ..... 55

*The Trade Promotion Coordinating Committee Recommends*

*Moving Satellites to Commerce Department Jurisdiction* ..... 57

*The 1996 Transfer of Jurisdiction Over Commercial Satellites to Commerce* ..... 60

*The 1999 Return of Jurisdiction Over Commercial Satellites to the State Department* .. 62

High Performance Computers ..... 64

Machine Tools ..... 70

Treatment of Hong Kong ..... 71

John Huang, Classified U.S. Intelligence, and the PRC ..... 73

## **CHAPTER 10**

# **Manufacturing Processes: PRC Efforts to Acquire Machine Tool and Jet Engine Technologies**

**CHAPTER SUMMARY** ..... 80

**MANUFACTURING PROCESSES: PRC EFFORTS TO ACQUIRE MACHINE TOOL AND JET ENGINE TECHNOLOGIES** ..... 82

**PRC TARGETING OF ADVANCED MACHINE TOOLS** ..... 84

    Export Controls on Machine Tools ..... 86

    Export Administration Regulations ..... 88

    The PRC’s Machine Tool Capabilities and Foreign Acquisitions ..... 88

**CASE STUDY: McDONNELL DOUGLAS MACHINE TOOLS** ..... 89

    Findings of the U.S. General Accounting Office ..... 89

    The U.S. Government’s Actions in Approving the Export Licenses ..... 92

*Intelligence Community Assessments* ..... 94

*Changes to the Trunkliner Program* ..... 98

*Discussions in the Advisory Committee for Export Policy* ..... 99



<i>The License is Issued</i> .....	100
McDonnell Douglas's Plans .....	102
<i>McDonnell Douglas's Limited Role at the Machining Center</i> .....	102
<i>Trunkliner Program</i> .....	102
Commerce Department Delays Investigating Machine Tool	
Diversion for Six Months .....	103
<i>The Commerce Department's Actions in April 1995</i> .....	103
<i>The Commerce Department's Actions in October 1995</i> .....	104
<i>Allegation that the Commerce Department Discouraged</i> <i>the Los Angeles Field Office's Investigation</i> .....	105
<i>The Office of Export Enforcement's Los Angeles Field Office's Request</i> <i>for a Temporary Denial Order Against CATIC</i> .....	107
PRC Diversion of Machine Tools .....	108
<i>CATIC Letter Suggests Trunkliner Program at Risk</i> .....	108
<i>CATIC's Efforts to Create the Beijing Machining Center</i> <i>with Monitor Aerospace</i> .....	109
Diversion of the Machine Tools to Nanchang Aircraft Company .....	112
Nanchang Accepts Responsibility .....	114
<b>CHRONOLOGY OF KEY EVENTS</b> .....	117
<b>PRC TARGETING OF U.S. JET ENGINES</b> <b>AND PRODUCTION TECHNOLOGY</b> .....	123
<b>CASE STUDY: GARRETT ENGINES</b> .....	128
PRC Targeting of Garrett Engines .....	129
U.S. Government Approval of the Initial Garrett Engine Exports .....	131
Commerce Department Decontrol of the Garrett Jet Engines .....	132
The Interagency Review of the Proposed Export of Garrett Jet Engines .....	134
Consideration of Enhanced Proliferation Control Initiative Regulations .....	135
Consideration of COCOM and Export Administration Regulations .....	137
Resolution of the Garrett Engine Controversy .....	140



**THE PRC CONTINUES TO ACQUIRE JET ENGINE  
PRODUCTION PROCESSES** ..... 143

**TECHNICAL AFTERWORD: The PRC’s Acquisition of Machine Tools, Composite  
Materials, and Computers for Aircraft and Missile Manufacturing** ..... 144

**CHAPTER 11**  
**Recommendations** ..... 166

**NOTES** ..... 178

**APPENDICES** ..... 206

**THE INVESTIGATION** ..... 206

**MEMBERS AND STAFF** ..... 214

**H. RES. 463** ..... 220

**HEARINGS AND MEETINGS** ..... 229

**INTERVIEWS, DEPOSITIONS, AND DOCUMENT REQUESTS** ..... 235

**GLOSSARIES** ..... 246

