Incidental Paper

Seminar on Intelligence, Command, and Control

Guest Presentations, Spring 1995:
Michael L. Brown, William A. Owens,
R.C.M. (Mark) Baker, Arthur V. Grant, Jr.,
A. Jay Cristol, Robert Lawrence,
Albert Edmonds, John A. Leide

Program on Information
Resources Policy

Harvard University
Center for Information Policy Research
Cambridge, Massachusetts
An incidental paper of the Program on Information Resources Policy

Seminar on Intelligence, Command, and Control

Spring 1995
Guest Presentations by:
Michael L. Brown, William A. Owens,
R.C.M. (Mark) Baker, Arthur V. Grant, Jr.,
A. Jay Cristol, Robert Lawrence,
Albert Edmonds, John A. Leide

I-96-2. January 1996

Project Director:
Anthony G. Oetinger

The Program on Information Resources Policy is jointly sponsored by Harvard University and the Center for Information Policy Research.

Chairman: Anthony G. Oetinger
Managing Director: John C. B. LeGates

Incidental papers have not undergone the reviewing process the Program requires for formal publication. Nonetheless the Program considers them to merit distribution.

Copyright © 1996 by the President and Fellows of Harvard College. Not to be reproduced in any form without written consent from the Program on Information Resources Policy, Harvard University, 200 Aiken, Cambridge, MA 02138, (617) 495-4114. Printed in the United States of America.

ISBN 1-879716-29-1

Printing 5 4 3 2 1
Affiliates

AT&T Corp.
BellSouth Corp.
Braxton Associates
Carvajal S.A., Columbia
Centro Studi San Salvador, Telecom Italia
The College Board
Commission of the European Communities
Computer & Communications Industry Assoc.
CSC Index (U.K.)
CyberMedia Group
DACOM (Korea)
Deloitte & Touche
Educational Testing Service
ETRI (Korea)
European Parliament
France Telecom
Grupo Clarin (Argentina)
GTE Corp.
Hitachi Research Institute (Japan)
IBM Corp.
Knight-Ridder Information, Inc.
KPN (Netherlands)
Lee Enterprises, Inc.
John and Mary R. Markle Foundation
McCaw Cellular Communications, Inc.
MeesPierson (U.K.)
Mead Data Central
Microsoft Corp.
MicroUnity Systems Engineering, Inc.
MITRE Corp.
National Telephone Cooperative Assoc.
NEC Corp. (Japan)
Nippon Telegraph & Telephone Corp. (Japan)
NYNEX
Pacific Bell
Pacific Bell Directory
Pacific Telesis Group
The Post Office (U.K.)
Research Institute of Telecommunications and Economics (Japan)
Revista Nacional de Telematica (Brazil)
Samara Associates
Scaife Family Charitable Trusts
Scientific-Atlanta, Inc.
Siemens Corp.
Southern California Edison Co.
Sprint Communications Co. L.P.
State of California Public Utilities Commission
Strategy Assistance Services
Telstra Corp. Ltd. (Australia)
TRW, Inc.
United States Government:
   Department of Commerce
      National Telecommunications and Information Administration
   Department of Defense
      National Defense University
   Department of Health and Human Services
      National Library of Medicine
   Federal Communications Commission
   National Security Agency
United States Postal Service
Viacom Broadcasting
VideoSoft Solutions, Inc.
Acknowledgments

For their willingness to travel to Cambridge to share their experience with our students at the Kennedy School of Government I am deeply grateful to Michael L. Brown, William A. Owens, R.C.M. (Mark) Baker, Arthur V. Grant, Jr., A. Jay Cristol, Robert Lawrence, Albert Edmonds, John A. Leide.

Special contributions by EG&G, Inc., TRW, Lincoln Laboratory of MIT, the Lockheed Martin Corporation, and the MITRE Corporation have enabled the preparation and printing of this publication.

I also wish to thank: Rick Jensen for his intellectual and logistical efforts on behalf of the seminar; Margaret MacDonald for whipping raw transcripts into readable form and for supervising production; and Fran Jonuskis for setting up the text.

The responsibility for any sins of omission or commission nonetheless remains entirely mine.

Anthony G. Oettinger
Introduction

The papers in this volume are lightly edited transcripts of presentations and discussions ordered in the sequence in which they took place. The informality of oral exposition interrupted by questions or comments has been preserved. Only pauses and repetitions have been eliminated and tripping sentences smoothed. Substance has, as far as possible, been left unaltered. All guests made their presentations in an open forum, forewarned that neither classified nor proprietary matters are appropriate in a university classroom.

Much of the 1995 seminar series focused on new demands being placed on the United States and the new world order resulting from dramatic changes in the international geopolitical picture in recent years—breakup of the former Soviet Union and continued turbulence in that regime, a volatile peace in Southwest Asia following the Persian Gulf War and new conflicts that threaten global peace and stability. Many of the speakers emphasized new threats to U.S. national security caused by the changing global geopolitical landscape. The promise of emerging technologies and of the concept of information warfare in responding to these threats served as a central underlying theme, while each speaker highlighted final concerns that are forcing not only widespread organizational changes in the U.S. defense establishment, but also a significant shift in the conceptual framework of DoD’s doctrine and the strategy of National Command Authorities that drives U.S. national security policy. Each emphasized the ever-increasing importance of good intelligence and of effective command and control and interoperability of forces in the success or failure of future armed conflict.
Proceedings of the Harvard Seminar on Intelligence, Command, and Control
John F. Kennedy School of Government
Harvard University

Anthony G. Oettinger, Professor of Information Resources Policy, has had a continuing interest in the ways in which institutions draw on systems of people, policies, and technologies to gather and use information for survival and growth. Since 1980 his graduate seminar on intelligence, command, and control has explored this topic with a series of guest speakers from military organizations, civil government, and businesses. While the guest speakers tend to be practitioners of the decision-making process, some are theoreticians who attempt to see patterns in the chaos of day-to-day crises. Taken as a whole, the series chronicles the recent history of this field.

The following descriptions of previous volumes identify the speakers’ roles at the time of their presentations.

This year’s seminar series continued to focus on new demands being placed on the United States and the new world order resulting from dramatic changes in the international geopolitical picture in recent years. The promise of emerging technologies in responding to the issues served as a central, underlying theme, while each speaker highlighted concerns forcing not only widespread organizational changes in the U.S. defense establishment but also a significant shift in the conceptual framework of DOD doctrine and the strategy of the National Command Authorities, which drives U.S. national security policy.


James Davis, Assistant Deputy Chief of Staff for Intelligence, U.S. Army: “The Role of Army Intelligence in the National Foreign Intelligence Program.”


Keith R. Hall, Deputy Assistant Secretary of Defense for Intelligence Collection Center, DIA: “Intelligence Needs in the Post Cold War Environment.”

Col. Richard L. Layman, USAF, Commander, Second Space Warning Squadron: “Survivability and Space-Based Missile Warning Capabilities.”

Major General John A. Leide, USA, Director, National Military Intelligence: “Intelligence Analysis in Coalition Warfare.”


Col. Lewis Wallace, Jr., USAF Fellow, Institute for the Study of Conflict, Boston University: “From the Soviet Union to Russia: Contradictions and Implications.”

This year’s seminar series focused on new demands being placed on the United States and the new world order resulting from dramatic changes in the international geopolitical picture in recent years. Many speakers emphasized new threats to U.S. national security caused by the changing global geopolitical landscape and each emphasized the ever-increasing importance of effective command and control and interoperability of forces in the success or failure of future armed conflict.

Randall M. Fort, Deputy Assistant Secretary for Functional Analysis and Research, Bureau of Intelligence and Research, Department of State: “The Role of Intelligence in Economic and Other Crises.”

Barry M. Horowitz, President and CEO, MITRE Corporation: “The Emergence of Data Systems: Cost and Technical Change in Military Systems.”

Walter Jajko, Director, Special Advisory Staff, Office of the Under Secretary for Policy, Department of Defense: “Defense Intelligence: Adaptability, Character, and Capability.”

Major General Gary W. O’Shaughnessy, Commander, Air Force Intelligence Command and Director, Joint Electronic Warfare Center: “The Structure and Missions of the Air Force Intelligence Command.”

Read Admiral Edward D. Sheafer, Director of Naval Intelligence: “Naval Intelligence in the Post-Cold War Era.”

Nina J. Stewart, Executive Assistant to the Director of Central Intelligence: “Infrastructure for Security.”

Vice Admiral Jerry O. Tuttle, Director of Space and Electronic Warfare: “The Copernican Pull.”

Michelle K. Van Cleave, Esq., Assistant Director for National Security Affairs and General Counsel, White House Office of Science and Technology Policy: “Intelligence: The Science and Technology Connection.”


This year’s seminar series focused on evolving threats to U.S. national security as Congress and National Command Authorities struggled to redefine America’s global geopolitical interests and the organizational changes needed to meet them. Several speakers emphasized the stakes for new and advanced technologies in this national debate.

Roscoe M. Cougill, Director, Command, Control, Communications and Computer Systems Directorate: “C3 During Desert Shield and Desert Storm.”

Richard L. Haver, Assistant to the Secretary of Defense for Intelligence Policy: “The Process of Reorganization within the U.S. Intelligence Community.”


Frank B. Horton, Deputy Chief of Staff/Intelligence, HQ Strategic Air Command: “Command Plan and C3I.”

Albert R. Lubarsky, Director, C³I for Counternarcotics, Department of Defense: “C³I in Transition.”

Richard C. Macke, Director, Command, Control, Communications and Computer Systems, The Joint Staff: “C⁴I for the Warrior.”

John M. McConnell, Director for Joint Staff Intelligence, J2: “The Role of the Current Intelligence Officer for the Chairman of the Joint Chiefs of Staff.”

This year’s seminar series stressed the role of intelligence in organizations. A number of speakers addressed the challenges confronting the U.S. intelligence apparatus in the Post-Cold War political environment.


Duane P. Andrews, Assistant Secretary of Defense (C³I): “Restructuring the World of C³I.”


Carnes Lord, Assistant to the Vice President for National Security Affairs: “Bureaucratic Problems in Formulating National Strategy.”

Eugene B. Lotochinski, Vice President, Marketing, Northern Telecom World Trade: “Global Communications Capabilities for the Banking Industry.”

David Y. McManis, National Security Agency/CSS representative to DOD: “Technology, Intelligence and Command.”

John M. Ruddy, Vice President, The MITRE Corporation: “Military Use of Satellite Communications.”

Paul R. Schwartz, Major General, USA: “Coalition Command and Control in Desert Shield/Desert Storm.”


Joseph S. Toma, Chief, Special Action Division, Joint Staff J6-A: “C³: A View from Inside the Joint Staff.”

**Guest Presentations, Spring 1990** [146 pages; December 1991/Incidental Paper: I-91-3]  
This year’s seminar series stressed the role of intelligence in organizations. A number of speakers addressed the challenges confronting the U.S. intelligence apparatus in the Post-Cold War political environment.

Lt. Gen. James Cassity, Jr., USAF, Director, Command, Control & Communications (J-6), Joint Chiefs of Staff: “Restructuring Military Policy to Reflect Worldwide Political Changes.”

Kenneth M. Duberstein, President and CEO of The Duberstein Group, formerly Chief of Staff to President Reagan: “The White House Information Process.”

Thomas K. Latimer, Staff Director, House Permanent Committee on Intelligence, U.S. House of Representatives: “The Congressional Intelligence Committees.”

[ix]
James W. Lucas, Dean, School of Professional Studies, Defense Intelligence College: “The Information Needs of Presidents.”

Gordon Negus, Executive Director, Defense Intelligence Agency: “Intelligence in Support of U.S. Foreign Policy.”

Vice Admiral W.O. Studeman, Director, National Security Agency: “The Philosophy of Intelligence.”


This year’s presentations included continuing assessments of the Defense Reorganization Act of 1986, a look at the impact of new technologies on C3I planning and perspectives on intelligence, command and control activities in some civilian domains.

James M. Fox, Assistant Director in Charge, New York City, Federal Bureau of Investigation: “Crisis Management at the FBI.”

Robert T. Herres, General, USAF, and Vice Chairman, Joint Chiefs of Staff: “The Role of the Joint Chiefs After the 1986 Defense Reorganization Act.”

Stuart E. Johnson, Director, Strategic Concepts Development Center, INSS, National Defense University: “Command and Control Education and Research.”

John F. Magee, Chairman of the Board, Arthur D. Little, Incorporated: “Some Business Analogies to C3I.”


John T. Myers, Lieutenant General, USA, and Director, Defense Communications Agency: “Future Directions for Defense Communications.”

Charles A. Zraket, President and CEO, The MITRE Corporation: “Four Vital Issues in C3I.”

Speakers in this series addressed a variety of topics, but two themes predominated. The first of these was the reorganization of the U.S. Department of Defense in accordance with the Goldwater-Nichols Reorganization Act of 1986. The second major theme was the role of Special Operations Forces and Low Intensity Conflict (SOF/LIC) in defense planning and organization.

Frank J. Breth, Brigadier General, USMC, Director of C4I2 Department/Director of Intelligence: “Getting in Front of C4I2 Problems.”

Ruth M. Davis, President, Pymatuning Group, formerly an Assistant Secretary of Energy and Deputy Under Secretary of Defense: “Putting C3I Development in a Strategic and Operational Context.”

Robert T. Herres, General, USAF, and Vice Chairman, Joint Chiefs of Staff: “Strengthening the Chairman of the Joint Chiefs of Staff.”
Rae M. Huffstutler, Deputy Director for Administration, formerly Director, National Photographic Interpretation Center, Central Intelligence Agency: "Intelligence Sources and Their Applications."


James R. Locher, III, Professional Staff Member, Senate Committee on Armed Forces: "Special Operations and Low Intensity Conflict: A Congressional Perspective."

Earl F. Lockwood, President and Chief Executive Officer, Betac Corporation: "The Evolution of Special Operations Forces."

John F. McLaughlin, Executive Director, Program on Information Resources Policy, Harvard University: "The Rise in Low Intensity Conflict: A Theory."

Richard L. Thornburgh, Director, Institute of Politics, Kennedy School of Government, Harvard University, formerly Governor of Pennsylvania: "Three Mile Island: A Case Study in C3I for Crisis Management."

Jerry O. Tuttle, Vice Admiral, USN, and Director, Command, control and Communications Organization of the Joint Chiefs of Staff (J-6): "Tailoring C3I Systems to Military Users."

Speakers explored the information requirements of national, military, and business organizations at a time of technological and organizational change in the military and civilian worlds. The reorganization of the U.S. Department of Defense in accordance with the Goldwater-Nichols Defense Reorganization Act of 1986 was the occasion for analysis and re-evaluation.

Archie D. Barrett, professional staff, House Armed Services Committee, formerly military staff assistant to the Executive Secretary of the Defense Organization Study: "Defense Reorganization: A View from the House."

Robert L. DeGross, provost, Defense Intelligence College: Teaching Intelligence."

Fred R. Demech, Jr., captain, U.S. Navy, formerly executive director, the President’s Foreign Intelligence Advisory Board: “Making Intelligence Better.”


James R. Locher, III, professional staff, Subcommittee on Projection Forces and Regional Defense, Senate Committee on Armed Services: "Defense Reorganization: A View from the Senate."

George C. Lodge, professor, Harvard Graduate School of Business Administration, formerly director of information, U.S. Department of Labor and Assistant Secretary of Labor for International Affairs: "Ideology and National Competitiveness."

Eugene B. Lotochinski, vice president, market development, Northern Telecom Inc.: “The Information Management Marketplace."

Michael J. Zak, vice president, marketing, Concord Communications, Inc.: “Coming of Age in C3I.”

Guest Presentations, Spring 1986 [168 pages; February 1987/Incidental Paper: I-87-1]
The speakers this year addressed a variety of topics, with two predominant themes. The first was the manner in which organizations—military, diplomatic, business—obtain and use intelligence. The second theme was how organizations protect information from the growing threat of electronic interception.

Robert Conley, formerly Deputy Assistant Secretary for Advanced Technology and Analysis and Acting Assistant Secretary for Electronic Systems and Information Technology, Department of the Treasury: “Data Security in the Information Age.”

Harold Daniels, Deputy Director for Information Security at the National Security Agency, formerly Assistant Deputy Director for Communications Security: “The Role of the National Security Agency in Command, Control and Communications.”

John Grimes, Director of National Security Telecommunications and Director of Defense Programs (C3) of the National Security Council: “Information Technologies and Multinational Corporations.”

Bobby R. Inman, president and chief executive officer, Microelectronics and Computer Technology Corporation, formerly Director of the Office of Naval Intelligence, Director of the National Security Agency, and Deputy Director of Central Intelligence: “Technological Innovation and the Cost of Change.”

Richard J. Levine, editorial director, data base publishing, Dow Jones & Company: “Data Base Publishing for Business Intelligence.”

Mark Lowenthal, acting director, Office of Strategic Forces Analysis, Bureau of Intelligence and Research, Department of State: “The Quest for ‘Good’ Intelligence.”

Clarence E. McKnight, Director for Command, Control, and Communications Systems, Organization of the Joint Chiefs of Staff, formerly Commanding General, U.S. Army Communications Command: “C3I Systems at the Joint Level.”

Lionel Olmer, formerly Under Secretary for International Trade, U.S. Department of Commerce, heading the International Trade Administration; currently member of Paul, Weiss, Rifkind, Wharton & Garrison, an international law firm: “Intelligence Techniques for the American Business Community.”

Guest Presentations, Spring 1985 [180 pages; April 1986/Incidental Paper: I-86-1]
These presentations examined the link between defense organization and the efficacy of command, control, communications and intelligence, within the context of current debate over reorganization of the Joint Chiefs of Staff.

Archie D. Barrett, professional staff, House Armed Services Committee, formerly military staff assistant to the Executive Secretary of the Defense Organization Study: “Politics and the Military—The Climate for Reform.”

Lincoln Faurer, formerly Director of the National Security Agency and Chief, Central Security Service, Fort Meade, Maryland: “The Role of Intelligence Within C3I.”


Robert Hilton, consultant specializing in national and international security affairs and political risk analysis; formerly Vice Director for Operations, Joint Chiefs of Staff: “Roles of the Joint Chiefs of Staff in Crisis Management.”

Samuel P. Huntington, director, Center for International Affairs, Harvard University, formerly Coordinator of Security Planning for the National Security Council: “Centralization of Authority in Defense Organizations.”

Donald Latham, Assistant Secretary of Defense, C3I: “A View from Inside OSD.”


These presentations explored the roles of communication, information, and warning systems in peacekeeping, crisis management, and economic security.


Stuart E. Branch, Deputy Assistant Secretary for Communications in the Department of State and member, National Communications System and U.S. Communications Security Board of the National Security Council: “C3I and Crisis Management.”

Leo Cherne, executive director, Research Institute of America: “Television News and the National Interest.”

Hubert L. Kertz, formerly president and managing director, American Bell International, Inc., with Anthony G. Oeltlinger: “With AT&T in Iran.”

David McManis, National Intelligence Officer for Warning and Director, National Warning Staff: “Warning as a Peacekeeping Mechanism.”


(The seminar was not held during 1983.)

Guest Presentations, Spring 1982 [181 pages; December 1982/Incidental Paper: I-82-3]
This series of C3I sessions emphasized national security issues, exploring policy and planning as
well as procurement and implementation perspectives. Guests discussed not only the impact within the defense community of rapidly expanding technology but also the public consequences—national and international—of intelligence gathering and use.

Richard D. DeLauer, Under Secretary of Defense for Research and Engineering: “The View from the Hot Seat.”

Hillman Dickinson, Director for Command, Control and Communications Systems, Joint Chiefs of Staff: “Planning for Defense-Wide Command and Control.”

Gerald P. Dinneen, corporate vice president, Science and Technology, Honeywell, Inc., formerly Assistant Secretary of Defense for Communications, Command, and Control, and Intelligence: “C3 Priorities.”

Richard H. Ellis, formerly commander in chief, Strategic Air Command: “Strategic Connectivity.”


Thomas H. McMullen, deputy commander, Tactical Air Command: “A Tactical Commander’s View of C3I.”

William G. Miller, associate dean and professor of international politics, Fletcher School of Law and Diplomacy, Tufts University: “Foreign Affairs, Diplomacy and Intelligence.”


The perspective in this volume encompasses the Congress, combatant commands, defense contractors, and technological innovators. As part of an ongoing open forum on C3I, the sessions brought together the intersecting vantage points of industrial suppliers and innovators, government funders and decision makers, and principals in military intelligence.

William O. Baker, formerly chairman, Bell Laboratories, Inc.: “The Convergence of C3I Techniques and Technology.”


Richard D. DeLauer, executive vice president, TRW, Inc.: “A Major Contractor’s View of C3I.”

B.R. Inman, Deputy Director of Central Intelligence: “Issues in Intelligence.”

James M. Osborne, formerly senior vice president, E-Systems, Inc.: “Meeting Military Needs for Intelligence Systems.”

David C. Richardson, vice admiral, U.S. Navy (ret.); consultant, Defense Intelligence Review Panel, the Defense Science Board, and other panels: “The Uses of Intelligence.”

Charles Rose, U.S. representative; chairman, Policy Group on Information and Computers: “Congress and C3I.”

Charles W. Snodgrass, vice president, Financial Planning and Management, Electronic Data Systems Corp., formerly assistant secretary of the Air Force for financial management: “Funding C3I.”
Table of Contents

Information Warfare and the Revolution in Military Affairs
Michael L. Brown .................................................................................. 1

The Three Revolutions in Military Affairs
William A. Owens .................................................................................. 29

The Globalization of Telecommunications
R.C.M. (Mark) Baker ................................................................................ 49

Effective Intelligence and Free Democracy—Is That an Oxymoron?
Arthur V. Grant, Jr .................................................................................... 75

The Liberty Incident
A. Jay Cristol ............................................................................................ 105

Global Reach Laydown
Robert Lawrence ........................................................................................ 129

Integrated Information Systems for the Warrior
Albert Edmonds .......................................................................................... 165

Coalition Warfare and Predictive Analysis
John A. Leide ............................................................................................ 205

Glossary ...................................................................................................... 229
### Glossary

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC</td>
<td>Air Combat Command, formerly Tactical Air Command</td>
</tr>
<tr>
<td>ACOM</td>
<td>U.S. Atlantic Command, aka USACOM or LANTCOM</td>
</tr>
<tr>
<td>ACSI</td>
<td>Assistant Chief of Staff, Intelligence (U.S. Air Force)</td>
</tr>
<tr>
<td>AECC</td>
<td>aeromedical evacuation control center</td>
</tr>
<tr>
<td>AFCC</td>
<td>Air Force Component Commander</td>
</tr>
<tr>
<td>AFFOR</td>
<td>Air Force Forces commander</td>
</tr>
<tr>
<td>ALCC</td>
<td>airlift coordination center</td>
</tr>
<tr>
<td>AMC</td>
<td>Air Mobility Command (formerly Military Airlift Command)</td>
</tr>
<tr>
<td>AME</td>
<td>air mobility element</td>
</tr>
<tr>
<td>AMHS</td>
<td>automated message handling system</td>
</tr>
<tr>
<td>AMOG</td>
<td>air mobility operations group</td>
</tr>
<tr>
<td>AMTO</td>
<td>air mobility task order</td>
</tr>
<tr>
<td>AOC</td>
<td>air operations center</td>
</tr>
<tr>
<td>APCC</td>
<td>aerial port control center</td>
</tr>
<tr>
<td>API</td>
<td>applications programming interface</td>
</tr>
<tr>
<td>ARPA</td>
<td>Advanced Research Projects Agency (formerly DARPA)</td>
</tr>
<tr>
<td>ASD</td>
<td>Assistant Secretary of Defense</td>
</tr>
<tr>
<td>ASIF</td>
<td>Airlift Support Industrial Fund</td>
</tr>
<tr>
<td>ATACMS</td>
<td>Army Tactical Missile System</td>
</tr>
<tr>
<td>ATO</td>
<td>air tasking order</td>
</tr>
<tr>
<td>AUTODIN</td>
<td>automatic defense intelligence network</td>
</tr>
<tr>
<td>AUTOSEVOCOM</td>
<td>automatic secure voice communications</td>
</tr>
<tr>
<td>AUTOVON</td>
<td>automatic voice network</td>
</tr>
<tr>
<td>BCE</td>
<td>battlefield control/coordinating element</td>
</tr>
<tr>
<td>BOS</td>
<td>base operating support</td>
</tr>
<tr>
<td>BT</td>
<td>British Telecom</td>
</tr>
<tr>
<td>C³I</td>
<td>command, control, communications and intelligence</td>
</tr>
<tr>
<td>C⁴I</td>
<td>command, control, communications, computers and intelligence</td>
</tr>
<tr>
<td>CCT</td>
<td>contingency communications team</td>
</tr>
<tr>
<td>CIA</td>
<td>Central Intelligence Agency</td>
</tr>
<tr>
<td>CIC</td>
<td>combat information center (Israel)</td>
</tr>
<tr>
<td>CINC</td>
<td>commander in chief</td>
</tr>
<tr>
<td>CINCCENT</td>
<td>Commander in Chief, U.S. Central Command</td>
</tr>
<tr>
<td>CINCEUR</td>
<td>Commander in Chief, U.S. European Command</td>
</tr>
<tr>
<td>CINCPAC</td>
<td>Commander in Chief, U.S. Pacific Command</td>
</tr>
<tr>
<td>CINCPACFLT</td>
<td>Commander in Chief, Pacific Fleet</td>
</tr>
<tr>
<td>CINCSOUTH</td>
<td>Commander in Chief, U.S. Southern Command</td>
</tr>
<tr>
<td>CINCUSNAVEUR</td>
<td>Commander in Chief, U.S. Navy, Europe</td>
</tr>
<tr>
<td>CIO</td>
<td>Central Imagery Office</td>
</tr>
<tr>
<td>CMS</td>
<td>Community Management Staff (intelligence community)</td>
</tr>
<tr>
<td>CNN</td>
<td>Cable News Network</td>
</tr>
<tr>
<td>CNO</td>
<td>Chief of Naval Operations</td>
</tr>
<tr>
<td>COE</td>
<td>common operating environment</td>
</tr>
<tr>
<td>COMNAVFOR</td>
<td>Commander of Naval Forces</td>
</tr>
<tr>
<td>CPA</td>
<td>Chairman's Program Assessment</td>
</tr>
<tr>
<td>CSG</td>
<td>Communications Services Group (AT&amp;T)</td>
</tr>
</tbody>
</table>
Glossary

CSS    combat support system
CTAPS  Contingency Theater Automated Planning System
DAB    Defense Acquisition Board
DBOF-T Defense Business Operating Fund—Transportation
DCI    Director of Central Intelligence
DCSINT Deputy Chief of Staff, Intelligence (U.S. Army)
DCTN   Defense Communications Telecommunications Network
DDR&E  Defense Development, Research and Engineering
DIA    Defense Intelligence Agency
DII    Defense Information Infrastructure
DIRMOBFOR Director, Mobility Forces (USTC)
DISA   Defense Information Services Agency
        (formerly Defense Communications Agency)
DMS    Defense Messaging System
DMZ    demilitarized zone
DNI    Director of Naval Intelligence
DOD    Department of Defense
DSN    Defense Systems Network
EC     electronic commerce
ECCM   electronic counter-countermeasures
ECM    electronic countermeasures
EDI    electronic data interchange
EDS    Electronic Data Services
EUCOM  U.S. European Command
FBI    Federal Bureau of Investigation
FBIS   Foreign Broadcast Information Service
FCC    Federal Communications Commission
FORSCOM U.S. Forces Command
FTS    Federal Telecommunications System
GATT   General Agreement on Tariffs and Trade
GCCS   Global Command and Control System
GDIP   General Defense Intelligence Program
GDP    gross domestic product
GDSS   Global Decision Support System
GKS    Graphics Kernel System
GLO    ground liaison officer
GPS    Global Positioning System
GSA    General Services Administration
HAWS   Hawaii area wideband system
HPSCI  House Permanent Select Committee on Intelligence
HUMINT human intelligence
ICAO   International Civil Aeronautics Organization
IDF    Israeli Defense Forces
INFOSEC information security
INR    Bureau of Intelligence and Research (U.S. State Department)
IPR    in-process review
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR</td>
<td>infrared</td>
</tr>
<tr>
<td>JCS</td>
<td>Joint Chiefs of Staff</td>
</tr>
<tr>
<td>JDAM</td>
<td>joint deep area munitions</td>
</tr>
<tr>
<td>JFAC</td>
<td>Joint Forces Air Component</td>
</tr>
<tr>
<td>JROC</td>
<td>Joint Requirements Oversight Council</td>
</tr>
<tr>
<td>JSOW</td>
<td>joint standoff weapon</td>
</tr>
<tr>
<td>JULLS</td>
<td>Joint Uniform Lessons-Learned System (AMC)</td>
</tr>
<tr>
<td>JWCA</td>
<td>Joint Warfare Capabilities Assessment</td>
</tr>
<tr>
<td>LMR</td>
<td>land-mobile radio</td>
</tr>
<tr>
<td>MAISRC</td>
<td>Major Automated Information System Review Council</td>
</tr>
<tr>
<td>MASINT</td>
<td>measurement and signals intelligence</td>
</tr>
<tr>
<td>MFJ</td>
<td>modified final judgment (breaking up AT&amp;T in 1984)</td>
</tr>
<tr>
<td>MI</td>
<td>mobile interdiction</td>
</tr>
<tr>
<td>MIPS</td>
<td>millions of instructions per second</td>
</tr>
<tr>
<td>MISREP</td>
<td>mission report</td>
</tr>
<tr>
<td>MISSI</td>
<td>Multilevel Information System Security Initiative</td>
</tr>
<tr>
<td>MLRS</td>
<td>Multiple Launch Rocket System</td>
</tr>
<tr>
<td>MMTC</td>
<td>Military Traffic and Management Command</td>
</tr>
<tr>
<td>MNC</td>
<td>multinational corporation</td>
</tr>
<tr>
<td>MPO</td>
<td>military personnel office</td>
</tr>
<tr>
<td>MRC</td>
<td>major regional conflict</td>
</tr>
<tr>
<td>MSE</td>
<td>mobile subscriber equipment</td>
</tr>
<tr>
<td>MTB</td>
<td>motor torpedo boat</td>
</tr>
<tr>
<td>NATO</td>
<td>North Atlantic Treaty Organization</td>
</tr>
<tr>
<td>NAVCOMSTA</td>
<td>Naval Communications Station</td>
</tr>
<tr>
<td>NAVFOR</td>
<td>Naval Forces Commander</td>
</tr>
<tr>
<td>NCA</td>
<td>National Command Authorities</td>
</tr>
<tr>
<td>NCS</td>
<td>National Communications System</td>
</tr>
<tr>
<td>NEACP</td>
<td>National Emergency Airborne Command Post</td>
</tr>
<tr>
<td>NFIP</td>
<td>National Foreign Intelligence Program</td>
</tr>
<tr>
<td>NIST</td>
<td>National Institute of Standards and Technology (formerly National Bureau of Standards)</td>
</tr>
<tr>
<td>NRO</td>
<td>National Reconnaissance Office</td>
</tr>
<tr>
<td>NSA</td>
<td>National Security Agency</td>
</tr>
<tr>
<td>NSEP</td>
<td>national security emergency preparedness</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>operations and maintenance</td>
</tr>
<tr>
<td>ODA</td>
<td>office document architecture</td>
</tr>
<tr>
<td>ODIF</td>
<td>office data interchange format</td>
</tr>
<tr>
<td>OODA</td>
<td>observation, orientation, decision, action</td>
</tr>
<tr>
<td>OPCON</td>
<td>operational control</td>
</tr>
<tr>
<td>OPREP</td>
<td>operational report</td>
</tr>
<tr>
<td>OPSEC</td>
<td>operational security</td>
</tr>
<tr>
<td>ORI</td>
<td>operational readiness inspection</td>
</tr>
<tr>
<td>OSA</td>
<td>operational support aircraft</td>
</tr>
<tr>
<td>OSD</td>
<td>Office of the Secretary of Defense</td>
</tr>
<tr>
<td>OTS</td>
<td>Oahu Telecommunications System</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td>PEO</td>
<td>program executive officer</td>
</tr>
<tr>
<td>PF2K</td>
<td>Post FTS 2000</td>
</tr>
<tr>
<td>PHIGS</td>
<td>Programmer's Hierarchical Interactive Graphics Standard or System</td>
</tr>
<tr>
<td>PIM</td>
<td>point of intended movement</td>
</tr>
<tr>
<td>POM</td>
<td>program objectives memorandum</td>
</tr>
<tr>
<td>PRC</td>
<td>People's Republic of China</td>
</tr>
<tr>
<td>PSA</td>
<td>Principal Staff Advocate</td>
</tr>
<tr>
<td>PTT</td>
<td>postal, telephone, and telegraphy authority</td>
</tr>
<tr>
<td>RPV</td>
<td>remotely piloted vehicle</td>
</tr>
<tr>
<td>SADBU</td>
<td>Small and Disadvantaged Business Utilization</td>
</tr>
<tr>
<td>SEAL</td>
<td>member of a Navy Sea-Air-Land unit</td>
</tr>
<tr>
<td>SHF</td>
<td>superhigh frequency</td>
</tr>
<tr>
<td>SOF</td>
<td>Special Operations Forces</td>
</tr>
<tr>
<td>SPIN</td>
<td>special intelligence network</td>
</tr>
<tr>
<td>SSCI</td>
<td>Senate Select Committee on Intelligence</td>
</tr>
<tr>
<td>STACCS</td>
<td>Simplified Tactical Air Command and Control System</td>
</tr>
<tr>
<td>TACAN</td>
<td>tactical air navigation</td>
</tr>
<tr>
<td>TACC</td>
<td>Tanker Airlift Control Center (USTC)</td>
</tr>
<tr>
<td>TAFIM</td>
<td>Technical Architecture Framework for Information Management</td>
</tr>
<tr>
<td>TALCE</td>
<td>Tanker Airlift Control Element (AMC)</td>
</tr>
<tr>
<td>TDY</td>
<td>temporary duty</td>
</tr>
<tr>
<td>TEL</td>
<td>transporter/erector/launcher</td>
</tr>
<tr>
<td>TIARA</td>
<td>tactical intelligence and related activities</td>
</tr>
<tr>
<td>TOW</td>
<td>tube-launched, optically tracked, wire-guided [missile]</td>
</tr>
<tr>
<td>TQM</td>
<td>Total Quality Management</td>
</tr>
<tr>
<td>TRANSCOM</td>
<td>U.S. Transportation Command, aka USTC</td>
</tr>
<tr>
<td>TRANSLO</td>
<td>Transportation Liaison Office</td>
</tr>
<tr>
<td>TSP</td>
<td>technical support plan</td>
</tr>
<tr>
<td>U&amp;S</td>
<td>unified and specified</td>
</tr>
<tr>
<td>UAV</td>
<td>unmanned air vehicle</td>
</tr>
<tr>
<td>UNPROFOR</td>
<td>U.N. Protection Force (Bosnia)</td>
</tr>
<tr>
<td>USTC</td>
<td>U.S. Transportation Command; aka TRANSCOM</td>
</tr>
<tr>
<td>VHF</td>
<td>very high frequency</td>
</tr>
<tr>
<td>VTC</td>
<td>video telecommunications</td>
</tr>
<tr>
<td>WWMCCS</td>
<td>Worldwide Military Command and Control System</td>
</tr>
</tbody>
</table>