This product is part of the RAND Corporation technical report series. Reports may include research findings on a specific topic that is limited in scope; present discussions of the methodology employed in research; provide literature reviews, survey instruments, modeling exercises, guidelines for practitioners and research professionals, and supporting documentation; or deliver preliminary findings. All RAND reports undergo rigorous peer review to ensure that they meet high standards for research quality and objectivity.

TECHNICAL REPORT

Improving Development and Utilization of U.S. Air Force Intelligence Officers

Marygail K. Brauner, Hugh G. Massey,
S. Craig Moore, Darren D. Medlin

Prepared for the United States Air Force

RAND PROJECT AIR FORCE

The research described in this report was sponsored by the United States Air Force under Contract FA7014-06-C-0001. Further information may be obtained from the Strategic Planning Division, Directorate of Plans, Hq USAF.

Library of Congress Cataloging-in-Publication Data

Improving development and utilization of U.S. Air Force intelligence officers / Marygail K. Brauner ... [et al.].
p. cm.
Includes bibliographical references.
ISBN 978-0-8330-4716-8 (pbk.)
1. United States. Air Force—Personnel management. 2. Intelligence officers—United States. 3. Intelligence officers—Supply and demand—United States. 4. Core competencies—United States. 5. Career development—United States. 6. Military intelligence—United States. I. Brauner, Marygail K., 1947–

UG793.I47 2009
358.4'134320973—dc22

2009023606

Published 2009 by the RAND Corporation
1776 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138
1200 South Hayes Street, Arlington, VA 22202-5050
4570 Fifth Avenue, Suite 600, Pittsburgh, PA 15213-2665
RAND URL: http://www.rand.org
To order RAND documents or to obtain additional information, contact
Distribution Services: Telephone: (310) 451-7002;
Fax: (310) 451-6915; Email: order@rand.org

Preface

In recent years, the U.S. Air Force has faced a shortage of general officers with the necessary experience to fill senior leadership positions in Air Force, joint, and interagency intelligence organizations and functions. Air Force human-capital development doctrine requires each career field manager to provide appropriate education, training, and assignment vectors for officers in the field. Designing such vectors requires an understanding of the competencies required for field-grade and general officer jobs, an understanding of the competencies acquired in jobs at all levels, and an understanding of ideal career paths through the jobs in the community or external to the community but filled by its members. At the request of the Air Force, the RAND Corporation undertook an analysis of the competencies required for intelligence jobs and compared the qualifications in the officer supply with the qualifications the jobs demand.

The analysis was performed within RAND Project AIR FORCE Manpower, Personnel, and Training Program for a project titled "Improving Development and Utilization of Intelligence Officers," sponsored by the Director of Intelligence, Surveillance and Reconnaissance, Deputy Chief of Staff for Air and Space Operations (then AF/A3I, now AF/A2) and the Assistant Chief of Staff, Intelligence, Headquarters, U.S. Air Force, Washington, D.C. The study's antecedents were projects sponsored by the Air Force General Officer Matters Office (later the Air Force Senior Leader Management Office), the Developing Aerospace Leaders Project Office, and Air Force Space Command.

Other published RAND analyses regarding the competencies required for Air Force jobs include the following:

- *Integrated Planning for the Air Force Senior Leader Workforce: Background and Methods*, Albert A. Robbert, Steve Drezner, John E. Boon Jr., Lawrence M. Hanser, S. Craig Moore, Lynn M. Scott, and Herbert J. Shukiar (TR-175-AF, 2004). This monograph addresses the development and application of data and methods for targeting the occupational skills needed by senior military and civilian Air Force executives (military general officers and the civilian Senior Executive Service).
- *Improving the Development and Utilization of Air Force Space and Missile Officers*, Georges Vernez, S. Craig Moore, Steven Martino, and Jeffrey Yuen, (MG-382-AF, 2006). This monograph focuses on improving the utilization and development of Air Force space and missile officers at lower grades (from lieutenant through colonel).

In addition, forthcoming work will identify the occupational skills needed by Air Force colonels. RAND research has also addressed the types of experience needed by military and/or

civilian executives in the U.S. Army, Navy, and Marine Corps, other Department of Defense and joint activities, and the Federal Bureau of Investigation.

This document should be of value to the Air Force intelligence community, the Air Force manpower and personnel community, and career field managers and development teams in other functional areas.

RAND Project AIR FORCE

RAND Project AIR FORCE (PAF), a division of the RAND Corporation, is the U.S. Air Force's federally funded research and development center for studies and analyses. PAF provides the Air Force with independent analyses of policy alternatives affecting the development, employment, combat readiness, and support of current and future aerospace forces. Research is conducted in four programs: Force Modernization and Employment; Manpower, Personnel, and Training; Resource Management; and Strategy and Doctrine.

Additional information about PAF is available on our Web site:
http://www.rand.org/paf/

Contents

Figures

Tables

Summary

The U.S. Air Force intelligence career field (14N) incorporates a broad set of operational functions. Nine former subdivisions have been melded into a single Air Force specialty code (AFSC), reflecting Air Force policy at the time to develop "broadened specialists" with an understanding of intelligence beyond a specific technical area. Intelligence officers are expected to gain proficiency in four core competencies: (1) targeting, (2) intelligence, surveillance, and reconnaissance battle planning, (3) unit and air operations center, and (4) aerospace intelligence preparation of the battlespace and predictive battlespace analysis.

A mismatch in the late 1990s between the qualifications needed for key general officer positions and the available candidates' background and experience stimulated an extensive Air Force effort to improve the development of future senior leaders. The effort evolved into a force-development initiative—managed by the Deputy Chief of Staff for Personnel; advised by a force management and development council (chaired by the Vice Chief of Staff); and primarily in the hands of career field managers, functional development teams, and the Air Force Personnel Center's (AFPC's) officer assignment teams. The initiative concentrates on the development of officers in grades below colonel and is aimed at developing enough officers with specified types of background and experience to provide multiple qualified candidates for future requirements (see pp. 3–4).

In 2005, an article in the *C4ISR Journal* asserted that colonels in the intelligence career field were at a disadvantage for promotion to the general officer ranks. This article, along with reports from the 9/11 Commission[1] and the Weapons of Mass Destruction Commission[2] calling for reform in the intelligence community, spurred the Air Force to ask RAND to recommend ways to improve the development and utilization of intelligence officers at the grades of major, lieutenant colonel, and colonel (see pp. 2–3).

Defining Required Background and Experience for Intelligence Officer Jobs (Demand)

To obtain the information needed for this analysis, we called upon subject-matter experts (primarily colonels) to identify the experience, education, and training needed for intelligence

[1] National Commission on Terrorist Attacks upon the United States, *The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks upon the United States*, New York, N.Y.: W. W. Norton & Company, July 2004.

[2] The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, *The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction: Report to the President of the United States*, Washington, D.C.: U.S. Government Printing Office, March 31, 2005.

jobs—i.e., the qualifications that the jobs demand. The experts rated the types of background and experience needed for 1,100 O-4 to O-6 14N jobs,[3] along with other associated jobs, using a rating sheet listing more than 100 different types of missions and specialties (prefixes) and functional, organizational, leadership, academic, and training experience. Each type of experience was rated as "critical," "important," "useful," or "not needed" for each job (or for job groups the experts regarded as similar). The resulting information represents consistently written requisitions for personnel (see pp. 8–10).

Not only did jobs at higher grades have more requirements, but also the criticality of each job requirement increased as the grade increased. Raters determined that, on average, 4.1 experience requirements were critical for colonels, 2.6 were critical for lieutenant colonels, and only 2.3 were critical for majors (see p. 12).

The list of specific job requirements for all field-grade intelligence jobs should be useful for managers who are writing job requisitions, assignment officers who need to fill vacant positions, and intelligence officers who are eligible for reassignment. A list of requirements ranked as "critical," "important," or "useful" is much easier to use than narrative descriptions of requirements (see p. 17).

Identifying Officers' Qualifications (Supply)

Using historical personnel records from AFPC, we identified the experience, education, and training that current intelligence officers had accumulated since entering the force—i.e., qualifications that the officers supply (see pp. 21–22).

Our study found that the types of experience needed for 14N jobs are far fewer than the types of experience accumulated. For example, there are on average only 10.8 job requirements for 14N colonels, but over their careers 14N colonels acquire an average of 35 types of experience. This number suggests that much greater depth is possible: Intelligence officers could spend more time in each job, thus acquiring greater depth in fewer areas (see p. 25).

Access to officer career histories would allow methodical identification of the education, training, and job experience that 14N officers gain as they progress in grade from major through colonel. Further, this acquired background and experience can be expressed in the same terms that characterize job requirements. However, there are some limitations. Standards for acquiring requirements should be set, and officers records should indicate when those requirements have been met (see p. 29).

There are far fewer job requirements than there are skills acquired, suggesting that 14N officers are being trained too broadly. Rather than requiring officers with more limited experience in many different intelligence areas, the jobs require personnel with more focused experience. The positive perspective of the current situation is that breadth of experience increases the number of candidates whom assignment officers can consider for job openings that occur. In addition, not all qualified officers are available for assignment. However, keeping officers in jobs longer or in "back-to-back" assignments in the same or similar job categories would give officers more depth (see p. 29).

[3] O-4 is the symbol for a major; O-5, lieutenant colonel; and O-6, colonel.

Assess Gaps Between Supply and Demand

A gap analysis compared the experience needed for intelligence jobs with the cumulative experience of the 14N officers holding those jobs. We compared the requirements of the jobs at each grade with the background and experience of officers holding these jobs as of, but not including, the job they were holding in 2005. This analysis covered five categories of experience: organizational, operational, functional, command, and AFSC prefix, by grade level and criticality of experience (see pp. 31–43).

Overall, there is about a 40-percent match between officer experience and job requirements; there is about a 50-percent match for critical elements, a 42-percent match for important elements, and a 30-percent match for useful elements (see p. 39).

The shortfalls identified may be the result of both career development gaps and imperfect allocation of officers to jobs. This assessment is quantitative; it assesses whether the officers had developed the experience needed for the jobs, but it does not address the qualitative question of whether the officers were proficient at the tasks needed for performing those jobs (see p. 31).

The current assignment of intelligence officers could be improved. The assignment system lacks systematic assessments of the requirements for various jobs and the experience acquired by individual officers. Good matches occur either by chance or by unstructured interactions among assignment officers, the individuals being assigned, and the gaining commanders or their representatives. In these cases, there may be tacit criteria that are important to the personnel decision but that are not available in either the assignment data describing the position or the personnel record. It may also be that the system has not had sufficient time to recognize evolving requirements (see p. 44).

The designation "critical," "important," or "useful" for each type of experience for many intelligence jobs needs refinement by officers holding those jobs and their supervisors. Adding deployment data would increase information on each type of experience acquired. When career field managers meet to assign force development vectors, they could review the job requirements and consider the recommendations of supervisors, Air Force assignment officers, and personnel holding the jobs (see pp. 44–45).

Recommendations

Improve available information on job requirements. Currently, a unit with an unfilled job sends AFPC a description of the job's functions and a list of the qualifications that candidates should have. These descriptions and qualifications vary from minimal (or none) to elaborate and overwhelming. Most Air Force job requisitions include detailed job descriptions, but few include specifics about the background, experience, or training needed to do the job (see pp. 47–49).

Improve available information on officer skills and experience. It will be much easier to match officer experience and training with job needs when more officers have special experience identifiers (SEIs) and more jobs identify required SEIs. The "rules" and histories in our supply data provide an independent basis for making SEI assignments for all field-grade intelligence officers. Our data may provide most of the SEI assignments needed if this information is initially input in personnel records. Individuals would need to provide additional information only when they felt that the method missed one or more SEIs to which they should be entitled (see p. 49).

Use flow analysis to assess the implications of alternative futures. In flow analysis, a simulation model optimizes the flow of officers through jobs within and across grades. Such a model has been used to understand the effects of different mixes of experience, education, and training at each career stage or policies that favor depth versus breadth of experience.[4] Technology and national priorities, for example, could change the nature and/or mix of future 14N jobs, as could shifts of intelligence work to or from other services, government agencies, enlisted personnel, civilians, or the reserve components. Flow analysis can readily indicate whether notional strategies are feasible and how they would affect the career paths recommended for 14N officers. A new report from the Defense Science Board Advisory Group on defense intelligence highlights the usefulness of such operations research models for decisionmaking (see pp. 49–50).[5]

Conclusions

There is much work still to be done to translate the results of these modeling excursions into career development strategies and then to measure the effect on organizational performance.[6] Even though empirical evidence is relatively slim relating experience to organizational performance, most placement systems in the military, government, and the private sector accept supervisors' declarations of the experience, education, training, or other attributes desired in candidates for specific positions (see p. 51).

The approach described in this technical report simply aims to make such processes considerably more systematic and effective for the Air Force's intelligence officer workforce to

- identify and prioritize positions' needs consistently by using a list of qualifications (these may change over time, but relatively slowly)
- trace officers' accumulation of those qualifications as their careers progress
- routinely assess any gaps between the positions' needs and the officers' qualifications
- develop plans that would deliberately develop officers so that, collectively, their qualifications will meet the requirements of future positions
- develop aids for the assignment process to help match individual officers with positions for which they are well qualified and thus, insofar as possible, enhance their readiness for future assignments
- create a more strategic view for an intelligence career within an evolving national security environment.

---

[4] Two RAND publications contain more discussion of flow analysis and its applications. See S. Craig Moore and Marygail Brauner, *Advancing the U.S. Air Force's Force-Development Initiative,* Santa Monica, Calif.: RAND Corporation, MR-545-AF, 2007; and Georges, S. Vernez, Craig Moore, Steven Martino, and Jeffrey Yuen, *Improving the Development and Utilization of Air Force Space and Missile Officers,* Santa Monica, Calif.: RAND Corporation, MG-382-AF, 2006.

[5] U.S. Department of Defense, *Report of the Defense Science Board Advisory Group on Defense Intelligence: Operations Research Applications for Intelligence, Surveillance and Reconnaissance (ISR),* Washington, D.C.: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, January 2009.

[6] The current career field manager for Air Force Intelligence officers, Col Theresa Meyer, read the draft manuscript for this document. She noted, "There have been minor changes in our force management process since this was written, but I believe they will contribute to better synchronization of personnel capabilities with positions requirements and improve deliberate development."

Acknowledgments

We are grateful to the numerous Air Force officers and civilians who met with members of our research team and discussed candidly their perceptions of the strengths and weaknesses in intelligence officer development.

The study benefited from interviews with then–senior leaders in the intelligence community, including Gen Michael V. Hayden, Director of Central Intelligence; Lt Gen Ronald F. Sams, former Director of Intelligence, Surveillance and Reconnaissance; Maj Gen John C. Koziol, Commander, Air Force Intelligence, Surveillance and Reconnaissance Agency; Brig Gen Paul A. Dettmer, Assistant Deputy Chief of Staff for Intelligence, Surveillance and Reconnaissance; Brig Gen Kevin J. Kennedy, former Deputy Director of Intelligence, Surveillance and Reconnaissance; Associate Director Kenneth K. Dumm, Intelligence, Surveillance and Reconnaissance; and Executive Director J. Donald Get, Air Force Intelligence, Surveillance and Reconnaissance Agency.

Discussions with retired senior intelligence leaders helped provide context for the study. These leaders included Lt Gen John R. Baker, former Commander, Air Intelligence Agency (retired 2005); Lt Gen Kenneth A. Minihan, former Assistant Chief of Staff for Intelligence and Director of the National Security Agency (NSA) (retired 1999); Lt Gen Ervin J. Rokke, former Assistant Chief of Staff for Intelligence and President, National Defense University (retired 1997); Lt Gen C. Norman Wood, former Assistant Chief of Staff for Intelligence and Director, Intelligence Community Staff (retired 1992); Maj Gen John P. Casciano, former Director of Intelligence, Surveillance and Reconnaissance (retired 1999); Maj Gen Paul J. Lebras, former Commander, Air Intelligence Agency (retired 2005); Maj Gen Glen D. Shaffer, former Director of Intelligence for the Joint Staff (retired 2003); Brig Gen Billy J. Bingham, Assistant Deputy Director for Operations, NSA (retired 1994); and Brig Gen Neal T. Robinson, former Vice Commander, Air Intelligence Agency (retired 2005). Air Force personnel senior leaders Gen Roger A. Brady, former Deputy Chief of Staff for Personnel; Lt Gen Glenn F. Spears, former Director of Force Management Policy; and Maj Gen (select) Robert R. Allardice, Director of Airman Development and Sustainment, added their perspectives on the study.

The following officers and government civilians contributed to this work by rating background and experience needed for intelligence jobs above the rank of captain. Col Scott A. Bethel, Lt Col Lewis Carlisle, Col George V. Eichelberger, Col Laura Fay, Col Lorry M. Fenner, Alan S. Gross, Lt Col Monica E. Midgette, Col Martin Neubauer, and Col James O. Poss.

At AFPC, Lt Col Monica Midgette (AFPC/DPAFF [Force Management/Analysis]), Maj Kristofer W. Gifford (AFPC/DPAFF), Maj James N. Yepez (AFPC/DPAOO3 [Nonrated Operations Assignment Branch]), and Capt Ronald A. Hopkins (AFPC/DPAOO3) spent many

hours reviewing job requirements and offering details that only assignment officers would know. Col John Kotch (USAF, retired) spent a week reviewing job requirements. Col Scott George, a RAND senior fellow in fiscal year 2006, contributed immeasurably to this study.

Our RAND colleagues Albert Robbert and Lionel Galway gave generously of their time; their experience on other manpower and personnel studies helped us avoid many pitfalls. RAND's Mike Hix, Marc Viola, and William A. Williams provided thoughtful technical reviews and suggestions for revisions that improved the document. Michael Neumann vastly improved the language and structure of the document.

Abbreviations

13S	space and missile career field
14N	Air Force intelligence career field
A2	Air and Space Operations
ACF	analysis correlation and fusion
AFC2ISRC	U.S. Air Force Command and Control, Intelligence, Surveillance and Reconnaissance Center
AFPC	Air Force Personnel Center
AFSC	Air Force specialty code
AFSPC	Air Force Space Command
AIA	Air Intelligence Agency
AOC	air and space operations center
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CAF	combat air forces
CC	commander
CIA	Central Intelligence Agency
COCOM	combatant command
CSA	combat support agency
CV	vice commander
DGS	deployable ground station
DIA	Defense Intelligence Agency
DO	director of operations
DPAFF	Force Management/Analysis
DPAOO3	Nonrated Operations Assignment Branch
DRU	direct reporting unit

FAC	functional account code
FO	flag officer
FOA	field operating agency
FTU	formal training unit
GO	general officer
HUMINT	human intelligence
IDE	intermediate developmental education
IMINT	imagery intelligence
IMSC	intelligence master skill course
INT	intelligence
IO	information operations
ISR	intelligence, surveillance, and reconnaissance
JAC	Joint Analysis Center
JCS	Joint Chiefs of Staff
JIC	Joint Intelligence Center
JIOC	Joint Intelligence Operations Center
MAJCOM	major command
MASINT	measurement and signature intelligence
NAF	numbered air force
NASIC	National Air and Space Intelligence Center
NSA	National Security Agency
O-4	major
O-5	lieutenant colonel
O-6	colonel
OSD	Office of the Secretary of Defense
OSS	operations support squadron
PACAF	Pacific Air Forces
PAF	Project AIR FORCE
PAS	personnel accounting symbol
PME	professional military education

POL/MIL	political military
RECCE	reconnaissance
SEI	special experience identifier
SES	Senior Executive Service
SIGINT	signals intelligence
sq	squadron
SSO FDO	special security/foreign disclosure officer
USAF	United States Air Force

CHAPTER ONE

Introduction

A mismatch in the late 1990s between the qualifications needed for key general officer positions and the available candidates' background and experience stimulated an extensive force development initiative at the U.S. Air Force intended to improve the development of senior and mid-career officers.[1] The Air Force needed to shape cohorts of officers with sufficient breadth for their current jobs and for positions they may need to fill in the future. In the past, most officers had been managed almost solely within their career fields and were too narrowly specialized.

To understand how the Air Force could better produce officers with the skills required for available jobs, RAND completed a study of space and missile officer development and utilization. The study and subsequent modeling showed where there were gaps between officers' skills and job requirements. It also showed that substantial improvement was possible with appropriate development and career guidance. The space and missile career field has built on RAND's initial work and created space experience codes to manage the complex process of matching qualified officers to jobs. Seeing utility in this approach, the intelligence officer career field manager and the Air Force Assistant Chief of Staff, Intelligence, asked RAND to conduct a similar study for their career field.

The Intelligence Officer Career Field (14N)

Intelligence officers come from a variety of backgrounds. The commissioning sources mirror those of all nonrated line officers (the rated force comprises pilots, navigators, and air battle managers): About 14 percent come from the U.S. Air Force Academy, 50 percent from the Reserve Officers' Training Corps, and 36 percent from the U.S. Air Force Officer Training School . The vast majority of intelligence officers enter the field with nontechnical undergraduate degrees. In recent years, about 50 percent have majored in social science, and a total of 18 percent have majored in arts, humanities, and education.

The Air Force intelligence career field (14N) incorporates a broad set of operational functions. Nine former subdivisions have been melded into a single Air Force specialty code (AFSC), reflecting Air Force policy to develop "broadened specialists" with an understanding

[1] Many general officers had backgrounds that were too specialized to be very useful at higher grades. Senior warfighting positions required candidates to have proficiency in primary and secondary skills. For example, intelligence officers should have secondary proficiency in political/military operations, information operations, aerospace power employment, etc. See S. Craig Moore and Marygail Brauner, *Advancing the U.S. Air Force's Force-Development Initiative*, Santa Monica, Calif.: RAND Corporation, MR-545-AF, 2007, p. 7.

of intelligence beyond a specific technical area.[2] Intelligence officers need both a technical base and operational experience. There are four broad areas of expertise in this career field:[3]

1. Intelligence, surveillance, and reconnaissance (ISR) operations, which include collection management, signals intelligence (SIGINT), imagery intelligence (IMINT), human intelligence (HUMINT), and measurement and signature intelligence (MASINT)
2. Air and space operations center (AOC)/unit-level intelligence, which includes support to ground operations, tactical airlift, strategic mobility, etc.
3. Predictive analysis
4. Targeting, which includes electronic warfare and net warfare.

An officer's first years are usually spent at the unit level participating in operational missions. Initial assignments include intelligence support in flying units, operations support squadrons (OSSs), air intelligence squadrons, deployable ground stations, regional SIGINT operations centers, and HUMINT detachments. Senior captains and junior majors move to leadership positions or ones requiring management skills as squadron-level intelligence flight commanders and operations officers. In addition, this career field has many jobs that are in joint commands or organizations.

Table 1.1 shows the organizations that employed field-grade intelligence officers in September 2005.

Concerns About the Development and Utilization of Intelligence Officers

As the study of intelligence officer career development was commencing, an article was published in the *Air Force Times*[4] that questioned the promotion opportunities of Air Force colonels in the intelligence career field. The Air Force asked RAND to examine recent brigadier general selection board results to determine what factors limited the competitiveness of colonels with intelligence experience.

Current and retired senior intelligence officers interviewed for this project expressed the need to strengthen career-long development and to strike the appropriate balance between developing generalists and officers with specific skills and technical knowledge. They saw a need for officers to have broad knowledge of intelligence skills and specific training in one of the areas of expertise. In general, the interviewees said there is a need to strike an appropriate balance of general and specific knowledge across the workforce. Continuing education and on-the-job training (life-long learning) were mentioned as critical to this career field. These intelligence officers also stressed the need for mentoring of junior officers by senior officers.

---

[2] The first year with the new 14N AFSC was 1994.

[3] Headquarters, U.S. Air Force, *14N Training & Force Management Issues*, April 26, 2006.

[4] Glenn W. Goodman, Jr., "A Stacked Deck: Intel Officers Find It Tough to Advance Beyond Colonel," *Air Force Times,* August 22, 2005.

Table 1.1
Inventory of Organizations with 14N Field-Grade Officer Jobs (September 2005)

Organization	Major	Lieutenant Colonel	Colonel	Total
480th Wing	12	12	5	29
70th Wing	6	12	14	32
Air intelligence squadron/group	43	18	5	66
Center	35	19	10	64
Deployable ground station	8	2		10
Fighter/Bomber OSSs	31			31
FOA/DRU	32	18	6	56
Headquarters USAF	65	35	9	109
Information Operations Squadron/Group/Wing	34	18	8	60
Joint (COCOMs, CSAs)	194	125	33	352
Joint, not COCOM	10	15	1	26
MAJCOM headquarters	56	24	17	97
NAF	9	2		11
OSSs heavy	15	1		16
Other (e.g., CIA, NSA)	65	44	8	117
Total	615	345	116	

Another RAND study interviewed leaders across the intelligence community[5] on the topic of intelligence analysis; interviewees expressed the concern that "analysis training and education [are] important but not sufficient or consistent throughout the Intelligence Community."[6] Analytic capability is a core capability for Air Force intelligence, as will be noted throughout this technical report.

Research Objectives and Approach

RAND Project AIR FORCE (PAF) has supported various force development initiatives with analyses that identify and prioritize the types of experience, education, and training required for categories of jobs; assess the skills and types of background and experience of current officers; and recommend ways to close gaps and plan for future demand. PAF has demonstrated this approach for line generals and colonels and for space and missile operations officers (the 13S career field) at lower grades and began applying it to the intelligence and rated career fields (the rated force comprises pilots, navigators, and air battle managers).[7]

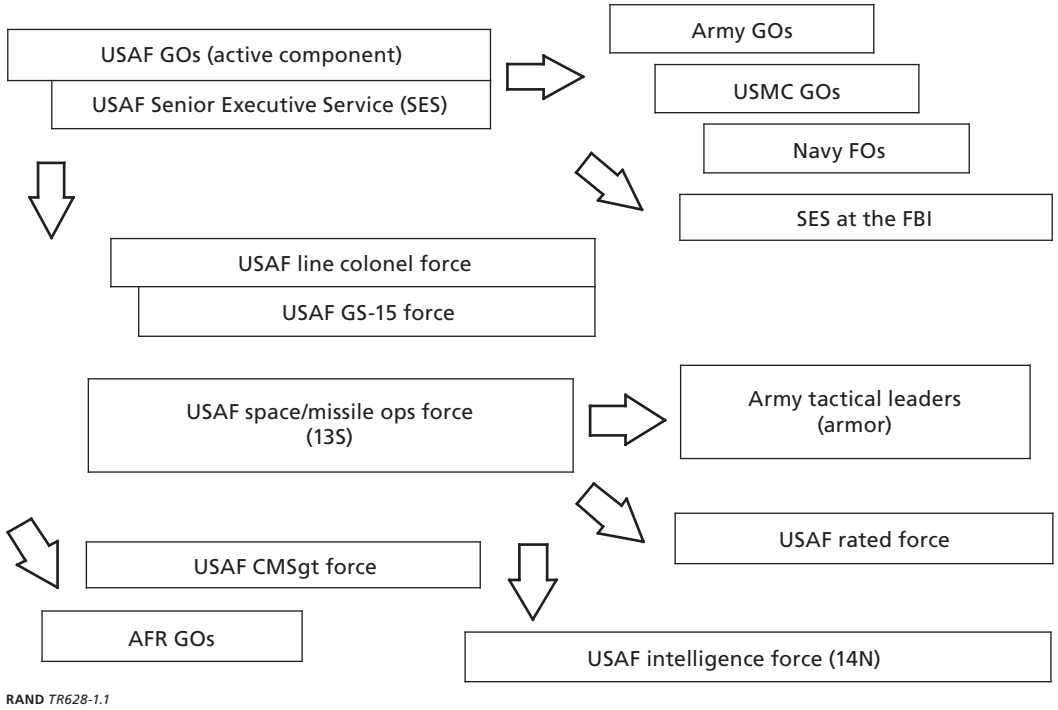
As Figure 1.1 illustrates, RAND research has addressed the background and experience needed by military and/or civilian executives in the U.S. Army, Navy, and Marine Corps and

[5] Air Force intelligence officers often have joint or interagency assignments that are outside the Department of the Air Force. If Air Force intelligence officers were assigned to such jobs in September 2005, those jobs are included in this study.

[6] Gregory F. Treverton and C. Bryan Gabbard, *Assessing the Tradecraft of Intelligence Analysis*, Santa Monica, Calif.: RAND Corporation, TR-293-CCNI(A), 2008, p. 12.

[7] Georges Vernez, S. Craig Moore, Steven Martino, and Jeffrey Yuen, *Improving the Development and Utilization of Air Force Space and Missile Officers,* Santa Monica, Calif.: RAND Corporation, MG-382-AF, 2006.

Figure 1.1
14N Research in Context of Similar Studies



in the Federal Bureau of Investigation. In addition, RAND has studied the development of Army tactical leaders,[8] the utilization and management of general and flag officers (GOs and FOs) across the Department of Defense,[9] ways to develop joint officers at lower grades,[10] and performance enhancement of senior joint workforces.[11]

Analytical Approach

RAND's approach to analyzing a career field is conveniently described by the three logical steps depicted in Figure 1.2. This analytical approach can be applied *across* career fields as well as within them. The first two steps are very data-intensive.

The analyses in this report were drawn from several data sources. The Consolidated Manpower Data Base is the collection of manpower documents from each unit in the Air Force. This database provides the count of authorized positions for each career field and is managed by the

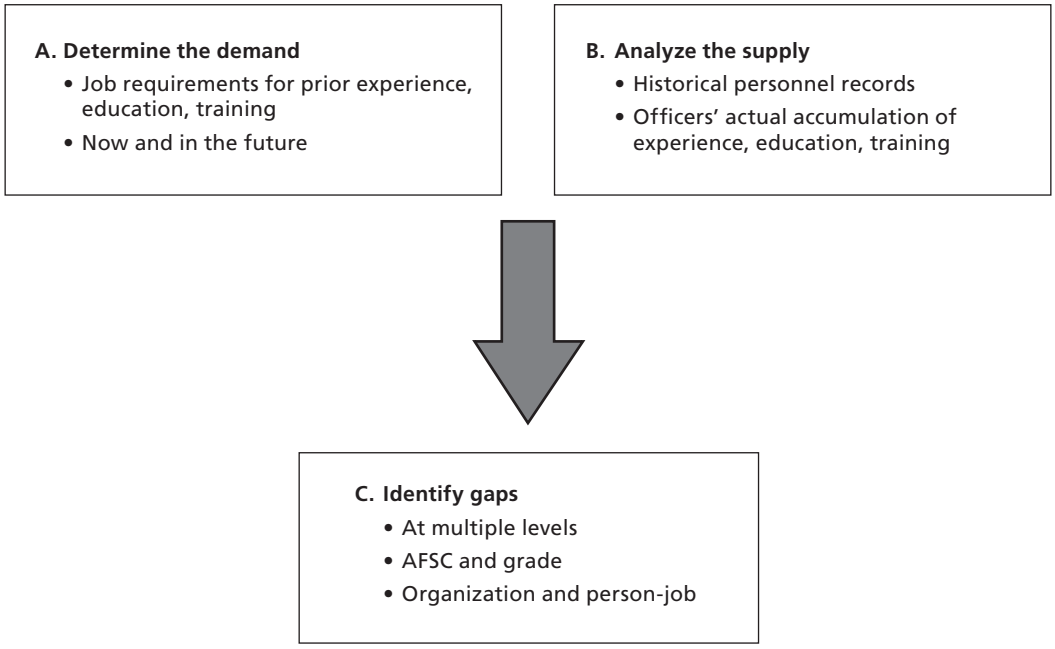
[8] Henry A. Leonard, J. Michael Polich, Jeffrey D. Peterson, Ronald E. Sortor, and S. Craig Moore, *Something Old, Something New: Army Leader Development in a Dynamic Environment,* Santa Monica, Calif.: RAND Corporation, MG-281-A, 2006.

[9] Margaret C. Harrell, Harry J. Thie, Peter Schirmer, and Kevin Brancato, *Aligning the Stars: Improvements to General and Flag Officer Management,* Santa Monica, Calif.: RAND Corporation, MR-1712-OSD, 2004.

[10] Harry J. Thie, Margaret C. Harrell, Roland J. Yardley, Marian Oshiro, Holly Ann Potter, Peter Schirmer, and Nelson Lim, *Framing a Strategic Approach for Joint Officer Management,* Santa Monica, Calif.: RAND Corporation, MG-306-OSD, 2005.

[11] Raymond E. Conley, Ralph Masi, Bernard D. Rostker, Herbert J. Shukiar, and Steve Drezner, *Enhancing the Performance of Senior Department of Defense Civilian Executives, Reserve Component General/Flag Officers, and Senior Noncommissioned Officers in Joint Matters,* Santa Monica, Calif.: RAND Corporation, MG-621-OSD, 2008.

Figure 1.2
Overview of Career Field Analytical Approach



RAND *TR628-1.2*

Division of Data Systems, Directorate of Manpower and Organization, Air Force Deputy Chief of Staff, Personnel. The Uniform Officer Records contain the current job and other demographic information about each individual officer. This database is maintained by the Air Force Personnel Center (AFPC) at Randolph Air Force Base, Texas. Our final analyses used the September 2005 versions of these databases. We also used historical Uniform Officer Records for the years 1978–2004 for job histories of current officers. Authorizations data from the September 2005 Manpower Programming and Execution System database supplemented the other authorizations data and helped resolve inconsistencies between the authorizations data and the assigned personnel data.

The first step was to determine the demand by identifying all intelligence jobs and their needs for prior experience, education, and training.

The second step, analyzing the supply, involved a careful review of each field-grade officer's historical personnel records to identify individual officers' actual accumulation of experience, education, and training.

The third step (the gap analysis) was performed to see how well the supply matched the demand, that is, how well the experience of the people holding field-grade intelligence jobs matched the requirements of those jobs.

Organization of This Report

The next chapter outlines how we identified the experience, education, and training needed for 14N jobs and documents these needs. Chapter Three documents the experience, education, and training that current active-duty 14N officers bring to their jobs at each grade in their

careers. Gaps in intelligence officer preparation, particularly for colonel and general officer–level positions, are identified in Chapter Four. Finally, Chapter Five contains conclusions and recommendations.

CHAPTER TWO

Background and Experience Required for Air Force Intelligence Officer Jobs: Demand

Identifying the types of background and experience needed to perform the duties of intelligence officer jobs is necessary before defining desirable career development and utilization patterns. The first section of this chapter outlines how we defined background and experience for intelligence officer jobs and then collected information on the background and experience needed for intelligence officer jobs. The second section documents the background and experience needed for different types of jobs.

Defining Required Background and Experience for Intelligence Officer Jobs

To define desirable career development and utilization patterns for intelligence officers (14N), it was necessary to identify the types of background and experience needed by officers assigned to intelligence jobs. Eventually, we identified 100 specific types of background or experience necessary to satisfactorily perform about 1,100 authorized intelligence jobs throughout the Air Force at the grades of major (O-4), lieutenant colonel (O-5), and colonel (O-6). These required types of background and experience were grouped into the following categories:

- *operational experience,* such as collection management, counterintelligence, signals intelligence, and targeting
- *organizational experience,* such as jobs in the Air Staff, the Air Intelligence Agency, and AOCs or other non–Air Force organizations
- *functional experience,* such as assignments in current operations, plans and programs, acquisition, and reconnaissance
- *command/leadership experience,* such as command of a squadron, operations group, wing, or center
- *specialty experience,* as designated by an AFSC prefix, such as
  - B = squadron operations/operations support officer
  - C = commander
  - E = electronic combat support duty
  - R = contingency/war planner
  - T = formal training instructor
  - U = information operations
  - V = automated functional applications analyst

  - W = weapons and tactics instructor
  - X = nonrated aircrew duty
- *training,* such as attending specific professional military education courses or having taken Air Force advanced technical courses or non–Air Force training and education
- *academic education,* such as having an undergraduate or graduate degree in computer science, electrical engineering, or behavioral sciences
- *languages,* particularly specific languages required for the job
- *pay grade,* specifically whether the officer must hold the grade authorized for the job.[1]

Focus on Work Experience

The analysis in this report focused on the first five experience categories: operational, organizational, functional, command, and AFSC prefix.

Future force development work should consider the balance among sources of competencies. For example to what extent can education and training substitute for experience? The 14N career field managers have studied some of these issues. They have identified the experience, education, and training needed for assigning special experience identifiers (SEIs) for many of the intelligence competencies, such as collections management, SIGINT, analysis. To give an example from an early SEI briefing, an SEI for analysis would be assigned to an officer who completed one of the following:

- 12 months in an analysis correlation and fusion (ACF) cell above wing level
- 12 months in an analytical job at the national/combatant command (COCOM) level
- ACF or area defense counsel 2W course and nine months in an ACF cell above wing level
- a minimum of four months' experience in an ACF cell within a deployed AOC supporting combat operations (e.g., Joint Task Force Southwest Asia).[2]

Experts Identified Job Requirements

To facilitate the identification of required job experience, each of the 1,076 identified jobs were assigned to one of 90 job categories that required similar types of experience. For example, the required types of experience for the following O-4 jobs were similar:

- intelligence flight commander, Pacific Air Forces (PACAF)
- chief, Plans and Policy Branch, PACAF
- chief, Systems Support Branch, Air Force Space Command
- chief, Intel Analysis, Air Force Special Operations Command.

All of these positions required critical operational experience in "any INT"—any area of intelligence (SIGINT, geospatial intelligence, imagery intelligence [IMINT], measurement and signature intelligence [MASINT], or HUMINT) and critical prior functional experience in reconnaissance, operations, combat operations, or plans and programs. Experience rated as important included operational experience in targeting, air operations centers, collection man-

[1] We considered field-grade positions only—major, lieutenant colonel, and colonel.

[2] The briefing from which this example was drawn was prepared in early 2006. The criteria for assigning an analysis SEI may have been revised since that time.

agement, or another "INT." Also at the important level were command/leadership experience in flight command and organizational experience at the wing-level or below. Useful prior functional experience for these jobs include requirements determination and acquisition.

Some categories included many jobs. For example, the joint COCOMs, combat support agencies (CSAs) intelligence analysis category included 105 jobs, and the major command (MAJCOM) headquarters (plans and programs) category contained 37 jobs. Of the intelligence jobs, 90 percent were assigned to one of 40 categories, but some jobs had specific requirements that necessitated creating a separate category for that single position, e.g., the two AOC jobs in numbered air forces that require targeting experience.

Table 2.1 lists the 40 largest job categories, based on number of positions identified in each category. The remaining 50 categories are consolidated under the miscellaneous line at the bottom of the list.

The designated senior intelligence officers were asked to complete a matrix by rating each of the more than 100 types of background or experience as "critical," "important," or "useful" for each of 90 intelligence officer job categories, across each of the three grade levels:

- *Critical*—experience, training, or education that is absolutely essential to effective performance of the job. Without this background, the officer cannot perform the job.
- *Important*—experience, training, or education that is helpful but not essential to effective performance of the job. Without this background, the officer can still perform the job, although the job will be much more difficult and time-consuming.
- *Useful*—experience, training, or education that is good but not necessary to perform the job. Without this background, the officer can perform the job, but with occasional difficulty.

Table 2.2 is an example of the completed MAJCOM headquarters plans and programs matrix. It illustrates how the raters evaluated the required background or experience (plus any other background elements they wanted to add) against the various job categories (MAJCOM plans and programs, in this case).

After the raters had completed their assessments, the RAND team obtained all the job requisitions available for intelligence jobs and verified that the background or types of experience identified in the requisitions were consistent with the requirements the experts identified. The team then analyzed the ratings by the five experience categories (operational, organizational, functional, command, and AFSC prefix) described above to determine which types of background or experience were deemed more critical than others. For example, Figure 2.1 illustrates the relative importance of the types of operational experience and background, as well as the percentage of all 14N jobs for which they were deemed critical, important, or useful.

Although collection management and AOC experience were among the most needed operational experience, analysis experience was most frequently a critical requirement for jobs at each of the grade levels. In addition, even though collection management was needed more than any other O-6 operational experience, it was one of the least critical types of experience at all grade levels. For SIGINT, IMINT, MASINT (except at O-6), and HUMINT, these types of experience are critical for more than half of the jobs for which they were identified as a required experience.

Table 2.1
Intelligence O-4, O-5, O-6 Positions, by Job Category

	Positions by Grade			
Job Category	**O-4**	**O-5**	**O-6**	**Total**
Joint (COCOMs, CSAs)/intelligence analysis	65	32	8	105
Joint (COCOMs, CSAs)/plans & programs	37	35	3	75
Air intelligence squadron/group	43	18	4	65
Information operations squadron/group/wing	34	18	8	60
Headquarters USAF/ISR	27	9	4	40
Joint (COCOMs, CSAs)/collection management	24	12	2	38
MAJCOM headquarters/plans & programs	26	8	3	37
HUMINT	17	8	7	32
Center/training	22	6	2	30
Fighter/bomber OSSs	30			30
Ground crypto squadron/group/wing	14	15	1	30
MAJCOM headquarters/plans & programs—ISR	18	9	1	28
FOA/DRU/AIA	15	8	4	27
POL/MIL (political military)	9	17	1	27
Joint (COCOMs, CSAs)/targeting	16	9	1	26
Joint (COCOMs, CSAs)/info operations	19	5		24
FOA/DRU/AFC2ISRC[a]	13	8	2	23
Headquarters USAF/plans & programs	12	5	3	20
Joint (COCOMs, CSAs)/IMINT	10	8	2	20
Joint (COCOMs, CSAs)/CC, CV, DO	1	3	11	15
MAJCOM headquarters/A2		2	13	15
Science & technology analyst	7	7		14
70th Wing/ISR	3	5	5	13
Joint, not COCOM/plans & programs	6	6	1	13
Airborne crypto squadron/group/wing	8	4		12
Generalist	7	5		12
Joint, not COCOM/analysis	3	8		11
OSSs heavy	11			11
Center/analysis	5	4	1	10
Joint (COCOMs, CSAs)/HUMINT	3	5	2	10
Air Force anti-terror force protection analyst	6	3		9
Deployable ground station squadron/group	8	1		9
Joint (COCOMs, CSAs)/SIGINT, IMINT, MASINT, HUMINT	4	4	1	9
Joint (COCOMs, CSAs)/education & training	4	2	3	9
480th Wing/DO	1	7		8
70th Wing/CC, CV, DO			8	8
Center/CC, CV, DO		3	5	8
Headquarters USAF/information operations	5	3		8
MAJCOM headquarters/analysis	5	3		8
Special operations support squadron	8			8
Miscellaneous job categories	69	40	10	119

[a] U.S. Air Force Command and Control, Intelligence, Surveillance and Reconnaissance Center.

Table 2.2
MAJCOM Headquarters Plans and Programs, Sample Matrix for 14N

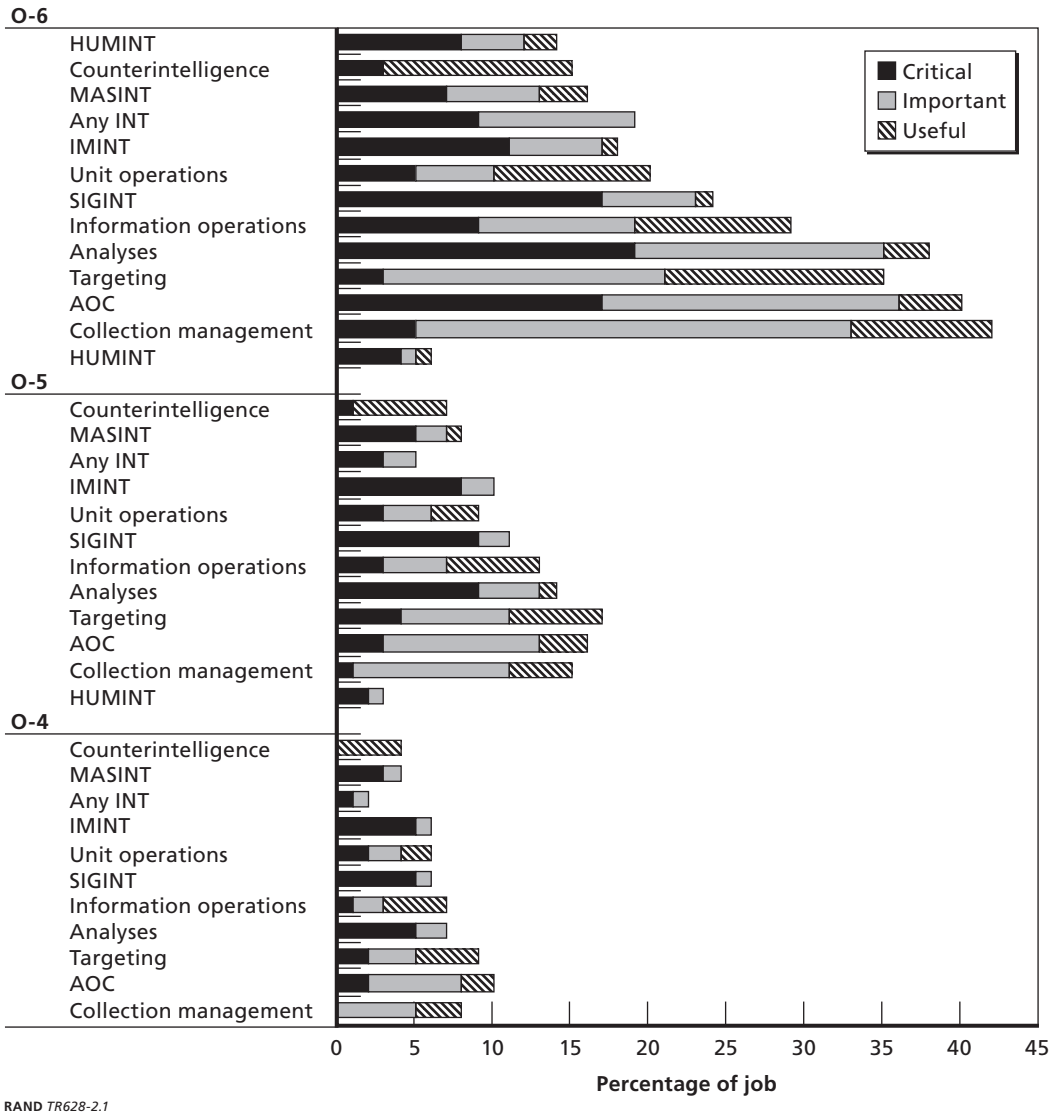
Background or Experience	Major	Lieutenant Colonel	Colonel
Operational experience			
Critical	Appropriate INT	Appropriate INT	
Important	Targets, AOC, collection management, other INT	Targets, AOC, collection management, other INT	Targets, AOC, collection management, appropriate INT
Useful			
Previous AFSC prefix			
Critical			
Important			
Useful			
Functional experience			
Critical	Reconnaissance ops, combat ops, plans and programs	Reconnaissance ops, combat ops, plans and programs	Plans and programs
Important			Requirements, acquisition
Useful	Requirements, acquisition	Requirements, acquisition	
Command/leadership experience			
Critical			
Important	Flight command	DO or squadron CC	DO and squadron CC
Useful			
Organizational experience			
Critical		Any staff	
Important	Wing level and below	Wing level and below	
Useful			
Enduring competencies			
Critical			
Important			
Useful			
PME/technological training			
Critical	Intelligence basic	Intelligence basic	Intelligence basic
Important	IDE, IMSC	IDE, IMSC	IMSC
Useful			
Degree area			
Critical			
Important			
Useful			
Language			
Critical			
Important			
Useful			
Must hold authorized grade			
Critical		√	√
Important	√		
Useful			
Other			
Critical			
Important			
Useful			

Not only did jobs at higher grades have more requirements (the bars in Figure 2.1 are longer for O-6 jobs than for O-4 jobs) but also the criticality of the job requirement increased as the grade increased (the black bars in Figure 2.1 are longer for O-6 jobs than for O-4 jobs). On average for colonels, raters determined 4.1 experience requirements to be critical; 2.6 were critical for O-5s, and only 2.3 were critical for O-4s.

Background and Experience Required for Intelligence Officer Jobs

Our study received input from numerous Air Force officers and civilians who provided information on the strength and weaknesses in intelligence officer development. Discussions with retired senior intelligence leaders helped provide context for the study. Working sessions with

Figure 2.1
Evaluation Ratings for Operational Background and Experience



RAND *TR628-2.1*

intelligence officers and government civilians contributed to the study by providing ratings of the background and types of experience needed for all intelligence jobs above the rank of captain. These inputs were further corroborated in sessions with officers at AFPC who spent many hours reviewing job requirements and offering details that only assignment officers would know. Finally, several 14N colonels reviewed and verified their own job histories and the background and experience types that the study assigned to those jobs. All this detailed input helped assure the validity of the study's methods.

Our findings about the background and experience needed for 14N jobs are discussed in this section. Discussed first will be the frequency with which each individual background or experience type is required. Next this section will show that 14N jobs at each grade can be combined into relatively few groups that require similar background or experience combinations. Grouping jobs is important because it can facilitate the Air Force's proactive management of the 14N workforce.

Here we report only on background and experience types that were rated as either "critical" or "important" to perform the job effectively. We do not consider background or experience types that were rated "useful" because raters had a tendency (but not consistently) to rate many requirements in any one category (such as organizational or functional) as useful.

Background and Experience Types Demanded

Table 2.3 shows the frequency with which each one of the types of background or experience is needed for O-4, O-5, and O-6 14N jobs. Broad patterns support the general validity of the demand ratings. As expected, the demand for most background or experience types increases with grade. This pattern is typical for specialty, functional, organizational, and command background and experience.

Figure 2.2 shows the average number of critical and important types of background and experience required per job from O-4 through O-6 by the five categories. Jobs for colonels require more types of background and experience (an average of 10.8 total types) than jobs for lieutenant colonels (which require an average of 9.2 total types).

Combination of Background and Experience Types Needed for 14N Jobs

In addition to discussing how many jobs require each specific experience or background type, prior research has shown the importance of ascertaining the combination of background and experience types needed.[3] For example, Table 2.4 shows the requirements for intelligence analysis jobs in joint assignments and assignments at COCOMs and CSAs. This job category contains 105 jobs with 65 at the major level, 32 at the lieutenant colonel level, and eight at the colonel level. While it is critical that a person assigned to one of these jobs has a background in intelligence analysis, political/military functional experience, and organizational experience at a numbered Air Force or higher organization, it is also important that this person has had relevant operational experience in SIGINT, HUMINT, MASINT, or IMINT or in collection management; functional experience in special security/foreign duty operations; and organizational experience in a squadron, group, COCOM/CSA, or Joint Intelligence Center (JIC)/Joint Analysis Center (JAC)/Joint Intelligence Operations Center (JIOC). At the lieutenant colonel and colonel levels, it is also important or critical to have experience in leadership at the

[3] Moore and Brauner, 2007.

Table 2.3
Specified Background and Experience for 14N Jobs, by Grade (percent)

	Grade		
Background or Experience Required	**O-4**	**O-5**	**O-6**
Organizational			
JIC/JAC	39	58	53
CSA	42	50	36
COCOM	37	51	55
JIOC	34	42	45
Group	32	36	19
NAF & above	32	36	0
Squadron	32	36	0
Wing and below	32	26	24
AIA	20	24	28
AOC	18	20	23
NSA	15	21	28
NASIC	9	10	7
MAJCOM staff	6	15	9
Air staff	5	14	16
MAJCOM and above	3	11	32
Wing	8	3	22
Interagency	1	12	22
Any staff	4	12	
AFSPC	6	5	7
Joint	3	8	5
CIA	4	3	6
Combat air forces (CAF)	4	4	2
JCS	0	6	15
FOA/DRU	1	4	16
OSD	0	6	13
Operational			
Collection management	73	85	72
Targeting	71	79	53
AOC operations	73	61	66
Information operations	62	76	56
Analysis	60	55	54
SIGINT	52	52	40
Unit operations	53	43	32
IMINT	37	39	22
Counterintelligence	37	32	20
MASINT	34	37	17
HUMINT	31	36	20
Any INT	25	26	26
Multi-INT operations	10	9	9
ISR employment	7	5	4
Functional			
Reconnaissance	6	10	12
Combat operations	5	8	11
Information operations	4	7	14
Space	3	7	11
Political/military	4	6	9
Plans & programs	2	5	6

Table 2.3—Continued

Background or Experience Required	Grade		
	O-4	O-5	O-6
Requirements	2	4	6
Acquisition	2	3	5
War planning	2	3	3
Special security /foreign disclosure officer	2	3	6
Command/leadership			
Flight command	59	21	2
Staff	28	31	16
Command	28	31	16
Any director of operations	1	39	22
Squadron command	0	23	50
MAJCOM/FOA command	4	11	8
Air staff	4	10	5
NAF		7	3
Center command		3	12
Group command			15
Intelligence group		1	12
Reconnaissance group		1	12
Expeditionary command		1	9
Intelligence wing		1	9
JCS/OSD		1	9
Joint multiservice		1	9
NAF A2		1	9
Reconnaissance group		1	9
Joint specialty officer			11
AFSC prefix			
U	52	56	66
W	46	36	23
R	26	29	28
X	20	22	27
V	18	23	9
E	19	20	13
B	2	26	16
C		9	31
T	5	3	4

staff or command level. The combination of operational, functional, organizational, and leadership experience is required to perform competently in these jobs.

Uses for Job Requirements and Categories

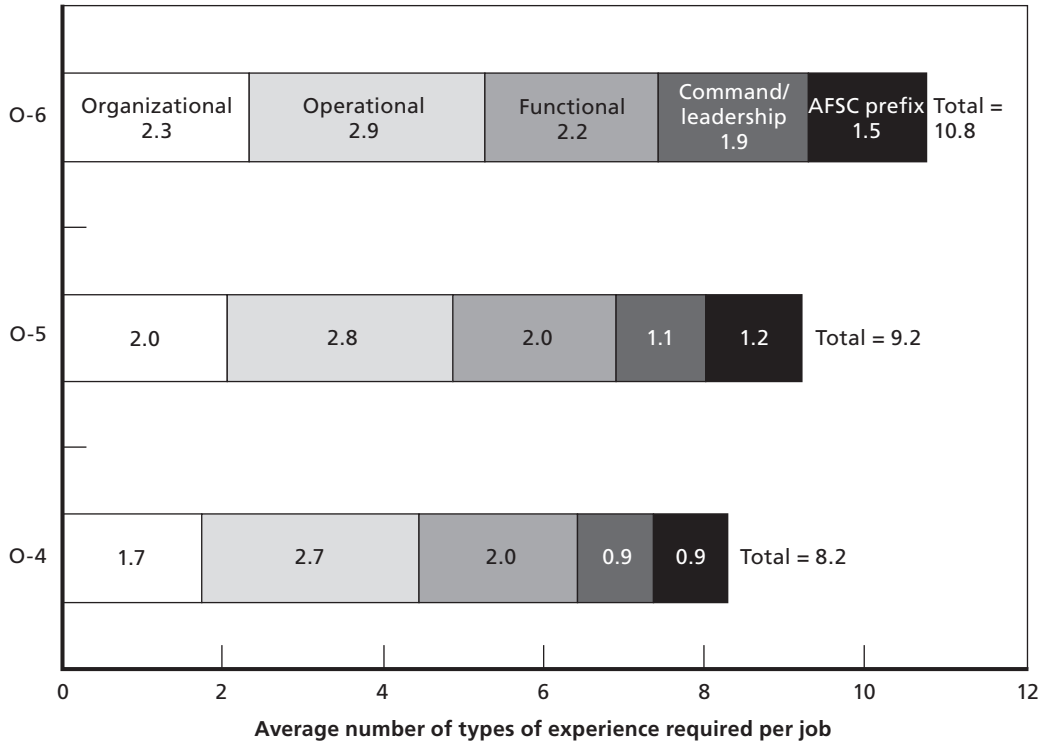
Job descriptions available to assignment officers at AFPC often fail to clearly delineate the specific background and experience types required to perform a job in the 14N career field. An example of a 14N job requirement from U.S. Air Force, AFPC (undated) states:

> Responsible for managing and establishing collection requirements and priorities within the USSOCOM [U.S. Southern Command] Center for Special Operations (CSO) and components. Oversees the management of the All Source Intelligence Collection Team and is responsible for the development of all source multi-discipline collection plans, syn-

chronization and cross cueing of collection assets and management of the Joint Collection Management Review Board. Ensures cross communications within the intelligence collection community to enable collection management synchronization in support of the War on Terrorism (WOT).

The list of specific job requirements for all field-grade intelligence jobs should be useful to managers who are writing job requisitions, assignment officers who need to fill the vacant positions, and intelligence officers who are eligible for reassignment. A list of requirements that are ranked as critical, important, or useful is much easier to work with than narrative descriptions of requirements. Table 2.5 lists the requirements from the matrix in Table 2.4. With this list, it is easy to update requirements as jobs evolve and new requirements are added or old requirements become obsolete.

Figure 2.2
Average Number of "Critical" and "Important" Requirements per 14N Job, by Grade and Type of Background or Experience



RAND *TR628-2.2*

Table 2.4
Background and Experience Required for Intelligence Analyst Jobs in Joint Assignments

Background or Experience	Major	Lieutenant Colonel	Colonel
Operational experience			
Critical	INT analysis	INT analysis	INT analysis
Important	Relevant INT or collection management	Relevant INT or collection management	Relevant INT or collection management
Useful	AOC, targeting, IO, unit operations, and counterintelligence	AOC, targeting, IO, unit operations, and counterintelligence	AOC, targeting, IO, unit operations, and counterintelligence
Previous AFSC prefix			
Critical			
Important			
Useful	U, W, or R	U, W, or R	U, W, or R
Functional experience			
Critical	POL/MIL	POL/MIL	POL/MIL
Important	Special security/foreign	Special security/foreign	Special security/foreign
Useful			
Command/leadership experience			
Critical			Staff- or command-level leadership
Important		Staff- or command-level leadership	
Useful	Staff- or command-level leadership		
Organizational experience			
Critical	NAF or above (AF)	NAF or above (AF)	MAJCOM or above (AF)
Important	Squadron, group, COCOM/CSA, or JIC/JAC/JIOC	Squadron, group, COCOM/CSA, or JIC/JAC/JIOC	Group, wing, COCOM/CSA, or JIC/JAC/JIOC
Useful			
Enduring competencies			
Critical			
Important			
Useful			
PME/tech training			
Critical			
Important			
Useful	Foreign disclosure course	Foreign disclosure course	Foreign disclosure course
Degree area			
Critical		Masters	Masters
Important	Masters		
Useful	Theater-specific area studies	Theater-specific area studies	Theater-specific area studies
Language			
Critical	Theater-specific language	Theater-specific language	Theater-specific language
Important			
Useful			
Must hold authorized grade			
Critical			√
Important	√	√	
Useful			
Other			
Critical	Theater-specific overseas or deployment	Theater-specific overseas or deployment	Theater-specific overseas or deployment
Important			
Useful			

Table 2.5
List by Criticality of Job Requirements for Intelligence Analyst Jobs in Joint Assignments and Assignments at COCOMs and CSAs

	Grade		
Background or Experience	**O-4**	**O-5**	**O-6**
Organizational			
NAF or above	C	C	
COCOM	I	I	I
CSA	I	I	I
JIC/JAC	I	I	I
JIOC	I	I	I
Group	I	I	I
Squadron	I	I	
MAJCOM and above		C	
Wing			I
Operational			
Analysis	C	C	C
Any INT	I	I	I
Collection management	I	I	I
AOC	U	U	U
Counterintelligence	U	U	U
Information operations	U	U	U
Targeting	U	U	U
Unit operations	U	U	U
Functional			
Political/military	C	C	C
Special security /foreign disclosure officer	I	I	I
Command/leadership			
Staff	U	I	C
Command	U	I	C
AFSC prefix			
R	U	U	U
U	U	U	U
W	U	U	U

NOTES: C = critical, I = important, and U = useful.

Conclusions

Ultimately, the utility of our demand analysis is contingent on how well our study captures the requirements of 14N officers. This study does not postulate requirements that have not yet been identified and used previously. Rather, it organizes and systematizes the requirements, making them far more comprehensive and consistent than in the past. We obtained all the job requisitions available for intelligence jobs and verified that the types of background and experience that commanders/supervisors identified in the requisitions were consistent with the requirements that the experts identified. Our effort is similar to IBM's efforts to apply supply-chain

thinking to personnel management.[4] Underlying the IBM effort is the assumption that people who obtain the training that a job requires perform better in that job than those who are not trained. "To provide the best assignments, input data must be accurate and well defined."[5] This article from *IBM Journal of Research and Development* describes a process that is similar to the one we used to enumerate specific job requirements.

Identifying the background and experience needed to perform the duties of an intelligence officer is necessary before defining desirable career development and utilization patterns. Our research showed that it is possible to systematically identify the job experience, education, and training that intelligence officer jobs require.

---

[4] D. L. Gresh, D. P. Connors, J. P. Fasano, et al., "Applying Supply Chain Optimization Techniques to Workforce Planning Problems," *IBM Journal of Research and Development*, Vol. 51, No. 3, 2007, pp. 251–263.

[5] Y. Naveh, Y. Richter, Y. Altshuler, D. L. Gresh, and D. P. Connors, "Workforce Optimization: Identification and Assignment of Professional Workers Using Constraint Programming," *IBM Journal of Research and Development,* Vol. 51, No. 3/4, 2007, p. 276.

CHAPTER THREE

Air Force Intelligence Officers' Background, Experience, and Career Paths: Supply

Identifying the Background and Experience of Officers

We now discuss the supply side: We identify the background elements that intelligence officers have accumulated from the positions they have held and the education and training they have completed.

AFPC Historical Data File

We used historical records from AFPC to identify the education, training, and experience that intelligence officers had acquired as of the end of each fiscal year from 1978 to 2005. Each officer's yearly record shows his or her current grade, academic degrees, professional military education (PME), Air Force Institute of Technology attendance, core AFSC, and position held.[1] The record also contains the date the officer entered active-duty service and the date of separation if applicable.

Translating Positions Held into Experience Acquired

Next, we translated the positions held into experience acquired. We developed rules for assigning experience based on work experience, which fell into five categories for identifying job requirements:

- *Operational experience* was inferred from assignments to operational organizations that conduct various types of intelligence analysis, collection management, targeting, etc.
- *Organizational experience* was identified from organizational and command codes of past assignments, for example, assignment to the Central Intelligence Agency, the National Air and Space Intelligence Center (NASIC), JIC/JAC, or the Department of Homeland Security (DHS).
- *Functional experience* was awarded when the member had assignments within organizations with responsibilities related to, for example, budgeting, planning and programming, political/military, special security, or education and training functions.
- *Command/leadership experience* was assigned if the individual had an AFSC with a C-prefix or an AFSC of 91W or 10C.
- *Specialty experience* was identified according to the AFSC prefixes received.

[1] The positions are characterized by duty AFSC, specialty code, command level, organization, unit type and kind, unit identification, organizational structure name, location, rated position identifier (if any), and functional category.

The following is a detailed example of *operational experience.* SIGINT operations experience was assigned to individuals whose prior duty assignments included any of the following characteristics:

- 14N (or pre-1993 equivalent) or commander jobs in one or more out of a list of specific intelligence squadrons
- duty AFSC (pre-1993) of 8031 or 8035
- duty functional account code in a list of six specific 35xx functional account codes (FACs) associated with SIGINT operations[2]
- duty SEI of "T8"
- duty title text including "SIGINT."

Because Air Force and joint organizations have changed over the career histories of the 14N officers, it was necessary to use historical information on prior organizational structures to piece together all the types of experience an officer with 18 to 20 years of service would have acquired.[3] We used personnel accounting symbol (PAS) code histories from 1980 to the present to identify changes in organizational identifiers of units (number, nomenclature, type) so we could associate units in prior years with the types of experience identified for their successors in later years. With the help of Air Force intelligence officers who contributed to the project and other intelligence personnel consulted or interviewed over the course of the project, we developed lists of organizations associated with each type of experience. These rules were verified with Air Force intelligence personnel and assignment officers at AFPC. Additionally, 14 officers were interviewed to confirm that the assignment of experience types to their careers was accurate. Of course, when we identified rule changes during these interviews, we then applied those changes to all officers' assignments, improving the accuracy of many individuals' records.

Illustration of a Career History

Table 3.1 lists all the positions that a hypothetical 14N lieutenant colonel held from the initiation of his career through September 2005. The right-hand columns show what experience types were credited to this officer by virtue of having held the job shown in the initial columns.

Using the third row of the table as an example, the person with this job history was in his or her 19th year of service and had the grade of O-5. The AFSC prefix of "C" means he or she was in a command position. The "duty AFSC" of "14N3" means "qualified." The columns labeled PAS through FAC show that the job was at Air Intelligence Agency, 20th Intelligence Squadron Special Operations. The "command level" is "CN" (center). The person holding this job was credited with organizational experience in "squadron," "wing & below," and "wing operations." No functional experience was credited for the job. Reading the table continuation across horizontally, we see that operational experience in "command operations," AFSC "prefix C," and command/leadership experience as "any CC" (any commander), "INT sq CC"

---

[2] FACs identify skills and knowledge acquired in previous job assignments. The six 35xx FACs identify specific SIGINT skills.

[3] RAND's Manpower, Personnel, and Training Program in Project AIR FORCE maintains historical data from manning documents dating back to the inception of the all-volunteer force in 1973.

Table 3.1
Hypothetical Officer's Career History: Example of the Types of Experience That a 14N Lieutenant Colonel Acquires

									Organizational experience													Functional experience					Operational experience								AFSC prefix			Command/ leadership					
Years of service	Grade	AFSC prefix	Duty AFSC	PAS	Command	Command Level	Organization	FAC	Any staff	CAF	COCOM	FOA/DRU	Group	Joint	MAJCOM staff	MAJCOM & above	MAJCOM & below	NAF & above	Squadron	Wing & below	Wing operations	Any INT	Any Operations	Current Operations	Joint	RECCE	SSO FDO	IMINT	Command operations	Director of Operations	ISR employment	ISR operations	Targeting	All INT	Any INT	Prefix B	Prefix C	Prefix R	Any CC	Any DO	INT Sq CC	Sq or above CC	Sq CC	Sq DO
21	O-5		14N4	FZLN	3G	WB	0000 ZNN NS	746100			1			1						1					1														1					
20	O-5		14N4	FTS6	1C	WB	0505 OPS SQ	132000		1							1		1	1	1		1															1					
19	O-5	C	14N3	FNX2	0U	CN	0020 ITL SQ	3515EA											1	1	1							1								1			1			1	1	
18	O-4		14N4	FNX2	0U	DJ	0020 ITL SQ												1	1	1																							
17	O-4		14N4	FCF8	3O	DJ	0000 ZPC JP	7361FK			1			1											1							1											
16	O-4		14N4	FCF8	3O	DJ	0000 ZPC JP	7361FK			1			1											1							1											
15	O-4	B	14N3	FL6N	0U	WB	0416 ITL SQ	3510AL											1	1	1								1						1			1				1	
14	O-4		14N3	FQMX	3M	DJ	0000 ZSB JS	7331IC			1			1											1																		
13	O-3		14N3B	F8TB	3M	WB	0000 ZSB JS	7331IC			1			1						1					1																		
12	O-3		14N3B	F8TB	3M	WB	0000 ZSB JS	7331IC			1			1						1					1																		
11	O-3	W	14N3B	FM5Y	1C	WB	0000 WEP SC	355000		1							1			1	1		1																1				
10	O-3	W	14N3B	FM5Y	1C	WB	0000 WEP SC	355000		1							1			1	1		1																1				
9	O-3		14N3A	F21R	0U	CM	0000 AIA FO	3515EA				1																															
8	O-3		8075	FH0Y	1C	WB	0005 OSS SQ	35A100		1							1		1	1	1		1																				
7	O-3		8075	FJC2	1C	CM	0000 CMB CM	350000	1	1					1	1	1	1																									
6	O-3		8075	F52B	0T	WB	0000 TCO ST	499600		1							1			1																							
5	O-3		8071	FXSL	0T	CM	0000 TAC CM	357000	1	1					1	1	1	1								1																	
4	O-2		8045	FDTD	0T	CS	0290 RTC GP	353300		1			1				1			1		1		1				1			1			1	1							
3	O-2		8045	FDTD	0T	WB	0290 RTC GP	353300		1			1				1			1	1	1	1	1		1			1			1	1		1	1						
2	O-1		8041	F56X	0R	WB	6300 RTC FT	353000		1							1			1	1		1			1																
1	O-1		8041	FZPK	0J		3470 STU SQ	999900																																			

NOTE: See Table A.2 for definitions of the abbreviations that are specific to this table.

RAND *TR628-Tab3.1*

(intelligence squadron commander), "sq or above CC" (squadron or above commander), and "sq CC" (squadron commander) were all credited to the officer holding this job.

We compiled career histories for every 14N field-grade officer in the intelligence career field. Each officer was assigned types of experience based on the jobs held. Complete information and the rules for assigning types of experience are available to the Air Force.

Limitations of This Analytic Approach

Despite the care taken in determining the appropriate officer background and experience and the assistance of knowledgeable Air Force personnel, the career histories we generated have several notable limitations. First, the original AFPC data include only the jobs held at the end of each fiscal year. Hence, an officer who held two jobs during a year may not be credited with the experience gained in the first job (unless that was his or her job at the end of the previous year). This limitation is probably not major because officers hold most jobs for a year or more. Also, the experience gained in a job held for less than a year is unlikely to be as valuable as that gained over a longer period. A more important limitation was the result of the organizational and coding changes that have taken place since 1978. We spent considerable time reconstituting the organizational and coding history of the intelligence career field, but we cannot be certain that all relevant positions were identified. A third limitation was in the accuracy of the information in historical personnel records. This limitation can be remedied by better recording of information about positions officers hold in the future; it is an inherent limitation in the historical data, particularly around the 2000–2001 time period, when major personnel data system changes were introduced.

Acquiring Experience and Skill

It is no surprise that the number of the types of experience accumulated by intelligence officers grows as the officers progress in grade from major to colonel. Of the more than 100 background elements described in Chapter Two, majors have acquired 24 on average, lieutenant colonels have acquired 29, and colonels have acquired 35.

Table 3.2 details the cumulative distribution of acquired experience by grade. We listed all the officers by grade in order of the number of total types of experience they had acquired—the ranking was from the fewest acquired types to the most acquired types. Ten percent of the O-4 intelligence officers had acquired 15 or fewer types of experience and 90 percent had acquired 32 or fewer types of experience. For O-5 intelligence officers, the comparable numbers are 20 types of experience and 38. Similarly, 90 percent of the O-6 intelligence officers had acquired 44 or fewer types of experience.

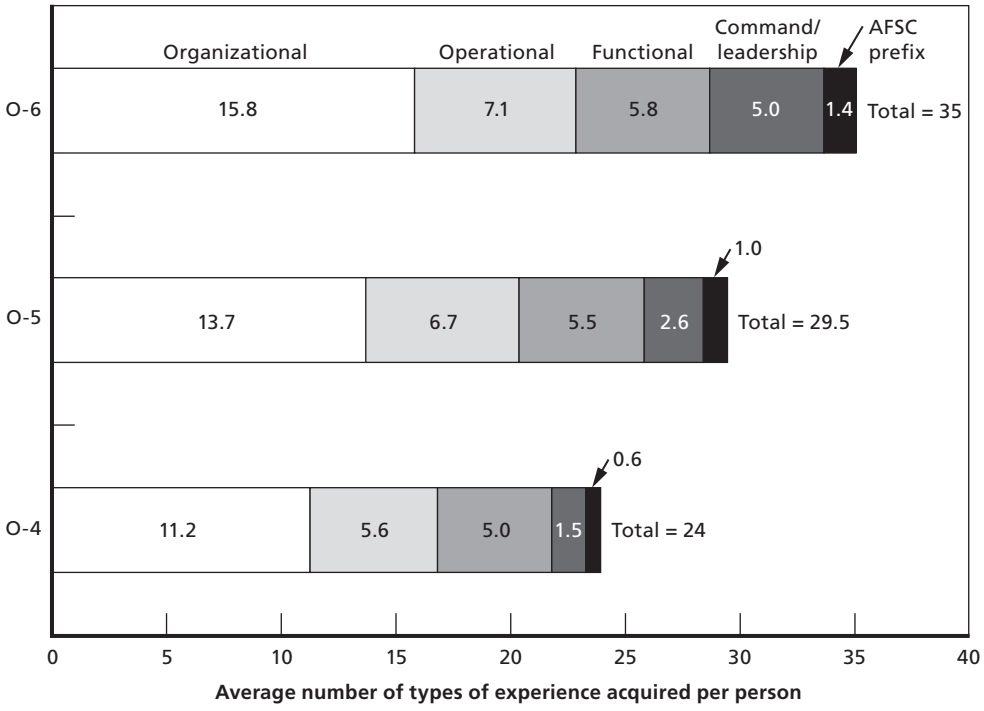
Intelligence officers also acquire a growing skill set as they progress in rank from major to colonel. Figure 3.1 shows the average number of types of experience acquired by 14N field-grade officers. The average number of acquired types increased across all five background categories as officers advance. Not surprisingly, the command/leadership category grew by the greatest percentage.

One reason for the increase of acquired types of experience as officers advance in grade is that Air Force officers change jobs frequently. New jobs provide new opportunities for additional experience. It may be that officers with more experience are more likely to be promoted, thus inflating the experience distribution at higher grades.

Table 3.2
Distribution of the Number of Acquired 14N Types of Experience by Grade

Grade	10%	20%	30%	40%	50%	60%	70%	80%	90%
O-4	15	18	20	22	24	25	27	29	32
O-5	20	23	25	27	29	31	33	35	38
O-6	24	28	31	33	35	37	39	42	44

Figure 3.1
Increase in 14N Skill Sets by Grade and Background or Experience Category



RAND *TR628-3.1*

Note that types of experience needed for 14N jobs (as shown in Figure 2.2) are far fewer than the types of experience accumulated (Figure 3.1). For example, there are on average only 10.8 job requirements for 14N colonels, but over their careers 14N colonels acquire an average of 35 types of experience. This number suggests that much greater depth is possible: Intelligence officers could spend more time in each job, thus acquiring greater depth in fewer areas.

Organizational Experience

As Table 3.3 shows, 14N officers gain experience in many different types of organizations as they progress through assignments. The lengthy list of organizations in which 14N officers have served indicates that intelligence officers contribute to a wide range of organizations, both within the Air Force and among joint commands. The table shows that almost all majors, lieutenant colonels, and colonels had organizational experience at the wing level and below. Scanning down the list of organizational experience, note that only 60 percent of majors had experience in joint operations, while 83 and 85 percent of lieutenant colonels and colonels, respectively, had such experience.

Table 3.3
Proportion of 14N Field-Grade Officers Who Have Acquired Various Types of Organizational Experience (percent)

Organizational Experience	Major	Lieutenant Colonel	Colonel
Wing and below	98	98	97
Squadron	96	92	98
Major command and below	95	93	94
Combat Air Force	92	89	85
Wing-level operations	87	88	85
Joint	60	83	85
Unit operations	65	56	51
Combatant command	43	68	71
Numbered Air Force and above	37	56	72
Any staff	36	53	78
DGS	45	47	34
Major command and above	34	52	72
Air and Space Operations Center	41	41	32
Group level	30	51	59
Combat support agency	32	42	56
Wing level	21	48	59
Major command staff	25	37	54
FOA/DRU	23	38	55
DIA	23	33	40
Air Education and Training Command	28	25	22
Joint Intelligence Center/Joint Analysis Center	18	27	28
Air Staff	12	23	46
Air Intelligence Agency	9	18	37
AFSPC	11	17	16
Air Force Special Operations Command	13	11	7
Center	10	12	13
Joint specialty officer	1	13	47

Operational Experience

Air Force intelligence officers gain operational experience in intelligence gathering and analysis, surveillance and reconnaissance, unit operations, signals intelligence, imagery, targeting, and collections management. Table 3.4 shows all the operational experience acquired by these field-grade officers. The Air Force *Officer Career Path Guide* states the following:

> Officers assigned initially to an operations discipline will be assigned as flight commanders at a signals intelligence field activity or as imagery intelligence analysts at collection or production units. Subsequent tours in operations could be at other field units (perhaps in a different discipline), or at intermediate headquarters, MAJCOM, Air Staff, or joint agencies, such as the National Security Agency (NSA) and Defense Intelligence Agency (DIA).[4]

[4] U.S. Air Force, Air Force Personnel Center, *Officer Career Path Guide,* undated, p. 62 (3.4.5.1).

Table 3.4
Proportion of 14N Field-Grade Officers Who Have Acquired Various Types of Operational Experience (percent)

Operational Experience	Major	Lieutenant Colonel	Colonel
Analysis	62	79	75
ISR employment	64	72	69
Unit operations	71	63	55
All INT	44	59	67
Any INT	44	59	67
ISR operations	51	53	48
DGS operations	46	47	35
Air Operations Center operations	41	41	32[a]
Targeting	30	32	26
SIGINT	24	29	36
IMINT	20	30	22
Command operations	10	25	78
Information operations	20	21	21[a]
Collections management	12	13	20
Director of operations	6	21	16
Multi-INT operations	7	14	14[a]
HUMINT	5	10	19
MASINT	3	4	5

[a] These are emerging capabilities; thus there is less opportunity to acquire experience.

Functional Experience

Functional types of experience acquired by Air Force intelligence officers as they pass through successive assignments include both activities that relate to intelligence-specific functions (collections management, reconnaissance operations, etc.) and more-general types of experience that officers in other specialties also encounter, such as budgeting, plans and programs, education and training, space operations, and joint agency experience. Table 3.5 shows all the functional experience acquired by these field-grade officers. Job and position characteristics that we used in assigning functional types of experience included functional account codes, organizational structure codes, and position titles in addition to such characteristics as organizational identity and AFSCs that were also used in assigning operational and organizational types of experience.

Command/Leadership Experience

Table 3.6 shows all the types of command/leadership experience acquired by field-grade intelligence officers. Fifty-four percent of 14N majors have held some kind of command positions. By the time these officers are colonels, 86 percent have held a command position. These command positions range from flight/squadron command to director of operations command positions.

Table 3.5

Proportion of 14N Field-Grade Officers Who Have Acquired Various Types of Functional Experience (percent)

Functional Types of Experience	Major	Lieutenant Colonel	Colonel
Any operations functional	75	76	66
Joint functional	60	83	85
Current operations	64	72	69
Combat operations	61	53	47
Education and training	43	42	47
AOC	41	41	32
Information operations	20	21	21
Budget/financial management	17	18	28
Plans and programs	16	17	25
Special operations	16	13	9
Space	11	17	15
Collections management	12	13	20
Reconnaissance operations	9	17	19
Political/military	6	14	29
Communications	10	8	15

Table 3.6
Proportion of 14N Field-Grade Officers Who Have Acquired Various Types of Command and Leadership Experience (percent)

Command/Leadership Types of Experience	Major	Lieutenant Colonel	Colonel
Any command	54	65	86
Flight command	48	54	30[a]
Squadron or above command	10	23	74
Squadron command	8	18	66
Any director of operations	6	21	16
Intelligence squadron command	2	12	46
Joint specialty officer commander	0	9	42
Squadron commander	2	12	8
Group commander	2	5	26
Intelligence group commander	1	4	21
Staff leadership	2	4	10

[a] When the intelligence function was embedded in a wing staff, flight command opportunities generally did not exist in the intelligence organizational structure. Thus, this command/leadership experience may not have existed as it does today for senior officers.

AFSC Prefix

A letter prefix is used with an AFSC when a job requires specific qualifications. So when an Air Force intelligence officer's personnel records show that he held a "B14N AFSC," that officer served as the squadron operations officer. Table 3.7 shows all the AFSC prefixes acquired by 14N officers (except the "U" prefix, as explained in the table note).

Table 3.7
Proportion of 14N Field-Grade Officers Who Have Acquired Various AFSC Prefixes (percent)

AFSC Prefix	Major	Lieutenant Colonel	Colonel
C = commander	10	23	75
X = nonrated aircrew	10	14	19
T = formal training instructor	12	11	10
E = electronic combat support duty	10	15	7
V = automated functional applications analyst	7	10	16
R = contingency/war planner	6	12	4
B = squadron operations officer	3	12	8
W = weapons and tactics instructor	6	6	3

NOTE: The "U" prefix, which indicates "information operations," was added to the personnel system for officers only in FY 2004. Hence, it appeared very rarely in prior-year histories for officers in our sample, which extended only through FY 2005.

Conclusions

With access to officer career histories, it is possible to methodically identify the education, training, and job experience that 14N officers gain as they progress in grade from major through colonel. Further, this acquired background and experience can be expressed in the same terms that characterize job requirements. However, there are some limitations; standards for acquiring requirements should be set and officer records should indicate when those requirements have been acquired.

There are far fewer job requirements than there are skills acquired, suggesting that 14N officers are being trained too broadly. Instead of requiring officers with more limited experience in many different intelligence areas, the job requirements are for personnel with more-focused experience. The positive perspective is that breadth of experience increases the number of candidates whom assignment officers can consider as job openings occur and not all qualified officers are available for reassignment. Keeping officers in jobs longer or in "back-to-back" assignments in the same or similar job categories would give officers more depth. Flow modeling, as was used in the space and missile (13S) study,[5] could be used to better understand the implications of breadth versus depth in officer development and the effects that such policy changes have on the career field.

[5] Vernez et al., 2006.

CHAPTER FOUR

Gaps Between Supply and Demand

This chapter compares the experience needed for intelligence jobs with the cumulative types of experience of the 14N officers holding those jobs. To determine gaps, we compared the background and experience required for the jobs at each grade with those that officers holding those jobs had accumulated up to, but not including, the job they were holding in 2005. Decisions are made based on the available officers and the data recognized by the structure of the system that describes the officers. The assignment officer's or supervisor's personal selection criteria, both explicit and tacit, may play a significant role in selecting personnel for leadership and/or representative positions. In integrating supply and demand information, we must recognize that the present system relies on functional representation from assignment officers to fill in knowledge gaps. In this chapter, we looked at the requirements and supply records to make this knowledge more visible and to show where gaps may exist. The following chapter will explain how flow analysis could enlighten decisionmakers so that actual gaps can be mitigated.

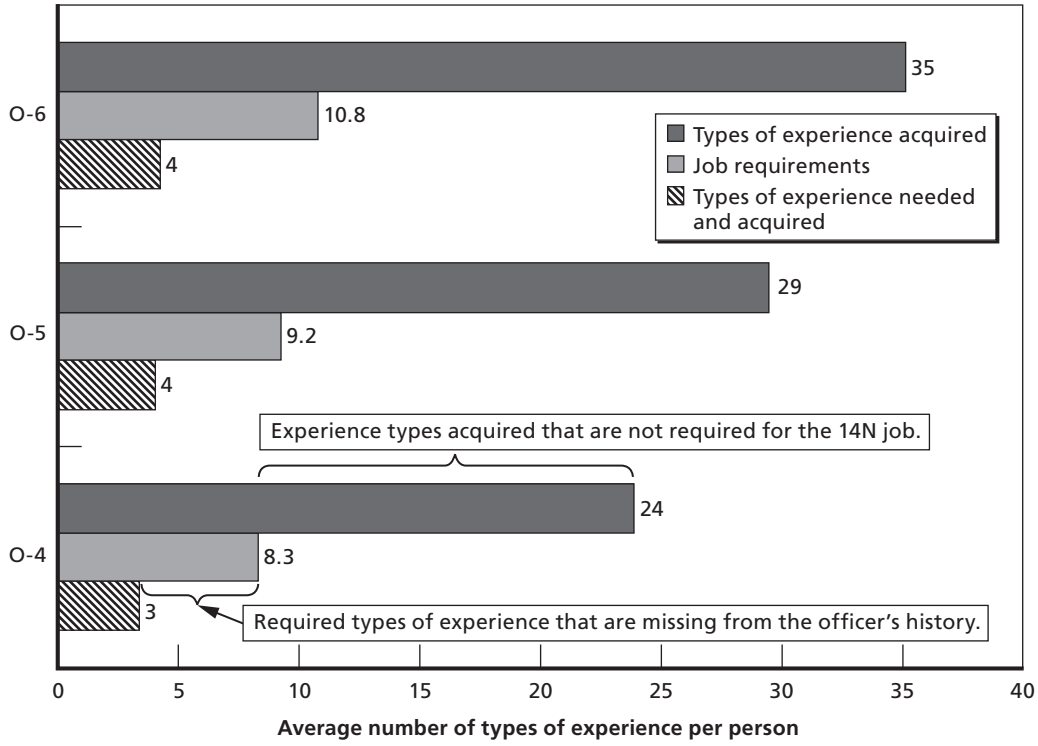
Specific Experience That Is in Short Supply

Shortfalls identified in this assessment may be the result of both career developmental gaps and imperfect allocation of officers to jobs. This assessment is quantitative—it assesses whether the officers had developed the experience needed for the jobs. However, it does not address the qualitative question of whether the officers were proficient at the tasks they needed to perform in those jobs.

To demonstrate the prevalence in mismatches between experience acquired by 14N officers and the experience required for 14N jobs, Figure 4.1 incorporates the experience-acquired and experience-required bars shown in Figure 2.2 and Figure 3.1. The bottom bar in each group in Figure 4.1 displays the match between each job's requirements and the types of experience that its incumbent had acquired before being assigned to the position. The numbers plotted on this graph include all five experience groupings and all levels of criticality.

At each grade, many of the types of experience required for the assigned job are missing from the officer's portfolio. However, at each grade level, there are a large number of types of experience that 14N officers have acquired that are not needed for the job they hold. For example, as labeled in Figure 4.1, O-4 officers had 24 types of experience on average, only three of which fulfilled the experience requirements for their job, leaving a gap of 5.3 required experience categories, on average. These same officers had acquired experience in 21 categories on average that was not needed for the job they held.

Figure 4.1
Gaps in 14N Types of Experience Required and Types of Experience Acquired, by Grade



RAND *TR628-4.1*

Figure 4.2 displays the gaps between officer experience and job requirements by each of our five categories; this figure puts more detail behind the bottom two bars for each grade in Figure 4.1. Concentrating only on organizational experience, note that organizational types of experience acquired by 14N majors only match 61 percent of the job requirements. For lieutenant colonels, the match was better. Sixty-seven percent of the people filling these jobs matched the job requirements, and for colonels the match was 73 percent.[1] Across all the grades and categories, the best matches were for organizational experience and the poorest matches were for AFSC prefixes.

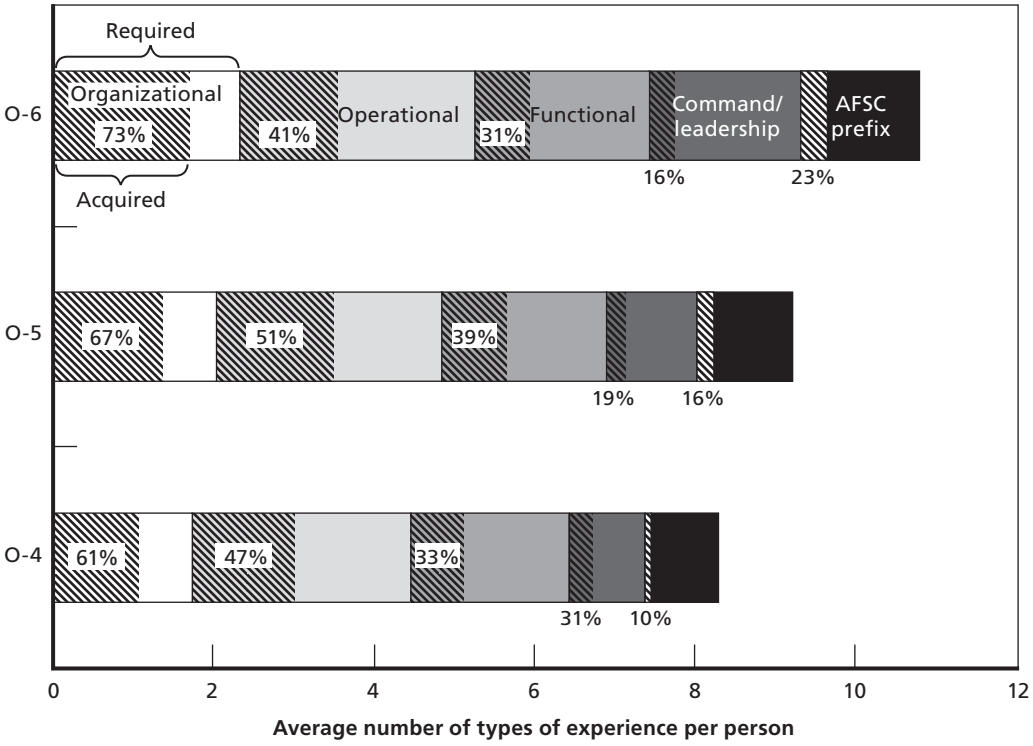
Next our analysis examines the gaps in five categories of experience: operational, organizational, functional, command/leadership, and specialty (based on AFSC prefix).

Organizational Experience

Figure 4.3 provides a more detailed comparison for organizational types of experience. It shows number of types of acquired experience, job requirements, and the match of experience to requirements by the people filling the job. From the graph, it would appear that officers are acquiring more than enough organizational experience. On average, majors have served in 11.2 different organizations but work in jobs that require only 1.7 of those types of experience. Lieutenant colonels have served in 13.7 and work in jobs requiring 2 of those organizational

[1] 73% = 196/270; O-6 intelligence jobs had 270 organizational requirements. Officers in those jobs matched 196 of those requirements.

Figure 4.2
Gaps Between Officer Experience and Job Requirements by Experience Category



RAND *TR628-4.2*

types of experience. Finally, colonels have served in 15.8 different organizations, but their jobs require experience in only 2.3 of those organizational types.[2]

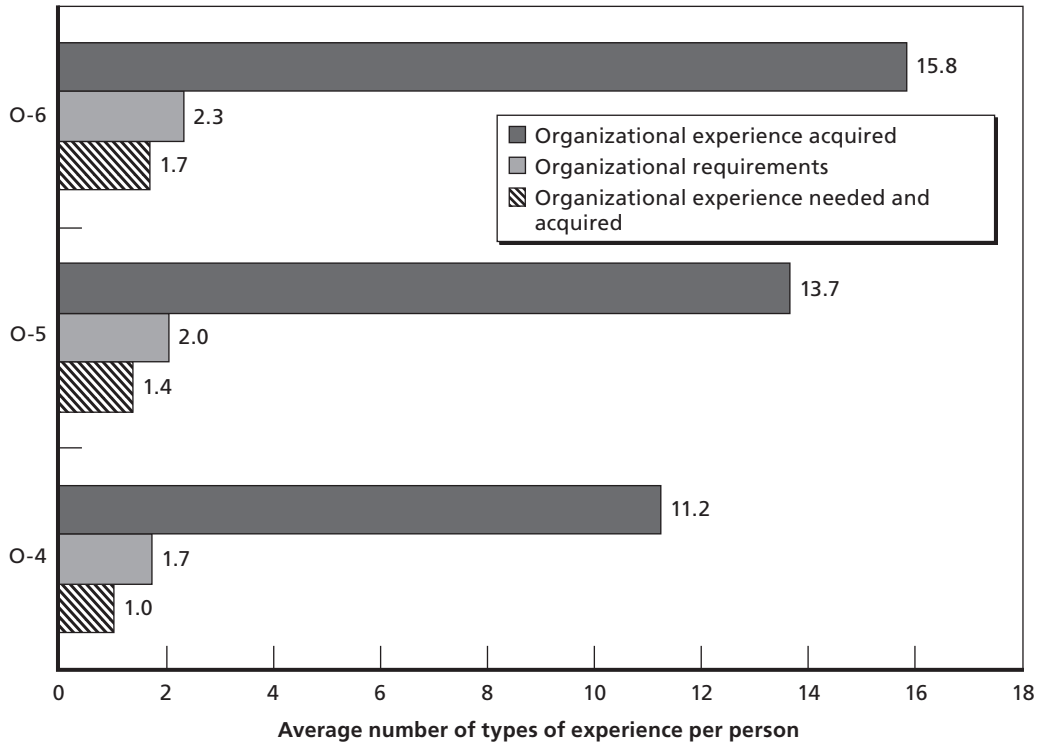
To better understand the source of the gaps between acquired and required types of experience, Table 4.1 displays the gaps by specific organizational experience. The second column shows the percentage of majors who have experience in each of the organizations listed in the first column. Eighteen percent of majors, for example, have experience in joint intelligence organizations. The third column shows that 11 percent of jobs filled by majors require organizational experience in joint intelligence organizations. Only at the O-6 level is the percentage of officers with experience in joint intelligence organizations less than the percentage of jobs requiring that experience. It appears that 14N officers are generally acquiring sufficient organizational experience for the job requirements.

Operational Experience

When the mismatch between the incumbent's experience and the job's requirements is shown by category (as in Figure 4.2), we can see that officers' experience more often matches the organizational requirements than the other requirements categories. The second best match is for operational requirements. At the O-6 grade level, the incumbents met an average of 41 per-

[2] 2.3 = 270/116; there were 116 O-6 jobs, which had 270 organizational requirements. 1.7 = 196/116; O-6 officers' types of experience matched 196 of the job requirements. Because of rounding, the corresponding number in Figure 4.2—73 percent—does not equal 1.7 divided by 2.3.

Figure 4.3
Gaps in 14N Organizational Experience Acquired, by Grade



RAND *TR628-4.3*

Table 4.1

Organizational Experience—Gaps Between What 14N Officers Have and What 14N Jobs Need (percent)

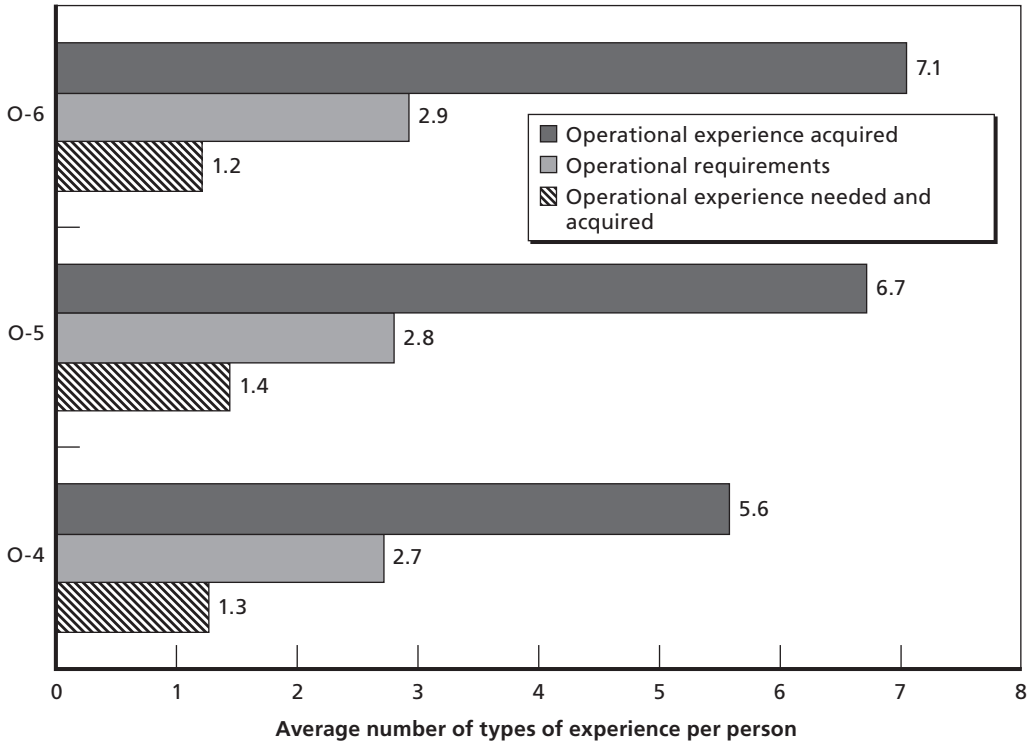
	O-4		O-5		O-6	
Organizational Experience	Officers Acquiring Experience	Jobs Requiring Experience	Officers Acquiring Experience	Jobs Requiring Experience	Officers Acquiring Experience	Jobs Requiring Experience
JIC/JAC/JIOC	18	11	27	21	28	57
Combatant command	43	4	68	9	71	30
CSA	32	4	42	8	56	25
Group level	30	3	51	6	59	18
Air and Space Operations Center	41	4	41	7	32	16
Major command and above	34	0	52	2	72	22
Wing and below	98	5	98	9	97	10
National Security Agency	6	2	8	5	20	14
Wing level	21	0	48	0	59	18
Air Intelligence Agency	9	2	18	4	37	11
Air staff	12	0	23	3	46	9
Major command staff	25	1	37	3	54	7

cent of the operational job requirements. For jobs at the O-5 and O-4 grades, the operational requirements matches are 51 and 47 percent, respectively.

Figure 4.4 shows more details for operational experience. Note that intelligence officers acquire far fewer operational types of experience than organizational types (compare Figure 4.3). An O-6 acquires an average of 7.1 operational experience types and 15.8 organizational experience types. The difference in job requirements is not as large. O-6 jobs require on average 2.9 operational types of experience and 2.3 organizational types. The matches between the operational experience of the person holding the job and the job's operational requirements are low. On average 1.2 operational types of experience acquired by a 14N O-6 match the operational job requirements for the job being filled. O-5 officers' operational types of experience match 1.4 job requirements, and O-4 officers match 1.3.

Table 4.2 shows the gaps between acquired and required experience by specific operational experience. The second column lists the percentage of O-4s who have experience in each of the operational types of experience listed in the first column. Sixty-two percent of majors have experience in analysis. The third column shows that 7 percent of jobs filled by majors require operational experience in analysis. Counterintelligence and measurement and signature intelligence are the only two types of operational experience for which job requirements exceed officer experience at every grade, O-4 though O-6. There are more jobs requiring collection management than the Air Force has lieutenant colonels and colonels who have acquired this experience. Targeting and air operations center operations have O-6 level job requirements that exceed O-6 acquired experience.

Figure 4.4
Gaps in 14N Operational Experience Acquired, by Grade



RAND *TR628-4.4*

Table 4.2
Operational Experience—Gaps Between What 14N Officers Have and What 14N Jobs Need (percent)

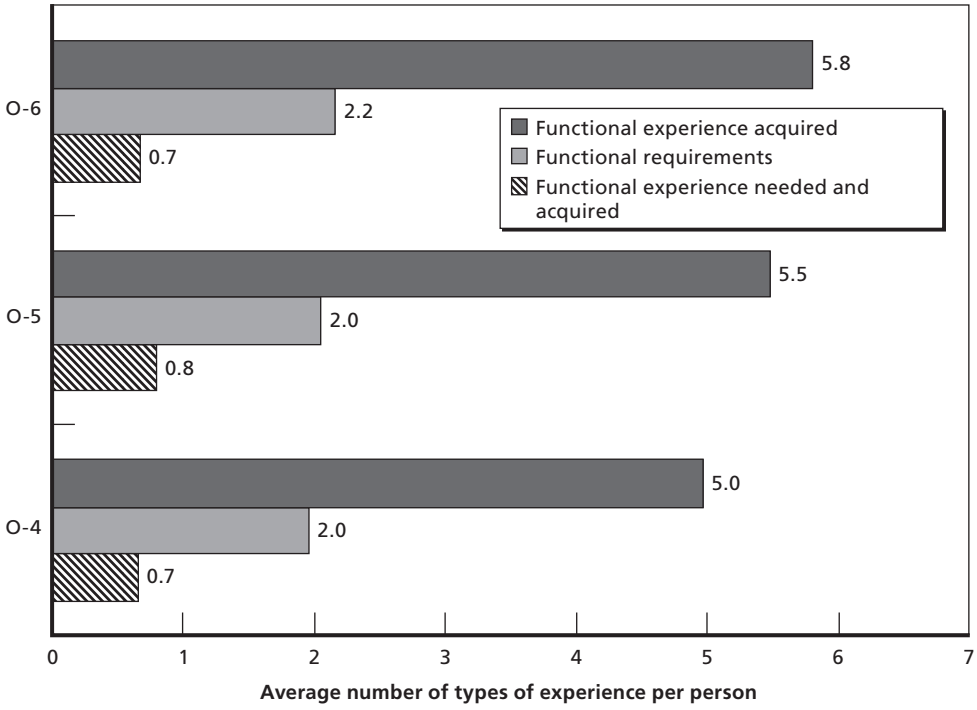
	O-4		O-5		O-6	
Operational Experience	Officers Acquiring Experience	Jobs Requiring Experience	Officers Acquiring Experience	Jobs Requiring Experience	Officers Acquiring Experience	Jobs Requiring Experience
Analysis	62	7	14	79	75	39
Any INT	44	3	5	59	67	20
AOC operations	41	9	17	41	32	41
Collection management	12	9	16	13	20	42
Command operations	10	0	1	25	78	0
Counterintelligence	0	4	7	0	0	15
DGS operations	46	0	0	47	35	2
Director of operations	6	0	0	21	16	0
HUMINT	5	4	6	10	19	14
IMINT	20	6	10	30	22	18
Information operations	20	7	13	21	21	30
ISR employment	64	1	1	72	69	4
ISR operations	51	0	1	53	48	2
MASINT	3	4	7	4	5	16
Multi-INT operations	7	2	3	14	14	3
SIGINT	24	6	11	29	36	24
Targeting	30	9	17	32	26	35
Unit operations	71	6	10	63	55	21

Functional Experience

Only about one-third of 14N officers have functional types of experience that match the functional job requirements of the positions they hold (see Figure 4.2). Yet on average, these officers acquire 5 functional experience types by the time they are majors and 5.8 functional experience types by the time they are colonels (see Figure 4.5). Further, the functional job requirements average two per job. The match between required and acquired is only 0.7 types of experience for majors, 0.8 for lieutenant colonels, and 0.7 for colonels. Looking at the specific functional requirements in Table 4.3 helps us to understand the gaps in meeting functional experience requirements.

The most frequent functional requirements for 14N field-grade officer jobs are operations for reconnaissance, combat, information, space, and political/military. Table 4.3 shows that 23 percent of the O-6 level jobs require reconnaissance operations experience but only 19 percent of all 14N colonels have acquired that experience. There are barely enough majors and lieutenant colonels who have acquired this experience to fill reconnaissance operations job requirements. The situation is similar for combat operations requirements. At the O-6 level 23 percent of the jobs require combat operations experience and only 20 percent of 14N colonels have acquired that experience. The gaps for information operations and space requirements mirror those for reconnaissance and combat operations. However, a higher percentage of majors and lieutenant colonels have acquired information operations experience in comparison

Figure 4.5
Gaps in 14N Functional Experience Acquired, by Grade



RAND *TR628-4.5*

to job requirements. In contrast, the percentage of officers acquiring political/military functional experience exceeds the job requirements at each grade.

Command/Leadership Experience

For 14N jobs requiring command/leadership experience, the match between job requirements and officer experience decreases from 31 percent at the O-4 level to 16 percent at the O-6 level (see Figure 4.2). It is notable that the number of jobs requiring command/leadership experience grows as the grade increases. Figure 4.6 shows that on average there are 0.9 command/leadership requirements for O-4 jobs and 1.9 requirements for O-6 jobs with O-5 jobs in the middle at an average of 1.1 command/leadership requirements. The 14N officers increase their acquisition of command/leadership experience as they progress in grade. Majors possess an average of 1.5 experience types, but by the time they are colonels they have acquired 5.0 experience types.

The most frequent command/leadership job requirements are for squadron command and director of operations. For 14N jobs requiring squadron command experience, there appear to be sufficiently enough officers who have held squadron command positions (see Table 4.4). An average of 18 percent of lieutenant colonels and 66 percent of colonels has this experience. There are far fewer jobs requiring this type of experience, with an average of 8 percent of lieutenant colonel jobs and 35 percent of colonel jobs requiring squadron command experience. For O-6 jobs requiring director of operations experience, there is a gap between the number of officers who have acquired the experience and the number of jobs requiring the experience.

Table 4.3
Functional Experience—Gaps Between What 14N Officers Have and What 14N Jobs Need (percent)

	O-4		O-5		O-6	
Functional Experience	Officers Acquiring Experience	Jobs Requiring Experience	Officers Acquiring Experience	Jobs Requiring Experience	Officers Acquiring Experience	Jobs Requiring Experience
Acquisition	5	2	6	4	9	13
Any operations	75	1	76	2	66	7
AOC	41		41	0	32	
Budget	17		18	0	28	
Collection management	61		53	0	47	
Combat operations	12	7	13	12	20	23
Communications	10	1	8	2	15	3
Current operations	64		72	0	69	1
Education & training	43	1	42	2	47	5
Information operations	20	5	21	9	21	27
Joint	60		83	0	85	1
Mobile operations	4	1	2	2	2	4
Personnel	6	1	6	2	8	6
Plans & programs	16	3	17	6	25	14
Political/military	6	4	14	8	29	22
RECCE operations	9	7	17	13	19	23
Requirements	4	3	3	5	11	15
Research & development	4	0	7	0	11	
Space	11	4	17	8	15	24
Special operations	16	2	13	3	9	10
Special security officer/ foreign disclosure officer	8	2	8	4	8	13
War planner	6	3	12	6	5	13

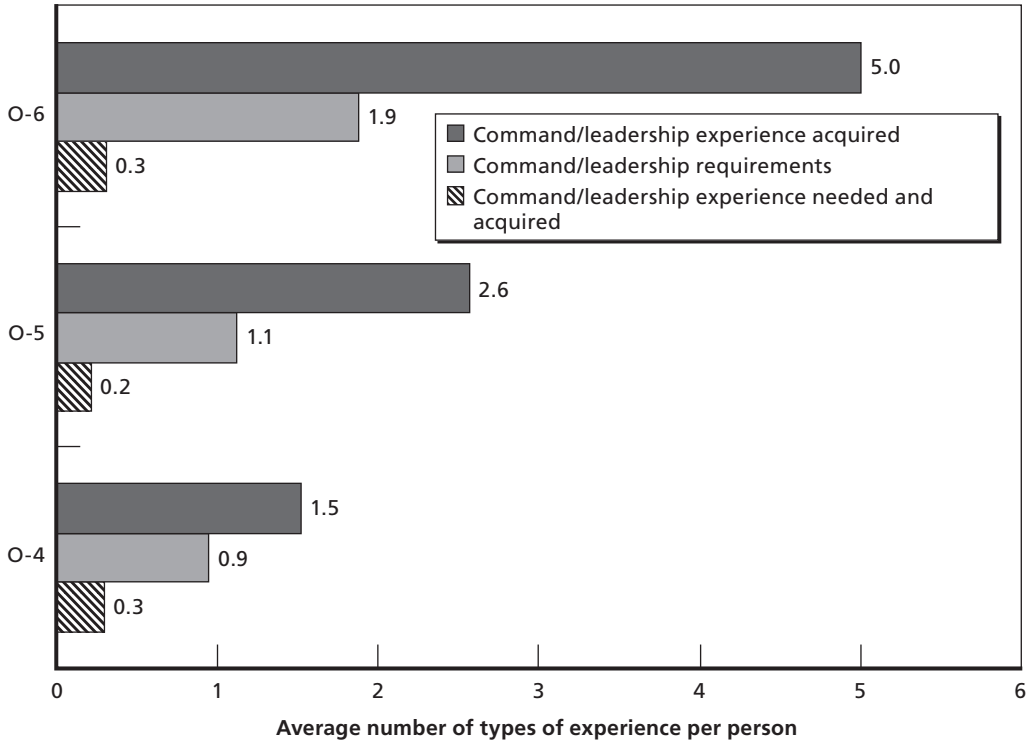
NOTE: Some cells are blank because there were no jobs requiring the experience at that grade level.

Nineteen percent of jobs require director of operations experience, but only 16 percent of 14N O-6 officers have acquired that experience. Table 4.4 shows that many 14N officers acquire command experience (see the "any command" row)—54 percent of majors, 65 percent of lieutenant colonels, and 86 percent of colonels. Few jobs show this as a requirement, with only 1 percent of O-5 jobs and 3 percent of O-6 jobs having this requirement. Perhaps a review of command/leadership requirements for 14N jobs would show that some of the more-specific requirements could be met by officers with any command/leadership experience.

Specialty Experience

Matches with AFSC prefix requirements average only 23, 16, and 10 percent for grades O-6, O-5, and O-4, respectively (see Figure 4.2). Figure 4.7 gives some insight into why the gap between required and acquired prefixes is so great—many 14N officers are not acquiring AFSC prefixes. On average 0.6 percent of majors, 1 percent of lieutenant colonels, and 1.4 percent of colonels have an AFSC prefix. This finding contrasts with job requirements that all exceed

Figure 4.6
Gaps in 14N Command/Leadership Experience Acquired, by Grade



RAND *TR628-4.6*

these percentages. The 14N jobs for majors require on average 0.9 AFSC prefixes; for lieutenant colonels the average is 1.2 prefixes; and for colonels it is 1.5 percent.

Table 4.5 shows more details on specific AFSC prefixes acquired and required by grade. Many officers are acquiring the "C" prefix for commander experience. In fact 75 percent of all colonels have had the "C" prefix; 23 percent of lieutenant colonels and 10 percent of majors have had the "C" prefix. But almost none of the 14N officers have received the information operations "U" prefix; while 34 percent of O-6 jobs require that prefix.[3]

Other RAND studies have noted that historical personnel data may not have accurately recorded all AFSC prefixes that were actually earned. Thus, issues of data quality may account for the low number of matches for AFSC prefixes.

In the preceding discussion, all requirements were treated equally in counting these matches. The criticality of the requirements should also be considered. In general, matches between job requirements and officer experience are generally better for critical requirements than for requirements classified as important or useful (see Table 4.6). Overall, there is about a 40-percent match between officer experience and job requirements, but about a 50-percent match for critical elements, a 42-percent match for important elements, and a 30-percent match for useful elements.

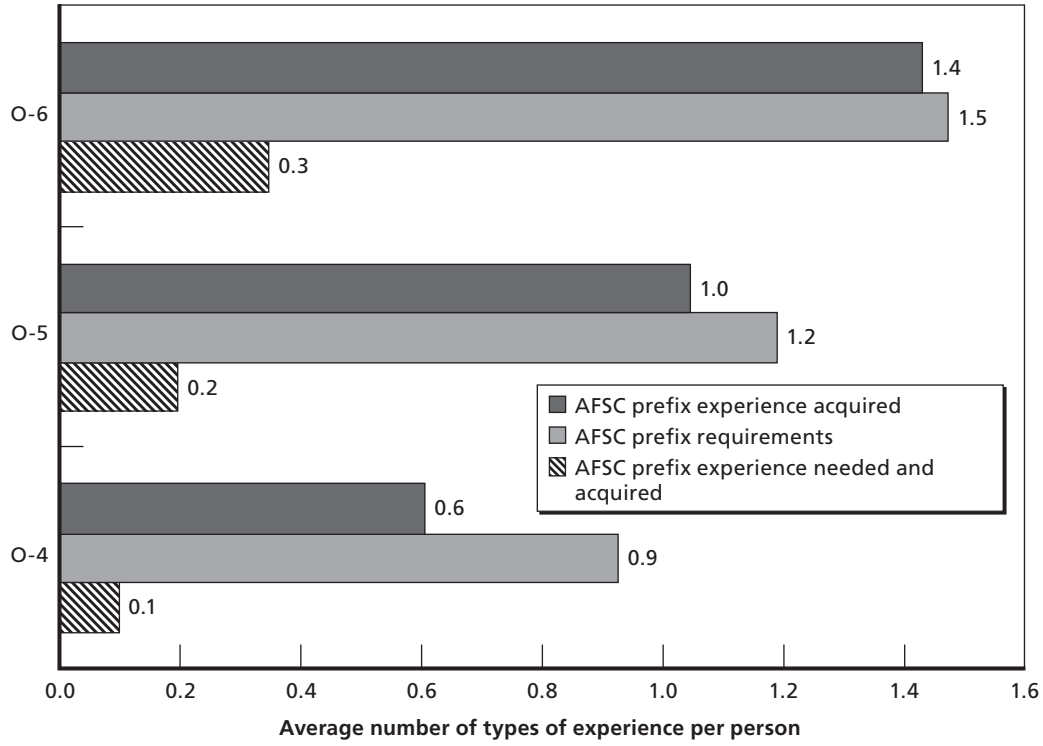
[3] As previously noted, our data included only one year of prior job history data following the introduction of the "U" prefix. It is likely that some positions occupied by intelligence officers prior to 2004 would have qualified for that prefix had it been in use at that earlier time.

Table 4.4
Command/Leadership Experience—Gaps Between What 14N Officers Have and What 14N Jobs Need (percent)

	O-4		O-5		O-6	
Command/Leadership Experience	Officers Acquiring Experience	Jobs Requiring Experience	Officers Acquiring Experience	Jobs Requiring Experience	Officers Acquiring Experience	Jobs Requiring Experience
Air staff command	0	0	0	1	3	2
Any command	54		65	1	86	3
Any director of operations	6	0	21	11	16	19
Any joint staff command	3		3		7	1
Center command	0		2	1	3	4
Command	1	2	1	4	9	12
Detachment command	2	0	4		7	
Expeditionary command			0	1	0	3
Flight command	48	9	54	6	30	2
Group command	2		5	0	26	3
Information operations group command	1		2		5	2
Information operations sq command	0		3	1	4	1
Intelligence group command	1		4	1	21	4
Intelligence squadron command	2		12	1	46	
Intelligence wing command	0		1	1	7	3
Joint Chiefs of Staff, Office of the Secretary of Defense command				1		3
Joint other multi command	3		3	1	7	3
Joint specialty officer command	0		9	0	42	2
MAJCOM FOA command	1	0	3	2	9	3
NAF A2				1		3
NAF command	0		0	1	0	2
Operations officer			3	1	6	3
RECCE group command	0		0	1	3	4
RECCE squadron command				1		
RECCE wing command				1		3
Sq command	8		18	8	66	35
Sq or above command	10		23		74	2
Staff	2	2	4	4	10	13
Training sq command	2		3	0	6	1

NOTE: Some cells are blank because there were no jobs requiring the experience at that grade level or no officers at that grade level who had acquired that experience.

Figure 4.7
Gaps in 14N AFSC Prefixes Acquired, by Grade



RAND *TR628-4.7*

Table 4.5
AFSC Prefix—Gaps Between What 14N Officers Have and What 14N Jobs Need (percent)

	O-4		O-5		O-6	
AFSC Prefix	Officers Acquiring Experience	Jobs Requiring Experience	Officers Acquiring Experience	Jobs Requiring Experience	Officers Acquiring Experience	Jobs Requiring Experience
B = squadron operations officer	3	1	12	6	8	13
C = commander	10	0	23	4	75	19
E = electronic combat support duty	10	2	15	3	7	6
R = contingency/war planner	6	2	12	5	4	16
T = formal training instructor	12	1	11	2	10	5
U = information operations	1	5	0	11	0	34
V = automated functional applications analyst	7	1	10	3	16	5
W = weapons and tactics instructor	6	3	6	5	3	13
X = nonrated aircrew	10	2	14	5	19	16

Table 4.6
Requirements Met, by Grade and Importance of Background Experience (percent)

	Percentage Met			
Grade and Category	**Critical**	**Important**	**Useful**	**Total**
O-6				
Organizational	75	76	62	73
Operational	41	43	40	41
Functional	26	40	29	31
Leadership	31	7	4	16
AFSC prefix	20	25	22	23
Total	43	38	34	39
O-5				
Organizational	60	83	40	67
Operational	67	44	38	51
Functional	51	30	36	39
Leadership	50	18	20	19
AFSC prefix	10	16	17	16
Total	59	42	32	44
O-4				
Organizational	50	81	28	61
Operational	57	44	37	47
Functional	49	30	22	33
Leadership		43	17	31
AFSC prefix	8	5	12	10
Total	51	48	24	40
Total O-4, O-5, and O-6	50	42	30	41

NOTE: One cell is blank because there were no requirements at that level of criticality for that grade level.

Combinations of Background and Experience

Prior RAND analysis has shown the importance of officers being competent in multiple skills as they progress in grade. This section reports on the match of experience types acquired to job requirements across all categories[4] of requirements without regard to whether or not the requirement is critical, important, or useful.

Table 4.7 summarizes the match between officers' experience and all 14N job requirements. It indicates the proportion of officers who have met all experience requirements in the indicated number of categories. For example, it shows that 35 percent of majors have met all requirements in only two of the five categories, while only 2 percent have met all requirements in all five categories. (If a job has no requirement in a category, the incumbent is counted as meeting requirements in that category.) Note that few officers at any grade match all requirements in all categories. Fully meeting requirements in three out of five categories is the norm,

[4] Organizational, operational, functional, command/leadership, AFSC prefix.

Table 4.7
Summary Across Experience Categories—Matches Between Job Requirements and Officers' Experience (percent)

Number of Categories in Which All Requirements Are Met	O-4	O-5	O-6	All Three Grades
0	2	1	0	1
1	9	8	16	9
2	35	29	24	32
3	38	42	36	39
4	15	16	20	16
5	2	4	4	3

NOTE: Because of rounding, columns may not sum to 100.

with 38 percent of majors, 42 percent of lieutenant colonels, and 36 percent of colonels at that level.

The last row of the table indicates that very few officers have experience that exactly matches their job requirements. The counts corresponding to the percentages shown in the last row of the table are three majors, two lieutenant colonels, and one colonel. The colonel has a total of 41 acquired types of experience and is in a job that requires 2 organizational types of experience, 1 functional type, and 1 AFSC prefix. Two of the majors are in jobs that require no organizational experience or AFSC prefix; the jobs have 2 operational, 1 functional, and 1 command/leadership requirement. These majors have acquired 30 experience types in prior assignments.

Interestingly, the two officers with the largest number of acquired experience types, 52, are missing some of the requirements for the jobs they hold. In one case, the officer is in a job that has a large number of requirements—3 organizational, 4 operational, 3 functional, 4 command/leadership, and 2 AFSC prefix requirements. The officer's acquired experience types match 2 organizational, 1 operational, and 1 command/leadership requirement.

The analysis shows that the combination of requirements is seldom met by the officer holding the job.

Method of Assignment to Jobs Contributes to Mismatch

Across all career fields, the Air Force assignment process is complex and is not designed for optimization of matching job requirements with an individual's background and experience. The officer assignment system must consider the officer's personal preferences, commanders' requests and input, and Air Force requirements. Additionally, at any one time, there is only a subset of jobs and people available for matching.

To understand if current 14N officers have the necessary experience to fill job requirements, we experimented with several different heuristic assignment schemes. One heuristic scheme filled jobs with the most requirements first. Another scheme filled critical requirements first. The good news for the intelligence career field (as with the space and missile career field) is that if we know an officer's background and experience and the job requirements, then much better matches are possible.

As an example, in the category of air intelligence squadron/group there are 43 jobs for majors.[5] Analysis showed that 33 14N majors met all the critical and important requirements for operational, organizational, functional, and command/leadership types of experience. Ninety-seven majors met all critical and three of the four important requirements. All the critical requirements were met by 273 majors. At least one critical, one important, and one useful requirement were met by 504 majors. This exercise demonstrated that if assignment officers had a list of job requirements ranked by criticality and a list of available officers' accumulated types of experience, it would be possible to more closely match officers and jobs.

Ways to Decrease Gaps Between Supply and Demand

Earlier work in the space and missile career field demonstrated the usefulness of an optimization model to identify career paths that would develop and assign officers more deliberately (see Appendix B). The idea was to prepare and assign officers so that at each assignment their experience would meet or exceed the jobs' needs. Analysis of the ideal career paths showed how many officers should acquire different mixes of experience at each stage of their career.

This type of optimization modeling, which RAND researchers have called *flow modeling,* was also used to identify paired primary and secondary occupational skills needed in future colonels and Air Force general officers. The analysis showed that far more officers than positions needed paired skills. An example of a paired skill would be an intelligence officer who also had a paired skill in communications, air power employment, or acquisition.[6]

Conclusions

The current assignment of intelligence officers could be improved. The assignment system lacks systematic assessments of the requirements for various jobs and the experience acquired by individual officers. Good matches occur either by chance or by unstructured interactions among assignment officers, the individuals being assigned, and the gaining commanders or their representatives. In these cases, there may be tacit criteria that are important to the personnel decision but not available either in the assignment data describing the position or in the personnel record. It may also be that the system has not had sufficient time to recognize the evolving requirement.

The designation of critical, important, and useful types of experience for many intelligence jobs probably needs refinement by officers holding those jobs and their supervisors. Adding deployment data would increase information on types of experience acquired.[7] When

---

[5] This job category is used as an example again in Chapter Five.

[6] For details on this study see Albert A. Robbert, Steve Drezner, John E. Boon, Jr., Lawrence M. Hanser, S. Craig Moore, Lynn M. Scott, and Herbert J. Shukiar, *Integrated Planning for the Air Force Senior Leader Workforce: Background and Methods*, Santa Monica, Calif.: RAND Corporation, TR-175-AF, 2004.

[7] In the Air Force, deployments are often for less than a year. Our data captured information on the jobs held by officers at only the end of each fiscal year. Thus, experience acquired while an officer is deployed would be noted only if the officer was deployed at the end of the fiscal year.

the career field managers meet to assign force development vectors, they could review the job requirements and consider the recommendations of supervisors, Air Force assignment officers, and personnel holding the jobs.

CHAPTER FIVE

Recommendations and Conclusions

The government, military, and private sectors are concerned about the match between job requirements, or demand, and worker's skills, or supply.

In the public sector, there is a growing belief that labor force skills do not match job requirements.[1,2] Unfortunately, the data to support or refute such a belief are not available. As one writer observed,

> Firm conclusions about skills mismatch are hampered by three problems, difficulties ascertaining the job-relevant skills employees possess, even less information on the skills their jobs require, and problems relating the two kinds of evidence to one another.[3]

In the military, the development of officers with the necessary skills is especially critical because, unlike most organizations, the military chain of command is developed within each service; military leaders are not hired from outside the military. They must be grown continually from a junior officer force. To provide a foundation for deliberately developing officers to fill higher-grade jobs, the military must identify and update the requirements for those jobs.

Recommendations

Improve Available Information on Job Requirements

Because officers change jobs about every two years, or even more frequently, the way in which officers are assigned to successive jobs is critical, both for career development and for effectively matching officers' qualifications with jobs' needs. A few captains and majors at AFPC facilitate this important task. To support the assignment decisionmaking process, the unit with an unfilled job sends AFPC a description of the job's functions and a list of the qualifications candidates should have.

---

[1] In 2005, IBM initiated research to better match employees to jobs (Michael Voelker, "Optimizing the Human Supply Chain," *Intelligent Enterprise*, January 1, 2006).

[2] IBM hopes to automate management and improve employee productivity by building mathematical models that assign workers based on abilities and specific job requirements. Among the eventual goals are to create the most cost-effective teams for specific projects and to deliberately develop workers for certain responsibilities (Stephen Baker, "Book Excerpt: *The Numerati* by Stephen Baker," *BusinessWeek*, August 28, 2008.

[3] Michael J. Handel, "Skills Mismatch in the Labor Market," *Annual Review of Sociology,* Vol. 29, 2003, p. 42.

The descriptions of the qualifications vary from minimal (or none) to elaborate. Most Air Force job requisitions include detailed job descriptions but few, if any, include specifics about the background, experience, or training needed to do the job.

The following two job descriptions are provided as examples:

- *Intelligence Flight Commander, PACAF, Hickam, O-4.* Inspects all intelligence functions and related areas in PACAF. Plans and coordinates operational and initial response readiness/unit compliance inspections. Develops comprehensive scenarios and presents briefings on scenarios prior to inspections. Briefs Headquarters, PACAF, functional staff concerning readiness and posture of command intelligence functions. Formulates policy and procedural recommendations based on experience and observations.
- *Chief, Plans and Policy Branch, PACAF, Hickam, O-4.* Manages foreign disclosure issues for 17 Headquarters, PACAF, directorates and over 50 subordinate intelligence/operations units. Works closely with the U.S. Pacific Command/Joint Forces Command Intelligence Directorate planning engagement events while representing the theater. Secures national authority, conducts exploratory talks and drafts memoranda of agreement for intelligence exchanges with area-of-responsibility nations.

In contrast to the job descriptions above, our 14N "demand" data include detailed job qualifications. As Table 5.1 shows, candidates for the two jobs (majors in air intelligence squadrons or groups) listed above must have operational experience in intelligence analysis, targeting, or collection management and functional experience in combat operations. For these positions, critical professional military and technical training should include the intelligence basic course, on-the-job training at an air operations center formal training unit (FTU), a combat training course, the intelligence/reconnaissance operations course, or the intelligence master skill course (IMSC). The requirements for important and useful experience, education, and

Table 5.1
Identifiable Job Requirements Listed by Criticality for Majors in Air Intelligence Squadrons or Groups

	Job Requirement by Criticality		
Category	**Critical**	**Important**	**Useful**
Operational experience	INT analysis, targeting, collection management	SIGINT, IMINT, unit operations	HUMINT, MASINT, IO
Previous AFSC prefix			R, U, W
Prior functional experience	Combat operations	Information operations, special operations, mobility operations, RECCE operations	Political/military; special security/ foreign disclosure
Command/leadership experience	Flight command	Flight command	Flight command
Organizational experience		AOC; any CSA	AIA
Enduring competencies			
PME/technical training	INT basic training, AOC FTU, certified trainer or INT RECCE operations course, IMSC	Intelligence FTU	
Degree area		Appropriate area	
Language		Appropriate language	
Grade			Holding authorized grade
Other	Deployed/expeditionary		

training are just as specific. With such data, AFPC can compare the jobs' needs against the background and experience that officers have acquired, and it can also count the number of matches by level of criticality. These data also make the criteria more explicit to commanders and supervisors, especially those who are not 14Ns.

The list of specific job requirements for all field-grade intelligence jobs should be useful to managers writing job requisitions, assignment officers who need to fill the vacant positions, and intelligence officers who are eligible for reassignment. If assignment officers had a list of job requirements ranked by criticality and a list of the available officers' accumulated experience, it would be possible for them to more closely match officers and jobs.

Improve Available Information on Officer Skills and Experience

When more officers have SEIs or other specific experience/training identifiers and when more jobs identify required SEIs, it will be much easier than it is today to match their experience and training to job needs. The "rules" and histories in our supply data provide an independent basis for making SEI assignments for all field-grade intelligence officers. Our data may provide most of the SEI assignments needed if this information is initially input in personnel records. Individuals would need to provide additional information only when they felt that the method missed one or more SEIs to which they should be entitled.

Leveraging Flow Analysis[4]

Although flow analysis was not conducted for this study, force developers in the Air Force should consider leveraging flow analysis because it would show how officers could be developed so that their experience and training would align more closely with job needs. Flow analysis can illustrate how well a virtual inventory of officers could meet developmental objectives, given ideal career paths that optimize the sequence of jobs, subject to policy preferences and constraints, such as expected retention and promotion patterns. Any changes in assignment policies, such as encouraging or discouraging back-to-back assignments in specific areas, could be modeled, and the effects of such changes on the capabilities of the resulting officer pool could be estimated.

Flow analysis uses a linear programming model to maximize a sum of scores representing how well the qualifications of those in a virtual, ideally developed officer inventory meet the developmental requirements of the jobs they fill. Policy preferences are expressed as constraints in the linear programming model, enabling an analysis of how the policies would affect the congruence of qualifications with requirements. A recent Defense Science Board study highlights the use of operations research such as flow analysis to strengthen the quality of decisionmaking.[5]

The 14N community could use flow analysis modeling to help establish developmental objectives. By improving data inputs, setting education and training priorities, etc., the 14N development team could help establish the objectives and then use them to

---

[4] Two RAND publications contain more discussion of flow analysis and its applications. See Moore and Brauner, 2007, and Vernez et al., 2006.

[5] U.S. Department of Defense, *Report of the Defense Science Board Advisory Group on Defense Intelligence: Operations Research Applications for Intelligence, Surveillance and Reconnaissance (ISR),* Washington, D.C.: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, January 2009.

- measure whether enough officers in each age group are on track to develop each of several distinct, targeted combinations of experience by each career stage
- guide individual officers toward the various developmental targets in order to bring each year's group (or cohort) into timely congruence with selected objectives.

Flow analysis also could use modeling to assess the implications of alternative futures, as affected by either potential changes in the nature of 14N work or the policies the community may adopt (and modify) to govern its members' development and utilization. Technology and national priorities could change the nature and/or mix of future 14N jobs, for example, as could shifts of intelligence work to or from other services, enlisted personnel, civilians, or the reserve components. Flow analysis can readily indicate whether such changes are feasible and how they would affect the career paths recommended for 14N officers.

If development and utilization goals, such as those described in the previous paragraph, were established, the AFPC 14N assignment team (knowing that such goals will inevitably evolve and that modeling can improve understanding and planning for necessary changes) could use the corresponding modeling results concretely, as suggested by these examples:

Aim for targeted numbers of officers with given combinations of experience, by grade or year of service. It would be natural for the 14N assignment team to work toward this goal in consonance with the 14N development team. The assignment team is the natural source of tracking data that the development team needs in order to tell whether cohorts are developing appropriately and, if they are not, to identify appropriate corrective actions.

Pursue utilization targets: the number of prior types of experience used versus those unused. With targets for how many or few of an officer's background elements could or should be relevant to his or her next job, assignment officers could work toward those objectives.

Exploit flow recommendations. Career flow modeling would represent assignment sequences explicitly to identify flows that would enable the 14N workforce to best meet the stated requirements for experience, education, and training. Assignment teams could use those sequences to help match officers with vacancies during each assignment cycle. The principal benefit should be that modeled sequences aim to balance the needs of both individual and workforce development on one hand and positions' needs and policy objectives on the other. Trying to match the optimized assignment sequences and timing should help concentrate the assignment process on deliberate officer development, while continuing AFPC's traditional emphasis on "filling spaces with faces."

Conclusions

This study demonstrated that the education, training, and experience needed for Air Force intelligence jobs can be systematically identified and prioritized, that officers' experience can be discerned from historical personnel records, and that gaps between jobs' requirements and officers' experience can be delineated. However, consistent mechanisms are needed to

- record jobs' requirements for prior experience, education, and training[6]
- track individual members' growing portfolios of experience, education, and training
- help commanders and mentors recommend qualified candidates
- help assignment teams assign officers that meet the qualifications of a particular position, consistent with targeted developmental patterns, and match members' preferences, insofar as possible.

Concrete improvements are needed in all four areas.

There is much work still to be done to translate the results of these analyses into actual career development strategies and then measure the effect on organizational performance.[7] The approach described in this report simply aims to make such processes considerably more systematic and effective for the Air Force's intelligence officer workforce to

- identify and prioritize positions' needs consistently using a list of qualifications (these may change over time, but relatively slowly)
- trace officers' accumulation of those qualifications as their careers progress
- routinely assess any gaps between the positions' needs and the officers' qualifications
- develop plans that would deliberately develop officers so that, collectively, their qualifications will meet the requirements of future positions
- develop aids for the assignment process to help match individual officers with positions for which they are well-qualified and thus, insofar as possible, enhance their readiness for future assignments.

---

[6] Personnel requisitions, which are submitted online and maintained at AFPC, often contain such information, but it is neither consistent nor presented in a manner that allows broad summaries (e.g., how many jobs require a specific element of experience, education, or training). These requisitions help identify good candidates (e.g., via comparing jobs' needs with members' backgrounds) and support performance assessments (e.g., how well assignees' prior qualifications match jobs' needs, overall).

[7] The current career field manager for Air Force Intelligence officers, Col Theresa Meyer, read the draft manuscript for this document. She noted, "There have been minor changes in our force management process since this was written, but I believe they will contribute to better synchronization of personnel capabilities with positions requirements and improve deliberate development."

APPENDIX A

Air Force Officer Career Field-Specialty Codes and Abbreviations from Table 3.1

Table A.1
Air Force Officer Career Field-Specialty Codes

AFSC	Description	Number of Officers
11M	Mobility pilot	4,647
33S	Communications & information	4,505
92T	Pilot/navigator trainee	3,663
11F	Fighter pilot	3,360
13S	Space & missile	3,150
14N	Intelligence	3,015
63A	Acquisition manager	2,956
46N	Clinical nurse	2,727
62E	Developmental engineer	2,593
92S0	Student officer authorization	2,256
21R	Logistics readiness	2,014
36P	Personnel	1,702
13B	Air battle manager	1,575
11K	Trainer pilot	1,448
32E	Civil engineer	1,445
21A	Aircraft maintenance	1,380
51J	Judge advocate	1,303
41A	Health services administrator	1,177

SOURCE: "Career Field Breakdown," *Airman,* January 2005, p. 38.

NOTE: Only AFSCs with 1,000 or more officers on September 30, 2004, are shown in the table.

Table A.2
Abbreviations from Table 3.1

Column Heading and Subheading	Definition
AFSC prefix	
C	Commander
B	Squadron operations officer
W	Weapons and tactics instructor
Duty AFSC	
14N4	Intelligence staff officer
14N3	Intelligence officer
14N3B	Intelligence applications
14N3A	Intelligence operations
8075	Intelligence applications
8071	Intelligence applications
8045	Imagery intelligence
8041	Imagery intelligence
PAS	
F21R	Air Intelligence Agency
F52B	Tactical Air Combat Operations Staff
F56X	Reconnaissance Technical Flight
F8TB	Air Force Element Intelligence Advisory Center
FCF8	Air Force Elements, U.S. Forces Korea
FDTD	Reconnaissance Technical Group
FH0Y	Operations Support Squadron
FJC2	Air Combat Command Headquarters
FL6N	Intelligence Squadron
FM5Y	Air Force Weapons School
FNX2	Intelligence Squadron
FQMX	Air Force Element Intelligence Advisory Center
FTS6	Operations Squadron
FXSL	Tactical Air Command Headquarters
FZLN	Air Force Element North Atlantic Treaty Organization (NATO) Southeast
FZPK	Student Squadron, Air Training Command
Command	
3G	Air Force Elements, NATO
1C	Air Combat Command
0U	Air Force Intelligence, Surveillance & Reconnaissance Agency (Air Force Intelligence Agency)
0U	Air Force Intelligence, Surveillance & Reconnaissance Agency (Air Force Intelligence Agency)
3O	Air Force Elements, U.S. Pacific Command
3O	Air Force Elements, U.S. Pacific Command
0U	Air Force Intelligence, Surveillance & Reconnaissance Agency (Air Force Intelligence Agency)
3M	Air Force Elements, U.S. Southern Command
3M	Air Force Elements, U.S. Southern Command

Table A.2—Continued

Column Heading and Subheading	Definition
3M	Air Force Elements, U.S. Southern Command
1C	Air Combat Command
1C	Air Combat Command
0U	Air Force Intelligence, Surveillance & Reconnaissance Agency (Air Force Intelligence Agency)
1C	Air Combat Command
1C	Air Combat Command
0T	Tactical Air Command
0T	Tactical Air Command
0T	Tactical Air Command
0T	Tactical Air Command
0R	Pacific Air Forces
0J	Air Education & Training Command (Air Training Command)
Command level	
WB	Wing/base
CN	Center
CM	Command/FOA/DRU Headquarters
DJ	DoD/joint agency
CS	Command staff
Organization	
0000 ZNN NS	Air Force Element, NATO Southeast
0505 OPS SQ	505th Operations Squadron
0020 ITL SQ	20th Intelligence Squadron
0020 ITL SQ	20th Intelligence Squadron
0000 ZPC JP	Air Force Elements, U.S. Forces Korea
0000 ZPC JP	Air Force Elements, U.S. Forces Korea
0416 ITL SQ	416th Intelligence Squadron
0000 ZSB JS	Air Force Elements, Intelligence Assessment Center
0000 ZSB JS	Air Force Elements, Intelligence Assessment Center
0000 ZSB JS	Air Force Elements, Intelligence Assessment Center
0000 WEP SC	Air Force Weapons School
0000 WEP SC	Air Force Weapons School
0000 AIA FO	Air Intelligence Agency Headquarters
0005 OSS SQ	5th Operations Support Squadron
0000 CMB CM	Air Combat Command Headquarters
0000 TCO ST	Tactical Air Combat Operations Staff
0000 TAC CM	Tactical Air Command Headquarters
0290 RTC GP	290th Reconnaissance Technical Group
0290 RTC GP	290th Reconnaissance Technical Group
6300 RTC FT	6300th Reconnaissance Technical Flight
3470 STU SQ	3470th Student Squadron

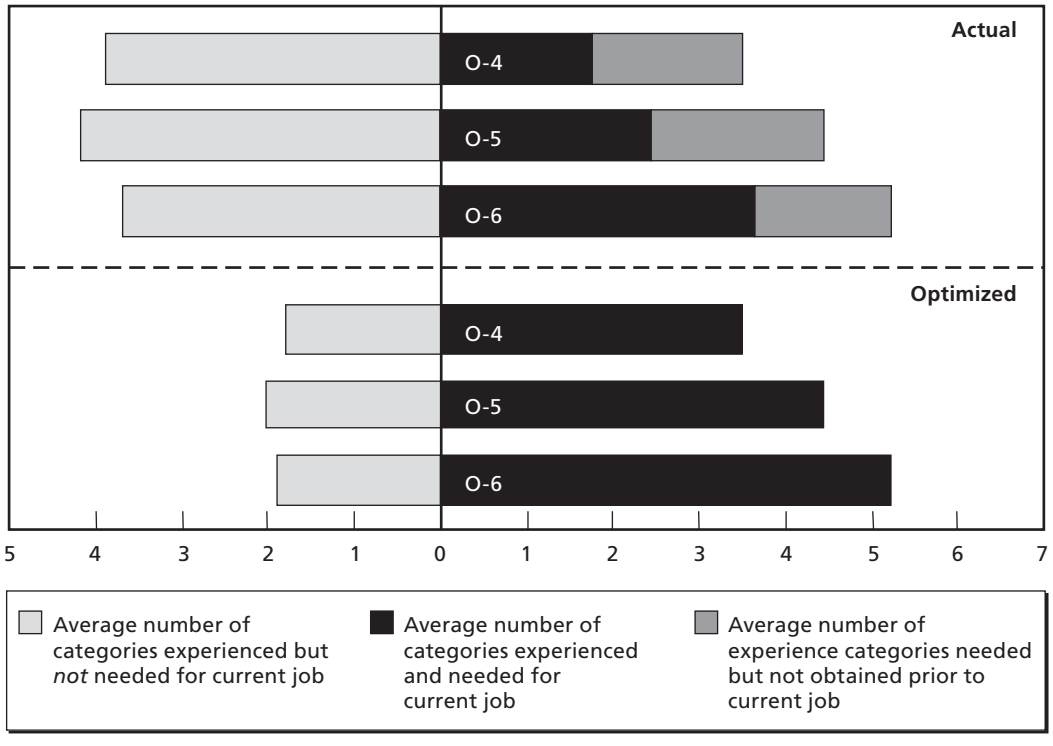
APPENDIX B

Introduction to Flow Analysis

This appendix introduces the application of flow analysis, which uses an optimization model to translate job requirements into goals for developing officers who will hold those jobs.[1]

Figure B.1 is for the space and missile career field (13S). It displays data similar to those shown earlier for the intelligence career field. This is the actual status of the 13S force as it stood at the end of 2001. The results of matching experience acquired by field-grade officers with job requirements were similar to those shown earlier for the intelligence career field.

Figure B.1
Optimized Development and Utilization Patterns Provide a Better Match Between the Needs of Positions and the Prior Experience of Candidates



RAND *TR628-B.1*

[1] More detailed discussion of flow modeling can be found in Vernez et al., 2006; Moore and Brauner, 2007; Robbert et al., 2004.

Many job requirements were missing from the 13S officers' portfolios, and the officers had acquired many types of experience that were not needed for the jobs they held. These gaps are illustrated in the "actual" quadrant in Figure B.1, which portrays the average number of experience categories

- required for the job but not present in the incumbent ("missing")
- required for the job and possessed by the incumbent
- possessed by the incumbent but not required for the job.

About half of a job's needs were not met, on average. Notably, for about 90 percent of the jobs above O-3 that needed an officer with certain experience, the jobholder lacked one or more of the needed types of experience. Moreover, about two-thirds of the assigned officer's accumulated background elements were not needed for the job, on average.

It is impressive to see the degree of potential improvement from optimizing officer's career paths. Sustained management of officers' flows through assignments could

- eliminate shortfalls almost entirely (there is a small shortfall at O-4 that is too tiny to even see here)
- greatly reduce the irrelevant types of experience that officers bring to their jobs (thus reflecting a policy favoring depth, which would concentrate officers' experience in fewer organizations and functions).

It may be worth noting that the 13S case study also sought to give as many of the force's members as possible a set of experience types that would place them on a space, missile, or acquisition "track" within the career field by the end of their third tours.

Other options might include maximizing the experience types acquired by officers, widening officers' experience insofar as possible, but still ensuring that they have the background needed for their various assignments. The fact that such options could be selected in this case implies that 13S officers could also spend some time working outside of their career field, broadening their experience in other functional areas—e.g., acquisition, communications, or intelligence.

This example suggests that virtually all of the 13S jobs' important and critical requirements could be met and that utilization of officers' experience could be increased substantially, to 68 percent overall in this example, from 35 percent in fiscal year 2001. The 13S study considered five cases. All cases aimed to meet the experience targets for jobs above captain and to give as many officers as possible experience in acquisition and either in space or in missile operations during their first four jobs (about three tours). Case 2 also aimed to maximize officers' depth of experience. It reflected the Rumsfeld Space Commission's[2] direction to increase space professionals' depth of experience and a desire to combine both operational and acquisition experience. The data are shown in Tables B.1 and B.2.

[2] The Commission to Assess United States National Security Space Management and Organization was established in 1999 by an amendment to the Fiscal Year 2000 Defense Authorization bill.

Table B.1
The Portions and Percentages of Requirements for 13S Jobs, in Fiscal Year 2001

Grade	Number of Officers	Experience Category					Percentage		
		Present	Used	Unused	Needed	Missing	Utilization	Fill	Missing
O-4	787	5.7	1.8	3.9	3.5	1.7	31	50	50
O-5	421	6.6	2.4	4.2	4.5	2.0	37	55	45
O-6	156	7.3	3.6	3.7	5.3	1.6	50	69	31
Total	1,364	6.2	2.2	4.0	4.0	1.9	35	54	46

Table B.2
The Portions and Percentages of Requirements for 13S Jobs, in Case 2

Grade	Number of Officers	Experience Category					Percentage		
		Present	Used	Unused	Needed	Missing	Utilization	Fill	Missing
O-4	760	5.3	3.5	1.8	3.5	0.0	66	99	0.8
O-5	484	6.5	4.4	2.0	4.5	0.0	69	100	0.1
O-6	166	7.2	5.3	1.9	5.3	0.0	73	100	0.0
Total	1,410	5.9	4.0	1.9	4.0	0.0	68	100	0.5

Bibliography

Baker, Stephen, "Book Excerpt: *The Numerati* by Stephen Baker," *BusinessWeek*, August 28, 2008. As of March 24, 2009:
http://www.businessweek.com/magazine/content/08_36/b4098032904806.htm

Barger, Deborah G., *Toward a Revolution in Intelligence Affairs*, Santa Monica, Calif.: RAND Corporation, TR-242-CMS, 2005. As of March 16, 2009:
http://www.rand.org/pubs/technical_reports/TR242/

"Career Field Breakdown," *Airman*, January 2005, p. 38. As of March 16, 2009:
http://www.af.mil/news/airman/0105/38_CareerField.pdf

The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, *The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction: Report to the President of the United States*, Washington, D.C.: U.S. Government Printing Office, March 31, 2005. As of March 24, 2009:
http://www.gpoaccess.gov/wmd/pdf/wmd_cover.pdf

Conley, Raymond E., Ralph Masi, Bernard D. Rostker, Herbert J. Shukiar, and Steve Drezner, *Enhancing the Performance of Senior Department of Defense Civilian Executives, Reserve Component General/Flag Officers, and Senior Noncommissioned Officers in Joint Matters*, Santa Monica, Calif.: RAND Corporation, MG-621-OSD, 2008. As of March 16, 2009:
http://www.rand.org/pubs/monographs/MG621/

Galway, Lionel A., Richard Buddin, Michael R. Thirtle, Peter Ellis, and Judith D. Mele, *Understrength Air Force Officer Career Fields: A Force Management Approach*, Santa Monica, Calif.: RAND Corporation, MG-131-AF, 2005. As of March 16, 2009:
http://www.rand.org/pubs/monographs/MG131/

Goodman, Glenn W., Jr., "A Stacked Deck: Intel Officers Find It Tough to Advance Beyond Colonel," *Air Force Times,* August 22, 2005.

Gotz, Glenn A., and John McCall, *A Dynamic Retention Model for Air Force Officers: Theory and Estimates*, Santa Monica, Calif.: RAND Corporation, R-3028-AF, 1984. As of March 16, 2009:
http://www.rand.org/pubs/reports/R3028/

Gotz, Glenn A., Michael G. Shanley, Robert A. Butler, and Barry Fishman, *Estimating the Costs of Changes in the Active/Reserve Balance*, Santa Monica, Calif.: RAND Corporation, R-3748-PA&E/FMP/JCS, 1990. As of March 16, 2009:
http://www.rand.org/pubs/reports/R3748/

Gresh, D. L., D. P. Connors, J. P. Fasano, et al., "Applying Supply Chain Optimization Techniques to Workforce Planning Problems," *IBM Journal of Research and Development*, Vol. 51, No. 3, 2007, pp. 251–263.

Handel, Michael J., "Skills Mismatch in the Labor Market," *Annual Review of Sociology,* Vol. 29, 2003, pp. 135–165. As of March 24, 2009:
http://arjournals.annualreviews.org/doi/pdf/10.1146/annurev.soc.29.010202.100030

———, *Worker Skills and Job Requirements: Is There a Mismatch?* Washington, D.C.: Economic Policy Institute, 2005.

Harrell, Margaret C., Harry J. Thie, Peter Schirmer, and Kevin Brancato, *Aligning the Stars: Improvements to General and Flag Officer Management*, Santa Monica, Calif.: RAND Corporation, MR-1712-OSD, 2004. As of March 16, 2009:
http://www.rand.org/pubs/monograph_reports/MR1712/

Headquarters, U.S. Air Force, *14N Training & Force Management Issues*, April 26, 2006.

Leonard, Henry A., J. Michael Polich, Jeffrey D. Peterson, Ronald E. Sortor, and S. Craig Moore, *Something Old, Something New: Army Leader Development in a Dynamic Environment*, Santa Monica, Calif.: RAND Corporation, MG-281-A, 2006. As of March 16, 2009:
http://www.rand.org/pubs/monographs/MG281/

Lightfoot, James E., et al., *Learning with Professionals: Selected Works from the Joint Military Intelligence College,* Washington, D.C.: Joint Military Intelligence College (U.S.), Center for Strategic Intelligence Research, 2005.

Moore, S. Craig, *Demand and Supply Integration for Air Force Enlisted Work Force Planning: A Briefing*, Santa Monica, Calif.: RAND Corporation, N-1724-AF, 1981. As of May 7, 2009:
http://www.rand.org/pubs/notes/N1724/

Moore, S. Craig, and Marygail Brauner, *Advancing the U.S. Air Force's Force-Development Initiative*, Santa Monica, Calif.: RAND Corporation, MR-545-AF, 2007. As of March 16, 2009:
http://www.rand.org/pubs/monographs/MG545/

Moore, S. Craig, James S. Kakalik, Deena R. Benjamin, and Richard E. Stanton, *Choosing Force Structures: Modeling Interactions Among Wartime Requirements, Peacetime Basing Options, and Manpower and Personnel Policies*, Santa Monica, Calif.: RAND Corporation, P-7973, 1996. As of March 16, 2009:
http://www.rand.org/pubs/papers/P7973/

National Commission on Terrorist Attacks upon the United States, *The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks upon the United States*, New York, N.Y.: W. W. Norton & Company, July 2004.

Naveh, Y., Y. Richter, Y. Altshuler, D. L. Gresh, and D. P. Connors, "Workforce Optimization: Identification and Assignment of Professional Workers Using Constraint Programming," *IBM Journal of Research and Development,* Vol. 51, No. 3/4, 2007, pp. 263–279.

Palmer, Adele R., and C. Peter Rydell, *Developing Cost-Effectiveness Guidelines for Managing Personnel Resources in a Total Force Context: Executive Summary*, Santa Monica, Calif.: RAND Corporation, R-4005/2-FMP, 1991. As of March 16, 2009:
http://www.rand.org/pubs/reports/R4005.2/

Robbert, Albert A., Steve Drezner, John E. Boon, Jr., Lawrence M. Hanser, S. Craig Moore, Lynn M. Scott, and Herbert J. Shukiar, *Integrated Planning for the Air Force Senior Leader Workforce: Background and Methods*, Santa Monica, Calif.: RAND Corporation, TR-175-AF, 2004. As of March 16, 2009:
http://www.rand.org/pubs/technical_reports/TR175/

Robbert, Albert A., William A. Williams, and Cynthia R. Cook, *Principles for Determining the Air Force Active/Reserve Mix*, Santa Monica, Calif.: RAND Corporation, MR-1091-AF, 1999. As of March 16, 2009:
http://www.rand.org/pubs/monograph_reports/MR1091/

Rostker, Bernard D., National Defense Research Institute, Charles Robert Roll, Jr., Marney Peet, Marygail K. Brauner, Harry J. Thie, Roger Allen Brown, Glenn A. Gotz, Steve Drezner, Bruce W. Don, Ken Watman, Michael G. Shanley, Fred L. Frostic, Colin O. Halvorson, Norman T. O'Meara, Jeanne M. Jarvaise, Robert Howe, David A. Shlapak, William Schwabe, Adele R. Palmer, James H. Bigelow, Joseph G. Bolten, Deena Dizengoff, Jennifer H. Kawata, Hugh G. Massey, Robert Petruschell, S. Craig Moore, Thomas F. Lippiatt, Ronald E. Sortor, J. Michael Polich, David W. Grissmer, Sheila Nataraj Kirby, and Richard Buddin, *Assessing the Structure and Mix of Future Active and Reserve Forces: Final Report to the Secretary of Defense*, Santa Monica, Calif.: RAND Corporation, MR-140-1-OSD, 1992. As of March 16, 2009:
http://www.rand.org/pubs/monograph_reports/MR140-1/

Schiefer, Michael, Albert A. Robbert, Lionel A. Galway, Richard E. Stanton, and Christine San, *Air Force Enlisted Force Management: System Interactions and Synchronization Strategies*, Santa Monica, Calif.: RAND Corporation, MG-540-AF, 2007. As of March 16, 2009:
http://www.rand.org/pubs/monographs/MG540/

Thie, Harry J., Margaret C. Harrell, Roland J. Yardley, Marian Oshiro, Holly Ann Potter, Peter Schirmer, and Nelson Lim, *Framing a Strategic Approach for Joint Officer Management*, Santa Monica, Calif.: RAND Corporation, MG-306-OSD, 2005. As of March 16, 2009:
http://www.rand.org/pubs/monographs/MG306/

Treverton, Gregory F., *The Next Steps in Reshaping Intelligence*, Santa Monica, Calif.: RAND Corporation, OP-152-RC, 2005. As of March 16, 2009:
http://www.rand.org/pubs/occasional_papers/OP152/

Treverton, Gregory F., and C. Bryan Gabbard, *Assessing the Tradecraft of Intelligence Analysis,* Santa Monica, Calif.: RAND Corporation, TR-293-CCNI(A), 2008. As of March 16, 2009:
http://www.rand.org/pubs/technical_reports/TR293/

U.S. Air Force, *Officer Professional Development*, Vol. 1, *Total Force Development (Active Duty Officer)*, AFI 36-2640, January 23, 2004.

U.S. Air Force, Air Force Personnel Center, *Officer Career Path Guide,* undated. Available from Valpo AFROTC, Valparaiso University, Valparaiso, Ind. As of March 16, 2009:
www.valpo.edu/afrotc/Career%20Path%20Guide.doc

U.S. Department of Defense, *Report of the Defense Science Board Advisory Group on Defense Intelligence: Operations Research Applications for Intelligence, Surveillance and Reconnaissance (ISR),* Washington, D.C.: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, January 2009.

Vernez, Georges, S. Craig Moore, Steven Martino, and Jeffrey Yuen, *Improving the Development and Utilization of Air Force Space and Missile Officers*, Santa Monica, Calif.: RAND Corporation, MG-382-AF, 2006. As of March 16, 2009:
http://www.rand.org/pubs/monographs/MG382/

Voelker, Michael, "Optimizing the Human Supply Chain," *Intelligent Enterprise,* January 1, 2006. As of March 24, 2009:
http://www.intelligententerprise.com/showArticle.jhtml?articleID=175002433