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WHO IS THE SENIOR CIVILIAN
AIR FORCE LOGISTICIAN?

THESIS

Dawn L. Wilson
GS-12, USAF

AFIT/GLM/LSM/85S-83

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WHO IS THE SENIOR CIVILIAN AIR FORCE LOGISTICIAN?

THESIS

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the

Requirements for the Degree of

Master of Science in Logistics Management

Dawn L. Wilson, B.B.A.

GS-12, USAF

September 1985

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— Dawn L. Wilson

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Abstract

Today's Air Force logistician must be able to manage the operation and support of weapon systems from a total system perspective. Lt Gen Leo Marquez, Deputy Chief of Staff, Logistics and Engineering, HQ USAF, has suggested senior logisticians may be unprepared to manage weapon systems due to a lack of general, "total system" skills. These senior logisticians may actually be specialists in only one of the core logistics functions, i.e., supply, maintenance, transportation, contracting, or logistic planning. Thus, the objective of this research was to determine whether senior civilian logisticians are specialists or generalists.

A survey was sent to all GS/GM-15s and Senior Executive Service in the Logistics Management Specialist (-346) job series. The survey information was individually reviewed by a panel of five experts and each respondent was classified as either a specialist or generalist. Subsequent analysis of the panel's results yielded an empirical description of today's senior civilian Air Force logisticians. The panel's findings, a composite description of senior logistics managers, and suggested Air Force applications are presented.

WHO IS THE SENIOR CIVILIAN AIR FORCE LOGISTICIAN?

I. Introduction

General Issue

Today's Air Force logistician must be able to manage the operation and support of weapon systems from a total system perspective. The validity of "total system management" is emphasized within the definition of military logistics as a "set of activities which, taken together, constitute a system for creating, supporting, and operating military forces on the battlefield" (21:I-2). Therefore, it is clear that thinking of logistics merely in terms of the individual functions of purchasing, supplying, transporting and maintaining provides a disjointed picture of what should be an interrelated and coordinated activity. Rather, the core logistics functions, namely maintenance, supply, transportation, contracting and logistic planning, (27:1), should join to produce the military logistics system, "the totality of the processes, flows, and actions performed by the organizations and activities within the logistics environment" (17:4).

The new weapons currently in the Air Force inventory involve such high technology and sophistication that they challenge the logistician and at the same time enhance

his or her essentiality. Lt Gen Leo Marquez, Deputy Chief of Staff, Logistics and Engineering, HQ USAF, has emphasized a necessary commitment to the logistics aspects of air power. Indeed, the awareness of that essentiality has led to a doubling of funding for reliability and sustainability since 1981 (25:9).

Because of the important role of logistics, General Marquez has expressed concern that those individuals reaching senior logistics positions are unprepared to manage due to what he terms "stovepiping" in specialized functions (25:10). The typical senior logistics manager (i.e., a colonel in AFSC 66XX or a GS/GM-15 and above in job series -346, Logistics Management Specialist) may actually be a specialist in such areas as maintenance, supply, or transportation. However, according to General Marquez, the Air Force needs generalists, not specialists, who can effectively organize and coordinate the actions of functional specialists. He contends that only through experience and training in several areas can the logistics manager better understand and, therefore, better manage the complex logistics system.

Specific Problem

General Marquez has stressed that there appears to be a lack of general, "total system" skills in today's senior military logistics officers. It is important to

note that civilian logisticians comprise a significant portion of Air Force manpower; about 90 percent of the AFLC work force is civilian (21:III-3). It is therefore feasible to suspect that civilian specialists are filling some senior logistics management positions in the Air Force.

A total commitment to the logistics aspects of air power requires a push for logistics management enhancement. A first step toward logistics management enhancement is an analysis of the senior civilian logistician population. That analysis must begin with a basic description of senior logistics managers. Thus, the purpose of this research was to describe the civilian Air Force logistics manager at the GS/GM-15 grade, and above, through identification of overall experience, background, and training levels. Based on the findings, it will be possible to determine whether generalists or specialists fill senior civilian logistics management positions.

Background

A review of literature on the concept of "logistics" yielded two unquestionable facts. Historically, logistics has always been difficult to understand and has been, until recently, a virtually ignored aspect of the nation's defense. According to Martin van Crevelt, author of Supplying War; Logistics from Wallenstein to Patton, logistics has historically been ignored in favor of

in-depth studies on strategy and tactics. This was so in spite of the fact that "logistics make up as much as nine-tenths of the business of war . . ." (38:231). For instance, although Napoleon was thought to have initially introduced logistics as a field of warfare, historians have typically chosen to overlook the logistical efforts he required to support 200,000 soldiers moving at a pace of fifteen miles a day (38:2).

During research for his 1970 dissertation, Lt Col Graham Rider found confusion existed over the definition of logistics from a military standpoint. Many military sources defined and explained the concept of logistics based on their individual experiences.

Rider noted that in 1854 the French theorist Baron de Jomini, regarded by many as the Father of Logistics, made logistics part of a trinity equal in importance to strategy and tactics and called it a "new science which will not only be that of the staff, but that of generals-in-chief" (35:6). Definitions of the elements in Jomini's trinity were provided by Capts Charles Carpenter and Stanley Collins in their master's thesis entitled Air Force Logistics: A Historical Perspective (1940-1983). Strategy is the "methodological planning for mission achievement . . ."; tactics are the "methodologies for implementing strategy"; and logistics "provides power by making resources

available to execute the plans conceived in strategic planning" (8:4-5).

It was another one hundred years after Jomini, when the logistical planning problems of World War II were being analyzed, that the entire military sector realized their inadequate knowledge of logistics. In 1955 the Air Force Institute of Technology (AFIT) began a program to train logistics managers (9:39). The program was initiated because military leadership believed Air Force personnel working in logistics did not have adequate knowledge of logistics concepts. From that first program grew the current School of Systems and Logistics which educates DOD managers to help meet the challenges of a constantly changing logistics environment (9:39).

Lieutenant Colonel Rider derived a definition of military logistics comprised of three different aspects: work functions, system processes, and socioeconomic functions. Originally, Rider cited nineteen different constructs (an idea expressed as word-symbol) for the work-functions of logistics. His methodology accepted those constructs named by a majority of at least ten different sources (35:72).

The work-functions aspect of logistics resulting from his analysis were as follows (35:69,73):

1. Traffic Management (Transportation)

2. Supply

   a. Procurement

   b. Warehousing

   c. Inventory Control

   d. Order-Processing

   e. Disposal

   f. Services

3. Maintenance

4. Facilities Engineering

To ensure a clear understanding of these findings, definitions for the four basic functions were extracted from the Compendium of Authenticated Systems and Logistics Terms, Definitions and Acronyms published by the School of Systems and Logistics, AFIT, in 1981.

1. Transportation--"the movement of persons and things and the means of accomplishing that movement" (as stated in AFR 69-8, Nov 74) (1:714).

2. Supply--"the procurement, distribution, maintenance while in storage, and salvage of supplies, including the determination of kind and quantity of supplies" (1:671). Supply consists of two phases:

   a. Producer Phase--"that phase of military supply which extends from determination of procurement schedules to acceptance of finished supplies by the military services" (1:671).

b. Consumer Phase--"that phase of military supply which extends from receipt of finished supplies by the military services through issue for use or consumption" (JCS Pub 1) (1:671).

3. Maintenance--

> . . . all actions necessary for retaining material in or restoring it to serviceable condition. Maintenance includes servicing, repair, modification, modernization, overhaul, inspection, condition determination, corrosion control, and initial provisioning of support items. (AFR 66-29, Aug 69) (1:407)

4. Facilities Engineering--

> . . . those activities relating to the repair, rehabilitation and maintenance of buildings, structures, grounds, utility systems and other real property; fire protection measures thereof; the construction of alterations, additions and extensions to such existing facilities; operation of utilities, and performance of insect, rodent, and pest control measures. (AR 310-25, Sep 75) (1:281)

In terms of the second aspect, system processes, logistics was viewed as requirements, acquisition, distribution and maintenance (35:74). Rider defined each process as follows:

1. Requirements--

> . . . in terms of quantity, quality, time, and place which are necessary to meet demands placed upon the logistics system. It is the process of translating those demands into specific goods and services which will, in turn, satisfy the demands. (35:78)

2. Acquisition--

> . . . the process of procuring and delivering goods and services to meet requirements which have been determined in terms of quantity, quality, time, and place. It involves decisions to make or buy. It includes

inspection and acceptance to insure that requirements have been met. (35:78)

3. Distribution--

. . . the movement of goods and services from point of procurement or production to consumption. It involves transportation, warehousing, and warehouse location decisions as well as decisions regarding what, when, and where services are provided. It also involves the termination, or disposal, of services and goods no longer required. (35:79)

4. Maintenance--(previously defined).

Rider defined the third aspect of logistics, socio-economic functions, as physical supply and physical distribution (35:86).

A refinement of Rider's definition of "logistics" was offered a few months later (December 1970) by Lt Col Graham Rider, Maj Robert Canady, and Capt Lonnie Ostrom in an AFIT report on management education. In that report, the work-functions of logistics were pared down to maintenance, supply, transportation, and contracting (7:25). Further research reflected a general consensus with these four specialties and a fifth specialty, logistic planning, as the functions of logistics (27:1). The definitions of "contracting" and "logistic planning" are provided below:

1. Contracting--

. . . purchasing, renting, leasing (including leasing of real property under 40 U.S.C. 472), or otherwise obtaining supplies or services. Contracting includes description (but not determination) of supplies and services required, selection and solicitation of sources, preparation and award of contracts, and all phases of contract administration. (DAC 76-18, 12 Mar 1979) (1:167)

2. Logistic Planning--

> . . . the determining of the logistic posture to be established for support of a weapon/support system program based upon prescribed mission objectives to be achieved. (AFM 11-1, 2 Jan 1976, and AFP 800-7, date unknown) (1:399)

Despite a basic agreement on the core functions of logistics, experts in the logistics field have continued to express their concern over an apparent lack of knowledge and experience. Jerome G. Peppers, Jr., former Associate Dean of the School of Systems and Logistics, AFIT, noted that the Air Force has continued development of outstanding specialists in the Air Force but has failed to develop real logisticians, i.e., generalists who could "bring together the actions and expertise of the specialists" (33:1). Dean Peppers added that the ensuing problem was a focus on the speciality world as the whole world, a tendency to micro-manage, and, worst of all, a loss of mission identification (33:2). Lack of general logistics skills was not found to be confined solely to the Air Force either. As Gen Bruce C. Clarke, U.S. Army (retired), stated,

> We too often get caught up in our specialties--supply officer, transportation officer, food service officer--and forget that our primary concern should be to train our people to be sharp combat soldiers. (10:36)

The vast complexity of the logistics concept was reiterated in 1979 by Col Fred Gluck, USAF, retired, when he pointed to a "logistics unawareness" (16:22):

> Although the defense establishment has become enamored with the term logistics, there is very little evidence of any common understanding of its meaning and even less of its concept. It is a widely used term that has come to mean many things to many people, and in so doing has no relevant meaning at all. . . . Military schools understandably do not teach logistics or its concept. They deal instead with the various technical/specialized activities within the logistics environment (maintenance, supply, etc.) and the many processes such as: integrated logistics support; life cycle cost; and foreign military sales.

According to Colonel Gluck, "the responsibility of military logistics is to create and sustain some level of military capability" (16:23). He pointed to weapon system design deficiencies (the fact that every system consumed fuel and munitions and had less than 100 percent reliability) as the reason for the logistics system's very existence. Overcoming design deficiencies creates military capability (16:24).

While Colonel Gluck viewed the logistics environment of a single organization as consisting of "a group of specialized activities, management, and other resources," the total military logistics objective was

> . . . to plan, integrate, and control the actions of a group of specialized activities in accomplishing an objective which is greater in scope and magnitude than each can achieve individually. (16:24)

Thus, he felt most problems in the logistics environment were management problems (planning, integrating, and controlling), rather than technical ones.

In response to Colonel Gluck's views, Dr. Benjamin Ostrofsky, Professor of Industrial Engineering and of

Systems and Operations Management at the University of Houston, disagreed that military logistics consisted of the actions of planning, integrating, and controlling. Rather, he believed "military logistics not only manages in the technical sense, it also becomes involved technically" (31:4). He felt most of the management problems of logistics were the result of

> . . . inadequate technical knowledge on the part of management. . . . The management role and technical competence have some limited degree of exchange (or tradeoff) but both are required for the logistics system to be effective. (31:4)

But how do logisticians gain technical proficiency in all (or several) logistics-related functions? In research conducted at AFIT in 1969, Mr. John Malouf and Capt Donald Gober stated that "varied experience gained in different geographical areas should upgrade the proficiency of the civilian logistician" (18:6). Ironically, their results revealed a general lack of mobile civilians within AFLC from which an adequate supply of qualified manpower could be selected (18:123).

Malouf and Gober found that the civilian Air Force employee typically remained at one military location and became a specialist because job rotation was not mandatory and was not encouraged as with the officer through repeated permanent changes of station. Since the experienced specialist was an asset at the working level, he or she

was not encouraged to cross-train in logistics-related functions.

In contrast, Capt James Ross and Mr. Earl Steiner found that specialization was an advantage for the civilian deputy director at the GM-15 level. In addition to providing continuity (due to staying in the same position for several years), the senior level logistician provided necessary specialized knowledge (36:3).

Since the Malouf and Gober study, there has been more documented emphasis placed on mobility. AFR 40-303, September 1976, states (12:1):

> Throughout the Air Force a related need often exists that requires the best qualified employees to be reassigned without a change in grade, reduction in rank or compensation to vacant positions in other geographic locations. . . . Depth and breadth of employee experience are important factors in determining best qualified candidates for referral to Air Force organizations. To acquire this depth and breadth of experience for career progression and executive development purposes, employees may need to become involved in geographic relocations at various times during their career . . . selection for mobility assignment is a recognition of, and tribute to, the person's skills, capability, and potential.

In an effort to assure the availability of logisticians possessing broadly developed skills, the Air Force initiated the Logistics Civilian Career Enhancement Program (LCCEP) in October 1980 (39:11). AFR 40-110, Volume IV, provides guidance to enhance the careers of Air Force civilian employees filling logistics positions and states the purpose of LCCEP (13:1-1):

> The Logistics Civilian Career Enhancement Program (LCCEP) is designed to encourage and manage the development of logistics personnel to their fullest potential to meet the mission needs of the Air Force. The LCCEP provides a means of planned career progression through competition to senior-level Air Force logistics positions.

The LCCEP currently manages approximately 2,000 designated positions in thirty different occupational series, such as logistics management, production control, equipment specialist, supply, transportation and quality assurance. Figure 1 lists the exclusive LCCEP job series and potential LCCEP series. Exclusive LCCEP job series are those permanent, full-time, competitive positions (except Air Reserve Technician positions) considered fully qualified for LCCEP classification. Potential LCCEP series are those positions coded as including performance of logistics-related duties 50 percent or more of the time (13:1-2,3; 29:Atch 2, p. 1). In October 1984, LCCEP expanded to include selected GS-09 through GS-11 Transportation (21XX) job series to ensure "a continuing source of highly qualified candidates for the senior logistics positions within the Air Force" (32:17). All employees meeting the grade and job series requirements specified in Figure 1 are encouraged to register and compete for designated program position vacancies.

In its report to the LCCEP Policy Council Meeting in February 1985, an Ad Hoc Review Group reiterated the program's objectives (23:8):

Exclusive LCCEP Series

GS-12 through GM-15

346 - Logistics Management Specialist
1104 - Property Disposal
1152 - Production Control
1670 - Equipment Specialist
1910 - Quality Assurance
2001 - General Supply
2003 - Supply Program Management
2005 - Supply Clerical and Technician
2010 - Inventory Management
2030 - Distribution Facilities & Storage Management
2032 - Packaging
2050 - Supply Cataloging

GS-09 through GM-15 (Transportation Series)

2101 - Transportation Specialist
2102 - Transportation Clerical Assistant
2130 - Traffic Management
2131 - Freight Rate
2132 - Travel Assistant
2134 - Shipment Clerk
2135 - Transportation Loss & Damage Claims Examiner
2144 - Cargo Scheduling
2150 - Transportation Operations
2151 - Dispatching

Potential LCCEP Series

GS-12 through GM-15

301 - Administrative and Technical
340 - Program Management
343 - Management Analysis
345 - Program Analysis
1101 - General Business & Industry
1150 - Industrial Specialist
1601 - Industrial Production Manager
1640 - Facility Management

Fig. 1. LCCEP Series (13:1-2,3; 29:Atch 2, p. 1)

1. Produce highly skilled professional logisticians.

2. Identify high-potential people.

   -- Foster increased education.

   -- Foster multi-functional experience.

   -- Foster multi-organizational experience.

3. Encourage self-development.

4. Provide standardized structure for career development.

5. Foster professionalism.

Central to the LCCEP objectives is its emphasis on employee movement among the seven logistics career families comprising the Logistics Career Group. The logistics career families are as follows (13:A-1):

1. Transportation
2. Supply and Distribution
3. Maintenance
4. Materiel Management
5. International Logistics
6. Acquisition Logistics
7. Logistics Plans

According to AFR 40-110, Attachment 1,

> . . . multiple family experience aids in developing employees into well-rounded logisticians. This type of background is particularly advantageous at upper management levels (GS/GM-13 and higher). (13:A-1)

Guidance on experience as well as education and training considered fundamental to logistics career development at specific grade levels within specific logistics career functions is provided in Master Development Plans (MDPs) developed by the Office of Civilian Personnel Operations (OCPO) (13:A-17). Figure 2 is the "Logistics Executive Development Core Courses MDP" which contains the management and executive courses common to the logistic career families listed above (13:A-18). It should be noted that completion of any one of the courses listed for each grade level satisfies suggested career development at that point in a logistician's career (13:A-17). A synopsis of some of the course categories will be provided later in this chapter.

Another stated LCCEP objective is multi-organizational experience. During the LCCEP Policy Council Meeting in February 1985, an Air Force Audit Agency report suggested OCPO should

> . . . develop more responsive procedures to identify career broadening candidates . . . the number of candidates for career broadening assignments involving a geographical move must be increased. (23:5)

Within the context of LCCEP, career broadening falls into two categories: (1) experience "received through local command-sponsored developmental assignments" and (2) experience through assignment to positions "postured at any echelon of command from base level to Secretary of the

GRADE	DESIRABLE TRAINING	PROFESSIONAL MILITARY EDUCATION (PME)
SES GS/GM 16-18	Federal Executive Institute, Top Management Seminar (OPM) ABK Brookings Institution, Educational Programs for Federal Executives (OPM) ADB Information Management for Senior Executives (DMET) JRF Defense Resources Mgt Systems (Flag/Gen) Naval Postgraduate School (DMET) ADM Kepner-Tregoe Executive Course (OPM) ADR	
GS/GM-15	Industry Financial Mgt for Program Mgrs (Program Mgr Level) (DMET) JRO Federal Executive Institute, Senior Executive Education Program (OPM) ABA Executive Round Table (DMET) ADL Federal Executive Institute, Executive Leadership and Mgt Programs (OPM) ABC Executive Refresher Course in Program Mgt (DMET) ACD Federal Executive Development Program (OPM) ADA	Senior PME Resident Programs: National War College (NDU) ACT Air War College (AU) ACR Army War College (AWC) ACB Naval War College (NWC) ACI Ind College of the Armed Forces (NDU) ACU
GS/GM-14	Administration of Public Policy (OPM) AAD Public Program Mgt (OPM) AAC National Economy and Public Policy (OPM) AAE Management Development Seminar (OPM) AAL Advanced Mgt Course (DMET) BCA Emerging Trends in Mgt Technology (DMET) BBY	
GS/GM-13	Computer Orientation for Intermediate Executives (DMET) QRB Management of Managers Course (DMET) BBZ Managerial Assessment Orientation Seminar (DMET) BB2 Ind Fin Mgt for Prgm Mgrs (Intermediate Mgrs Level) (DMET) JRP Seminar for New Managers (OPM) AAA Dynamics of Employee Behavior (DMET) CBA Kepner-Tregoe Government Mgt Seminar (OPM) BDW Kepner-Tregoe/GENCO Mid-Manager Course (OPM) BDV	Senior PME (Correspondence or Seminar) See Resident Courses Above Intermediate PME Resident, Correspondence or Seminar Programs: Air Command and Staff College (AU) ACS Armed Forces Staff College (AFSC) AC2 Ind College of the Armed Forces (NDU) ACU
GS-12	Management Development Seminar (DMET) CBC Education for Public Management (OPM) BAU Defense Resource Mgt Systems Course, Naval Postgraduate School (DMET) BAI Logistics Management (AFIT) JOG Logistics Executive Development (DMET) ACH Program Management (DMET) JRL	

Fig. 2. Logistics Executive Development Core Courses Master Development Plan (13:A-18)

Air Force level," usually two years in length. The career broadening positions may be assigned to gain general background knowledge enhancement or to gain "sharply focused skills to apply in a specific situation" (13:9-1).

Based on AFLC recommendations, the LCCEP Policy Council took action in April 1985 to "place stronger emphasis on the career development aspects of the program" (24). Prior to this time, an inventory of individuals identified as high-potential employees was kept from which specific career executive positions (called cadre reserved positions) were filled. The inventory is referred to as the "Logistics Executive Cadre" (13:1-1). Although the cadre still exists, it is now used only to identify those individuals receiving first consideration for training, education, and career development/broadening rather than as a pool from which to fill designated positions (29:Atch 1). Similarly, it was acknowledged that the career planning needs of senior level logisticians differed from those of lower grades. Thus, GM-15s have been eliminated from the Cadre. Instead, OCPO and local Career Development Planning Groups (composed of senior civilian and military logistics managers) are presently establishing procedures for "identifying and grooming GS-15 level personnel for promotion into the Senior Executive Service" (23:9).

The LCCEP Policy Council also directed OCPO and a Career Development Panel to continue to pursue establishment of a professional logistics job series and a means of recognizing the professional logistician "such as Certification by the Society of Logistics Engineers" (SOLE) (23:12).

The purpose of SOLE is

> . . . to engage in educational, scientific, and literary endeavors to advance the art of logistics technology and management, and related arts and sciences. (3:7)

The society strives to promote professionalism in logistics and to improve the knowledge base of its members through the exchange of information in logistics-related areas. AFR 40-110 stresses the values of participation in professional organizations such as SOLE toward self-development. Moreover, attendance at meetings as well as reading the society's periodicals are continuing sources of new ideas and concepts which help expand knowledge in the dynamic field of logistics (13:A-17).

Ostensibly, SOLE's active search for ways to further solidify the professional status of logisticians led to initiation of a program known as Certified Professional Logistician (CPL) in 1972 (3:7). The "total system perspective" of logistics is nowhere more apparent than within the framework of the CPL examination itself. The written examination required for this certification

consists of four parts: Part I--Systems Management; Part II--System Design and Development; Part III--Acquisition and Production Support; and Part IV--Distribution and Customer Support (3:7).

Based on the dynamic nature of the logistics environment, SOLE expanded earlier military definitions of logistics to:

> . . . the art and science of management, engineering, and technical activities concerned with requirements, design, and supplying and maintaining resources to support objectives, plans, and operations. (5:10)

This definition supports the concept of the life-cycle approach to logistics whereby decisions concerning ongoing weapon systems support must be made during the early phases of system planning and conceptual design (5:10). Thus, the life-cycle approach to logistics requires an "overall comprehensive knowledge of the field"; certification demonstrates knowledge in certain fundamental areas as specified in Figure 3 (5:11). According to Benjamin S. Blanchard, Assistant Dean for Engineering Extension at Virginia Polytechnical Institute and State University and past Vice President-Technical of SOLE, "the CPL is considered as the ultimate level of achievement in the overall logistics domain" (3:7).

It should be noted, SOLE emphasizes an <u>education</u>, not specific training requirements, as a means of

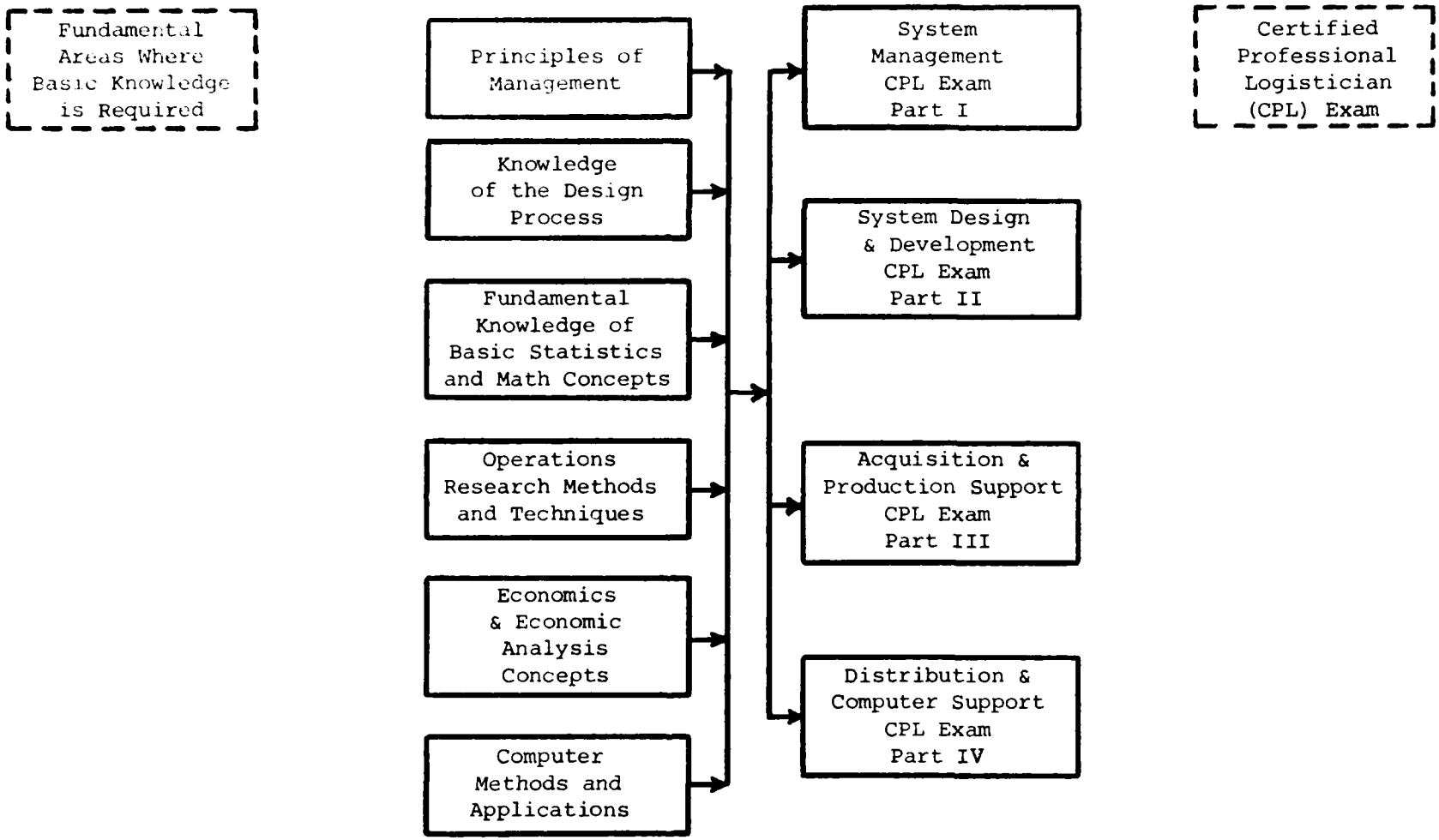

Fig. 3. Logistics Certification Requirements (5:11)

maintaining currency within the logistics profession. As Blanchard asserts,"

> . . . as systems and products become more complex in the future, logistics activities will further increase and the needs for education will become more relevant than in the past. (4 :18)

Ironically, the academic arena has fostered the production of logisticians with business degrees who are necessarily occupied with the traditional concepts of supply and transportation (30:29). Graduate degrees from the business college encourage further specialization in such areas as warehousing and inventory control. Although engineering colleges tend to focus on system design, they usually only include logistics "vital to the functioning of the hardware" and usually redefine "total system" for every problem (30:30-31). The academic environment promotes specialty programs and degrees. Currently, there are only about thirty-nine civilian colleges and universities offering undergraduate degrees in logistics; even fewer offer graduate degrees in logistics (40:1).

According to Dr. Benjamin Ostrofsky, Professor of Industrial Engineering and of Systems and Operation Management at the University of Houston, industry and the military need hybrid logisticians who can mesh together both business and engineering curricula while emphasizing system life cycle and associated support requirements. Dr. Ostrofsky contends the rise in the complexity of

technology will force the eventual development of the logistics generalist (30:32).

Aside from obtaining a formal degree in logistics, the joint services offer Professional Military Education (PME) courses as well as Professional Continuing Education (PCE) courses designed to enhance logistics-related skills and decision-making processes in the defense environment. PME such as the National War College and the Industrial College of the Armed Forces (ICAF) concentrates on a variety of studies, the principal areas being (15:5-F-1):

1. The Environment of National Security--explains economic theory, policies, and issues related to resource adequacy for defense; assesses the U.S. position in the world economy and how political systems influence U.S. conduct in world affairs.

2. Resources for Defense--analyzes the importance of energy, transportation, and technology to the U.S. economy and national security; identifies our increased dependence on foreign sources for critical resources.

3. Defense Decision-Making--discusses the organization and management of the Department of Defense; explains requirements determination and decision-making procedures relative to resource allocation.

4. Executive Management--identifies the traditional as well as newer management approaches with "an emphasis on human resource management"; examines the

weapon system acquisition process and management of defense logistics; analyzes mobilization planning.

There are approximately sixty-five PCE courses currently offered by the Air Force (and many more through other agencies of DOD) from one to seven weeks in duration with emphasis on the operational areas of systems acquisition, logistics, procurement, supply, and maintenance. Analysis of PCE courses offered by AFIT (the first three categories) resulted in the following description:

1. Systems--provide emphasis on acquisition planning and analysis; include simulation techniques as applied to weapon system development (15:2-A-28); provide details of configuration management and documentation (15:2-A-29); management of technical orders (15:2-A-35); provide concepts of performance measurement, life cycle cost analysis, and financial management (15:2-A-37,38).

2. Logistics--show interface between support planning and the systems engineering process; provide techniques used in making decisions relevant to integrated logistics support; familiarize students with the structure, functions and processes of Air Force logistics regarding materiel management (15:2-A-28); emphasize the relationships between AFLC, AFSC, and ALCs pertaining to weapon system development, acquisition and logistics support (15:2-A-34); provide maintenance managers with a background

of executive skills for management of base level maintenance (15:2-A-36); emphasize the interrelationship of the various logistics functions (15:2-A-36); provide training in the use of DYNA-Metric modeling in support of "AFLC's combat analysis capability (CAC) program" (15:2-A-39); use hands-on exercises involving hypothetical war plan scenarios, strategies and contingency procedures and give understanding of how logistics contributes to wartime requirements (15:2-A-40); help students comprehend the rationale behind possible logistic decisions (15:2-A-54); make use of performance measurements and introduce "fundamental behavior characteristics of logistical systems" (15:2-A-55); provide understanding of the provisioning associated with weapon system acquisition and management focus on system support (15:2-A-61); teach procedures for conducting and documenting the analysis of weapon systems/equipment and associated maintenance requirements (15:2-A-65); focus on the role of the system program manager and his/her interaction with maintenance, distribution, item management, contracting, budgeting, and financial management (15:2-A-69).

3. Procurement--provide basic knowledge of skills necessary in managing government contracts as well as a knowledge of those skills used in solving operational problems (15:2-A-40,41); introduce techniques for reducing development/weapon system costs; show interrelationship

between the engineer, the buyer, and contract administrator (15:2-A-43); emphasize legal principles and sources of contract law (15:2-A-47); provide basic elements of the necessary relationship between government and industry to effectively "integrate production management concerns into life cycle management of complex defense systems" (15:2-A-52); emphasize proper evaluation of contractor production planning (15:2-A-57); provide knowledge of the major manufacturing processes of weapon system production and cost implications of system design (15:2-A-59); emphasize quality control/inspection and new production initiatives (15:2-A-60).

The rather exhaustive research of the LCCEP, SOLE, PME, and PCE courses has provided ample evidence that opportunities for education do exist as a variable substitute for job experience in the logistics environment. Taking advantage of any or all of these opportunities was viewed as a step toward becoming a logistics generalist.

In contrast, one source recommends retaining specialists and promoting their understanding of "how the specialties interact and combine to achieve logistic advantage"; the specialties are "complementary and interdependent" (37:4). In fact, Air Command and Staff College developed an "Initial Assignment Handbook for Logisticians" due for publication in Fall 1985 through Air Force Logistics Management Center (AFLMC) sponsorship. Although the

handbook was intended for use by newly assigned logistics officers (AFSC 66XX), civilian logisticians (in the appropriate job series) should benefit as well from the information on how logistics functions interrelate.

Maj James A. Hoskins, an Air Force researcher, has pointed to the success of teams of specialists in solving tactical and strategic problems and the emphasis that operations research places on the team concept (20:10). In this case, the specialist was considered to be at an advantage when grouped with or when having access to information in other specialist functions. Having the ability to recognize the need for and the interrelationship with other specialties was seen as fundamental to being a qualified senior logistics manager.

Admittedly, there has been controversy over the advantages versus disadvantages of filling senior logistics positions with personnel specializing in areas such as maintenance, supply, transportation, logistic planning and contracting; these areas were recognized as the core logistics functions (27:1). Yet, logically, a logistician possessing a basic understanding of the interrelated functions should be better qualified to effectively manage the complex logistics system.

Based on the literature available, the following specific criteria were identified as relevant to a generalist background in logistics:

1. Multi-functional experience

2. Multi-organizational experience

3. Formal logistics-related education

4. PME/PCE course completion

5. Affiliation with professional logistics organizations (i.e., SOLE)

6. Logistics certification (i.e., CPL)

Thus, this research was undertaken to apply the above criteria to individuals filling GM-15 and SES positions in the -346 job series in order to describe senior logisticians as either generalists or specialists.

Investigative Questions

Identification of the type and amount of experience and training the typical civilian Air Force senior logistician possesses required answers to several specific questions:

1. What does the individual's current logistics position entail?

   a. As indicated by specific job title;

   b. As perceived by the individual.

2. What job experience was acquired prior to the current position?

3. What formal education degrees has the individual completed?

4. What Professional Military Education (PME) and/or Professional Continuing Education (PCE) courses have been completed?

5. What technical training has the individual received?

6. According to the individual, what education, training, and previous job experience best prepared him or her for a senior logistics management position?

More detailed explanation of the above questions and evaluation criteria required for this research effort is provided in Chapter II. Responses to the above questions will determine the types of job experience, education and training of civilians in senior Air Force logistics management positions. The research objective was to test the null hypothesis (H_o) that senior level logistics managers are specialists. The alternate hypothesis (H_a) was that senior level logistics managers are generalists. Proper description will clearly demonstrate whether civilian logisticians are generalists or specialists.

Research Scope and Limitations

For the purposes of this research, senior civilian Air Force logisticians were defined as all GS/GM-15s and Senior Executive Service (SES) which includes GS/GM-16 through -18. The senior level positions considered for analysis were limited to those within the Logistics

Management Specialist (-346) job series. The purpose of the research was to determine whether senior civilian logisticians are generalists or specialists. The research does not make a judgment about the value of being a generalist or a specialist but does present findings which have potential Air Force applications. These suggested applications are presented in Chapter IV.

II. Research Design and Methodology

Introduction

This chapter details the design and methodology of the research effort. Specifically it addresses population definition, evaluation criteria, and the data collection plan necessary to achieve the research objective.

Defining the Population

The population of interest was identified as all GS/GM-15s and Senior Executive Service (SES), which included GS/GM-16 through -18. The senior level positions were limited to those within the -346 job series, Logistics Management Specialist. Referring back to Figure 1, this job series alone encompassed the total logistics system perspective.

A computer listing of all GM-15s, -346 job series, and their locations was obtained from OCPO through the ATLAS Variable Inquiry System; as of 30 April 1985 there were seventy positions throughout the United States (2). A similar list of ten SES positions and locations in the -346 job series was obtained by telephone from HQ AFLC/MPKS on 13 May 1985 (34). Tables I and II, respectively, specify the locations and number of GM-15 and SES positions currently filled and currently assigned to each

TABLE I

GM-15 POSITIONS, -346 JOB SERIES, BY LOCATION (2)

Location	Number Assigned (Filled)
AF Acquisitions Logistics Center (AFALC)	6
AF Logistics Command Logistics Operations Center (AFLC LOC)	5
HQ AFLC	6
HQ AF Systems Command (AFSC)	2
HQ Aeronautical Systems Division (ASD)	1
HQ USAF	3
International Logistics Center (ILC-HQ AFLC)	3
Air Logistics Centers (ALCs)	
Oklahoma City (OC-ALC)	6
Ogden (OO-ALC)	8
San Antonio (SA-ALC)	11
Sacramento (SM-ALC)	7
Warner Robins (WR-ALC)	7
Other	
AF Logistics Management Center (Gunter AFB AL) (acting)	1
AF Logistics Squadron (Norton AFB CA)	1
Cataloging Standards (Battlecreek MI)	1
Data Systems Design (Gunter AFB AL)	1
Pacific Air Forces Command (Hickam HI)	1
TOTAL	70

TABLE II

SENIOR EXECUTIVE SERVICE (SES) POSITIONS,
-346 JOB SERIES, BY LOCATION (34)

Location	Number Assigned (Filled)
AFALC	1
AFLC LOC	1
HQ AFLC	2
HQ USAF	1
OC-ALC	1
OO-ALC	1
SA-ALC	1
SM-ALC	1
WR-ALC	1
TOTAL	10

organization (2;34). Since receipt of the computer listing in May 1985, one GM-15 position at HQ AFLC was vacated; an "acting" GM-15 position at Air Logistics Management Center (AFLMC) was included in the survey population but did not appear on the computer printout.

Due to the small size of the population, data collection from 100 percent of the GM-15s and SES was attempted. However, since a lesser percentage response rate was considered more realistic, calculation of the number of responses required to obtain a 95 percent

desired level of confidence was necessary. Using the population of eighty individuals in the expression (6:25; 22:12),

$$n = \frac{N(Z^2) \times p(1-p)}{(N-1)(d^2) + (Z^2) \times p(1-p)}$$

where

Z = one-half the standard deviation associated with the desired level of confidence (95 percent),

N = the size of the population being surveyed,

n = the number of responses required,

p = maximum response rate factor (.50), and

d = desired tolerance (.05),

the formula yielded a required response rate (sample size) of n = 44.

Evaluation Criteria

Within the context of this research effort, a specialist was initially defined as an individual with job experience and/or education and training limited primarily to one of the five logistics-related functions, i.e., maintenance, supply, transportation, contracting and logistic planning (log plans). Conversely, a generalist was an individual with job experience and/or education and training in two or more of the core functions.

The research objective was to test the null hypothesis (H_0), that senior level logistics managers are

specialists. The alternate hypothesis (H_a) was that senior level logistics managers are generalists.

To test the null hypothesis required measurement of the six criteria identified in Chapter I. The first two criteria, also considered the most significant, encompassed actual work experience. If an individual had remained in the same job field and/or the same organization virtually his or her entire career, that individual was possibly unprepared to effectively manage the coordinating activities of all five core functional specialties.

The next two criteria encompassed education and training. Formal education included completion of a degree program. PME consisted of programs geared toward a broad military overview and a familiarization of logistics as a system. PCE educated the civilian in various types of specialties such as budgeting, and in general categories, such as system management. Technical school was added as a key consideration, since it was assumed that most of the population was forty years of age or older and thus had probably been in the active military prior to entering civil service. This criterion was not one found in the research literature.

The remaining two criteria presented in Chapter I included affiliation with professional organizations (such as SOLE) directly related to the logistics field and certification applicable to the logistics profession (such as

the CPL exam). As mentioned in Chapter I, involvement in logistics-related organizations was considered an excellent source of information leading toward self-development and a broader knowledge base for the professional logistician.

The resulting seven criteria used to differentiate a specialist from a generalist are restated below:

1. Job experience. Experience in primarily one of the core logistics functions was considered specialist-oriented while experience in several functions was generalist-oriented. Experience in more than one job series was also considered generalist-oriented. Multi-organizational experience, geographical and between offices, was a factor impacting the categorization of senior logisticians. More multi-organizational experience means more generalist experience.

2. A college degree in a logistics-related program. A degree with emphasis in an area identical to the individual's career field was considered specialist-oriented while a degree with emphasis in a broad area such as logistics management or systems management was considered generalist-oriented. A degree in a non-logistics program was dealt with on a case-by-case basis. In assessing an individual's college degree, a bachelors was considered more valuable than an associate degree; a masters was considered more valuable than a bachelors, etc. Currency of the education was also a factor (a degree

completed less than five years ago was considered more valuable than the same degree completed fifteen years ago).

3. Technical school, in particular, training received during prior military duty or as a reservist. Training in the same area as the logistician's primary career field was specialist-oriented; training in any of the core areas other than the primary career field was generalist-oriented.

4. PME programs. Completion of programs such as Air Command and Staff College (ACSC), Air War College (AWC), or Industrial College of the Armed Forces (ICAF) was considered generalist-oriented.

5. PCE course. Completion of PCE courses were evaluated by subject category. Participation in courses in the same area as the individual's primary career experience was specialist-oriented; courses outside the career experience were considered generalist-oriented.

6. Certification in a logistics-related area. Certification (such as successful completion of the CPL exam) was viewed as demonstration of a broad logistics knowledge (i.e., generalist-oriented).

7. Membership in logistics-related organizations. Active participation in such organizations as SOLE was considered a means of acquiring broader logistics knowledge than possibly attainable at the workplace; therefore, membership was viewed as generalist-oriented.

Data Collection Plan

The Survey Questionnaire. The logical choice for data collection was the survey instrument or questionnaire, due to the type of data desired (i.e., a demographic profile) and due to population size and nationwide dispersement. A sample of the survey is included as Appendix A.

Care was taken to ensure the survey questions were clear, concise and easy to answer. While some questions requested "yes" or "no" responses, most questions required responses that could be categorized according to the seven criteria above.

The survey instrument was divided into three parts. Part I, Section A, requested job experience. The first five questions were necessary in order to identify the demographical characteristics of senior civilian logisticians (i.e., age, time-in-grade, total years of federal service, etc.). The resulting data was expressed as means, medians, and modes. The remaining questions in Section A, questions 6 through 8, were used to pinpoint the individual's primary career field(s) related to the five core functions of logistics. In particular, question 8 not only requested blocks of job experience by job series and dates, but also asked if the positions held were staff, technician, or manager/supervisor at what organizational level and if the job was LCCEP/LCCEP cadre. The information gathered here made it possible to determine

the overall extent of multi-functional, multi-organizational experience as well as the influence LCCEP initiatives had on the population of interest.

Section B of Part I requested the education and training background of senior civilian logisticians. Thus, the type and level of college education, military training, as well as PME and PCE course completion was determined. Also, the extent of involvement in professional organizations and certification in logistics was measurable. Responses to the last question in this section, question 15, reflected the relative importance of each core function to successful accomplishment of the senior logistician's job. Moreover, the information provided in the previous questions on job experience was compared with responses to question 15 for an assessment of how prepared an individual was to meet the challenges of his/her current position.

Part II of the survey was structured to assess the relative importance of all seven criteria previously described when considering the respondent's current position. The seven criteria were reformatted as subquestions (a) through (k); an "other" criterion, criterion (l), was added for optional inclusive of one or more elements the respondent considered important to his/her particular job. Table III is a list of the twelve resulting criteria specified in the survey. The survey recipients were instructed to weight all twelve criteria for a total of 100 points.

TABLE III

CRITERIA RELEVANT TO SENIOR LOGISTICS MANAGEMENT POSITIONS (SURVEY QUESTION 1, PART II)

Criterion
a. Job experience primarily in any one of the core logistics functions. Please specify function: _____
b. Job experience in more than one of the core specialties.
c. Inherent management skills (regardless of actual job experience).
d. Formal educational degree(s) in any area of study.
e. Formal educational degree(s) in a specific logistics-related area. Please specify major preferred: _____
f. Technical training in a core function which is same specialty as criterion (a).
g. Technical training in core function other than specialty under criterion (a).
h. PME course(s) completion.
i. PCE course(s) in logistics-related area(s).
j. Certification in logistics-related area(s).
k. Membership in logistics-related organization(s).
l. Other criteria you consider important (Please specify): _____ _____ _____

Thus, it was evident which criteria were most/least important to senior logistics job performance from the respondent's perspective. The last question in Part II requested the senior logistician's view of how much time should be spent in each core function to facilitate a working knowledge in that function. Respondents were again allowed an "other" category. The data provided by the respondents was used for comparison with the information in question 8 of Part I.

The final section of questions, Part III, allowed the respondent an opportunity to provide his or her attitudes and perceptions of how well logistics-related education and job experience in several of the core functions had or could enhance the senior level logistician's ability to manage the complex logistics system. This section was optional but was considered a valuable source of senior level insight.

The Survey Pretest. Once the survey was drafted, an interview was conducted with Mr. Lloyd K. Mosemann II, Deputy Assistant Secretary of the Air Force (Logistics and Communications), on 29 March 1985. As a senior level logistician (SES), Mr. Mosemann's responses were sought to pretest or validate the survey instrument. As a result of his recommendations, "materiel management" (one of the seven logistics career families under the LCCEP) was added

to the supply core function for inclusion in the survey (28). Materiel management was defined as follows (1:435):

> [Materiel Management]--the exercise of direction and control of all phases of supply management, including the functions of cataloging, inventory, identification, standardization, requirements determination, procurement, inspection, quality control, storage, distribution, disposal, arrangement for transportation maintenance, mobilization planning, industrial readiness planning, and item management classification. Synonymous with materiel control, inventory control, inventory management and supply management. (DODI 4140.32-M, Mar 1975)

In addition, question 3 of Part II, concerning time required to become knowledgeable in a core function, was revised to avoid confusion initially encountered during the pretest (28).

Measurement Technique. Since the reliability of the survey instrument in determining proper classification of the respondents as specialists versus generalists had not yet been established, a "panel" of experts" was selected to aid in developing a valid measurement technique. The panel members selected were:

1. A retired Air Force Lieutenant General with significant logistics experience.

2. A retired Air Force Colonel with logistics experience at the ALC, HQ AFLC, and HQ USAF levels.

3. An academic administrator with twenty years of DOD job experience.

4. A professor of acquisition management with a total of thirty-eight years of federal service.

5. A retired professor of logistics with over forty years of federal service.

These individuals were chosen based on their broad logistics backgrounds and combination of civilian and military perspectives of the logistics field.

Using the criteria provided in survey question 1, Part II, as a guideline, the panel was asked to individually review each survey response and categorize the corresponding anonymous respondent as a specialist or a generalist based on the respondent's answers to the questions about job experience, education/training, and professional society affiliation/certification. Once all respondents were classified, each of the two resulting groups (specialists and generalists) would be analyzed. By "coding" the data by categories of responses for each question in the survey, it was possible to differentiate the demographics peculiar to each of the two groups. Comparison and contrast of these features assured proper description of those characteristics relevant to specialists in logistics functions compared to those relevant to generalists. The result was a method for achieving the research objective to determine whether senior civilian logisticians are specialists or are generalists.

Personal [illegible] were also asked questions about [illegible] senior logisticians were to effectively [illegible] coordinating activities of logistics-related functions. Personal interviews were scheduled for 25 June 1985 with Mr. Joseph E. DelVecchio, Assistant Director of Logistics Plans and Programs, HQ USAF/Logistics and Engineering (LE), and with Mr. Oscar A. Goldfarb, Deputy of Supply and Maintenance, Office of the Assistant Secretary of the Air Force (11;19). The comments from these personal interviews are included in Chapter III, Data Analysis.

Data Collection. The survey instrument was approved by OCPO and HQ Air Force Manpower and Personnel Center (MPCYPS) by telephone on 23 April 1985 followed by letter approval on 26 April 1985. Distribution of the survey questionnaires to all eighty GM-15 and SES personnel in the -346 job series by office address was completed by 15 May 1985.

A high response rate was anticipated because the population of interest was a high grade level and, therefore, willing to provide data that would prove beneficial to the logistics management function. Some survey recipients were not able to respond by the 26 July 1985 cutoff due to higher priority projects and stringent TDY schedules. To ensure the best possible response rate, follow-up

telephone calls were made every two weeks to monitor the status of outstanding surveys. As a result, sixty surveys were completed and returned for a response rate of 75 percent.

Summary

First, the population of interest was identified as all GS/GM-15 and SES employees in the -346 job series. There are currently seventy GS/GM-15s and ten SES for a total of eighty individuals filling senior civilian logistics positions. The entire population was then surveyed by questionnaire to gather data on each individual's job experience, as well as education and training in the logistics-related functions.

Having gathered data on 75 percent of the population, a panel of experts was selected to separately review each respondent's answers to the survey and to classify each respondent as a specialist or a generalist. Once classified, the two resulting groups were to be analyzed in order to compare/contrast those characteristics peculiar to specialists and generalists. Thus, it would be possible to achieve the research objective to determine whether senior civilian logisticians are specialists or are generalists.

III. Data Analysis and Findings

Panel Results

The panel of five experts met individually during 2-9 August 1985. Using the criteria in question 1, Part II, as a guide, each respondent's survey was reviewed and each respondent was classified as a generalist or a specialist. Based on the panel members' combined classifications, the majority of senior civilian Air Force logisticians are generalists.

Appendix B details the six subgroups of logisticians by response number. The five experts determined the subgroups as follows:

1. Unanimous Generalists--two respondents (3.33 percent) were judged by all five experts to be generalists.

2. Consensus Generalists--fifteen respondents (25 percent) were determined to be generalists by four out of five experts.

3. Mixed Generalists--seventeen respondents (28.33 percent) were considered generalists by three out of five experts.

4. Mixed Specialists--seventeen respondents (28.33 percent) were determined to be specialists by three out of five experts. (One respondent was judged by only

two experts of three; the remaining two experts did not classify.)

5. Consensus Specialists--five respondents (8.33 percent) were considered specialists by four of the five experts.

6. Unanimous Specialists--four of the respondents (6.67 percent) were judged by all five experts to be specialists.

Thus, 56.67 percent of the sixty respondents, thirty-four individuals, were classified as generalists; 43.44 percent, or twenty-six respondents, were classified as specialists. Only one of the SES respondents was considered a specialist. Appendix C displays the above information in bar chart form. The vertical axis is the number of respondents assigned to each of the six subgroups while the horizontal axis is the number of panel experts who classified the subgroups as specialists. For example, the first bar going left to right shows that two survey respondents were classified as specialists by none of the experts. In other words, two senior logisticians were considered unanimous generalists by the panel. On the opposite end of the graph, four senior logisticians were considered unanimous specialists. Appendix D shows individual panel classifications of GS/GM-15s and SES respondents.

Analysis of Panel Results. Once the panel had completed its classification of all respondents, the two resulting groups (generalists and specialists) were analyzed. Detailed analysis was done on the six individual subgroups mentioned above. Characteristics peculiar to each large group and to each subgroup are included herein to provide a description of generalists and specialists. Table IV is a comparison of the age of the two main groups as well as the subgroups. The mean ($\bar{x}$) age of all generalists is 49.98 years while the mean age of specialists is 49.46 years. The median age for generalists is 50 years while that of specialists is 48 years. Thus, we can infer that generalists from the population of senior civilian logisticians within the -346 job series are approximately the same age as specialists from the same population. However, it is shown by the standard deviation, symbol (s), for the six subgroups that specialists from the survey population vary more in age than do generalists. The specialists classified here range in age from 32 years of age to 64 years of age; generalists from 34 years of age to 62 years. Beyond this comparison, the values found within each subgroup are not significant because each subgroup population is small with rather large age variations.

Table V is a comparison of years-in-grade for generalists and specialists. It is interesting to note that the average (mean) time-in-grade for a generalist

TABLE IV

COMPARISON OF AGE FOR GENERALISTS VERSUS SPECIALISTS

	Mean ($\bar{x}$)	Median	Std Dev (s)	Range
Generalists				
Unanimous Generalists	42.50	42.50	2.12	2
Consensus Generalists	51.40	50.00	5.93	24
Mixed Generalists	49.60	52.00	5.64	21
All Generalists	49.98	50.00	5.85	28
Specialists				
Unanimous Specialists	47.0	47.50	11.86	29
Consensus Specialists	49.60	47.00	8.20	20
Mixed Specialists	50.00	48.00	7.04	30
All Specialists	49.46	48.00	7.79	32

TABLE V

COMPARISON OF YEARS-IN-GRADE FOR GENERALISTS VERSUS SPECIALISTS

	Mean ($\bar{x}$)	Median	Std Dev (s)	Range
Generalists				
Unanimous Generalists	2.88	2.88	.17	1.44
Consensus Generalists	5.87	5.00	3.88	12.33
Mixed Generalists	2.93	1.67	2.91	9.83
All Generalists	4.23	4.00	3.50	13.66
Specialists				
Unanimous Specialists	8.90	4.00	12.22	26.33
Consensus Specialists	8.10	5.00	10.10	24.50
Mixed Specialists	6.07	4.50	5.08	19.67
All Specialists	6.90	5.00	5.60	26.67

within the survey population is about 60 percent that of a specialist, 4.23 years for generalists and 6.90 years for specialists. This may indicate more lateral movement by generalists before reaching senior level positions in logistics. The median years-in-grade for the two groups are close while the overall range is significant; over twenty-six years for specialists compared to thirteen years for generalists. The first two specialist subgroups have very similar means while mixed specialists have a mean about 25 percent less. The medians of the specialist subgroups are similar, however, and indicate the values above the median vary more than the values below the median. The standard deviations for the first two specialist subgroups emphasize the extreme variability among these small subgroups. These subgroups, unanimous specialists and consensus specialists, consist of four and five individuals respectively. Thus, the large ranges for years-in grade result in meaningless values for the mean, median, and standard deviation of each specialist subgroup. Conversely, the very small standard deviation for unanimous generalists is meaningless since there are only two individuals in the subgroup.

Table VI is a comparison of total years of federal service for generalists and specialists. Generalists average approximately one year more federal service time than specialists. This was anticipated since Table IV

TABLE VI

COMPARISON OF TOTAL YEARS OF FEDERAL SERVICE
FOR GENERALISTS VERSUS SPECIALISTS

	Mean ($\bar{x}$)	Median	Std Dev (s)	Range
Generalists				
Unanimous Generalists	18.50	18.50	2.12	3
Consensus Generalists	29.33	29.00	5.85	21
Mixed Generalists	29.10	31.00	7.16	27
All Generalists	28.58	30.00	6.81	28
Specialists				
Unanimous Specialists	27.25	27.50	13.07	32
Consensus Specialists	27.40	23.00	8.76	20
Mixed Specialists	27.47	25.00	7.85	33
All Specialists	27.42	25.00	8.50	33

indicates generalists from the survey population are slightly (.50 years) older than specialists from the survey population. Specialists within the three subgroups have similar mean values while the generalists display means with more variability. However, the standard deviations are larger (the ranges are larger) within the specialist subgroups than those within the generalist subgroups.

To aid in determining what characteristics are peculiar to the two main groups of respondents, the categories of survey responses were "coded." Then, each respondent within each of the main groups (and within each subgroup) received a numerical value for each survey answer. Table VII lists individual criterion and subcriterion with a corresponding value for each possible response. The values, or relative weights, serve two purposes, First, the weights allow easy categorization of data on each respondent and rank each individual's experience, education, and background relevant to one another. In addition, the weights may be used as computer input coding for further statistical analysis.

Comparison of the job experience of generalists and specialists is displayed in Table VIII as means and modes of three subcriteria. Comparison of the first subcriterion, number of logistics core functions, revealed that the generalist subgroups average job experience in one to four more core functions than the specialist subgroups. Overall,

TABLE VII

CODE FOR CATEGORIES OF RESPONSES

Criterion	Relative Weight
Job Experience	
Logistics Core Functions (min of 12 months)	
None	0
Any One of the Following:	1
Maintenance Supply/Materiel Management Transportation Contracting Log Plans	
(Experience in additional logistics functions adds 1 point each for a maximum of 5 points)	
Logistics Job Series	
1 point for each job series held during logistics career (No point limit)	
Geographic Locations	
1 point for each geographic and/or command location (no point limit)	
Level of Formal Education	
Less than 12 years education High school graduate/equivalent	1
Some college, no degree Associate's degree	2
Bachelor's degree Graduate credit, no graduate degree	3

TABLE VII--Continued

Criterion	Relative Weight
Master's degree	
Work beyond master's	4
Doctorate	5
Prior Military Logistics Experience/ Technical Training	
None	0
Any one of the following:	1
Maintenance Supply/Materiel Management Transportation Contracting Log Plans	
(Additional experience in any of core functions adds 1 point each for a maximum of 5 points)	
PME Program Completion	
None	0
Air Command and Staff College (ACSC)	1
Air War College (AWC)	2
Industrial College of the Armed Forces (ICAF)	2
Other PME under non-AF Programs (two points for each non-AF Program	2
PCE Course Completion	
None	0
Systems	1
Logistics Mgt (Acquisition, Weapon Systems Mgt)	1

TABLE VII--Continued

Criterion	Relative Weight
Financial Mgt	1
Cost/Scheduling	1
Quantitative (Reliability, Theory, Design, Research & Application	1
Other logistics-related courses	1
(Each course adds 1 point for a maximum of 6 points)	
Certification in Logistics Related Area(s)	
No	0
Yes	1
(One point for each type of certification)	
Membership in Logistics-Related Organizations	
No	0
Yes	1
(One point for each type of membership; inactive membership counts as "zero")	

TABLE VIII

COMPARISON OF JOB EXPERIENCE OF GENERALISTS SUBGROUPS VERSUS SPECIALISTS SUBGROUPS

Subcriterion	$\bar{x}$	Mode
# of Core Functions		
Generalists		
Unanimous*	5.00	5
Consensus	2.71	2
Mixed	2.47	2
All	2.73	2
Specialists		
Unanimous	1.50	1,2
Consensus	1.40	1
Mixed	1.81	1
All	1.68	1
# of Different Job Series		
Generalists		
Unanimous*	3.00	1,5
Consensus	3.27	3
Mixed	2.83	2
All	3.03	3
Specialists		
Unanimous	3.25	4
Consensus	3.60	5
Mixed	2.69	2
All	2.85	2

*Note: Only 2 respondents in this category.

TABLE VIII --Continued

Subcriterion	$\bar{x}$	Mode
# of Geographic Locations		
Generalists		
Unanimous*	3.50	3,4
Consensus	2.00	1
Mixed	2.11	1
All	2.18	1
Specialists		
Unanimous	2.00	2
Consensus	1.40	1
Mixed	1.56	1
All	1.54	1

generalists have experience in 2.73 core functions compared to the specialists' average of 1.68 functions. It should be noted, however, that the high mean value allocated to unanimous generalists is insignificant due to the very small sample size of two individuals. The consistently higher mode values for each generalist subgroup compared to specialist subgroups reflects the former's broader functional background. The overwhelming majority (83 percent) of all respondents have significant job experience in the supply/materiel management function. While generalists also have significant experience in logistic planning and maintenance, specialists are almost exclusively supply/materiel management oriented. Twenty-three of twenty-six specialists are supply/materiel management oriented. Very little job experience in transportation or contracting was evidenced by either of the two groups of senior logisticians. Twenty respondents specified significant job experience in either international logistics, acquisition logistics, and/or engineering. While these three functions are indeed logistics-related, they were incorporated into one of the five core specialties depending on the organization in which the experience was gained. Fourteen of the twenty affected by this incorporation of functions were considered generalists by the panel of experts. In addition, job experience adding up to less than one year in any core function was disregarded. Ostensibly, the number of core

functions in which a respondent had worked affected his/her classification as a generalist or a specialist.

The second subcriterion, number of different job series, was compared for logisticians in each of the two main groups. As illustrated in Table VIII, there was no appreciable difference in the average job series of each of the six subgroups. Generalists have an average of 3.03 job series; specialists have an average of 2.85. Most significant was the higher mean value for unanimous specialists compared to unanimous generalists. The number of job series held by a respondent apparently had no impact on his/her classification.

The final subcriterion, number of geographic locations, was compared for generalists and specialists. Although all generalist subgroups had consistently more geographic moves on the average than specialist subgroups, both categories had an overall mode of one. Both generalists and specialists appear to be geographically immobile. It should be noted that several respondents who indicated experience in only one primary core function and/or only one geographic location also reflected some degree of mobility within an organization. In other words, although an individual may have "stovepiped" within the Directorate of Materiel Management (D/MM) his or her entire career, the logistician may also have worked in five to six different offices within the directorate. This may or may not

have been completely reflected by the number of different job series he or she also held. The fact remains, however, that a certain amount of "generalist" logistics skills can be learned from experience in different offices within a logistics organization. Unfortunately, the extent to which "office mobility" affected a respondent's classification as a generalist or a specialist could not be accurately measured due to insufficient information provided in the completed surveys.

Level of formal education was the next area of comparison. Referring to the relative weights (Table VII) for different levels of education, Table IX presents the number of respondents per subgroup and percentage of each subgroup having a specific educational level. Of the two individuals in the unanimous generalists subgroup, one has a bachelor's degree; the other has a master's degree. Fifty-three percent of consensus generalists have a master's degree or higher. Only 35 percent of mixed generalists have a master's degree. Overall, 44 percent of the generalists have a master's degree or higher. In comparison, none of the unanimous specialists possess a master's degree or higher. Only one consensus specialist (20 percent) and only 35 percent of mixed specialists possess a master's degree or higher. Overall, 27 percent of the specialists have a master's degree or higher. Thus, level of education appears to have an effect on the classification

TABLE IX

LEVEL OF FORMAL EDUCATION FOR GENERALISTS COMPARED TO SPECIALISTS

Subgroup	Level	Number of Respondents	% of Subgroup
Unanimous Generalists (2 ea)	3	1	.50
	4	1	.50
			1.00
Consensus Generalists (15 ea)	2	4	.27
	3	3	.20
	4	7	.47
	5	1	.06
			1.00
Mixed Generalists (17 ea)	1	1	.06
	2	6	.35
	3	4	.24
	4	6	.35
			1.00
All Generalists (34 ea)	1	1	.03
	2	10	.29
	3	8	.24
	4	14	.41
	5	1	.03
			1.00

TABLE IX--Continued

Subgroup	Level	Number of Respondents	% of Subgroup
Unanimous Specialists (4 ea)	1	1	.25
	3	3	.75
			1.00
Consensus Specialists (5 ea)	2	1	.20
	3	3	.60
	4	1	.20
			1.00
Mixed Specialists (17 ea)	2	2	.12
	3	9	.53
	4	6	.35
			1.00
All Specialists (26 ea)	1	1	.04
	2	3	.12
	3	15	.57
	4	7	.27
			1.00

of a respondent as a generalist or a specialist. Further analysis revealed the major area of study and currency of the degree had no impact. For instance, Masters of Business Administration (MBAs) among generalists were completed an average of thirteen to fifteen years ago. Although there were more MBAs awarded to generalists than to specialists, the latter group had more degrees in logistics management and engineering.

The next main criteria for comparison were prior military logistics experience and technical training specified in Table X. Disregarding the first subgroup, it was found that 53 percent of the mixed generalists compared to 33 percent of consensus generalists have prior military experience in logistics. Overall, 44 percent of respondents classified as generalists have prior military experience. In contrast, neither unanimous nor consensus specialists have any prior military experience in logistics. Only 27 percent of all specialists have prior military logistics experience. Over 50 percent of all respondents (in both categories) with prior military experience got that experience in the maintenance function. Ostensibly, prior military logistics experience could affect the classification of a logistician as a generalist or a specialist.

Under prior military logistics experience, technical training in the core functions was also considered. Thirty-five percent of all generalists have had technical

TABLE X

PRIOR MILITARY LOGISTICS EXPERIENCE AND TRAINING FOR GENERALISTS COMPARED TO SPECIALISTS

Subgroup	Rating	Number of Respondents	% of Subgroup
	Military Experience		
Unanimous Generalists (2 ea)	0	1	.50
	1	1	.50
			1.00
Consensus Generalists (15 ea)	0	10	.67
	1	4	.27
	2	1	.06
			1.00
Mixed Generalists (17 ea)	0	8	.47
	1	9	.53
			1.00
All Generalists (34 ea)	0	19	.56
	1	14	.41
	2	1	.03
			1.00
Unanimous Specialists (4 ea)	0	4	1.00
Consensus Specialists (5 ea)	0	5	1.00

TABLE X--Continued

Subgroup	Rating	Number of Respondents	% of Subgroup
	Military Experience		
Mixed Specialists (17 ea)	0	10	.59
	1	6	.35
	3	1	.06
			1.00
All Specialists (26 ea)	0	19	.73
	1	6	.23
	3	1	.04
			1.00
	Technical Training		
Unanimous Generalists (2 ea)	0	2	1.00
Consensus Generalists (15 ea)	0	8	.53
	**1	4	.26
	2	1	.07
	*3	1	.07
	*5	1	.07
			1.00

Notes:

*Non-military technical training.

**One of four has non-military technical training.

TABLE X--Continued

Subgroup	Rating	Number of Respondents	% of Subgroup
	Technical Training		
Mixed Generalists (17 ea)	0	12	.71
	1	2	.12
	2	3	.17
			1.00
All Generalists (34 ea)	0	22	.65
	1	6	.17
	2	4	.12
	3	1	.03
	5	1	.03
			1.00
Unanimous Specialists (4 ea)	0	4	1.00
Consensus Specialists (5 ea)	0	5	1.00
Mixed Specialists (17 ea)	0	13	.76
	1	3	.18
	*3	1	.06
			1.00
All Specialists (26 ea)	0	22	.85
	1	4	.15
			1.00

training in one or more of the logistics core functions. It should be noted that one generalist has had non-military technical training in one core function, one in three functions, and one in all five core functions. Only 15 percent of all specialists have received technical training in a logistics-related area. There were three generalists whose technical training was in the same function as their primary career field. However, each individual had sufficient experience in at least three additional functions to overcome the "stovepipe" effect. Like military experience, technical training could impact a logistician's classification as a generalist or a specialist.

PME and PCE course completion were the next criteria for comparison. Referring again to Table VII, points allotted for PME program completion were unlimited; the maximum allowed for PCE courses was six points. Table XI reflects 53 percent of all generalists responded they had not completed any PME program. The two unanimous generalists have completed the Industrial College of the Armed Forces (ICAF); one has completed another non-Air Force PME program. Sixty-two percent of all specialists responded they had not completed any PME. Therefore, it is likely PME program completion is not a significant criterion for classifying a logistician as a generalist or a specialist.

PCE course completions yielded a much higher response. It was found that 74 percent of all generalists

TABLE XI

PROFESSIONAL MILITARY EDUCATION (PME) AND PROFESSIONAL CONTINUING EDUCATION (PCE) FOR GENERALISTS COMPARED TO SPECIALISTS

Subgroup	Rating	Number of Respondents	% of Subgroup
	PME		
Unanimous Generalists (2 ea)	2	1	.50
	4	1	.50
			1.00
Consensus Generalists (15 ea)	0	9	.60
	1	2	.13
	2	3	.20
	5	1	.07
			1.00
Mixed Generalists (17 ea)	0	9	.53
	1	3	.18
	2	3	.18
	3	2	.11
			1.00

TABLE XI--Continued

Subgroup	Rating	Number of Respondents	% of Subgroup
	PME		
All Generalists (34 ea)	0	18	.53
	1	5	.15
	2	7	.20
	3	7	.20
	4	1	.03
	5	1	.03
			1.00
Unanimous Specialists (4 ea)	0	3	.75
	5	1	.25
			1.00
Consensus Specialists (5 ea)	0	4	.80
	2	1	.20
			1.00
Mixed Specialists (17 ea)	0	9	.52
	2	4	.24
	4	4	.24
			1.00

TABLE XI--Continued

Subgroup	Rating	Number of Respondents	% of Subgroup
	PME		
All Specialists (26 ea)	0	16	.62
	2	5	.19
	4	4	.15
	5	1	.04
			1.00
	PCE		
Unanimous Generalists (2 ea)	4	1	.50
	5	1	.50
			1.00
Consensus Generalists (15 ea)	0	2	.14
	1	1	.06
	2	2	.14
	3	4	.27
	4	4	.27
	5	1	.06
	6	1	.06
			1.00

TABLE XI--Continued

Subgroup	Rating	Number of Respondents	% of Subgroup
	PCE		
Mixed Generalists (17 ea)	0	7	.41
	1	1	.06
	2	2	.12
	3	3	.17
	4	1	.06
	5	1	.06
	6	2	.12
			1.00
All Generalists (34 ea)	0	9	.26
	1	2	.06
	2	4	.11
	3	7	.21
	4	6	.18
	5	3	.09
	6	3	.09
			1.00
Unanimous Specialists (4 ea)	0	3	.75
	1	1	.25
			1.00

TABLE XI--Continued

Subgroup	Rating	Number of Respondents	% of Subgroup
	PCE		
Consensus Specialists (5 ea)	0	3	.60
	4	1	.20
	5	1	.20
			1.00
Mixed Specialists (17 ea)	0	3	.18
	1	6	.35
	2	3	.18
	3	4	.23
	4	1	.06
			1.00
All Specialists (26 ea)	0	9	.35
	1	7	.27
	2	3	.12
	3	4	.15
	4	2	.07
	5	1	.04
			1.00

have completed one or more logistics-related PCE courses. In fact, 58 percent of all generalists have completed three or more PCE courses. Sixty-five percent of all specialists have had one or more courses; only 26 percent have had three or more courses. More detailed analysis of the six subgroups is given in Table XI: only 14 percent of consensus generalists have never completed any PCE; 41 percent of the mixed generalists have never completed any PCE. Conversely, 18 percent of mixed specialists have never completed a PCE course; 60 percent of consensus specialists and 75 percent of unanimous specialists have never completed any PCE. Thus, the degree of generalization may be affected to some extent by exposure (or lack of exposure) to logistics-related information through PCE course completion. Of the twenty-five generalists who have taken at least one PCE course, ten were required to take particular courses as part of their job qualifications. Of the seventeen specialists who have taken at least one PCE course, only two were required to take particular courses. Ten of the above twelve logisticians specified logistics management courses were required; seven indicated systems management courses were required. From a generalist standpoint, this is not surprising. What is surprising is that so few "specialist" senior logisticians were required to take the same courses as their generalist counterparts in similar jobs. Perhaps the very requirement to take a particular

course for a senior-level job supports the resulting classification of the respondents as generalists. It should be noted that the number of positions requiring specific PCE courses are subject to error since the right-hand column of survey question 11 may have been overlooked in some cases (see Appendix A).

Another criterion used for comparison was certification in logistics as shown in Table XII. Although the Society of Logistics Engineers (SOLE) places a high value on the Certified Professional Logistician (CPL) exam, apparently senior logisticians do not. Of the sixty survey respondents, only four (two generalists and two specialists) are certified in their profession. However, three of these hold certifications in addition to the CPL. Certification in logistics does not appear to impact classification as a generalist or a specialist.

Table XII also reflects senior logisticians' active membership in logistics organizations. Fifty-six percent of all generalists participate in logistics organizations (inactive membership was not considered participation). There was slightly more participation among mixed generalists than among the other generalist subgroups. Only 31 percent of all specialists are active members of logistics organizations. The consensus subgroup reflected more participation than the other two subgroups. Apparently, active membership in logistics organizations is a

TABLE XII

CERTIFICATION IN LOGISTICS AND MEMBERSHIP IN LOGISTICS ORGANIZATIONS OF GENERALISTS COMPARED TO SPECIALISTS

Subgroup	Rating	Number of Respondents	% of Subgroup
	Certification		
Unanimous Generalists (2 ea)	0	2	1.00
Consensus Generalists (15 ea)	0	13	.87
	2	2	.13
			1.00
Mixed Generalists (17 ea)	0	17	1.00
All Generalists (34 ea)	0	32	.94
	2	2	.06
			1.00
Unanimous Specialists (4 ea)	0	4	1.00
Consensus Specialists (5 ea)	0	5	1.00
Mixed Specialists (17 ea)	0	15	.88
	1	1	.06
	2	1	.06
			1.00

TABLE XII--Continued

Subgroup	Rating	Number of Respondents	% of Subgroup
	Certification		
All Specialists (26 ea)	0	24	.92
	1	1	.04
	2	1	.04
			1.00
	Membership in Logistics Organization		
Unanimous Generalists (2 ea)	0	1	.50
	2	1	.50
			1.00
Consensus Generalists (15 ea)	0	7	.47
	1	5	.33
	2	3	.20
			1.00
Mixed Generalists (17 ea)	0	7	.41
	1	10	.59
			1.00
All Generalists (34 ea)	0	15	.44
	1	15	.44
	2	4	.12
			1.00

TABLE XII--Continued

Subgroup	Rating	Number of Respondents	% of Subgroup
Membership in Logistics Organization			
Unanimous Specialists (4 ea)	0	3	.75
	1	1	.25
			1.00
Consensus Specialists (5 ea)	0	3	.60
	1	2	.40
			1.00
Mixed Specialists (17 ea)	0	12	.71
	1	2	.12
	2	3	.17
			1.00
All Specialists (26 ea)	0	18	.69
	1	5	.19
	2	3	.12
			1.00

significant criterion for classification as a generalist or a specialist.

While reviewing the career backgrounds of the survey respondents, it was discovered that 50 percent of the respondents now hold or have within the last four years held LCCEP or LCCEP cadre positions. Eight respondents are currently in a LCCEP/LCCEP cadre position; four individuals were classified as generalists and four as specialists. As stated earlier in this research thesis, the LCCEP encourages multi-functional and multi-organizational experience. Yet, of the thirty respondents who have at one time held a LCCEP/LCCEP cadre position, fourteen individuals, or 47 percent, were classified as specialists by the panel of experts. Ironically, all unanimous specialists have been in LCCEP/LCCEP cadre positions within the last two years (1983). Eighty percent of consensus specialists have held LCCEP/LCCEP cadre positions within the last two years. The emphasis placed on broad functional/organizational experience may become a lower priority when considering individuals most qualified for senior logistics positions. Perhaps individual senior positions within the -346 job series require different qualifications.

Each GM-15 position in the -346 job series corresponds to one of six different and specific Air Force Specialty Codes (AFSCs) according to the computer list obtained from OCPO (2). Matching each of the seventy

GM-15 positions to a particular AFSC provided a means of describing the basic duties and responsibilities of senior civilian logisticians. The primary specialty code was AFSC 6616, Logistics Plans and Programs Staff Officer. Fifty-seven GM-15 positions were matched to this job description; forty-four of the fifty-seven responded to the survey. The next most prevalent specialty code was AFSC 0046, Director of Logistics. Five GM-15s are matched to this job description; three responded. AFSC 6416, Supply Management Staff Officer, was designated for four of the GM-15s surveyed; three responded. Only two GM-15s were designated as AFSC 6624, Logistics Plans and Programs Officer. One of these individuals responded to the survey. One GM-15 logistician (who also responded) was designated as AFSC 0076, Planning and Programming Officer. Likewise, only one GM-15 (who did not respond) was classified as AFSC 2716, Acquisition Management Officer.

The following specifies the basic duties and responsibilities of each AFSC relevant to the survey population:

1. AFSC 6616, Logistics Plans and Programs Staff Officer:

> [a] Formulates logistics plans, programs and logistics support policies. Integrates supply, maintenance, transportation, and contracting activities into plans and programs.
>
> [b] Directs and coordinates logistics plans and program activities . . . with supply, maintenance, transportation, contracting and other activities to assure development and integration of logistics capabilities in support of assigned missions.

[c] Provides acquisition program support . . . serves as the deputy program manager for logistics (DPML) or assistant to the DPML.

[d] Provides life cycle logistics support and system management. Develops, initiates, integrates, and manages all logistics actions associated with life cycle management of weapon systems, subsystems and equipment. (14:A17-37)

2. AFSC 0046, Director of Logistics:

[a] Directs and organizes logistics programs. . . . Establishes area of responsibility for activities such as maintenance, supply, transportation, and production-procurement.

[b] Monitors logistics activities. Analyzes logistics requirements and estimates capabilities to accomplish assigned missions.

[c] Coordinates logistics programs. . . . Confers with commanders and staff on activities such as maintenance, supply, transportation, and procurement to establish and implement logistics programs, policies, and procedures. (14:A5-9/10)

3. AFSC 6416, Supply Management Staff Officer:

[a] Formulates supply management policies. Develops plans; establishes policies and procedures for management of supply and fuels activities. . . . Develops stock fund operating programs and determines operating budget. Determines war readiness requirements to include war and emergency supply and fuel support plans, and tactical and strategic movement of personnel, materiel, and units.

[b] Coordinates supply management activities. . . . Coordinates with all operating units and staff to determine present and projected requirements for equipment, fuels, and supplies. . . .

[c] Monitors and directs supply management activities. Organizes, directs, and monitors supply and fuels staff activities and supply field organizations.

[d] Develops functional data systems. Designs and develops standard supply and fuels data systems. . . . (14:A17-19).

4. AFSC 6624, Logistics Plans and Programs Officer:

Same as AFSC 6616, but emphasis is on management and

control of logistics plans and program activities in lieu of formulation and administration (14:A17-39)

5. AFSC 0076, Planning and Programming Officer:

> [a] Develops, establishes, and maintains Air Force, joint services, and combined plans, programs, and policies. . . . Develops basic Air Force structure and plans to implement emergency, intermediate, mobilization, and long-range war plans.
> [b] Develops, establishes, and maintains planning and programming systems and procedures.
> [c] Plans, proposes, and establishes security policies and procedures for implementation.
> [d] Conducts analytical studies. . . . Determines by analysis actual and potential effects of air weapons on an enemy.
> [e] Coordinates Air Force and joint plans and programs. . . . Establishes priority for allocation of assets. (14:A5-15)

6. AFSC 2716, Acquisition Management Officer:

> [a] Provides overall program management. Performs as Program Manager (PM) for the acquisition of any program not meeting the definition of a major program (see AFR 800-2).
> [b] Performs program office management. . . . Various managerial and primarily supervisory tasks associated with such functions as program control, configuration management, test and deployment engineering, and ILS. . . as the deputy program manager for logistics (DPML). . . .
> [c] Performs staff functions. Serves as focal point for assembly, analysis, and dissemination of information on assigned acquisition programs or broad aspects of program management.
> [d] Provides acquisition program support. . . . Plans for and manages training and logistics support of acquisition programs by assisting in translating program requirements and specifications into training or logistics support requirements. (14:A10-31)

The official descriptions of AFSCs 6616, 6624, and 0046 responsibilities provided in AFR 36-1 specify a mandatory knowledge of the functional areas of maintenance,

supply, transportation, and contracting (14:A5-9/10,A17-37, A17-39). Similarly, AFSC 2716 requires a mandatory knowledge of program "development, procurement, production, and logistics support (14:A10-31). Clearly, the positions designated by these four specialty codes require senior logisticians with "generalist" logistics skills. Fifty-six percent of the respondents in AFSCs 6616, 6624, and 0046 were, in fact, classified as generalists; the individual designated as AFSC 2716 did not respond.

The specialty qualifications for AFSCs 6416 and 0076, however, appear to be of a more specialized nature. The former requires a mandatory knowledge of supply systems "including related data systems, their capabilities, limitations, and technical characteristics; current USAF supply policy and doctrine. . . ." (14:A17-19). Although this position requires a knowledge of the fundamentals of other logistics areas, the emphasis is clearly on supply and supply data systems. AFSC 0076 stresses a mandatory knowledge of "techniques involved in formulation of military policies, programs, and procedures." In addition, a knowledge of the "capabilities and limitations of "a particular type of weapon system (piloted aircraft, missile, or nuclear) or support organizations is mandatory (14:A5-15). There is no stated requirement to be knowledgeable in the functional areas of logistics. Not

surprisingly, all four of the respondents under the AFSC 6416/0076 designation were classified by the panel experts as specialists.

The idea that specialists fill specialty positions even at top-level positions may actually make the most effective use of high-ranking personnel. One of the five panel members, a retired USAF colonel with experience in several logistics-related functions, feels a specialist in one core function is often the best choice for a senior level position in that particular specialty. Thus, although all senior logistics management positions may appear generic on the surface, many may actually entail responsibilities which are very specialized and call for specialized expertise.

Summary of Panel Results. The panel of experts classified 57 percent of the survey respondents as generalists and 43 percent as specialists. Generalists and specialists were each segregated into three subgroups. Appendices B and C list the numerical breakouts of all six subgroups.

Demographics for each subgroup are displayed in Tables IV through VI and Tables VIII through XII using the criteria specified in Table VII. Peculiar characteristics of the two main groups follow.

1. Age. The average (mean) age of generalists is 49.98 years; the average age of specialists is 49.46 years. There is no appreciable difference in the ages of the two groups.

2. Years-in-grade. The mean for generalists is 4.23 years; 6.90 years for specialists. Specialists may tend to stay at the GM-15 level once reached.

3. Total years of federal service. The mean for generalists is 28.58 years; 27.42 years for specialists.

4. Job experience.

a. Core functions. Generalists average job experience in 2.73 core functions; specialists average experience in 1.68 functions. Primary experience is in the supply/materiel management function. Number of core functions may be an effective criterion for generalist/specialist classification.

b. Different job series. Individuals in both groups have experience in approximately three job series by the time they reach the senior level. There is no appreciable difference here between generalists and specialists; job series as a criterion has no effect.

c. Geographic locations. Both groups appear to be geographically immobile although generalists show slightly higher mobility than specialists (a mean of 2.18 versus 1.54). Geographic mobility is not a significant

criterion for classifying a logistician as a generalist or a specialist.

5. Formal education. Forty-four percent of generalists have a master's degree or higher; 27 percent of specialists do. Formal education, therefore, does appear to affect classification as a generalist or a specialist.

6. Prior military experience/technical training. Forty-four percent of all generalists and 27 percent of all specialists have prior military experience in logistics-related functions. Thirty-five percent of all generalists have received logistics-related technical training during military service while only 15 percent of all specialists have received such training. Both criterion could have impacted classification of a logistician as a generalist or a specialist.

7. PME/PCE course completion. Forty-seven percent of the generalists have completed at least one PME program; 38 percent of the specialists have. Seventy-four percent of all generalists have completed at least one PCE course; 58 percent of them have completed three or more. Sixty-five percent of all specialists have completed one or more PCE course; only 26 percent have completed three or more. While PME as a criterion is not significant, PCE could affect classification.

8. Certification in logistics. Only four of the sixty respondents are certified. This criterion has no impact.

9. Membership in professional organizations. Fifty-six percent of all generalists are active members of professional logistics organizations; 31 percent of all specialists are active members. Active membership in professional organizations has an impact on an individual's classification.

Results of Personal Interviews

Separate personal interviews with three Senior Executive Service (SES) managers from logistics areas were held in order to solicit their opinions on the effectiveness of today's senior civilian logisticians. On 29 March 1985, a personal interview was conducted with Mr. Lloyd K. Mosemann II, Deputy Assistant Secretary of the Air Force (Logistics and Communications). In addition to validating the survey instrument, Mr. Mosemann offered comments on inhibitors to the maximum effectiveness of senior civilian logisticians. While individuals filling top-level logistics positions may be experienced in several functional areas and reinforced with basic logistics/systems curriculum, one of the biggest problems may be an individual's "mindset," i.e., he or she may not be goal-oriented, not innovative, and not willing to take risks

on the job. There is the danger to junior level managers who pattern themselves after the current senior manager(s). The result can be a "cloning" or duplication of attitudes and characteristics passed on to a present or future senior level manager (logistician) from his/her predecessor. Not only the predecessor's strengths but also his weaknesses are perpetuated (28). For example, suppose a senior logistician with little ambition to sharpen his/her logistics skills is viewed by a subordinate as successful (perhaps only because he is a senior level manager). Thus, that subordinate may strive to follow the same career path he views as being successful for his superior. His career choices thereafter may lead to a senior logistics position, but may not make him effective at managing from a total systems perspective.

A personal interview was also conducted with Mr. Joseph E. DelVecchio, Assistant Director of Logistics Plans and Programs, HQ USAF/LE, on 25 June 1985. Like Mr. Mosemann, he commented on what factors he felt most inhibited senior logisticians, particularly relevant to promotion opportunities. Of primary concern was a lack of desire (ambition) to get ahead and a lack of mobility. He feels functional as well as geographical mobility is a must, especially at the Senior Executive Service (SES) level. Therefore, mobility should be included in a logistics manager's career portfolio as early as possible.

Mr. DelVecchio felt the best advice to aspiring middle level logistics managers would be to "change jobs now, geographically and functionally" (11).

Mr. DelVecchio emphasized his support of continuing education but did not feel specific logistics-related courses or even degrees are necessary. Rather, he stated that continuing education "should be in pursuit of what aids you in doing your job better" (i.e., mathematics, economics, operations research, etc.) (11).

Mr. Oscar A. Goldfarb, Deputy of Supply and Maintenance, Office of the Assistant Secretary of the Air Force, was also interviewed on 25 June 1985 to solicit his views of senior logistics management. In his opinion, the greatest inhibitors to promotion to senior level logistics positions are a "lack of success" on the job and a lack of "demonstrated broad understanding of the organization" in which the logistician works. Most importantly, the senior logistician must "climb above the job description" (19); he or she must be capable of and willing to do more than what is functionally required by the position held. In other words, if a senior logistician is the Deputy Program Manager for Logistics (DPML) for acquisition of a particular weapon system, he/she should learn as much as possible about the contracting function to ensure his or her understanding of how that function (as well as

all logistics-related specialties) can and will affect successful procurement and subsequent logistics support.

A good understanding of interrelated logistics specialties is to some extent a function of tenure in each specialized position. Mr. Goldfarb feels, however, it is not how long an individual is on a job but rather what that individual experiences or does in that position that most contributes to an understanding of the job and successful management in that position (19).

On the subject of logistics-related education, Mr. Goldfarb stresses the idea that the objective of an education is to enable the individual to "assimilate knowledge from more than one area" (function) and to comprehend what more than one function does (19). Continuing education should be useful to the senior logistician on the job.

In addition to classifying each survey respondent as a generalist or a specialist, the panel experts were asked to comment on their individual analyses of the data contained in the surveys. Their individual comments are provided as Appendix E. To summarize their reactions to the survey analysis, all five panel experts acknowledged a lack of geographic mobility among the respondents. While three of the five experts felt immobility was a detriment to achieving generalized experience and progression, two felt geographic mobility was not entirely necessary for promotional progression.

At the senior level, the panel felt inherent management skills should take priority over any functional or technical expertise. Perhaps the most accurate portrayal would be 100 percent general management of all five core logistics specialties.

Two panel experts classified the majority of respondents as specialists; two classified most as generalists; one was split 50-50 percent. Even though all five felt the "typical" senior level logistician should be a generalist based on the level of his or her position, two felt some senior -346 positions require a specialist, especially if it is a staff position.

Survey Respondents' Opinions

Responses to Classification Criteria. The survey respondents were asked to give relative weights to twelve criteria in question 1, Part II, which could be used when considering someone as his or her future replacement. By requesting a weighting of the same basic criteria that were used to differentiate a generalist from a specialist, it is possible to determine how important the criteria were to senior logistics job performance from each respondent's perspective. Appendix F provides a meaningful comparison between how generalists, specialists, and SES logisticians weighted the same criteria. The weights of the criteria are expressed as mean ($\bar{x}$) values exclusively.

Other measures of central tendency (such as modes) may give meaningless or confusing results particularly for the lower weighted criteria. Those criteria weighted at "zero" by a significant number of respondents are mentioned throughout the description below.

Job experience primarily in one core function was the first criterion. Generalists gave this criterion a mean weight of ten (out of a possible 100 points); specialists gave it a weight of 29.7. Comparatively, specialists considered experience in one logistics function to be approximately three times more important than their generalist counterparts. Specialists also felt experience in primarily one function comprised almost one-third of their total job makeup. The one core function considered most beneficial to the senior position by both generalists and specialists was supply/materiel management. Sixteen generalists showed a preference; nine of those (56 percent) preferred supply/materiel management. Of the eighteen specialists with a preference, 78 percent chose supply/materiel management. This preference was not surprising since earlier analysis revealed 83 percent of all respondents have significant experience in this core function; 88 percent of all specialists have primary experience in this function. While eleven generalists gave one-function experience a "zero" weight, only one specialist did. In fact, generalist rankings ranged from zero to 40 while

specialist ranking ranged from zero to 100. Not surprisingly, the two specialists allocating the highest weights to this criterion were from the unanimous and consensus categories. Overall, specialists apparently consider "specialization" necessary to effective management in their individual jobs.

The next criterion was job experience in more than one of the core specialties. Generalists ranked this criterion 18.3 percent; specialists ranked it 11.9 percent. In other words, generalists felt it was approximately twice as important to have multi-functional experience as to have experience in only one function. Conversely, specialists gave multi-functional experience less than one-half (almost one-third) the importance they gave to one-function experience. Yet, the response to this criterion was not as dramatic as that given to the first criterion. Only one generalist gave multi-functional experience a "zero" weight; only three specialists did. But the shift in emphasis is evident. Generalists give more importance to multi-functional (generalized) experience as it applies to their jobs. Specialists give more importance to experience in one function (specialized experience) as it applies to their jobs.

Generalists gave their highest ranking to inherent management skills (29 percent). Specialists also gave this criterion a high weight (23.6 percent). The range for

generalists was 5 to 90; there were no zeros given by the generalists. The range for specialists was zero to 50; two specialists gave a zero weight (the same two who rated one-function experience so high). It is interesting to note that the mode for generalists was ten while that for specialists was twenty. In other words, specialists overall rated this criterion more consistently (closer to the mean) than did their generalists. Since the respondents are in senior level positions, it is not surprising that both groups would weight this criterion so heavily. Senior logisticians must in most cases manage large groups of diverse individuals. Inherent management ability at this level is a must. It is significant, however, that specialists would still give a higher average weight to functional specialization than to management skills.

Formal education in any area of study was the next criterion. The weights allocated to this criterion can best be described when compared to relative weights given to the next criterion, formal education in a logistics-related area. Generalists rated the first criterion at 1.9 percent; specialists rated it at 7.0 percent. Thus, there was not much difference in how the two groups viewed the importance of a degree in any area of study. The significance is in how these weights compare to those given to education in logistics areas. Generalists rated logistics-related education at 9.7 percent while specialists rated

the same criterion at 7.5 percent. It appears generalists feel logistics-related education is more important than education in just any field (9.7 percent versus 5.9 percent). However, specialists weighted them approximately the same (7.5 percent versus 7.0 percent). When designating a preference, generalists (32 percent of nineteen individuals) chose business administration first followed by logistics management. Specialists (45 percent of eleven individuals) preferred logistics management followed by business administration. Eight generalists and eight specialists gave both education criteria a zero. Thus, 27 percent of the respondents felt that formal education had no influence on successful logistics management at the senior level. This percentage (27 percent) corresponds with the overall percentage (25 percent) of respondents who did not have at least a bachelor's degree. Formal education overall was considered slightly more important to generalists than to specialists.

Both groups of respondents gave similar ratings to technical training in a core function identical to the individual's primary career specialty. Fourteen generalists (41 percent) and nine specialists (35 percent) allocated "zero" weights to this criterion. Comparatively, the two groups gave lower weights to the next criterion, technical training in a function other than the primary career

specialty. Apparently, the respondents considered it more valuable to have primary experience reinforced by technical training than training in a non-primary career field. Forty-seven percent of all generalists and 46 percent of all specialists rated the latter criterion "zero." It is significant to note that although over twice as many generalists as specialists have received technical training, the former of the two criteria was ranked slightly higher by specialists. It was offset, however, by the slightly lower ranking specialists gave to technical training in a function other than the primary career field.

The next criterion was PME course completion. As was expected, both groups gave relatively low weights (2.1 percent and 1.6 percent) to PME. It had previously been found that PME course completion was not a significant criterion for classifying respondents as generalists and specialists. What was not expected was that the same low weights were also given to PCE course completion (2.2 percent and 1.8 percent). Seventy-four percent of all generalists and 65 percent of all specialists have completed at least one PCE course. Perhaps the extent of PCE exposure is significant. As noted previously, 58 percent of all generalists have completed three or more PCE courses while [illegible] percent of all specialists have. Yet, in both groups of respondents, 62 percent gave this criterion a "zero" weight.

Certification in logistics-related areas was the next criterion. As anticipated, low weights were allocated by both generalists and specialists (2.1 percent and 1.7 respectively). Only four of the sixty respondents are certified and, therefore, classification into either group was not affected by this criterion.

Membership in logistics-related organizations was rated even lower as a criterion than the previous one. Generalists and specialists only ranked this criterion 1.5 percent and 1.2 percent respectively. Again, 62 percent of both groups gave membership in a logistics organization a "zero" rating although the majority of generalists are active members. Unlike the relative lack of importance reflected by the respondents, this criterion appeared to have an effect on classification into either group by the panel experts.

The final criterion was the "other" category designated to include those elements respondents felt were important when considering their replacement. Sixteen generalists, or 47 percent, included qualifications here; nine specialists, or 35 percent, added qualifications. The overall weight allocated by generalists was 12 percent while specialists allocated 6.9 percent. The qualification most often included by both groups was "past performance." Twenty-five percent of the generalists and 33 percent of the specialists who included elements under this

criterion chose past performance. Leadership ability was the next most preferred qualification.

Analysis of responses from SES logisticians was done as a means of comparing the relative importance of the criteria through the senior level progression. Since six of the seven SES respondents had been classified as generalists, their relative weights were compared to those of the total generalist population (which included SES).

The SES logisticians rated job experience in one core logistics function at 9.3 percent as compared to 10 percent by generalists overall. Two of the four giving a preference chose supply management. Three SES respondents weighted the criterion at zero; the range was thirty. The highest rating was allocated by the one specialist SES.

In comparison, multi-functional job experience was rated 15.7 percent. One SES respondent weighted this criterion as well as the first criterion at zero. The range again was thirty. This ranking is less than that allocated by generalists overall; the overall weight was 18.3 percent.

By far the most significant criterion according to SES logisticians was inherent management skills rating 38.6 percent, compared to 29 percent by generalists overall. This is not surprising since "managing" would intuitively be more important than functional skills at the higher levels in logistics management.

The weighting of the next two criteria was significant. The relative weights allocated by SES respondents were a reversal of those given by generalists overall. SES logisticians rated formal education in any area higher than education in a logistics-related area (7.9 percent for the former and 4.3 percent for the latter). In fact, one SES respondent rated both of these criteria as "zero." Generalists rated the two criteria 5.9 percent and 9.7 percent respectively. Ostensibly, as a logistician progresses through the senior levels, education in logistics-related areas becomes less important (as does functional experience). Inherent ability (leadership, management skills, etc.) become more important to successful senior logistics management. Two of the four giving a preference chose logistics management as the most desirable degree to have. SES gave less weight to formal education overall than did generalists or specialists.

The two criteria related to technical training were given lower weights by SES logisticians (3.6 percent and 2.1 respectively) than by generalists or specialists. In fact, the rating for technical training in a function other than the primary career field was comparable to the specialists' rating. Four of the seven SES respondents gave this criterion "zero" weights.

PME and PCE course completion were rated quite low by SES logisticians. Both were allocated 1.4 percent which

is comparable to the overall generalists' weights. Six of the seven SES respondents allocated a "zero" to both criteri . Apparently neither is considered significant when considering a replacement at the SES level.

Even less important were the next two criteria, certification and membership in logistics organizations. Again, six of the seven SES respondents rated the two criteria at zero. The mean weight for both was .7 percent.

The "other" criterion was rated 14.3 percent, a weight higher than that given by generalists overall. While four of the seven SES logisticians disregarded this criterion, one allocated as much as 60 percent here for qualities such as a successful career and management ability. The other two SES respondents indicated weights of 30 percent to past performance and 10 percent to communicative ability.

Opinions on Functional Activities. Survey question 15 included in Appendix A solicited information on the percentage of time spent on each of the logistics-related core functions. Appendix G represents the mean percentage of time spent by generalists compared to specialists. A comparison of these two groups with SES responses is also included.

Overall, generalists and specialists spend the most time in general management and administration.

Generalists spend almost one-half their work time in this area. Thirty-eight percent claimed they spent 60 percent or more of their business day on general management. Similarly, SES logisticians spend about 41 percent of their time in this area. It is significant to note, however, that specialists spend considerably less time in general management than generalists (33 percent compared to 49 percent). Two individuals from both main groups claimed no time was spent in general management while two from each group also claimed 100 percent time in this area. The two specialists in the former category spent an average of 85 percent of their time instead in the supply function.

Specialists as a group spend twice as much time as generalists in the supply specialty (25.8 percent versus 10.2 percent). This is not surprising since twenty-three (88 percent) of the twenty-six specialists who responded have primary job experience in the supply/materiel management field. This high time percentage also corresponds to the high preference for supply reflected by specialists when weighting criteria in Appendix F. It is interesting, however, that SES respondents reflected more time in the supply area than did generalists overall (15 percent versus 10.2 percent). This is mainly because the one specialist SES allotted 50 percent of the workday to supply. Only three of the seven SES logisticians actually allotted time to this function.

Another point of interest is the relatively high percentage of time spent by both generalists and specialists in the logistic planning function. Although generalists reflected more time for this specialty than did specialists, neither showed a preference for logistic planning when weighting the criteria in survey question 1, Part II. The mode for logistic planning was 10 percent for both groups of respondents. Only two SES respondents showed any time spent in this function.

The final significant time allocation was to the "other" category. Seven generalists (two of them being SES) reflected time spent here. Two of the seven listed acquisition logistics; two listed systems support; and two listed resource acquisition. In fact, one generalist devoted 100 percent of the work time to resource acquisition. Similarly, six specialists reflected time allotted to "other" activities such as acquisition logistics and resource acquisition. Only two of the seven SES logisticians allocate time to other activities. The high percentage shown for SES respondents reflects those two very high allocations.

Additional Respondents' Comments. Part III of the survey (Appendix A) was an optional section requesting respondents' opinions on what most inhibits promotion to the senior level in logistics management and advice to

middle level logisticians. Ninety-two percent of all respondents answered this section of the survey.

By far the most common inhibitor mentioned was a lack of depth and breadth of job experience. Almost one-third of the senior level logisticians who responded felt there was too much specialization on the way to the senior level. However, many said the problem stemmed from an overall lack of opportunity to gain needed multi-functional experience due to poorly designed programs for career broadening. Related to specialization, the next most prevalent comment was on the apparent lack of mobility among logisticians at the middle and senior levels.

Not surprisingly, the most common advice respondents had for all logistics managers was to personally plan their careers for early pursuit of multi-functional experience, particularly at the field and staff levels. Several suggested obtaining a sound base in one primary function before pursuing career-broadening experience. Just as often, respondents contended hard work and a good record of performance were important. Many went further with this response to add middle and senior level logisticians need to go beyond their respective job descriptions and to be aggressive on the job.

Most of the responses were very positive but a few did criticize categorizing the materiel management function with supply. One senior logistician offered the

defense that materiel management includes many functional activities such as acquisition, engineering, production management, logistic/program planning, technical support, distribution, and budgeting. Similar criticism came from senior logisticians with primary experience in engineering. One respondent explained that "engineering is ignored" even though "it forms the basis for all logistics." Respondents with significant experience in acquisition logistics as well as international logistics felt these two functions encompass all five core logistics specialties.

Summary

The research objective was to test the hypothesis that senior civilian logisticians are specialists. Based on the panel's analysis and subsequent classification, the above hypothesis was rejected and it was determined that the majority (57 percent) of senior civilian logistics managers, GS/GM-15s and SES in the -346 job series, are generalists. The original investigative questions introduced in Chapter I were answered based on the research findings:

1. What does the individual's current logistics position entail? Eighty-one percent of all senior logisticians from the population of interest are officially designated as AFSC 6616, Logistics Plans and Programs

Staff Officer. According to AFR 36-1, these positions entail "formulation and administration of plans and programs encompassing the logistics functional areas of supply, maintenance, transportation, and contracting" (14:A17-37).

Most of the respondents have primary career experience in supply/materiel management. In their current positions, the majority of the senior logisticians who responded are directly involved in the logistics support (i.e., modification, repair, etc.) of specific weapon systems. As such they manage activities related to all the core logistics functions (i.e., production, engineering, contracting, acquisition, and maintenance).

2. What job experience was acquired prior to the current position? Eighty-three percent of all respondents have primary job experience in the supply/materiel management function at one of the five ALCs and/or at HQ AFLC.

3. What formal education degrees has the individual completed? Forty-four percent of all generalists and 27 percent of all specialists have a master's degree or higher. Approximately one-third of the degrees held by generalists and specilists are in business administration/management.

4. What PME/PCE courses have been completed? Forty-seven percent of the generalists and 38 percent of the specialists have completed at least one PME course.

Over 50 percent of those respondents have completed Industrial College of the Armed Forces (ICAF).

Seventy-four percent of the generalists and 65 percent of the specialists have completed one or more PCE courses. Most courses completed were those in the systems and logistics management categories.

5. What technical training has the individual received? Thirty-five percent of generalist respondents and 15 percent of all specialists have received technical training in a logistics-related area. The majority of these individuals have technical training in maintenance followed in frequency by supply training.

6. According to the individual, what education, training, and previous job experience best prepared him or her for a senior logistics management position? By far the most frequent response was materiel management experience in depot level supply at the ALC(s). This included day-to-day experiences as they related to all the core logistics functions. The next most important experience noted was formal education.

IV. Recommendations

Usefulness to the Air Force

Career Development. This research effort has determined that the majority of today's senior civilian Air Force logisticians are generalists. Each survey respondent was classified as a generalist or a specialist by a panel of experts. The two resulting groups of respondents were analyzed for distinguishing characteristics which then resulted in an empirical description of senior logisticians, i.e., GS/GM-15s and Senior Executive Service in the Logistics Management Specialist job series (-346).

The findings described in Chapter III can serve as a guide for logistics managers who want to evaluate their own backgrounds and to develop their own career paths. For instance, it was found that the number of core functions in which an individual works has an effect on his or her classification as a generalist. If a junior level logistician wants to develop a generalist background, he/she should include multi-functional job experience, i.e., experience in at least two of the core logistics functions (maintenance, supply, transportation, contracting, and logistic planning). While all individuals classified in the analysis have significant experience in the

supply/materiel management function, generalists also have significant experience in logistic planning and maintenance. Multi-functional experience, therefore, should probably include supply, logistic planning, and maintenance.

Based on the research findings, the number of different job series is not relevant to generalist versus specialist classification. The same is true of geographic mobility. However, individuals evaluating their own backgrounds for career development needs should consider multi-organizational experience. Lateral movement among various offices/organizations within an ALC, for example, is an excellent means of gaining a generalist background in all five core specialties. Coinciding with "office mobility" is a necessary change in job series, depending on the particular organization chosen. It should be remembered that both generalists and specialists in this research averaged approximately three job series each.

The level of formal education does appear to impact whether a senior logistician was a generalist or a specialist. It was found that while more specialists than generalists have a bachelor's degree, more generalists possess a master's degree (or higher). Completion of a master's degree may be the critical point at which classification occurs. The major area of academic study can vary, i.e., a business/management degree or logistics

management. In addition, pursuit of formal continuing education is important, especially if working toward a master's degree.

Technical training was evaluated as part of prior military experience. Over twice as many generalists as specialists have received either military or non-military technical training. This criteria could be particularly useful for lower level logisticians (and technicians) aspiring to future senior level logistics positions. Several respondents suggested that it was essential to build a solid base or depth of experience in one core function before proceeding to other logistics specialties or breadths of experience. A logistician should, therefore, take advantage of technical training as a way of enhancing a primary career skill. Likewise, military personnel anticipating entry into civilian logistics positions should take advantage of any technical training available.

PCE courses also appear to affect classification as a generalist or a specialist, but the emphasis should be on a well-rounded variety of courses. For instance, a logistician should include logistics management courses (such as acquisition logistics and weapon systems management), systems courses (including simulation techniques), and financial management courses (including budgeting and life cycle cost analysis). Descriptions of other courses are identified in Chapter I.

Active membership in professional logistics organizations is beneficial to junior and senior level logisticians. Through active participation, an individual is able to gain a broad base of logistics knowledge not readily available on the job. Exposure to commercial business logistics is also important and is possible through participation in these logistics organizations.

Although PME course completion and professional certification in logistics were not considered significant in classifying logisticians as generalists or specialists, neither criteria should be eliminated from career development planning. PME courses do offer a very broad perspective of national defense and logistics support concepts. Likewise, certification as a professional logistician demonstrates an individual's ability to understand and use a broad spectrum of logistics concepts and techniques. Moreover, the preparation required to successfully complete certification exams ensures exposure to a broad base of logistics knowledge.

Promotion Qualifications. The criteria described above can be compared to known requirements for promotion to specific senior level logistics positions. For instance, senior logisticians (SES) screening applicants for GM-15 positions may consider a "generalist" to be the best choice but could use a criteria-based "checklist" to

compare against each individual's resume. The findings of the panel of experts and subsequent descriptive analysis of the two groups is an excellent beginning.

The average weights allocated to the criteria by the survey respondents are another good reference. This information contained in Appendix F includes the relative importance of inherent management skills and other criteria, such as past performance and leadership ability, which could not be measured by the panel of experts.

These criteria are not intended to replace but only to supplement the list of qualifications required for a specific position. As mentioned previously, some senior level logistics positions may require a specialist in lieu of a generalist. Thus, the criteria designated as significant elements for a generalist classification only serve as guidelines. Other qualities may take precedence when considering several individuals for a specific senior logistics position.

Future Studies

This research effort has provided a first step toward a better understanding of the complex logistics system perspective. It has been determined from expert opinion that today's senior civilian Air Force logisticians in the -346 job series tend to be generalists. Admittedly, there is much left to be done. A valid

statistical model could further substantiate the above panel findings and analysis. Discriminant analysis is one such statistical tool which could help determine a linear combination of the criteria used in this research.

The criteria listed in Appendix F were also ranked by the respondents according to their relative importance when filling a GS/GM-13 (middle-manager) position. While time did not permit a review of this survey data, follow-on analysis would enable a valuable comparison to be made of the two positions--that of a senior level logistician versus a middle level manager in logistics. It could be determined how the relative importance of the criteria shifts as a logistics manager progresses from middle to senior level logistics positions. More in-depth analysis could also include the difference in relative weights assigned by generalists compared to the weights assigned by specialists when considering an individual for a GS/GM-13 position.

Another consideration is expanding this research to include additional logistics job series. Referring to Figure 1, similar analysis could be conducted on senior logisticians in other series such as -301, Administrative and Technical, and -345, Program Analysis. As recommended by one panel expert, the analysis could be expanded to the entire Department of Defense once the Air Force has properly evaluated their senior level logisticians. This,

in turn, could be used to review and enhance civilian career development policies and programs.

Summary

While this research makes no judgement about the value of being a specialist or a generalist, the findings have several potential applications to the Air Force:

1. Junior/senior level logisticians may use the findings to evaluate and plan personal career development.

2. Senior logisticians can use the findings as guidelines in selecting individuals for promotion to senior logistics positions.

3. These findings can serve as a basis for follow-on studies to include but not be limited to:

a. perform a discriminant analysis or other statistical analysis upon the data.

b. expand the research effort to include different job series and possibly include DOD personnel.

c. study middle level logisticians in the GS/GM-13/14 positions as the next generation of senior level logisticians.

4. These findings could be used to review and possibly enhance the current civilian career development policies/programs.

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433-6583

Appendix A: Survey Questionnaire

1 MAY 1985

REPLY TO ATTN OF: LS (Dawn L. Wilson, AV 785-6569)

SUBJECT: Research Questionnaire

TO:

1. Please take the time to complete the attached questionnaire and return in the enclosed envelope by 30 May 85.

2. This questionnaire is being used to obtain information about your job experience, education and training, as well as your opinions toward your job as a senior level logistician. The data gathered will become part of an AFIT research project on senior civilian Air Force logisticians in the -346 job series.

3. Please be assured that all information you provide will be held in the strictest confidence. Your individual responses will be combined with others and will not be attributed to you personally.

4. Your participation is completely voluntary, but I would certainly appreciate your help.

[illegible] D. SMITH, Colonel, USAF
[illegible]
School of Systems and Logistics

3 Atch
1. Letter from SAF/ALG
2. Questionnaire
3. Return Envelope

AIR FORCE—A GREAT WAY OF LIFE

DEPARTMENT OF THE AIR FORCE
WASHINGTON 20330

OFFICE OF THE ASSISTANT SECRETARY

1 MAY 1985

Dear Colleague:

I want to express my personal support for this effort. Ms. Dawn Wilson's research about the senior Air Force civilian logistician shows promise and should provide us with a valuable insight. It is important that your opinions and response be included in this research. I therefore encourage you to take the few minutes required to complete this survey and thereby assist us in creating a quality research product.

Thank you for your time and support.

Sincerely,

L. K. MOSEMANN, II
Deputy Assistant Secretary
(Legislation and Communications)

SURVEY

The following survey is in three parts. Part I requests information about your job experience and education/training. Part II requests your opinions on criteria that should be used to evaluate the qualifications of GS/GM-346-13 (and above) applicants. Part III requests additional personal opinions and is optional.

PART I

Section A - Job Experience

1. What is your current grade, job series, job title and organization?

   Grade/Job Series _____

   Job Title _____

   Organization _____

2. How long have you held your current grade?

   _____

3. How many total years of federal service do you have?

   _____

4. Are you male or female?

   _____

5. What is your age?

   _____

USAF Survey Control No. 85-40

PART I
Section A--continued

The specialty functions most often considered the "core" logistics functions are maintenance, supply, transportation, contracting and logistics plans. Job experience in materiel management is included under the supply function.

6. Do you have prior military service, either as active or reservist, in any of the five logistics functions?

___ Yes
___ No

If yes, please complete the following; if no, go to the next item.

	Function	Branch of Service	AFSC	Highest Rank	Dates of Service	Active (Check)	Reservist (Check)
Maint							
Supply							
Transp							
Contract							
Log Plans							

7. In your own words, describe the logistics aspects of your present position.

_____
_____
_____
_____
_____

8. Using the form on the next page, please indicate the amount of job experience you have in the five logistics functions and others. Under the column labeled "position," please indicate whether your position was that of staff, technician, manager, supervisor or any combination of these. Under "level" column, please indicate whether squadron, group, wing, major command, or headquarters. Under "other" column, please specify functions other than the five core functions listed above. Please list most recent job (prior to current position) first. (Please list as many previous positions as necessary to accurately portray your breadth of experience.)

PART I
Section A--continued

Inclusive Dates	(1) Position	*LCCEP/Cadre or Rotational	Location (Organization)	(2) Level	Grade	Job Series	Maintenance	Supply/Mat. Mgt.	Transportation	Contracting	Log Plans	Other (Specify)
							(check one)					
							☐	☐	☐	☐	☐	
							☐	☐	☐	☐	☐	
							☐	☐	☐	☐	☐	
							☐	☐	☐	☐	☐	
							☐	☐	☐	☐	☐	
							☐	☐	☐	☐	☐	

*If position was Logistics Civilian Career Enhancement Program (LCCEP) or LCCEP Cadre assignment please indicate by a "L" or "LC." If the position required cross-training/job rotation please indicate by an "R."

(1) "Position" is staff, technician, manager, supervisor, or combination.
(2) "Level" is squadron, group, wing, major command, or headquarters.

PART I

Section B - Education/Training

9. Please mark the response which indicates the highest education level you have completed. Also, indicate major area of study and dates for items (c) through (i).

	Major Area	Dates
a. Less than 12 years education		
b. High school graduate or equivalent		
c. Some college, no degree	_____	_____
d. Associate's degree	_____	_____
e. Bachelor's degree	_____	_____
f. Graduate credit, no graduate degree	_____	_____
g. Master's degree	_____	_____
h. Work beyond Masters	_____	_____
i. Doctorate	_____	_____

10. Have you completed any Professional Military Education (PME) programs, either as military or as a civilian?

___ Yes
___ No

If yes, please circle one or more of the following; if no, go to the next item.

a. Air Command and Staff College (ACSC)
b. Air War College
c. Industrial College of the Armed Forces (ICAF)
d. Other PME under branch of service other than the Air Force (Please specify): _____

11. Please circle any of the following categories of Professional Continuing Education (PCE) courses that you have completed. Please check if required for position held, past or present.

Category	Required
a. Systems	____
b. Logistics Mgt (Acquisition Log, Weapon Systems Mgt)	____
c. Production Mgt	____
d. Financial Mgt	____
e. Cost/Scheduling	____
f. Quantitative (Reliability theory, design, research & application)	____
g. Other (Please specify):	
_____	____
_____	____
_____	____
h. N/A	

PART I
Section B--continued

12. Referring to question 6 on military service, have you completed technical training in any of the five logistics functions? (Circle one or more of the following.)

    a. Maintenance
    b. Supply
    c. Transportation
    d. Contracting
    e. Log Plans
    f. Other (Please specify): _____

    _____

    _____

    g. N/A

13. Do you belong to any professional organizations directly related to logistics, such as the Society of Logistics Engineers (SOLE)?

    ___ Yes
    ___ No

    If yes, please list name of organization(s), dates of membership, and degree of your involvement; if no, go to the next item.

		Degree of Involvement		
Organization	Dates	Inactive	Moderately Active	Very Active
_____	_____	___	___	___
_____	_____	___	___	___
_____	_____	___	___	___
_____	_____	___	___	___
_____	_____	___	___	___

14. Have you received a certification applicable to your profession?

    ___ Yes
    ___ No

    If yes, please specify title and date received; if no, go to the next item.

Type Certification	Date
_____	_____
_____	_____
_____	_____

PART I
Section B--continued

15. The following is a list of functions you may or may not find to be a part of your position responsibilities. Please give an estimate of the percentage of time spent on each of these logistics-related activities.

Function	% of Time Spent
Maintenance	_____
Supply	_____
Transportation	_____
Contracting	_____
Log Plans	_____
General Management and Administration	_____
Other (Please specify):	
_____	_____
_____	_____
_____	_____
TOTAL	100%

PART II

The following list contains criteria which may (or may not) be used to evaluate an individual's qualifications for a logistics position.

1. Assume you are soon to be promoted and will select your replacement from a list of applicants.

   Please allocate a total of 100 points in column (A) among the following criteria which you would use to evaluate the qualifications of each individual on the list. (Allocating more points to one criterion relative to another indicates greater importance.)

   (Go to the next page for list of criteria.)

PART II--continued

Criterion	(A) Your Replacement	(B) GS-13
a. Job experience primarily in any one of the core logistics functions. Please specify function: _____	_____	_____
b. Job experience in more than one of the core specialties.	_____	_____
c. Inherent management skills (regardless of actual job experience).	_____	_____
d. Formal educational degree(s) in any area of study.	_____	_____
e. Formal educational degree(s) in a specific logistics-related area. Please specify major preferred: _____	_____	_____
f. Technical training in a core function which is same specialty as criterion (a).	_____	_____
g. Technical training in core function other than specialty under criterion (a).	_____	_____
h. PME course(s) completion.	_____	_____
i. TCE course(s) in logistics-related area(s).	_____	_____
j. Certification in logistics-related area(s).	_____	_____
k. Membership in logistics-related organization(s).	_____	_____
l. Other criteria you consider important (Please specify): _____	_____	_____
_____	_____	_____
_____	_____	_____
TOTAL:	100 pts	100 pts

m. Now, assume you are interviewing individuals for a GS-13 position -346 job series, in your organization. Allocate 0-100 points in column (B) to the above criteria.

PART II--continued

3. How much time in each of the following logistics core functions do you consider adequate job experience for an individual to be knowledgeable in that function? Please specify any other functions you consider logistics-related.

Function	Time in Each
a. Maintenance	_____
b. Supply	_____
c. Transportation	_____
d. Contracting	_____
e. Log Plans	_____
f. Other (Please specify)	
_____	_____

PART III (Optional)

1a. In your opinion, what job experience(s) and education or training in your background best prepared you for your current position?

_____

_____

_____

_____

_____

1b. If you were offered an opportunity to return to school in the near future for three months and could take a custom-designed curriculum, what kinds of things would you study? Be as specific as possible.

1st Choice: _____

_____

2nd Choice: _____

_____

PART III--continued

2. In your opinion, what is (are) the greatest inhibitor(s) to promotion to the senior level logistics position (GS-15 and above)?

_____

_____

3. My advice to aspiring middle level logistics managers would be:

_____

_____

_____

_____

_____

4. Please provide any comments you feel are relevant to this survey.

_____

_____

_____

_____

_____

This concludes the survey.
Thank you for your participation.

Appendix B: Respondents Grouped by the Number of Panel Experts Classifying Them as a Specialist

Survey Number	None	Only 1	Only 2	Three	Four	All
[illegible]	1					
[illegible]	1					
2		1				
[illegible]		1				
[illegible]		1				
8		1				
10		1				
[illegible]		1				
[illegible]		1				
[illegible]		1				
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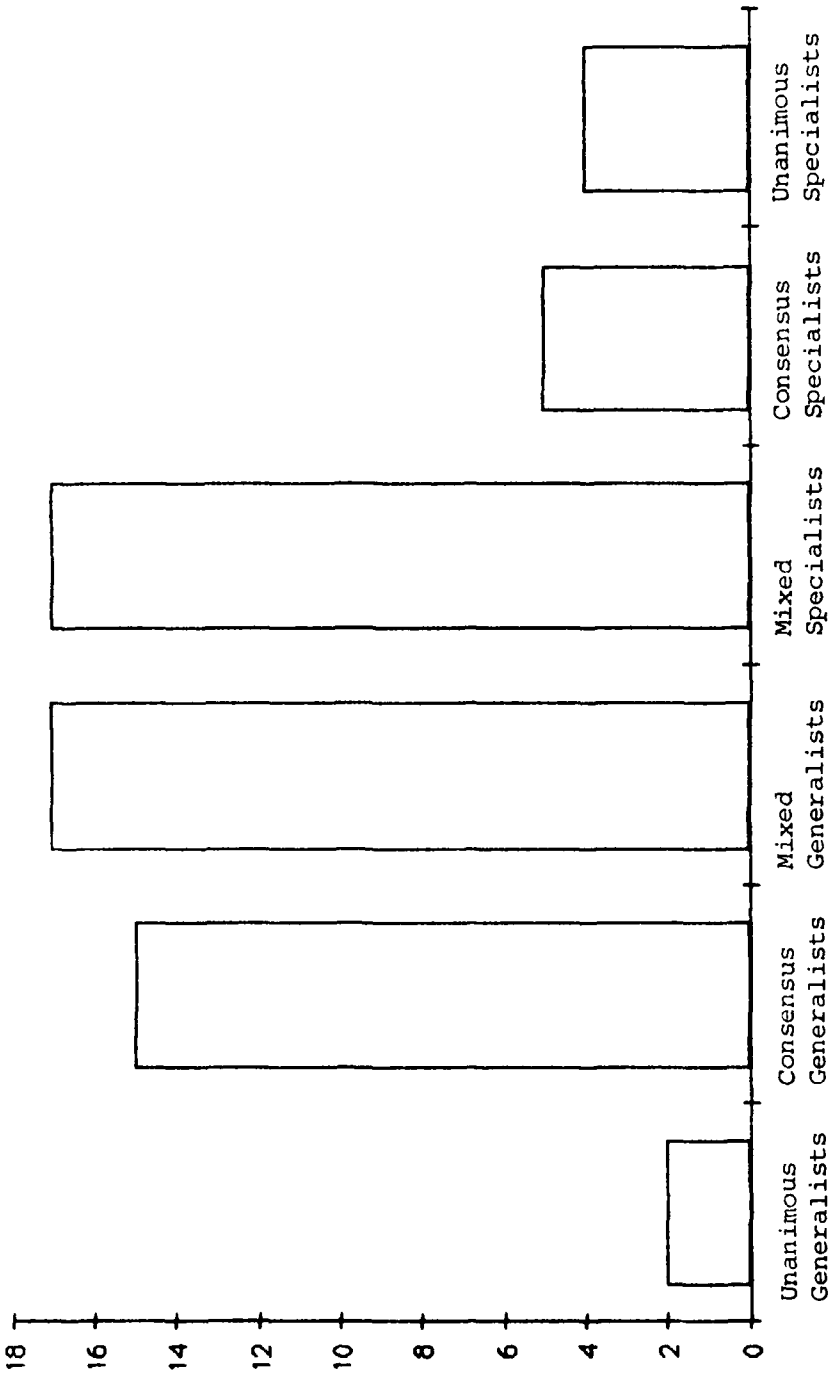
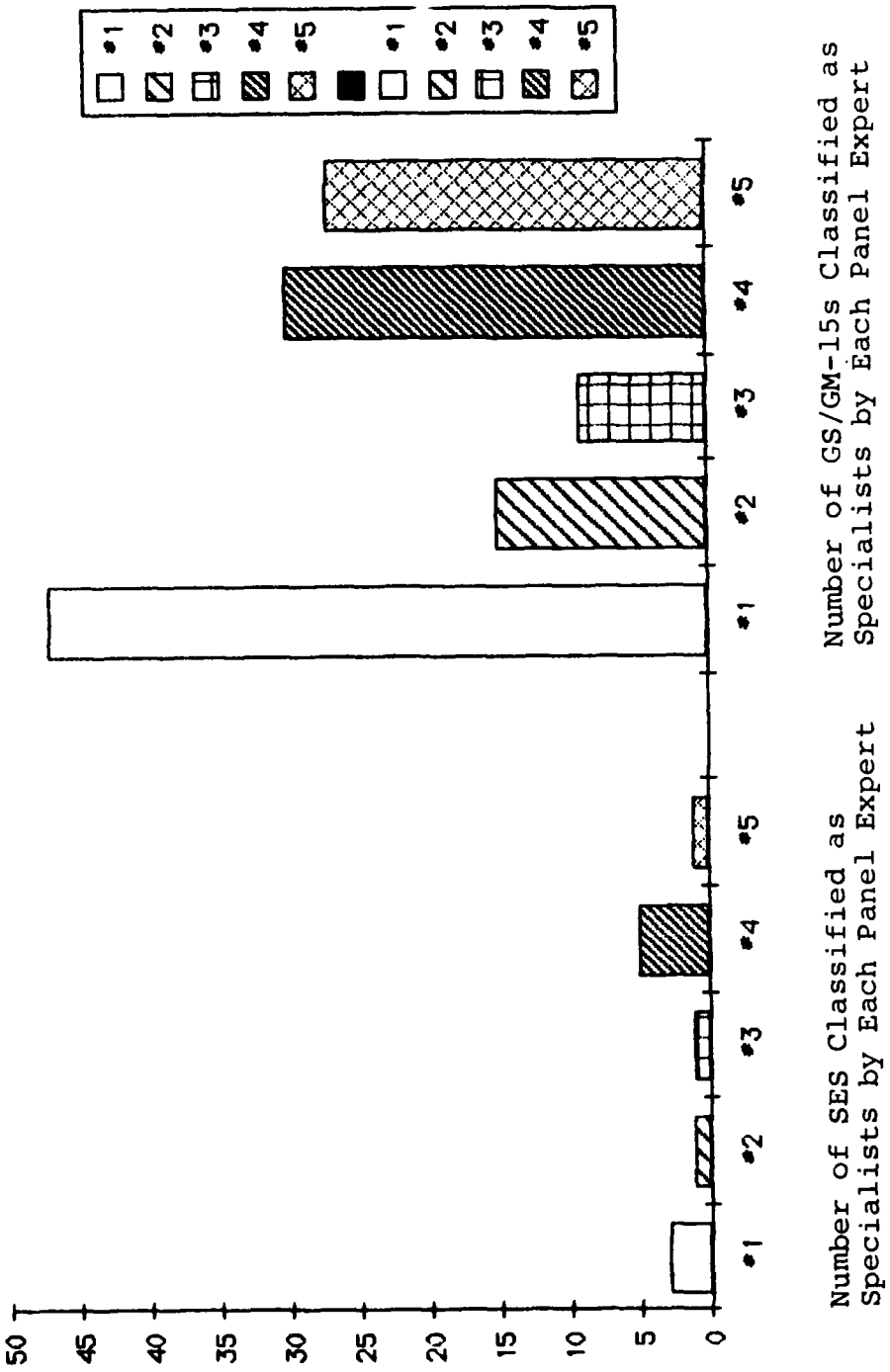
[illegible]					1	
[illegible]						1
[illegible]						1
[illegible]						1
[illegible]						1
[illegible]	[illegible]	15	17	17	5	4
[illegible]	3.33%	25.00%	28.33%	28.33%	8.33%	6.67%
[illegible]	0	5	1	0	1	0
[illegible]	[illegible]	10	[illegible]	17	4	4

Appendix C: Number of Respondents in Each Subgroup According to Panel of Experts Classification



Appendix D: Number of Senior Civilian Air Force Logisticians Classified as Specialists by Each Panel Expert



Appendix E: Panel of Experts' Comments on Individual Survey Analyses

Upon completion of their individual analyses of the respondents' surveys, the panel experts were asked to comment on what they found. The following are some of those comments made by each panelist:

Panelist #1

- The majority of the respondents are specialists.
- Many individuals have spent an entire career at a single geographical location.
- Many have a key specialty without any other experience.
- Few had:
  - -- operational command experience.
  - -- acquisition experience.
  - -- HQ USAF level experience.
- None had experience in their specialty outside the Air Force.
- Few or none had logistics experience with industry.
- Many positions demand career specialists, not generalists.
- Younger logisticians (those with less time in service) tended to specialize more than those in government for a longer period of time.

Panelist #2

- The majority of the respondents are generalists.

- There did not appear to be much geographic mobility. Perhaps mobility is not a better route to progression.

- A large number of respondents were in the materiel management function. Their "feeling of ownership" caused many to consider themselves experienced in all five core functions.

- Referring to survey question 15 on the amount of time spent in each function, general management should be allotted 100 percent. This actually should consist of 100 percent time spent on a "mix" of functions.

- The subject matter diminishes as an individual progresses in grade. After reaching the senior level, technical expertise is not important.

- While criteria (a-c) and (e) in question 1, Part II, are significant, the remaining criteria are not important.

- Specifically, formal education is not that important and can actually cause specialization.

Panelist #3

- The majority of the respondents are generalists.

- While many appear geographically immobile, mobility is probably not a detriment to progression.

- Based on the survey responses, it is the "exception" who achieves senior level position with a specialist background.

- Many respondents who were categorized as generalists are actually specialists.

- The "other" criterion category (question 1, Part II) is significant.

Panelist #4

- The majority of the respondents are specialists.
- There is little geographic mobility.
- There is little experience outside HQ AFLC, i.e., little experience at the wing/base levels.

Panelist #5

- Fifty percent are specialists and 50 percent are generalists.
- There was an almost total lack of mobility.
- Geographic mobility should begin at the GS-11 to -13 level.
- There were more specialists found at the senior level than was anticipated.
- In general terms, senior logisticians should be generalists; they need to be leaders/managers. However, those individuals without a staff probably are specialists in that particular position. Some select positions do require a specialist.

Appendix F: Weights for Criteria Relevant to Senior Logistics Management Positions (Survey Question 1, Part II)

Criterion	Mean ($\bar{x}$) Weights		
	Generalists	Specialists	SES
a. Job experience primarily in any one of the core logistics functions. Please specify function: Supply/Materiel Mgt (56%/78%/50%)	10.0	29.7	9.3
b. Job experience in more than one of the core specialties.	18.3	11.9	15.7
c. Inherent management skills (regardless of actual job experience).	29.0	23.6	38.6
d. Formal educational degree(s) in any area of study.	5.9	7.0	7.9
e. Formal educational degree(s) in a specific logistics-related area. Please specify major preferred: Business Administration (32%-gen) Logistics Management (45%-spec)	9.7	7.5	4.3
f. Technical training in a core function which is same specialty as criterion (a).	3.8	4.5	3.6
g. Technical training in core function other than specialty under criterion (a).	3.4	2.6	2.1
h. PME course(s) completion.	2.1	1.6	1.4
i. PCE course(s) in logistics-related area(s).	2.2	1.8	1.4
j. Certification in logistics-related area(s).	2.1	1.7	.7
k. Membership in logistics-related organization(s).	1.5	1.2	.7
l. Other criteria you consider important (Please specify): Past performance (25%/33%)	12.0	6.9	14.3
TOTAL:	100 pts	100 pts	100 pts

Appendix G: Mean Percentage of Time Spent on Each of the Logistics Core Functions (Survey Question 15)

The following is a list of functions you may or may not find to be a part of your position responsibilities. Please give an estimate of the percentage of time spent on each of these logistics-related activities.

Function	% of Time Spent (Mean)		
	General-ists	Special-ists	SES
Maintenance	9.5	12.2	5.5
Supply	10.2	25.8	15.0
Transportation	2.1	1.6	1.7
Contracting	6.3	7.0	6.4
Log Plans	14.3	12.6	3.6
General Management and Administration	49.1	33.4	40.7
Other (Please specify):			
Acquisition Logistics / Systems Support / Resource Acquisition	8.5	7.4	27.1
TOTAL:	100%	100%	100%

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: WHO IS THE SENIOR CIVILIAN AIR FORCE LOGISTICIAN?

Thesis Chairman: David E. Lloyd, Lt Col, USAF
Assistant Professor of Logistics Management

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Today's Air Force logistician must be able to manage the operation and support of weapon systems from a total system perspective. Lt Gen Leo Marquez, Deputy Chief of Staff, Logistics and Engineering, HQ USAF, has suggested senior logisticians may be unprepared to manage weapon systems due to a lack of general, "total system" skills. These senior logisticians may actually be specialists in only one of the core logistics functions, i.e., supply, maintenance, transportation, contracting, or logistic planning. Thus, the objective of this research was to determine whether senior civilian logisticians are specialists or generalists.

A survey was sent to all GS-GM-15s and Senior Executive Service in the Logistics Management Specialist (-346) job series. The survey information was individually reviewed by a panel of five experts and each respondent was classified as either a specialist or generalist. Subsequent analysis of the panel's results yielded an empirical description of today's senior civilian Air Force logisticians. The panel's findings, a composite description of senior logistics managers, and suggested Air Force applications are presented.