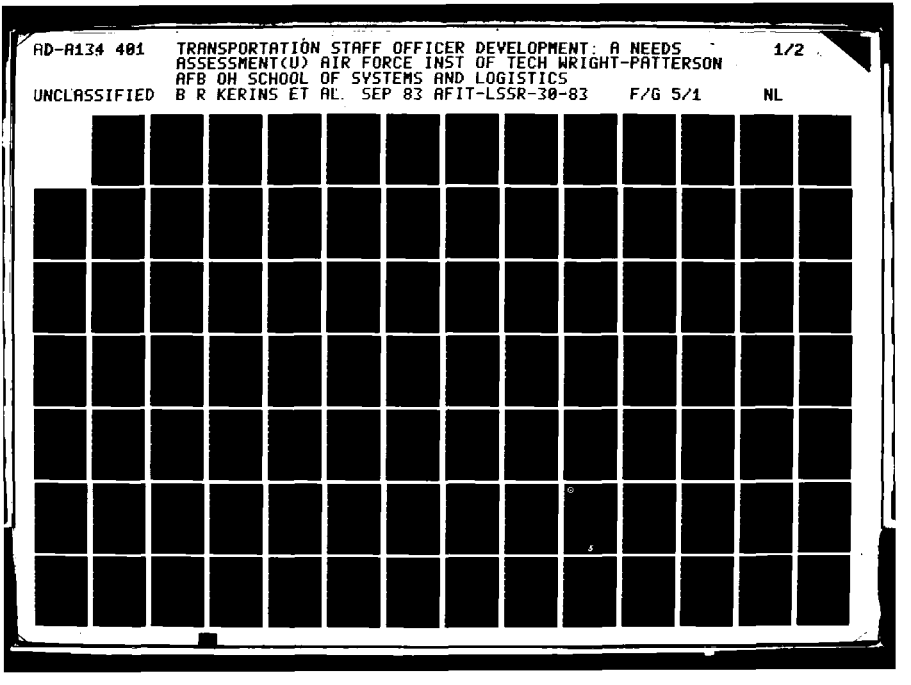
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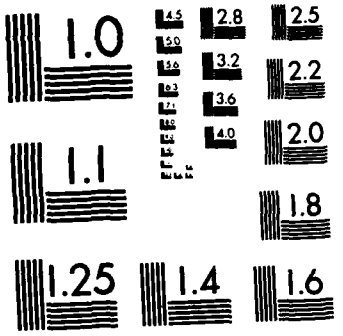

TRANSPORTATION STAFF OFFICER DEVELOPMENT: A NEEDS ASSESSMENT

Brian R. Kerins, Captain, USAF
Ray A. Kiracofe, Captain, USAF

LSSR 30-83

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

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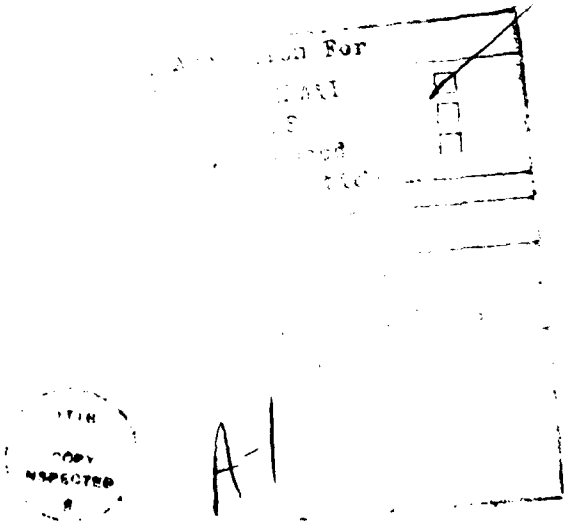

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This research assessed the management development needs of U.S. Air Force Transportation Staff Officers. In addition, an objective of the study was to determine the management development needs to be addressed at the Transportation Staff Officer Course (TSOC). Questionnaires mailed to transportation officers serving in the ranks of Captain, Major, Lieutenant Colonel and Colonel examined the importance in the job, proficiency level, and future importance of 53 educational dimensions. The 53 educational dimensions covered these areas: (1) communications; (2) human relations and leadership; (3) management; (4) transportation technical knowledge; (5) management science knowledge; (6) advanced transportation and management knowledge. Structured interviews of senior transportation policy makers identified problem areas and provided broad guidelines for improvements in officer development. Analysis resulted in the identification of 44 management development needs of which 12 should be addressed at the TSOC. Justification was found for the development of a senior level course to complement the present TSOC.

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TRANSPORTATION STAFF OFFICER DEVELOPMENT: A NEEDS ASSESSMENT

A 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

By

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has been accepted by the undersigned on behalf of the faculty of the School of Systems and Logistics in partial fulfillment of the requirements for the degree of

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CHAPTER I

INTRODUCTION

Statement of the Problem

The recent U.S. Air Force Occupational Management Center Job Inventory of the Transportation Officer Specialty identified skills, attitudes and knowledge used by transportation officers in performing their management duties. For U.S. Air Force transportation organizations to be effective, their management development programs must be focused to eliminate deficiencies in required skills, attitudes and knowledge. Headquarters United States Air Force has recently identified a need to investigate the objectives of the Transportation Staff Officer Course (TSOC), J30AR6011 000, a management development program conducted at Sheppard Air Force Base, Texas. Therefore, a need exists to assess and analyze the management development needs of transportation officers. This research provided information to be used in developing program objectives for the Transportation Staff Officer Course.

Background and Justification

Transportation operations is the common denominator which connects the remaining logistics operations of procurement, supply, and maintenance providing a synergistic

effect to the overall logistic system capability. The objective of the transportation system as defined by Air Force Manual (AFM) 400-2 Air Force Logistics Doctrine is to:

> Provide the means of conveyance that insures the timely dispatch and arrival of cargo and personnel at its mission destination . . . [which] must be tailored to provide responsive, flexible and mobile support [13:p.4-4].

U.S. Air Force personnel must be prepared to carry out the transportation system's objective in a variety of environments, and under an assortment of conditions.

Air Force Regulation (AFR) 36-1, Officer Classification Regulation, distinguishes between two categories of Air Force officers who are responsible and accountable for the effective management of the transportation system (15:p.a17-5). The distinction is based on grade and experience. Transportation officer, Air Force Specialty Code (AFSC) 6061/6054, includes the grades Second Lieutenant through Captain and possibly Major. Approximately 60 percent of the authorized transportation positions are in this category. Air Force Regulation 36-1 summarizes the duties of a transportation officer as:

> Manages transportation activities, including motor vehicle operations and maintenance; movement of personnel, personal property, and materiel by military and commercial air, motor, rail, water, and pipeline transportation facilities; and may command transportation, aerial port, and airlift support units [15: p.a17-5].

Seventy-five percent of the transportation officer company grade authorizations are at the squadron and wing levels.

The second category of Air Force transportation managers is the more senior and experienced transportation staff officer (AFSC 6011/6016). This category is composed of officers in the grades of Major through Colonel. The duties of a transportation staff officer are summarized:

> Administers transportation programs, including military and commercial air and surface transportation, motor vehicle, and logistic transportation planning and control; and may command transportation units [15:p.a17-5].

Assignments for transportation staff officers range from Squadron Commander positions to "Staff assignments including managing major functional activities, important programs and projects, and staff planning and policy formulation [14:p.27-2]." The majority of the transportation staff officer authorizations are at the Squadron Commander, Numbered Air Force or higher levels.

To carry out these responsibilities, the U.S. Air Force requires its transportation managers be provided initial technical training and continuing management development courses. Though both the terms training and management development are often used interchangeably and will be throughout this paper, in systems terms they are distinct. The researchers feel it is important that the reader understand this distinction. Training can be defined as:

> . . . supplying specific knowledge, skills or attitudes needed by the organization to meet its goals. Training is oriented to the completion of specific tasks within standards of productivity [17:6].

Management development is defined as:

> . . . supplying individuals prepared to meet organizational goals in specific positions or functions. In other words it prepares individuals to perform whole groups of tasks [17:6].

The present Transportation Staff Officer Course J30AR6011 000 currently conducted at Sheppard Air Force Base, Texas is a nine-week management development course. It prepares candidates to perform as staff officers and squadron commanders in the defense transportation system. Attendance at the course is limited to senior USAF Captains and higher military grades, and civilians GS-9 or higher with a minimum of five years experience in transportation. Topics of instruction at the Transportation Staff Officer Course include:

> Procedures and techniques of advanced traffic management; military and commercial air, motor, and rail movement; management and transportation funds; application of automatic data processing in everyday transportation management within DOD; application of military logistics; development of transportation plans and programs; staff surveillance of transportation activities; problems peculiar to transportation of hazardous materials; management of vehicle operations and maintenance activities and packaging and packing activities [16:p.3-9].

In order for the Transportation Staff Officer Course and other transportation management development programs to better serve their mission it is necessary that their curricula represent the real management development needs of the transportation staff officer.

Literature Review

Introduction

No resource is more critical to the success of an organization than management talent. But, effective managers must be developed; they are not born (1:50; 9:8; 18:449; 19:109). The problem for organizations is to identify the skills required for successful managing and insure these skills are developed throughout the manager's career. A review of the literature provides an identification of the skills required by successful managers. This background will provide a foundation on which the research can build.

Using the facilities of the Air Force Institute of Technology, Wright State University, Defense Technical Information Center, and the Defense Logistics Studies Information Exchange, articles were selected from professional management and training journals published from 1975 through 1982.

Military Managers

Hunsicker (4:618-621) sought the skill requirements of successful military managers in a study of students in three professional development schools. The schools, located at the U.S. Air Force Air University at Maxwell AFB, Alabama, are quite selective and are attended by the best qualified personnel.

Students at the Squadron Officer School, Air Command and Staff College and the Air War College were asked to identify and briefly describe three major skills which they felt contributed to the success of a manager. In addition, they were asked to indicate the percentage proportion contributed by each skill. Although the questions were open-ended, requiring the researcher to categorize the responses, controls were established to ensure consistent categorization.

The six skill categories and a brief description of each are summarized:

1. Communication--the technical ability to read, write, and listen.

2. Human Relations--the ability to "empathize," "understand people," or "consider subordinates." It reflects a concern for understanding and getting along with people in subordinate, lateral, or superior positions.

3. Management--the ability to analyze problems, make decisions, and apply the principles and functions of management to organizations and problems.

4. Competence--the skill in specific technical fields, such as logistics or maintenance and knowledge of the administrative, technical, and professional requirements of their specific organization.

5. Leadership--knowing how to motivate or direct people.

6. Internal--intangible traits such as "intuition," "judgment," and "personality" (4:619).

Hunsicker theorizes the failure of management improvement programs may be based on the failure of programs to develop the correct skills. He suggests organizations compare his findings with their existing program and if discrepancies appear, he recommends a systematic needs analysis of each of the six identified skill areas.

Hierarchy of Skills

Hunsicker's work supported the hierarchy of managerial skills introduced by Katz (5:33-42) and refined by Guglielmino and Carrol (3:341-345). Katz suggested that managerial skills could be categorized in three general areas--technical, human relations, and conceptual. His theory was that more technical skills are required at lower levels, with human relations skills becoming more important in middle management and conceptual skills most critical in top management.

In a survey of managers at different levels in different organizations, Guglielmino and Carrol found that 47 percent of the skills needed for low level management positions were technical in nature, while 18 percent of the skills needed for top management positions were technical. The percentages were exactly reversed for conceptual skills. They suggest this hierarchy of managerial

skills be used to "develop a unified, integrated development plan for managers in order to increase their probability of success [3:345]."

Thomas and Sireno (11:47-51) researched managers in various industries to identify the skills considered most important for management personnel. Five hundred relevant activities were originally identified by the researchers from a literature review and suggestions from employers. A panel of consultants then examined the list for content validity and the list was reduced to 115 activities. Put into the form of a questionnaire, the survey was sent to a random sample of firms from four industries. The respondents indicated those activities deemed essential in their jobs and those which were important.

The researchers classified the responses into the functional areas of communications, leadership, and control. Inherent with any classification system is the problem of judgment, which they stated. A weighted composite index showed the relative importance of each skill. Communication skills were the most highly ranked in all industries with all of the remaining highly ranked skills involving some form of communication skill. Below communication skills were control skills such as following proper channels of authority and developing and maintaining effective

control to produce a group effort. Leadership skills were ranked third.

Waters identifies three types of managerial skills

> . . . distinguishing among managerial behaviors according to the time interval over which they are learned and performed and the specificity with which they can be described [18:449].

He describes practice skills as those skills which have reasonably specific behavioral descriptions and which are performed over a relatively short time interval. Examples are listening, public speaking, managing meetings and asserting one's self. These skills can be practiced in a training program and learners can be given detailed feedback as to the extent to which they can perform the specified behavior.

Content skills are also behaviorally specific, but because the learning takes place over a long period of time, these skills are hard to simulate in a training environment. Examples are goal setting, time management, and building employee commitment and motivation. Learning these behaviors is best done on the job, so the goal of training programs is to increase the understanding of the behaviors.

Insight skills are behaviorally less specific than practice and content skills but like practice skills are performed and refined over a short time interval. Examples are the skill of working in a group, empathizing, and

bargaining and negotiating. Individuals have difficulty in explaining how these skills are learned but as Waters states, "are aware of having gained important learning that they can use immediately [18:451]."

Waters suggests two kinds of learning required in the development of managerial skills. The first is a cognitive understanding of the required behaviors; e.g., learning the rules of effective speech making. The second is the ability to actually perform those behaviors; e.g., learning to give an effective speech. Of his three types of skills, practice and insight skills require the ability to actually perform the required behavior while with context skills a cognitive understanding of the behavior is required.

Universal Versus Contingency Models

Dyer (1:50-56) discussed the controversy concerning the universal versus contingency models of management and its impact on management development programs. The universal management models appeared around 1960 and emphasized a strong reaction against highly authoritarian management (1:51). This emphasis was based on evidence that managers who imposed their will on subordinates encountered lower productivity and employee morale than less authoritarian leaders. Development programs based on the universal management model utilized the "human relations"

approach; training exercises and cases emphasized concern for employees as human beings, improved communication, and more participative management.

The contingency management model contends that effective management is dependent on the demands of the situation. Thus, the kind of management needed will vary according to the requirements of the situation. This model is based on research that indicates certain management behaviors used in one situation are not as effective in a different situation (1:53). Dyer's research found that while the management style of thirty-three managers remained fairly stable, the managers altered behavior as they shifted from one situation to another. His findings can be summarized in these four points:

1. Some specific behaviors characterize effective management in a variety of situations.

2. Organizational situations vary and call for different actions from managers for them to be successful.

3. An individual's overall management style seems to be relatively stable.

4. Managers can and do alter behavior to meet situational demands within the context of their styles (1:55).

Based on these propositions, Dyer concludes that training to improve managerial effectiveness must focus in one of three directions. The first direction is to train

around certain specified behaviors that have a high probability of being transferable. Second, train managers in general diagnostic skills. Third, direct situational training such that the program is developed to meet needs identified by the manager from his work environment.

Mandt states that "Development cannot occur unless there is a conscious desire for it to occur on the part of the employee [6:396]." Mandt presents a mental model depicting that all three levels--the manager, his supervisor and the organization--are involved in the manager's development. As a manager moves up within the organization he assumes more control of his development, the supervisor is still actively involved but the organization becomes more passive (6:396). Mandt also lists three groups of skills needed in this process:

1. Technical and Professional--this is the area of the organization in which the manager works; it includes knowledge, methods and techniques and implies the ability to use them.

2. Interpersonal--these skills imply an understanding of motivation, communication and sensitivity.

3. Managerial and Administrative--the ability to understand the complexity of organizations. The ability to set meaningful objectives and reasonable goals to solve problems.

As the manager moves up he masters some of the technical and professional skills required of his job thereby creating a need for expertise in managerial and administrative skills. Interpersonal skills are present at all levels of management but specific interpersonal skill requirements vary. At lower managerial positions selection interviewing techniques may be desired. At higher level management positions public speaking skills probably would be desired. Mandt suggests we combine these two constructs, level of management involvement as a contributor to the development process and level of management skill required into a general model of the entire management development process (6:399-400).

Summary

In summary, the literature has identified skills required by the successful manager. The skills can be categorized into three broad areas--technical, human relations, and conceptual. The importance of each category is dependent on the managerial level resulting in a hierarchy of skills. Therefore, management development programs must be focused to develop the correct skills as identified by the managers. This knowledge will serve as a foundation on which an assessment of the managerial development needs of the U.S. Air Force transportation staff officer can build.

Objectives

The purpose of this research project was to solicit and assimilate attitudes, opinions, and comments of transportation staff officers regarding their management development needs. An additional objective was to recommend specific objectives for the Transportation Staff Officer Course based upon aggregated needs.

Research Questions

Questions addressed in this research were:

1. What are the management development needs of the transportation staff officer?

2. Given the management development needs of transportation staff officers, what specific management development needs should be presented in the Transportation Staff Officer Course?

CHAPTER II

RESEARCH DESIGN AND METHODOLOGY

Introduction

To answer the questions posed in Chapter I it was necessary to define the population, identify the data collection plan, declare the variables of interest, and choose the analytical techniques for summarizing and presenting the research results.

Population

Identification of transportation management development needs required that the research solicit responses from officers who have working experience in the transportation career field. Therefore, the research population was composed of all active duty Air Force officers holding the Air Force Specialty Codes (AFSC) 6054, 6011, and 6016 and presently serving in grades Captain, Major, Lieutenant Colonel, and Colonel.

Air Force Military Personnel Center (AFMPC), Randolph AFB, Texas officials provided the actual size of the population defined above. The officers holding the appropriate AFSC and grades for our study are:

1. Captains, 285
2. Majors, 163

3. Lieutenant Colonels, 129

4. Colonels, 42

The total research population is 619.

Data Collection Plan

Structured Interview

The research literature suggests that managers should have input into the construction of their management development program, but the views of senior policy makers should not be ignored. Therefore, the researchers developed a structured interview which was conducted with selected senior transportation policy makers. The purpose of the interview was to identify the senior viewpoint regarding the management development needs of transportation staff officers. Appendix A contains a copy of the interview.

The structured interview was designed to provide the researchers with broad transportation education guidelines, identification of current management development problems, and possible solutions to these problems. The questions were intended to have the interviewees categorize skills into appropriate experience levels, ranks, and learning methods. This categorization allowed comparison with information gathered from the survey questionnaire described in the following section.

Survey Instrument

A mail survey was selected as the most reasonable survey instrument because of the wide geographic dispersion of the population. A major advantage of the mailed questionnaire was its low cost. Using a mail survey provided more respondents the opportunity to present input data at a fraction of the cost of conducting personal interviews. Also, the respondent was able to spend more time to consider his replies than with a telephone or personal interview. Another advantage was that a mail survey provides more anonymity. Therefore, a respondent was more likely to provide data of a personal nature (2:307-308).

While a mailed survey was selected as the most practical survey instrument, several limitations of this method must be stated. The major limitation was that the results may be subject to strong bias created by non-response. A second limitation was the inability to probe deeply into questions or secure large amounts of information (2:308).

These disadvantages did not present significant problems in this study. The study was descriptive and not inferential in nature. Therefore, non-response had the effect only of reducing the number of subjects described. The survey instrument was carefully designed to eliminate complex questions and did not require the respondent to provide large amounts of information.

Questionnaire Structure

The questionnaire was structured into three sections: (1) usefulness of the Transportation Staff Officer Course; (2) transportation management dimensions, and (3) demographic section. Appendix B contains a copy of the questionnaire.

The first section (Section A) asked respondents who had attended the Transportation Staff Officer Course to comment on the usefulness and applicability of the course. This information aided in addressing the research objectives.

The second section (Section B) was based upon the management skills required by effective managers as identified in the survey literature, the recent *Air Force Job* Inventory conducted by the USAF Occupational Measurement Center, and current civilian transportation management development courses. The skills, abilities and knowledge were grouped into six categories: communication, human relations and leadership, management, transportation technical knowledge, management science knowledge, and advanced professional transportation and management knowledge. The respondent was asked to indicate the importance in his present job, his present proficiency level, and the future career importance of the skills, abilities, and knowledge. While the USAF Job Inventory identified the amount of time spent by transportation officers in performing duties

requiring certain skills, attitudes, and knowledge, it did not ascertain the importance of the skills, abilities, and knowledge in duty performance. Likewise, it was necessary to determine the present proficiency level. If an individual was proficient in an area, the area should be precluded from a management development program.

The respondent also indicated the most appropriate course to overcome deficiencies in the skills, attitudes, and knowledge. The choices included: Squadron Officers School (SOS), Air Command and Staff College (ACSC), Air War College (AWC), Basic Transportation Officer Course (BTOC), and Transportation Staff Officer Course (TSOC). An open-ended option also allowed the respondent to indicate any appropriate DOD or civilian course.

The demographic section (Section C) gathered descriptive information such as organizational levels, major commands, Air Force Specialty Codes, time in present assignment, grade, and time in present grade.

Measurement Scale

The survey required respondents to use two seven-point Likert scales (see Figure 1) to indicate their responses. Throughout this research the Likert scale was assumed to deliver interval data. In reality, this assumption overstates the scale's capability. The Likert scale was originally structured to yield ordinal data but many

Strongly Disagree	Disagree	Slightly Disagree	No Opinion/ Don't Know	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Measurement Scale for Section A

Low						High
1	2	3	4	5	6	7

Measurement Scale for Section B

Fig. 1. Measurement Scales

researchers believe the distortion incurred by assuming interval data is negligible (2:122-125).

Evidence of Validity

The survey questionnaire was administered to seven transportation officers within the Air Force Institute of Technology, School of Systems and Logistics (AFIT), for indications of validity and comment. Our defined population restricted the number of students available for pretesting. The results and comments indicated that the questionnaire would identify management development needs.

Identification and Operational Definitions of Variables

The four independent variables used in this research were:

1. Importance in Present Job (IJ)
2. Present Proficiency Level (PL)
3. Future Career Importance (FI)
4. Appropriate Learning Method (ALM)

Importance in Present Job (IJ) was defined as the arithmetic mean of the population responses or subgroup responses which indicated the importance of that skill, ability, or knowledge in the respondent's present job.

Present Proficiency Level (PL) was defined as the arithmetic mean of the population responses or subgroup responses which indicated the respondent's proficiency in that skill, ability, or knowledge.

Future Career Importance (FI) is defined as the arithmetic mean of the population responses or subgroup responses which indicated the future career importance of that skill, ability, or knowledge as perceived by the respondent.

Appropriate Learning Method (ALM) is defined as the modal choice of population responses or subgroup responses which indicated the appropriate learning method regarding the skill, ability, or knowledge.

The two dependent variables used in this research were:

1. Education Factor Index (EFI)
2. Management Development Need

The Education Factor Index (EFI) was calculated by summing the arithmetic means for IJ and FI and subtracting the arithmetic mean for the PL of an educational dimension presented in Section B of the survey questionnaire. The EFI was subjectively constructed in this manner to

allow equal weighting for each measure (FI, IJ, PL). The reader could create a weighted EFI by giving more importance to any of the measures which may possibly change the results.

By summing the FI and IJ means for each of the fifty-three dimensions, the researchers produced a relative measure of the importance of that dimension. By subtracting the PL mean, the EFI became sensitive to education and knowledge already acquired.

The dependent variable EFI can assume continuous values ranging from -5 to +13. A large EFI connotes a high measure of importance with a relatively low proficiency level. A small or negative EFI connotes the reverse.

The dependent variable management development need was defined as that educational dimension which produces an EFI $\geq$ 4.0. The value, 4.0, was selected by the researchers because it was the median value of the continuous sample space, -5 to +13. In addition, the researchers subjectively defined a management development need as an educational dimension which failed to produce an EFI $\geq$ 4 but was of high concern to the interviewed senior transportation policy makers.

Method of Distribution

The survey questionnaire was conducted as a census because of the manageable size of the population (619) and

to allow all transportation officers defined in the population the opportunity to voice their perceptions, beliefs and experiences concerning management development issues. Consequently, the generalizability of the research is limited in that the non-random selection of respondents allowed the researchers to generalize the findings only to the respondents and not to the entire population.

A HQ USAF survey control number and approval to conduct the survey from the Research and Measurement Division of AFMPC was obtained on 16 May 1983. The survey was mailed to all transportation officers defined in the population. Names and addresses of the transportation officers were provided by the Research and Measurement Division of AFMPC. The researchers sent the questionnaire along with a pre-addressed return envelope through military distribution. The responses were marked directly on the questionnaire. The close-out date for returned survey packets to be included in the analysis was 30 June 1983.

Analysis Design

After conducting the structured interviews with senior transportation policy makers and receiving the completed questionnaire, the data was analyzed in the following manner:

1. Structured Interview--since the number of interviews conducted were few (twenty-four), the researchers

combined all the responses to the interview questions to produce a composite response for the first three questions. The last question was open-ended in design; the responses were categorized into general problem areas.

2. Mail Survey--upon receipt of the completed questionnaires, the responses for each question were entered into a computer file. The data base was first analyzed with respect to the respondent population. The responses were then stratified by rank and TSOC graduate status. The data base was analyzed with the Statistical Package for the Social Sciences (SPSS), a packaged system of computer programs designed for the statistical analysis of data. FREQUENCIES is one of the SPSS packaged programs which produces one-way frequency distribution tables for discrete variables (8:10). The researchers computed the mean, mode, and standard deviation of the responses to each question. Because the population was reduced to the number of respondents, the measures of central tendency and dispersion produced for each response in Section B of the survey questionnaire were used in calculating the EFIs.

3. The management development needs that respondents felt would best be presented at the TSOC were analyzed by using the SPSS packaged program PEARSON CORRELATION to produce a summary index indicating the strength of agreement among the subgroups analyzed. The absolute value of the index indicates the strength of the relationship.

The index 1.0 indicates a perfect agreement. The EFIs corresponding to the management development needs which should be presented at the TSOC for each subgroup were correlated with every other subgroup producing a Pearson Correlation matrix of summary indices. Only those management development needs identified by all subgroups were used in the Pearson Correlation procedure, since exclusion of a management development need by a subgroup implies non-randomness which biases the summary index.

4. Section A of the survey consisting of the TSOC usefulness portion was analyzed by computing and comparing the means and standard deviations for each of the six questions to the Likert scale presented in this chapter.

Assumptions and Limitations

There were several assumptions and limitations which must be recognized in this study. The assumptions made include the following:

1. The responses were independent of one another.

2. The respondents have taken the time necessary to mark the correct or intended answer alternatives.

3. The survey instrument was a reliable and valid measurement tool.

4. The Likert seven-point scale provided data close enough to interval level to allow use of parametric statistics.

5. The researchers have provided a representative list of educational dimensions which address the management development needs of the transportation staff officer.

The limitations include:

1. The conclusions applied only to the respondent population. Since this research was intended as a census of all transportation officers, Captain through Colonel, and 100 percent return was not achieved, no statistical inferences of the overall population was possible.

2. A mailed survey had the inherent limitations of: a strong bias created by non-response, the inability to probe deeply, and that respondents could be less than cooperative with complex time-consuming questionnaires.

CHAPTER III

DATA ANALYSIS

Introduction

The purpose of this chapter is to analyze the data received from the structured interviews and the survey questionnaire. This chapter is divided into the following sections: (1) interview and questionnaire administration, (2) demographics, (3) analysis of structured interviews, (4) identification of management development needs, (5) correlation of results, and (6) TSOC usefulness.

Interview and Questionnaire Administration

Survey Questionnaire

On 16 May 1983 the Research and Measurement Division of the Air Force Military Personnel Center (AFMPC), assigned HQ USAF Survey Control Number 83-41 to the survey questionnaire with an expiration date of 30 June 1983. The survey questionnaires were mailed on 24 May 1983 to the 619 active duty U.S. Air Force officers possessing the 605X, 601X, and A601X AFSCs. The names and official mailing addresses were supplied by AFMPC personnel. The researchers received 429 survey questionnaires, a 69.4 percent response rate. Of those returned, 419 (67.8 percent) had been completed and were deemed useful. Primary reasons for

noncompletion were retirements, separations, and personnel enroute to new assignments. The rank distribution of the useful survey questionnaire respondents is shown in Table 1.

TABLE 1

RANK DISTRIBUTION OF USEFUL SURVEY RESPONSES

	0-3	0-4	0-5	0-6	Missing
Absolute Freq.	180	120	91	27	1
Adjusted Freq.	43.1	28.7	21.7	6.5	-

An analysis based on a census could not be performed since the response rate was less than 100 percent. Therefore, the analysis in this chapter is meant to be a description of the respondent group only and no inferences to the defined population are implied.

Structured Interviews

The researchers conducted structured interviews with twenty-four senior transportation policy makers. The interview, Appendix A, consisted of four open-ended questions. The personal interviews were conducted between 9 and 16 June 1983 with senior transportation officials representing Headquarters United States Air Force (HQ USAF), Joint Chiefs of Staff (JCS), Office of the Secretary of Defense (OSD), Headquarters Air Force Systems Command (HQ AFSC), Headquarters Military Airlift Command (HQ MAC),

and Headquarters Military Traffic Management Command (HQ MTMC). A distribution by rank of those interviewed is found in Table 2.

TABLE 2

RANK DISTRIBUTION OF INTERVIEWEES

	0-7	0-6	0-5	0-4	0-3	GM-13
Absolute Freq.	1	12	8	1	1	1
Adjusted Freq.	4.25	50.0	33.3	4.25	4.25	4.25

Demographics

Survey Respondents

A complete presentation of demographic data is presented in Appendix C. This section contains an overview of selected demographic data for all respondents, those who have completed the TSOC, and those who have not attended the TSOC.

Table 1 showed 43.1 percent of the respondents were Captains, 28.7 percent were Majors, 21.7 percent were Lieutenant Colonels, and 6.5 percent were Colonels. Approximately 85 percent of the respondents had five or more years experience in the transportation career field with 54 percent having ten or more years experience. Approximately 67 percent of the respondents had been awarded Master's degrees. The respondents indicated that 9.3

percent had completed no Professional Military Education (PME) coursework, while 63.7 percent had completed PME beyond the Squadron Officer's School (SOS).

Respondents assigned to MAC accounted for 34.6 percent of the analyzed questionnaires, 13.7 percent were assigned to the "other" category which includes joint service assignments, unified commands and special operating agencies. Approximately 34 percent of the respondents were serving at the squadron level and 25.9 percent were performing duties at major commands. Predominantly, 47.4 percent of the respondents held the 601X (Transportation Staff Officer) AFSC; 29.7 percent held the 605X (Transportation Officer) AFSC; and 19.1 percent served in A601X (Commander) billets.

The demographic findings indicated the median respondent was a senior Captain with ten years or more of transportation experience. The majority of the respondents were serving at squadron or major command levels, had acquired a Master's degree and had completed SOS.

TSOC Graduates

The returned questionnaires indicated that 59.2 percent of the respondents were graduates of the Transportation Staff Officer Course (TSOC). The responses indicated that 40.6 percent of the Captains, 82.5 percent of the

Majors, 68.1 percent of the Lieutenant Colonels, and 51.9 percent of the Colonels had attended the TSOC.

Demographic findings indicated that the average TSOC graduate that responded to the questionnaire was a Major with over ten years experience in the transportation field. The TSOC graduate was well educated as 62.9 percent had received Master's degrees. The TSOC graduate respondent served in positions above the squadron level (71.7 percent) and primarily was assigned to MAC (30.9 percent). A significant number of those assigned to squadron duties were serving as commanders.

Non-TSOC Attendees

Evaluation of the demographic results for those respondents who had not attended the TSOC indicated a much junior officer as 73.5 percent of this group had less than ten years of transportation experience. A large percentage, 42.4 percent, were serving at the squadron level, and 17.1 percent had not completed any PME.

Analysis of the Structured Interview

Interview Question 1

The responses to interview question 1 were subjectively grouped into nineteen categories by the researchers as shown in Table 3. The results indicate that many of the criteria by which senior transportation officials

TABLE 3

RESPONSE TO STRUCTURED INTERVIEW QUESTION 1

Criteria	Number of Responses
Job knowledge	15
Attitude/motivation	11
Communication	9
Performance	6
Potential	5
Initiative	4
Experience	4
Understanding broad issues	4
Knowledge of related career fields	2
Image	2
Interest	1
Perceptions	1
Getting job done	1
Training	1
Capacity	1
Work habits	1
Responsiveness	1
Integrity	1
Loyalty	1
Ability to satisfy customers' needs	1

evaluate transportation staff officers can be presented in an educational environment.

Interview Question 2

The responses to interview question 2 are presented in Table 4. The results suggested that technical skills become less important to transportation staff officers as rank and responsibility increase. Human skills retained high importance through a transportation staff officer's career. Conceptual ability became increasingly important as the transportation staff officer advances in rank.

TABLE 4

RESPONSE TO STRUCTURED INTERVIEW QUESTION 2

	Technical			Human			Conceptual		
Rank	Low	Medium	High	Low	Medium	High	Low	Medium	High
Capt.	0	5	19	0	8	16	6	17	1
Major	0	19	5	0	5	19	0	12	12
Lt. Col.	7	14	3	0	2	22	0	5	19

Interview Question 3

This question was intended to provide an educational model to compare to the results of the survey questionnaire. The responses to interview question 3 are shown in Table 5.

TABLE 5

RESPONSE TO STRUCTURED INTERVIEW QUESTION 3

Area	Captain	Major
Communications	23 (PME 18, Precommissioning 5)	1 (PME)
Human Relations and Leadership	22 (PME 15, Precommissioning 7)	2 (PME)
Management	19 (PME 13, Precommissioning 6)	5 (PME 3, AFIT 2)
General Transportation Knowledge	24 (BTOC 22, TSOC 2)	-
Management Science Knowledge	10 (PME 2, Precommissioning 8)	14 (PME 6 AFIT 8)
Advanced Transportation Knowledge	2 (TSOC)	22 (TSOC 19, AFIT 3)

The majority of those interviewed indicated that education in communication, human relations and leadership, management, and general transportation knowledge areas should begin as early as possible in a transportation staff officer's career. Precommissioning programs and PME were identified as the appropriate course for the communication, human relations and leadership, and management areas. General transportation knowledge should be presented in the Basic Transportation Officer's Course.

Many of those interviewed stated that reinforcement is required throughout a transportation staff officer's career in the areas of communication, human relations and

leadership, and management. They suggested these areas should be incorporated into all technical and professional military courses.

Management science techniques and advanced transportation knowledge were seen as most appropriately offered to Majors through the Air Force Institute of Technology (AFIT) or the Transportation Staff Officer's Course.

Interview Question 4

The researchers categorized the responses to interview question 4 into five general areas: the acquisition of proper officer candidates; shorter courses; the improvement of industry interface; increased knowledge and application of data automation; the need to develop an educational vehicle to refocus the outlook and roles of mid-career officers.

The acquisition of proper officer candidates was seen as a critical problem. Most of those interviewed felt a rigid screening process must be implemented to ensure quality transportation officer acquisitions. This screening process should include a demonstrated capability to learn the diverse career field of transportation and the dedication to excel.

Several senior officers interviewed felt that the diversity of the career field caused many junior officers to develop "tunnel vision" in regard to their transportation

specialty. This can be combated with more participation of junior transportation officers in joint exercises, serving joint service assignments, and touring major command headquarters in an effort to see the transportation officer's role in the mission of the military services.

Several of the senior officials interviewed advocated separating the career field into three AFSCs--air, vehicles, and traffic management. However, they realized that this change may not be effective due to the small number of transportation officers and its possible adverse effects on promotion rates.

Short courses which focus on a particular aspect of the transportation career field were seen as the best method to ensure technical competence. Many of those interviewed felt that as junior officers rotated through the various functional areas of the career field, they should be afforded training in that area. The senior officers suggested the present courses were too broad in scope and therefore not challenging to the student. Strong support was presented for a three-tiered management development program. The proposed management development program would be composed of short courses and offered to transportation officers at the lower, mid and senior management levels.

Improving the interface with civilian industry was perceived as a growing problem. Many senior transportation policy makers felt transportation officers should know

more concerning the operation of the civil portion of the national transportation system. Viable methods to gain this knowledge would be increased Education-With-Industry positions, seminars, and increased active membership in professional transportation organizations.

Increased computer knowledge and the application of data based management techniques in transportation management was a unanimous concern of the senior transportation officials interviewed. Most of those officers interviewed felt this education should begin early in an officer's career and be reinforced often.

Many senior transportation officers indicated a need for a course to refocus the outlook and role of the mid-career transportation officer. The proposed course would bring together the skills acquired through PME, BTOC, TSOC, AFIT and short courses with experiences gained from the work environment to better prepare mid-level transportation officers for senior responsibilities.

Identification of Management Development Needs

This section presents the Education Factor Indices used in determining the management development needs of the transportation staff officer. The management development needs were determined as described in Chapter II. A revision in the determination of the appropriate learning method was necessary. Analysis of the completed

questionnaires revealed that many respondents indicated several appropriate courses from the choices available and others listed numerous additional courses. The researchers categorized all the responses into the following nine categories:

1. Professional Military Education (PME) (combined all original PME courses into one category)
2. Basic Transportation Officer Course (BTOC)
3. Transportation Staff Officer Course (TSOC)
4. All (responses which stated the dimension should be presented in PME, BTOC and TSOC)
5. Short Course
6. Private Education
7. Base School
8. Air Force Institute of Technology
9. Precommissioning Programs

Research question 1 is answered in Appendix D (all respondents). This appendix shows all the educational dimensions with their associated education factor index ranked from highest to lowest and the appropriate course the respondents felt best suited to present that dimension. As explained in Chapter II, a management development need can be defined as that dimension which produces an EFI $\geq$ 4.0. The results produced forty-four management development needs for the transportation staff officer.

The remainder of Appendix D shows the ranking of educational dimensions by EFI, for each of the remaining six subgroups studied. As previously stated, the management development needs of these subgroups are those dimensions possessing an EFI $\geq$ 4.0. Many of the highest ranking educational dimensions in all of the studied groups were found to be in the communications, human relations and leadership, and management sections of the survey questionnaire. PME was most often selected as the appropriate course to acquire these skills and abilities.

Research question 2, the management development needs selected to be presented at the TSOC as determined by each studied group are shown in Tables 6 through 12.

After inspecting the results of research question 2 it became apparent to the researchers that the results indicated the need for transportation staff officers to keep abreast of changing technology as evidenced by the following management development needs:

1. Data automation techniques
2. Microcomputer operations
3. Mathematical techniques to allocate and schedule transportation resources
4. Computer programming
5. Logistics computer simulation

The respondents also indicated educational needs to keep current with the dynamic requirements and uses of

TABLE 6

MANAGEMENT DEVELOPMENT NEEDS TO BE PRESENTED AT TSOC--
ALL RESPONDENTS

Rank	Index	Topic	
1	6.242	IV-13	Data Automation Techniques
2	6.098	IV-7	Logistics Planning Techniques
3	6.064	VI-12	War and Mobilization Plans
4	5.795	V-6	Microcomputer Operations
5	5.586	VI-10	National Transportation System's Impact on AF Mobility/Contingency Requirements
6	5.161	VI-1	Economics of Transportation Systems
7	5.067	VI-11	Management of Common User Transportation Systems
8	4.987	VI-3	Economics of Military Acquisition
9	4.741	V-5	Computer Programming
10	4.698	V-9	Math Techniques to Allocate and Schedule Transportation Resources
11	4.604	VI-2	Economic Regulation/Deregulation of the Transportation Industry
12	4.444	V-7	Logistics Computer Simulation

TABLE 7

MANAGEMENT DEVELOPMENT NEEDS TO BE PRESENTED AT TSOC--
TSOC GRADUATES

Rank	Index	Topic	
1	6.101	IV-13	Data Automation Techniques
2	6.039	IV-7	Logistics Planning Techniques
3	5.908	VI-12	War and Mobilization Plans
4	5.795	V-6	Microcomputer Operations
5	5.480	VI-10	National Transportation System's Impact on AF Mobility Contingency Requirements
6	4.966	VI-1	Economics of Transportation System
7	4.857	VI-3	Economics of Military Acquisition
8	4.841	VI-11	Management of Common User Transportation Systems
9	4.434	V-9	Math Techniques to Allocate and Schedule Transportation Resources
10	4.415	VI-2	Economic Regulation/Deregulation of the Transportation Industry
11	4.365	V-7	Logistics Computer Simulation

TABLE 8

MANAGEMENT DEVELOPMENT NEEDS TO BE PRESENTED AT TSOC--
NON-TSOC ATTENDEES

Rank	Index	Topic	
1	6.468	IV-13	Data Automation Techniques
2	6.283	VI-12	War and Mobilization Plans
3	6.238	IV-7	Logistics Planning Techniques
4	5.752	VI-10	National Transportation System's Impact on AF Mobility/Contingency Requirements
5	5.556	V-6	Microcomputer Operations
6	5.437	VI-1	Economics of Transportation Systems
7	5.299	VI-11	Management of Common User Transportation Systems
8	5.268	IV-12	National and State Transportation Regulatory Directives
9	5.183	VI-3	Economics of Military Acquisition
10	5.055	V-9	Math Techniques to Allocate and Schedule Transportation Resources
11	4.914	VI-2	Economic Regulation/Deregulation of the Transportation Industry
12	4.909	V-5	Computer Programming
13	4.542	V-7	Logistics Computer Simulation

TABLE 9

MANAGEMENT DEVELOPMENT NEEDS TO BE PRESENTED AT TSOC--CAPTAINS

Rank	Index	Topic	
1	6.438	IV-13	Data Automation Techniques
2	6.352	VI-12	War and Mobilization Plans
3	6.266	IV-7	Logistics Planning Techniques
4	5.865	VI-10	National Transportation System's Impact on AF Mobility/Contingency Requirements
5	5.826	V-6	Microcomputer Operations
6	5.481	VI-1	Economics of Transportation Systems
7	5.424	VI-3	Economics of Military Acquisition
8	5.411	VI-11	Management of Common User Transportation Systems
9	5.213	V-5	Computer Programming
10	5.056	V-9	Math Techniques to Allocate and Schedule Transportation Resources
11	4.906	VI-2	Economic Regulation/Deregulation of the Transportation Industry
12	4.554	V-7	Logistics Computer Simulation

TABLE 10

MANAGEMENT DEVELOPMENT NEEDS TO BE PRESENTED AT TSOC--
MAJORS

Rank	Index	Topic	
1	5.950	IV-7	Logistics Planning Techniques
2	5.933	IV-13	Data Automation Techniques
3	5.754	VI-12	War and Mobilization Plans
4	5.475	IV-11	Capabilities of Military Air Transportation
5	5.402	V-6	Microcomputer Operations
6	5.162	VI-10	National Transportation System's Impact on AF Mobility/Contingency Requirements
7	4.583	VI-11	Management of Common User Transportation Systems
8	4.459	VI-3	Economics of Military Acquisition
9	4.093	V-5	Computer Programming
10	4.073	V-9	Math Techniques to Allocate and Schedule Transportation Resources
11	4.061	V-7	Logistics Computer Simulation
12	3.970	VI-1	Economics of Transportation Systems
13	3.908	VI-2	Economic Regulation/Deregulation of the Transportation Industry

TABLE 11

MANAGEMENT DEVELOPMENT NEEDS TO BE PRESENTED AT TSOC--
LIEUTENANT COLONELS

Rank	Index	Topic	
1	6.110	IV-13	Data Automation Techniques
2	6.105	V-6	Microcomputer Operations
3	6.060	IV-7	Logistics Planning Techniques
4	5.848	VI-12	War and Mobilization Plans
5	5.527	VI-10	National Transportation System's Impact on USAF Mobility/Contingency Requirements
6	5.429	VI-1	Economics of Transportation Systems
7	5.044	VI-11	Management of Common User Transportation Systems
8	5.033	VI-3	Economics of Military Acquisition
9	4.897	V-9	Math Techniques to Allocate and Schedule Transportation Resources
10	4.769	VI-2	Economic Regulation/Deregulation of the Transportation Industry
11	4.739	V-7	Logistics Computer Simulation
12	4.670	V-5	Computer Programming

TABLE 12

MANAGEMENT DEVELOPMENT NEEDS TO BE PRESENTED AT TSOC--
COLONELS

Rank	Index	Topic	
1	6.778	IV-13	Data Automation Techniques
2	6.406	VI-12	War and Mobilization Plans
3	5.846	VI-10	National Transportation System's Impact on AF Mobility/Contingency Requirements
4	5.815	V-8	Budgeting Techniques
5	5.778	IV-7	Logistics Planning Techniques
6	5.629	VI-1	Economics of Transportation Systems
7	5.586	V-1	Aerial Port Operations
8	5.552	IV-11	Capabilities of Military Air Transportation
9	5.348	IV-5	Capabilities of Commercial Air Carriers
10	5.185	VI-2	Economic Regulation/Deregulation of the Transportation Industry
11	5.074	VI-5	Managerial Economics
12	5.074	VI-11	Management of Common User Transportation Systems
13	4.888	V-9	Math Techniques to Allocate and Schedule Transportation Resources
14	4.848	IV-4	Capabilities of Commercial Surface Carriers
15	4.444	V-7	Logistics Computer Simulation
16	4.334	VI-3	Economics of Military Acquisition
17	4.041	IV-3	Capabilities of Military Sea Transportation

transportation resources in the military arena by identifying the following dimensions as needs:

1. Logistics planning techniques
2. War and mobilization plans
3. National transportation system's impact on USAF mobility/contingency requirements
4. Economics of military acquisitions

The respondents identified educational needs to keep abreast of the military transportation interface with the commercial sector as indicated by the following needs:

1. Economics of transportation systems
2. Management of common user transportation systems
3. Economic regulation/deregulation of the transportation industry

The subgroup of Colonels identified several educational dimensions not acknowledged by the majority of the remaining respondents. These dimensions are:

1. Budgeting techniques
2. Military air capabilities
3. Aerial port operating procedures
4. Capabilities of commercial carriers
5. Capabilities of surface carriers
6. Military sealift capabilities
7. Managerial economics

Commensurate with their rank, experience, and responsibility, Colonels find themselves on the forefront of change, implementing and promulgating policy and making decisions between diverse alternatives. The inclusion of the above dimensions indicate these senior officers realize the impact of transportation modes and cost structures on policy alternatives and decisions.

Correlation analysis focused on the twelve management development needs produced by the survey questionnaire respondents. Correlation analysis was used to find the strength of agreement between the studied groups' EFIs for the management development needs shown in Tables 6 through 12.

The four management development needs of: (1) microcomputer operations, (2) economics of transportation systems, (3) computer programming, and (4) economics of regulation and deregulation of the transportation industry, were eliminated from analysis because they were not found to be management development needs in all studied subgroups.

The correlation matrix (Table 13) shows the strong agreement of the remaining eight dimensions between the studied groups. Dimensions excluded from correlation analysis warrants further explanation. Colonels felt that microcomputer operations and computer programming were not management development needs. They indicated a user preference versus an operator preference by eliminating these two

TABLE 13

CORRELATION MATRIX OF EDUCATION FACTOR INDICES

	All Respondents	TSOC Grad	Non-TSOC	Captain	Major	Lt Cols	Colonels
All Respondents		.9957	.9938	.9877	.9922	.9902	.9171
TSOC Grad			.9798	.9747	.9969	.9921	.8972
Non-TSOC				.9921	.9748	.9799	.9272
Captains					.9638	.9621	.8897
Majors						.9925	.8967
Lt Colonels							.9065
Colonels							

needs. They included data automation techniques as it impacts transportation management as their strongest TSOC need. TSOC graduates also failed to identify computer programming as a management development need. No satisfactory reason for this exclusion was found.

Economics of transportation systems and economics of regulation and deregulation of the transportation industry barely missed the criteria of an EFI $\geq$ 4.0 by the Major respondents. The Major respondents provided EFIs for these two dimensions as 3.970 and 3.908, respectively. As was shown in Tables 6 through 12, the EFIs for the Majors' responses were consistently lower than any other group studied. Although no explanation was drawn from this information, the researchers felt the support shown by the other groups indicated these two dimensions should be included as management development needs.

TSOC Usefulness

Table 14 presents the results to questions 1 through 6 in Section A of the survey questionnaire. Slight agreement on the usefulness of the TSOC was found as indicated by the results to questions 1 and 3. However, the respondents indicated stronger agreement on encouraging other transportation officers to attend the TSOC. The results to question 4 indicated the course is more theoretical in nature and not oriented to improve on-the-job problem

TABLE 14

PARAMETRIC VALUES FOR SECTION A OF THE SURVEY--
TSOC ATTENDEES

Question	Mean	Std Dev
1	5.240	1.617
2	5.575	1.656
3	3.271	1.812
4	4.664	1.690
5	4.219	1.798
6	6.231	1.360

solving. No conclusion on the educational facilities at Sheppard AFB, Texas can be made from the results to question 5. Results to question 6 indicated a strong need for transportation management education beyond the Transportion Staff Officer Course.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This research was undertaken to identify the management development needs of the U.S. Air Force transportation staff officer. Also, the research was to determine those management development needs to be presented at the Transportation Staff Officer Course.

A survey questionnaire was developed and mailed to 619 transportation officers in the ranks of Captain through Colonel. The respondents returned 419 completed, useful surveys--a rate of 67.8 percent. Additionally, a structured interview of twenty-four senior transportation policy makers provided a macro perspective of important issues to be considered in the development of effective transportation staff officers.

Educational factor indices were computed from the survey questionnaire responses and management development needs derived from these indices. Management development needs to be addressed at the Transportation Staff Officer Course showed strong similarity for each subgroup studied.

Conclusions

The conclusions of this research effort are based on an analysis of the responses to the Transportation Officer Management Development Questionnaire and the personal interviews of selected transportation policy makers. A limitation of the research is that the conclusions apply only to the respondents. Since the survey questionnaire was designed as a census and not all questionnaires were returned, no statistical inferences to the defined population were attempted. This study produces descriptive information of the survey respondents only.

Analysis of the survey and interviews led to the following conclusions:

1. Additional education for transportation staff officers is needed. This conclusion is based on the 6.231 mean response to question 6 (Recommend education beyond TSOC), Section A, of the survey questionnaire. Additional support is provided by the management development needs identified by the Colonels studied and the support for a senior executive program indicated by the structured interview.

2. Communication, human relations and leadership, and management skills were found to be the most important management development needs of transportation staff officers. This conclusion is supported by the high education

factor indices produced in these areas across all groups studied.

3. Educational dimensions described in the Advanced Professional Transportation and Management Knowledge section of the questionnaire which were found to be management development needs should be presented at the Transportation Staff Officer Course. This conclusion is supported by twenty-one of twenty-four of those interviewed indicating the Transportation Staff Officer Course as the most appropriate course for these topics. Also, one-half of the management development needs identified to be presented at the TSOC by the survey questionnaire respondents are from the Advanced Professional Transportation and Management Knowledge section.

4. The Transportation Staff Officer Course should address the following three broad areas:

a. Technological changes in transportation management

b. Procedural changes and techniques in military transportation management

c. Procedural changes and techniques in civilian transportation management

This conclusion is supported by the management development needs derived from the survey questionnaire, the similar ratings among studied subgroups, and comments elicited by the structured interview.

Recommendations

The researchers offer these recommendations:

1. Modify the Plan of Instruction for the TSOC. The current Plan of Instruction for the Transportation Staff Officer Course, J30AR6011 000 describes the course

> Training includes the techniques and procedures of advanced traffic management; transportation planning, programming, and operations, including military and commercial air, motor, rail, water, and pipeline movements; terminal management, and the management of transportation resources [12:i].

The researchers feel the course should include the educational dimensions listed below in order of priority:

a. Knowledge of data automation techniques and their application to transportation management

b. Knowledge of logistics planning techniques

c. Knowledge of war and mobilization plans and planning policies or procedures

d. Knowledge of microcomputer (office size) operations, uses and limitations

e. Knowledge of the national transportation system as it impacts Air Force mobility/contingency requirements

f. Knowledge of the economics of transportation systems

g. Knowledge of policies and procedures required to establish and manage common user transportation systems

h. Knowledge of military economics, especially acquisition of weapon systems, vehicles and equipment

i. Knowledge of computer programming

j. Knowledge of mathematical techniques developed to allocate and schedule transportation resources

k. Knowledge of economic regulation/deregulation as it pertains to our national transportation industries

l. Knowledge in logistics computer simulation techniques

2. Develop a senior level course to fulfill the management development requirements for the senior transportation officer. The course should be designed to complement the TSOC, but should emphasize these additional educational dimensions:

a. Knowledge of budgeting techniques, regulations, and integration from base, major command and DOD viewpoints

b. Knowledge of aerial port operating procedures

c. Knowledge of the capabilities of military air transportation

d. Knowledge of the capabilities and procedures of commercial air carriers

e. Knowledge of managerial economics to serve as the basis for making policy decisions within an organization

f. Knowledge of the capabilities and procedures of commercial surface carriers

g. Knowledge of the capabilities of military sea transportation

Recommendations for Future Research

To aid future researchers, the raw data used in this research is available from the Department of Logistics Management, Resource Management Division, School of Systems and Logistics, Air Force Institute of Technology, Wright-Patterson AFB, Ohio. Additionally, Appendix E, Parametric Values for Survey Section B of the Survey Questionnaire, provides summary data for further research and/or replication.

Recommendations for future research are as follows:

1. To determine if the management development needs identified as best presented in Professional Military Education are effectively presented to transportation staff officers.

2. To explain the consistently lower AFIs provided by the subgroup of Majors.

3. To determine the impact and feasibility of separating the transportation career field into three distinct functional areas: air transportation; traffic management; vehicles operations and maintenance.

APPENDICES

APPENDIX A

INTERVIEW GUIDE FOR SENIOR TRANSPORTATION POLICY MAKERS

The following questions request your views and perceptions concerning the management development needs of the transportation career field. We are interested in uncovering broad areas of knowledge which transportation officers possess or should possess, when the knowledge should be presented or expected in a transporter's career, and the appropriate method of presentation.

NAME OF RESPONDENT _____ RANK _____

OFFICE SYMBOL _____ DATE _____

1. List the 3 most important criteria by which you evaluate transportation staff officers.

a. _____

b. _____

c. _____

2. Researchers have identified 3 broad categories of skills required by effective managers:

a. TECHNICAL--understanding of and proficiency in a specified kind of activity; particularly one involving methods processes, procedures or techniques.

b. HUMAN--working effectively as a group member and building cooperative effort within the team they lead.

c. CONCEPTUAL--ability to see the enterprise as a whole.

Please indicate the importance (high, medium, low) you would place on these categories for transportation staff officers of the following ranks.

	TECHNICAL			HUMAN			CONCEPTUAL		
	low	med	high	low	med	high	low	med	high
CAPT									
MAJOR									
LtCOL									

3. There are many skills which transportation staff officers are required to perform. We have categorized these skills into 6 broad areas:

a. COMMUNICATION--face-to-face conversation, public speaking, briefing, writing, and listening.

b. HUMAN RELATIONS AND LEADERSHIP--motivation, effectiveness reports, counseling, and administering UCMJ.

c. MANAGEMENT--setting goals, managing time, organization, administration and work simplification.

d. GENERAL TRANSPORTATION KNOWLEDGE--aerial port procedures, water port procedures, surface transportation, air transportation, logistics planning and data automation tools.

e. MANAGEMENT SCIENCE TOOLS--statistics, inventory management techniques, budgeting, computer programming and simulation techniques.

f. ADVANCED TRANSPORTATION KNOWLEDGE--economics, deregulation, mobility, war planning.

At what rank should transportation officers be afforded the opportunity to acquire these skills and what course/learning method would be the most appropriate?

AREA	CAPTAIN	MAJOR	Lt COL
Communication			
Human Rel			
Mgmt			
Gen Trans Knldg			
Mgmt Science			
Adv Trans Mgmt			

4. Before validating or recommending changes to the present transportation management development programs we solicit your comments concerning the direction you feel the transportation career field must take to better prepare its officers to perform in the next 5-10 years.

APPENDIX B

SURVEY QUESTIONNAIRE

17 MAY 1983

MPCYP

Request for Survey Approval

AFIT/ED (Colonel Gleason)

1. The survey entitled, "Transportation Management Needs Profile Instrument", submitted by Capt B. Kerins and 1Lt R. Kiracofe, has been reviewed and approved for military personnel. The assigned survey control number is USAF SCN 83-41, which expires 30 Jun 83. Request copy of the survey results be provided to this office.

2. Should you require further assistance, please contact Capt Jackson, HQ AFMPC/MPCYPS, AUTOVON 487-6122/2449.

FOR THE COMMANDER

/S/

BERT K. ITOGA, Lt Col, USAF
Chief, Research and Measurement
Division

Cy to: AFIT/LSH ✓
Dr. Robert Weaver
AFIT/LSM
Maj James Annesser

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C. 20330

20 MAY 1983

REPLY TO ATTN OF: LET

SUBJECT: Transportation Officer Management Development Questionnaire

TO: Selected Transportation Officers

1. You have been selected to participate in the transportation officer utilization career field survey. This survey is being conducted as an integral part of a graduate research program of the Air Force Institute of Technology (AFIT). It is designed to gather data on transportation officer educational and training needs based upon your opinions, perceptions and experience.

2. A research report will be prepared by the Fall of 1983 based upon your responses. This report will be reviewed by managers at every level of the transportation and logistics command structure. While your participation is voluntary, a valid cross-section of attitudes is possible only through your willingness to take 30 minutes to complete and return the survey. Your individual response will be kept confidential; we are interested in the collective response of all selected transportation officers. This is your opportunity to have your collective voices heard at the policy-making level.

3. The completed survey should be forwarded to AFIT in the envelope provided within 10 days of receipt. If you have any questions or recommendations regarding this survey, please contact either Capt Brian R. Kerins or 1Lt R. Andrew Kiracofe, AFIT/LSM, AUTOVON 785-4149.

John E. Griffith

JOHN E. GRIFFITH
Brigadier General, USAF
Director of Transportation

2 Attachments
1. Questionnaire
2. Return Envelope

AIR FORCE ANNIVERSARY
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READY THEN READY NOW

PRIVACY STATEMENT

In accordance with paragraph 8, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority:

(1) 5 U.S.C. 301, Departmental Regulations, and/or

(2) 10 U.S.C. 8012, Secretary of the Air Force, Powers, Duties, Delegation by Compensation; and/or

(3) DOD Instruction 1100.13, 17 Apr 68, Surveys of Department of Defense Personnel; and/or

(4) AFR 30-23, 22 Sep 76, Air Force Personnel Survey Program.

b. Principal purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Air Force and/or DOD.

c. Routine Uses. The survey data will be converted to information for use in research of management related problems. Results of the research, based on the data provided, will be included in written master's theses and may also be included in published articles, reports, or texts. Distribution of the results of the research, based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who selects not to participate in any or all of this survey.

GENERAL

Headquarters USAF Survey Control Number 83-41
has been assigned to this questionnaire.

INSTRUCTIONS

1. Please complete all the survey questions. Mark your answers directly on the survey form by circling your choice of a response.

2. Once you have completed the survey, please remove the cover letter and return the questionnaire in the provided envelope.

3. Thank you for your cooperation, time, and experienced viewpoint.

Section A

Questions 1 through 6 solicit your opinions about the Transportation Staff Officer course conducted at Sheppard AFB, Texas. Below each statement, circle the number that most closely corresponds to your answer based on the following 7-point scale:

Strongly Disagree	Disagree	Slightly Disagree	No Opinion/ Don't Know	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

PLEASE OMIT RESPONSES TO THESE QUESTIONS IF YOU HAVE NOT ATTENDED THE TRANSPORTATION STAFF OFFICER COURSE.

1. My Transportation Staff Officer Course education is useful to me.

   1 2 3 4 5 6 7

2. I would encourage other transportation officers to attend the Transportation Staff Officer Course.

   1 2 3 4 5 6 7

3. Education received at the Transportation Staff Officer Course is of little use to my on-the-job performance.

   1 2 3 4 5 6 7

4. I am better prepared to solve on-the-job problems because of my completion of the Transportation Staff Officer Course.

1 2 3 4 5 6 7

5. The educational facilities at Sheppard AFB, Texas, provide an environment conducive for professional management training.

1 2 3 4 5 6 7

6. I would recommend professional transportation management education beyond the Transportation Staff Officer Course.

1 2 3 4 5 6 7

Section B (Instructions)

In each of the following sections, the questions solicit your opinions concerning the importance of selected skills, abilities, and knowledge areas for Transportation Officers.

Please indicate:

a. The importance of each item in your present job (importance in job).
b. Your proficiency level for each item (proficiency level).
c. The perceived importance of each item in your career development (future importance).

Please indicate your responses by circling the number that most closely corresponds to your answer based upon the following 7-point scale:

Low						High
1	2	3	4	5	6	7

Finally, circle the appropriate course where the item should be presented:

SOS = Squadron Officer's School
ACSC = Air Command and Staff College
AWC = Air War College
BTOC = Basic Transportation Officer's Course
TSOC = Transportation Staff Officer's Course
Other = any formal DOD or civilian school

Example

Item: Automobile Driving Skill

Importance in job	1	2	3	(4)	5	6	7
Proficiency level	1	2	3	4	5	(6)	7
Future importance	(1)	2	3	4	5	6	7

Appropriate course SOS ACSC AWC BTOC TSOC (Other) (please specify)
BASE DRIVER'S SCHOOL

I. COMMUNICATION

1. Skill in effective face-to-face communication.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7

Appropriate course SOS ACSC AWC BTOC TSOC Other (please specify)

2. Skill in writing clear, concise and effective letters, memos, and reports.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7

Appropriate course SOS ACSC AWC BTOC TSOC Other (please specify)

3. Ability to make effective presentations and to sell ideas in a persuasive, well documented manner to management, subordinates and peers.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7

Appropriate course SOS ACSC AWC BTOC TSOC Other (please specify)

4. Ability to effectively listen; to organize, summarize and clarify the speaker's message.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7

Appropriate course SOS ACSC AWC BTOC TSOC Other (please specify)

II. HUMAN RELATIONS AND LEADERSHIP

1. Ability to challenge and motivate subordinates.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

2. Ability to appraise performance objectively and to conduct effective performance reviews.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

3. Skill in counseling employees on inappropriate work or behavior.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

4. Skill in resolving conflict as it arises in interpersonal relations.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

5. Knowledge in administering justice under the Uniform Code of Military Justice.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

III. MANAGEMENT

1. Ability to set realistic goals and standards, to define performance requirements, and to develop action plans for achieving and controlling performance.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

2. Ability to effectively manage time (of self and others) by prioritizing tasks, controlling interruptions, and by investing rather than spending time.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

3. Ability to conduct well organized and results-oriented meetings, briefings, and conferences.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

4. Ability to identify stress-related problems and knowledge of Air Force drug, alcohol and mental health programs.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

5. Ability to identify problems, separate causes from symptoms, evaluate evidence, weigh alternatives, and select and implement appropriate solutions.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

6. Skill in managing daily activities between the demands of the job and of the employees.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

7. Skill in reducing resource requirements through work simplification, reallocation of tasks, flow charting, analysis of procedures, or through other methods improvement techniques.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

8. Knowledge and understanding of the Planning, Programming and Budgeting System (PPBS).

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

9. Knowledge and understanding of personnel legal requirements, including civil service legislation, human relations legislation, and equal opportunity employment guidelines.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

IV. TRANSPORTATION TECHNICAL KNOWLEDGE

1. Knowledge of aerial port operating procedures.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

2. Knowledge of water port operating procedures.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

3. Knowledge of the capabilities of military sea transportation.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

4. Knowledge of the capabilities and procedures of commercial surface carriers.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

5. Knowledge of the capabilities and procedures of commercial air carriers.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

6. Knowledge of the commercial carrier rate computation procedures.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

7. Knowledge of logistics planning techniques.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

8. Knowledge of packaging methods and specifications.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

9. Knowledge of motor vehicle resource and maintenance management procedures.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

10. Knowledge of personal property, passenger, and freight movement forecasting, scheduling and management.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

11. Knowledge of the capabilities of military air transportation.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

12. Knowledge of state and national regulatory directives concerning transportation services.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

13. Knowledge of data automation techniques and their application to transportation management.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

14. Knowledge of hazardous cargo procedures.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

V. MANAGEMENT SCIENCE KNOWLEDGE

1. Knowledge of basic descriptive and inferential statistics.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

2. Knowledge of advanced statistical application techniques such as multi-variate analysis, factor analysis and extrapolation.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

3. Knowledge of analytical inventory management theories and techniques.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

4. Knowledge of mathematical techniques in decision analysis.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

5. Knowledge of computer programming.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

6. Knowledge of microcomputer (office size) operations, uses and limitations.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

7. Knowledge in logistics computer simulation techniques.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

8. Knowledge of budgeting techniques, regulations, and integration from base, major command and DOD viewpoints.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

9. Knowledge of mathematical techniques developed to allocate and schedule transportation resources.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

VI. <u>ADVANCED PROFESSIONAL TRANSPORTATION AND MANAGEMENT KNOWLEDGE</u>

1. Knowledge of the economics of transportation systems.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

2. Knowledge of economic regulation/deregulation as it pertains to our national transportation industries.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

3. Knowledge of military economics, especially acquisition of weapon systems, vehicles and equipment.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

4. Knowledge of the Soviet transportation system including economic analysis.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

5. Knowledge of managerial economics to serve as the basis for making policy decisions within an organization.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

6. Knowledge of the role of government in the allocation of resources. The impact of military decisions on the private sector.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

7. Knowledge of the leadership and command role of the President and his civilian advisors and the military commander's impact as analyzed in war and peace.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

8. Knowledge of arms control policies and problems of national security pertaining to arms control in the nuclear age.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

9. Knowledge of accounting data/information to implement planning and control techniques.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

10. Knowledge of the national transportation system as it impacts Air Force mobility/contingency requirements.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

11. Knowledge of policies and procedures required to establish and manage common user transportation systems.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

12. Knowledge of war and mobilization plans and planning policies or procedures.

Importance in job	1	2	3	4	5	6	7
Proficiency level	1	2	3	4	5	6	7
Future importance	1	2	3	4	5	6	7
Appropriate course	SOS	ACSC	AWC	BTOC	TSOC	Other (please specify)	

Section C

Section C consists of demographic questions to develop background information for survey analysis.

1. What is the organizational level of your current assignment?

a. Squadron or below
b. Group
c. Wing
d. Air Division
e. Numbered Air Force
f. Major Command
g. HQ Air Force
h. Department of Defense
i. Separate Operating Agency
j. Other

2. To what major command or activity are you presently assigned?

a. AAC
b. AFCC
c. AFLC
d. AFSC
e. ATC
f. ESC
g. HQ USAF
h. MAC
i. PACAF
j. SPACE COM
k. SAC
l. TAC
m. USAFE
n. Other

3. What is your current grade?

a. 0-3
b. 0-4
c. 0-5
d. 0-6

4. What is your time in grade?

a. Less than 2 years
b. 2 years but less than 5 years
c. 5 years but less than 8 years
d. 8 years or more

5. What is your current duty AFSC?

a. 605X
b. 601X
c. A601X
d. Other (please specify)

6. What is your total time in the transportation career field?

a. Less than 2 years
b. 2 years but less than 5 years
c. 5 years but less than 10 years
d. 10 years or more

7. How long have you held your present position?

a. Less than 1 year
b. 1 year but less than 2 years
c. 2 years but less than 4 years
d. 4 years or more

8. Have you at some time directly supervised transportation officers?

a. Yes
b. No

9. What was your grade when you finished the Transportation Staff Officer Course?

a. Have not attended
b. 0-3
c. 0-4
d. 0-5

10. Please indicate the highest level of PME completed.

a. None
b. SOS (correspondence)
c. SOS (residence)
d. ACSC (correspondence)
e. ACSC (residence)
f. ACSC (seminar)
g. AWC (correspondence)
h. AWC (residence)
i. AWC (seminar)
j. Other

11. Please indicate the highest level of formal education completed.

a. High School
b. Associate's Degree
c. Bachelor's Degree
d. Master's Degree
e. Doctorate

APPENDIX C

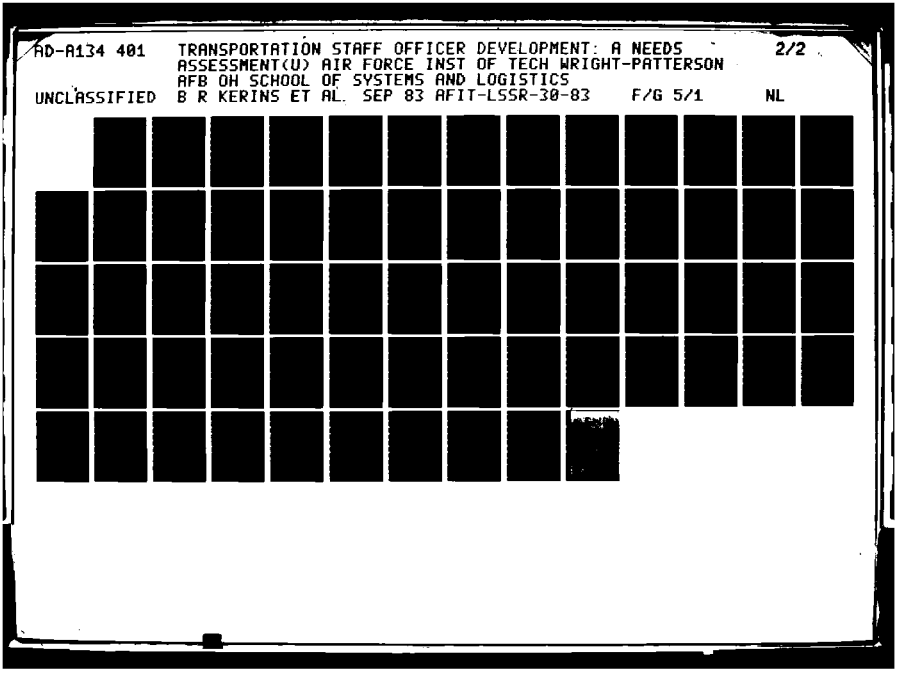
PARAMETRIC VALUES FOR DEMOGRAPHICS

FREQUENCY ANALYSIS OF SURVEY DEMOGRAPHICS

Variable	Value	Absolute Frequency ALL	TSOC	NON-TSOC	Adjusted Frequency ALL	TSOC	NON-TSOC
Rank	Captain	180	73	107	43.1	29.4	62.9
	Major	120	99	21	28.7	39.9	12.4
	Lt Col	91	62	29	21.7	25.0	17.1
	Colonel	27	14	13	6.5	5.7	7.6
	Missing	1	-	-	-	-	-
Time in Grade (Years)	Less than 2	114	57	57	27.3	23.0	33.7
	2 less than 5	159	91	68	38.1	36.7	40.2
	5 less than 8	102	65	37	24.5	26.2	21.9
	8 or more	42	35	7	10.1	14.1	4.2
	Missing	1	-	-	-	-	-
Org. Level	Squadron	142	70	72	34.0	28.3	42.4
	Group	13	10	3	3.1	4.0	1.8
	Wing	27	13	14	6.5	5.3	8.2
	Air Division	14	7	7	3.4	2.9	4.1
	NAF	35	20	15	8.4	8.1	8.8
	MAJCOM	108	70	38	25.9	28.3	22.4
	HQ USAF	17	14	3	4.1	5.7	1.8
	DOD	11	8	3	2.6	3.2	1.8
	SOA	8	7	1	1.9	2.9	0.5
	Other	42	28	14	10.1	11.3	8.2
	Missing	2	-	-	-	-	-
MAJCOM	AAC	3	1	2	.7	.4	1.0
	AFCC	2	2	0	.5	.8	0
	AFLC	21	6	15	5.0	2.4	9.0
	AFSC	9	6	3	2.2	2.4	2.0
	ATC	23	15	8	5.5	6.2	4.0

FREQUENCY ANALYSIS OF SURVEY DEMOGRAPHICS--Continued

Variable	Value	Absolute Frequency ALL	Absolute Frequency TSOC	Absolute Frequency NON-TSOC	Adjusted Frequency ALL	Adjusted Frequency TSOC	Adjusted Frequency NON-TSOC
MAJCOM	ESC	1	1	0	.2	.4	0
	HQ USAF	20	16	4	4.8	6.5	2.0
	MAC	144	76	68	34.6	30.9	4.0
	PACAF	23	14	9	5.5	5.7	5.0
	Space Com	4	4	0	1.0	1.6	0
	SAC	31	17	14	7.5	6.9	9.0
	TAC	37	21	16	8.9	8.5	9.0
	USAFE	41	25	16	9.9	10.2	9.0
	Other	57	42	15	13.7	17.1	9.0
	Missing	3	-	-	-	-	-
Duty AFSC	605X	124	46	78	29.7	18.5	45.9
	601X	198	142	56	47.4	57.3	32.9
	A601X	80	49	31	19.1	19.8	18.3
	Other	16	11	5	3.8	4.4	2.9
	Missing	1	-	-	-	-	-
Total Trans-portation Time (Years)	Less than 2	17	4	13	4.1	1.6	7.6
	2 less than 5	45	5	40	10.8	2.0	23.5
	5 less than 10	129	57	72	30.9	23.0	42.4
	10 or more	227	182	45	54.2	73.4	26.5
	Missing	1	-	-	-	-	-
Grade when Finished TSOC	Have not Attended	170	-	-	40.7	-	-
	Captain	205	-	-	49.0	-	-
	Major	27	-	-	6.5	-	-
	Lt Col	8	-	-	1.9	-	-
	Colonel	8	-	-	1.9	-	-
	Missing	1	-	-	-	-	-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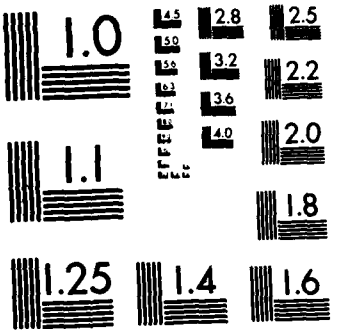

FREQUENCY ANALYSIS OF SURVEY DEMOGRAPHICS--Continued

Variable	Value	Absolute Frequency			Adjusted Frequency		
		ALL	TSOC	NON-TSOC	ALL	TSOC	NON-TSOC
Highest PME	None	39	10	29	9.3	4.0	17.1
	SOS-C	52	25	27	12.4	10.1	15.8
	SOS-R	61	25	36	14.6	10.1	21.2
	ACSC-C	85	65	20	20.3	26.2	11.8
	ACSC-R	8	3	5	1.9	1.3	2.9
	ACSC-S	55	35	20	13.2	14.1	11.8
	AWC-C	18	13	5	4.3	5.2	2.9
	AWR-R	12	9	3	2.9	3.6	1.8
	AWC-S	25	15	10	6.0	6.0	5.9
	Other	63	48	15	15.1	19.4	8.8
	Missing	1	-	-	-	-	-
Highest Formal Education	High School	2	1	1	.5	.6	.4
	Associate	0	0	0	0	0	0
	Bachelor	133	60	73	31.9	35.9	29.2
	Master	280	105	175	67.1	62.9	70.0
	Doctorate	2	1	1	.5	.6	.4
	Missing	2	-	-	-	-	-

FREQUENCY ANALYSIS OF CAPTAIN DEMOGRAPHICS

Variable	Value	Absolute Frequency	Adjusted Frequency
Time in Grade (Years)	Less than 2	48	26.8
	2 less than 5	44	24.6
	5 less than 8	69	38.5
	8 or more	18	10.1
	Missing	1	-
Command	AAC	2	1.1
	AFLC	12	6.7
	AFSC	6	3.4
	ATC	14	7.8
	HQ USAF	2	1.1
	MAC	77	43.0
	PACAF	10	5.6
	Space Com	2	1.1
	SAC	8	4.5
	TAC	17	9.5
	USAFE	21	11.7
	Other	8	4.5
	Missing	1	-
Organizational Level	Squadron or Below	69	38.3
	Group	9	5.0
	Wing	14	7.8
	Air Division	7	3.9
	NAF	19	10.6
	MAJCOM	48	26.7
	HQ USAF	1	.6
	DOD	1	.6
	SOA	1	.6
	Other	11	6.1

FREQUENCY ANALYSIS OF CAPTAIN DEMOGRAPHICS--Continued

Variable	Value	Absolute Frequency	Adjusted Frequency
Total Transportation Time (Years)	Less than 2	3	1.7
	2 less than 5	34	18.9
	5 less than 10	105	58.3
	10 or more	38	21.1
Current AFSC	605X	116	64.4
	601X	51	28.4
	A601X	6	3.3
	Other	7	3.9
Completed TSOC	No	107	60.5
	Yes	70	39.5
	Missing	3	-
Highest PME	None	33	18.4
	SOS-C	46	25.6
	SOS-R	50	27.8
	ACSC-C	23	12.8
	ACSC-S	27	15.0
	AWC-C	1	.6
Highest Educational Level	High School	1	.6
	Bachelor	89	49.7
	Master	89	49.7
	Missing	1	-

FREQUENCY ANALYSIS OF MAJOR DEMOGRAPHICS

Variable	Value	Absolute Frequency	Adjusted Frequency
Time in Grade (Years)	Less than 2	32	26.7
	2 less than 5	56	46.7
	5 less than 8	17	14.2
	8 or more	15	12.5
Command	AAC	1	.8
	AFCC	2	1.7
	AFLC	2	1.7
	AFSC	1	.8
	ATC	6	5.0
	ESC	1	.8
	HQ USAF	6	5.0
	MAC	31	25.8
	PACAF	7	5.8
	SAC	13	10.8
	TAC	12	10.0
	USAFE	13	10.8
	Other	25	20.8
Organizational Level	Squadron or Below	43	35.8
	Group	2	1.7
	Wing	6	5.0
	Air Division	3	2.5
	NAF	7	5.8
	MAJCOM	28	23.3
	HQ USAF	7	5.8
	DOD	4	3.3
	SOA	3	2.5
	Other	17	14.2

FREQUENCY ANALYSIS OF MAJOR DEMOGRAPHICS--Continued

Variable	Value	Absolute Frequency	Adjusted Frequency
Total Transportation Time (Years)	Less than 2	4	3.3
	2 less than 5	5	4.2
	5 less than 10	10	8.3
	10 or more	101	84.2
Current AFSC	605X	7	5.8
	601X	77	64.2
	A601X	33	27.2
	Other	3	2.5
Completed TSOC	No	21	17.9
	Yes	96	82.1
	Missing	3	-
Highest PME	None	4	3.3
	SOS-C	4	3.3
	SOS-R	5	4.2
	ACSC-C	49	40.8
	ACSC-R	4	3.3
	ACSC-S	20	16.7
	AWC-C	8	6.7
	AWC-S	4	3.3
	Other	22	18.3
Highest Educational Level	High School	1	.8
	Bachelor	19	15.8
	Master	99	82.5
	Doctorate	1	.8

FREQUENCY ANALYSIS OF LIEUTENANT COLONEL DEMOGRAPHICS

Variable	Value	Absolute Frequency	Adjusted Frequency
Time in Grade (Years)	Less than 2	23	25.3
	2 less than 5	48	52.7
	5 less than 8	14	15.4
	8 or more	6	6.6
Command	AFLC	5	5.5
	AFSC	2	2.2
	ATC	1	1.1
	HQ USAF	10	11.0
	MAC	24	26.4
	PACAF	6	6.6
	Space Com	2	2.2
	SAC	9	9.9
	TAC	5	5.5
	USAFE	6	6.6
	Other	21	23.1
Organizational Level	Squadron or Below	28	30.8
	Group	2	2.2
	Wing	4	4.4
	Air Division	3	3.3
	NAF	7	7.7
	MAJCOM	18	19.8
	HQ USAF	7	7.7
	DOD	6	6.6
	SOA	4	4.4
	Other	12	13.2

FREQUENCY ANALYSIS OF LIEUTENANT COLONEL DEMOGRAPHICS--Continued

Variable	Value	Absolute Frequency	Adjusted Frequency
Total Transportation Time (Years)	Less than 2	9	9.9
	2 less than 5	3	3.3
	5 less than 10	8	8.8
	10 or more	71	78.0
Current AFSC	605X	1	1.1
	601X	51	56.0
	A601X	34	37.4
	Other	5	5.5
Completed TSOC	No	29	33.0
	Yes	59	67.0
	Missing	3	-
Highest PME	None	2	2.2
	SOS-C	2	2.2
	SOS-R	6	6.6
	ACSC-C	10	11.0
	ACSC-R	4	4.4
	ACSC-S	8	8.8
	AWC-C	8	8.8
	AWC-R	6	6.6
	AWC-S	16	17.6
	Other	29	31.9
Highest Educational Level	Bachelor	19	20.9
	Master	71	78.0
	Doctorate	1	1.1

FREQUENCY ANALYSIS OF COLONEL DEMOGRAPHICS

Variable	Value	Absolute Frequency	Adjusted Frequency
Time in Grade (Years)	Less than 2	11	40.7
	2 less than 5	11	40.7
	5 less than 8	2	7.4
	8 or more	3	11.1
Command	AFLC	2	7.7
	ATC	2	7.7
	HQ USAF	2	7.7
	MAC	12	46.3
	SAC	1	3.8
	TAC	3	11.5
	USAFE	1	3.8
	Other	3	11.5
	Missing	1	-
Organizational Level	Squadron or Below	2	7.7
	Wing	3	11.5
	Air Division	1	3.8
	NAF	2	7.7
	MAJCOM	14	53.9
	HQ USAF	2	7.7
	Other	2	7.7
	Missing	1	-
Total Trans-portation Time (Years)	Less than 2	1	3.7
	2 less than 5	3	11.1
	5 less than 10	6	22.2
	10 or more	17	63.0

FREQUENCY ANALYSIS OF COLONEL DEMOGRAPHICS--Continued

Variable	Value	Absolute Frequency	Adjusted Frequency
Current AFSC	601X	19	70.4
	A601X	7	25.9
	Other	1	3.7
Completed TSOC	No	13	48.1
	Yes	14	51.9
Highest PME	ACSC-C	3	11.1
	AWC-C	2	7.4
	AWC-R	6	22.2
	AWC-S	4	14.8
	Other	12	44.4
Highest Educational Level	Bachelor	6	22.2
	Master	21	77.8

APPENDIX D

RANKED EDUCATION FACTOR INDICES

RANKED EDUCATION FACTOR INDICES--ALL RESPONDENTS

Rank	Index	Topic		Course
1	7.190	I-1	Face-to-Face Communication	PME
2	7.099	I-2	Writing	PME
3	6.980	III-2	Time Management	PME
4	6.870	I-3	Briefing	ME
5	6.592	III-1	Set Realistic Goals	ME
6	6.591	III-5	Identify Problems and Implement Solutions	
7	6.579	II-1	Challenge and Motivate Subordinates	PME
8	6.532	I-4	Listen Effectively	PME
9	6.355	III-3	Conduct Well-Organized Meetings	PME
10	6.242	IV-13	Data Automation Tehniques	TSOC
11	6.119	II-2	Appraise Performance Objectively	PME
12	6.098	IV-7	Logistics Planning Techniques	TSOC
13	6.064	VI-12	War and Mobilization Plans	TSOC
14	6.012	II-4	Resolve Conflict in Interpersonal Relationships	PME
15	5.872	III-6	Managing Daily Activities	PME
16	6.851	II-3	Counseling Employees	PME
17	5.809	IV-11	Capabilities of Military Air Transportation	BTOC
18	5.795	V-6	Knowledge of Microcomputer Operations	TSOC
19	5.654	III-8	Knowledge of PPBS	PME

RANKED EDUCATION FACTOR INDICES--ALL RESPONDENTS--Continued

Rank	Index	Topic		Course
20	5.647	III-7	Reducing Resource Requirements Through Work Improvement Techniques	PME
21	5.586	VI-10	National Transportation System's Impact on USAF Mobility/Contingency Requirements	TSOC
22	5.502	V-8	Budgeting Techniques	PME
23	5.370	II-5	Administering UCMJ	PME
24	5.302	III-9	Personnel Legal Requirements	PME
25	5.291	III-4	Identifying Stress-Related Problems	PME
26	5.279	IV-5	Capabilities of Commercial Air Carriers	BTOC
27	5.245	IV-1	Aerial Port Operations	BTOC
28	5.179	IV-4	Capabilities of Commercial Surface Carriers	BTOC
29	5.161	VI-1	Economics of Transportation Systems	TSOC
30	5.067	VI-11	Management of Common User Transportation Systems	TSOC
31	5.056	IV-10	Traffic Management	BTOC
32	4.987	VI-3	Economics of Military Acquisition	TSOC
33	4.931	IV-14	Hazardous Cargo Procedures	BTOC
34	4.907	VI-5	Managerial Economics	PME
35	4.853	IV-9	Motor Vehicle Resource and Maintenance Management	BTOC
36	4.741	V-5	Computer Programming	TSOC
37	4.717	IV-12	National and State Transportation Regulatory Directives	BTOC

RANKED EDUCATION FACTOR INDICES--ALL RESPONDENTS--Continued

Rank	Index	Topic		Course
38	4.690	V-9	Math Techniques to Allocate and Schedule Transportation Resources	TSOC
39	4.604	VI-2	Economic Regulation/Deregulation of the Transportation Industry	TSOC
40	4.444	V-7	Logistics Computer Simulation	TSOC
41	4.382	VI-6	Government Role in the Allocation of Resources	PME
42	4.348	VI-9	Accounting Techniques for Control	PME
43	4.026	IV-3	Capabilities of Military Sea Transportation	BTOC
44	4.013	V-1	Basic Descriptive Statistics	PME
45	3.903	VI-7	Leadership and Command Role of the President	PME
46	3.847	IV-8	Packaging Methods and Specifications	BTOC
47	3.781	VI-4	The Soviet Transportation System	PME
48	3.726	IV-2	Water Port Operations	BTOC
49	3.667	IV-6	Commercial Carrier Rate Computation	BTOC
50	3.651	V-4	Math Techniques for Decision Analysis	PME
51	3.476	V-2	Advanced Statistical Techniques	PME
52	3.414	VI-8	Arms Control Policies	PME
53	2.889	V-3	Analytical Inventory Management Techniques	TSOC

RANKED EDUCATION FACTOR INDICES--TSOC GRADUATES

Rank	Index	Topic		Course
1	7.190	I-1	Face-to-Face Communication	PME
2	7.102	I-2	Writing	PME
3	6.942	I-3	Briefing	PME
4	6.917	III-2	Time Management	PME
5	6.574	I-4	Listen Effectively	PME
6	6.498	III-1	Set Realistic Goals	PME
7	6.450	III-5	Identify Problems and Implement Solutions	PME
8	6.343	II-1	Challenge and Motivate Subordinates	PME
9	6.334	III-3	Conduct Well-Organized Meetings	PME
10	6.101	IV-13	Data Automation Techniques	TSOC
11	6.039	IV-7	Logistics Planning Techniques	TSOC
12	6.018	II-4	Resolve Conflict in Interpersonal Relationships	PME
13	5.909	VI-12	War and Mobilization Plans	TSOC
14	5.900	II-2	Appraise Performance Objectively	PME
15	5.797	III-6	Managing Daily Activities	PME
16	5.795	V-6	Knowledge of Microcomputer Operations	TSOC
17	5.668	IV-11	Capabilities of Military Air Transportation	BTOC
18	5.653	II-3	Counseling Employees	PME
19	5.521	III-8	Knowledge of PPBS	PME
20	5.480	VI-10	National Transportation System's Impact on USAF Mobility/Contingency Requirements	TSOC

RANKED EDUCATION FACTOR INDICES--TSOC GRADUATES--Continued

Rank	Index	Topic		Course
21	5.423	III-7	Reducing Resource Requirements through Work Improvement Techniques	PME
22	5.339	V-8	Budgeting Techniques	PME
23	5.106	IV-5	Capabilities of Commercial Air Carriers	BTOC
24	5.081	III-9	Personnel Legal Requirements	PME
25	5.038	III-4	Identifying Stress-Related Problems	PME
26	4.973	II-5	Administering UCMJ	PME
27	4.966	VI-1	Economics of Transportation Systems	TSOC
28	4.965	IV-1	Aerial Port Operations	BTOC
29	4.963	IV-4	Capabilities of Commercial Surface Carrier Capability	BTOC
30	4.857	VI-3	Economics of Military Acquisition	TSOC
31	4.841	VI-11	Management of Common User Transportation System	TSOC
32	4.810	IV-10	Traffic Management	BTOC
33	4.743	IV-9	Motor Vehicle Resource and Maintenance Management	BTOC
34	4.658	VI-5	Managerial Economics	PME
35	4.594	IV-14	Hazardous Cargo Procedures	BTOC
36	4.518	V-5	Computer Programming	PME
37	4.434	V-9	Math Techniques to Allocate and Schedule Transportation Resources	TSOC
38	4.415	VI-2	Economic Regulation/Deregulation of the Transportation Industry	TSOC

RANKED EDUCATION FACTOR INDICES--TSOC GRADUATES--Continued

Rank	Index	Topic		Course
39	4.388	IV-12	National and State Transportation Regulatory Directives	BTOC
40	4.365	V-7	Logistics Computer Simulation	TSOC
41	4.220	VI-6	Government Role in the Allocation of Resources	PME
42	4.195	VI-9	Accounting Techniques for Control	PME
43	3.856	IV-3	Capabilities of Military Sea Transportation	BTOC
44	3.803	VI-7	Leadership and Command Role of the President	PME
45	3.767	V-1	Basic Descriptive Statistics	TSOC
46	3.607	IV-8	Packaging Methods and Specifications	BTOC
47	3.596	VI-4	The Soviet Transportation System	PME
48	3.539	IV-2	Water Port Operations	BTOC
49	3.515	V-4	Math Techniques for Decision Analysis	PME
50	3.321	V-2	Advanced Statistical Techniques	PME
51	3.240	IV-6	Commercial Carrier Rate Computation	BTOC
52	3.236	VI-8	Arms Control Policies	PME
53	3.213	V-3	Analytical Inventory Management Techniques	TSOC

RANKED EDUCATION FACTOR INDICES--NON-TSOC ATTENDEES

Rank	Index	Topic		Course
1	7.024	I-1	Face-to-Face Communication	PME
2	6.974	I-2	Writing	PME
3	6.914	III-2	Time Management	PME
4	6.735	II-1	Challenge and Motivate Subordinates	PME
5	6.665	III-5	Identify Problems and Implement Solutions	PME
6	6.628	I-3	Briefing	PME
7	6.601	III-1	Set Realistic Goals	PME
8	6.468	IV-13	Data Automation Techniques	TSOC
9	6.353	I-4	Listen Effectively	PME
10	6.329	II-2	Appraise Performance Objectively	PME
11	6.283	VI-12	War and Mobilization Plans	TSOC
12	6.259	III-3	Conduct Well-Organized Meetings	PME
13	6.238	IV-7	Logistics Planning Techniques	TSOC
14	6.129	IV-11	Capabilities of Military Air Transportation	BTOC
15	6.071	II-3	Counseling Employees	PME
16	5.980	III-7	Reducing Resource Requirements Through Work Improvement Techniques	PME
17	5.866	III-8	Knowledge of PPBS	PME
18	5.864	II-4	Resolve Conflict in Interpersonal Relationships	PME
19	5.814	III-6	Managing Daily Activities	PME
20	5.752	VI-10	National Transportation System's Impact on USAF Mobility/Contingency Requirements	TSOC

RANKED EDUCATION FACTOR INDICES--NON-TSOC ATTENDEES--Continued

Rank	Index	Topic		Course
21	5.735	V-8	Budgeting Techniques	PME
22	5.717	IV-1	Aerial Port Operations	BTOC
23	5.656	IV-5	Capabilities of Commercial Air Carriers	BTOC
24	5.654	III-9	Personnel Legal Requirements	PME
25	5.556	V-6	Knowledge of Microcomputer Operations	TSOC
26	5.555	IV-4	Capabilities of Commercial Surface Carriers	BTOC
27	5.543	IV-10	Traffic Management	BTOC
28	5.508	III-4	Identifying Stress-Related Problems	PME
29	5.503	IV-14	Hazardous Cargo Procedures	BTOC
30	5.437	VI-1	Economics of Transportation Systems	TSOC
31	5.389	II-5	Administering UCMJ	PME
32	5.299	VI-11	Management of Common User Transportation Systems	TSOC
33	5.268	VI-5	Managerial Economics	PME
34	5.268	IV-12	National and State Transportation Regulatory Directives	TSOC
35	5.183	VI-3	Economics of Military Acquisition	TSOC
36	5.090	IV-9	Motor Vehicle Resource and Maintenance Management	BTOC
37	5.055	V-9	Math Techniques to Allocate and Schedule Transportation Resources	TSOC
38	4.914	VI-2	Economic Regulation/Deregulation of the Transportation Industry	TSOC
39	4.909	V-5	Computer Programming	TSOC

RANKED EDUCATION FACTOR INDICES--NON-TSOC ATTENDEES--Continued

Rank	Index	Topic		Course
40	4.641	VI-6	Government Role in the Allocation of Resources	PME
41	4.571	VI-9	Accounting Techniques for Control	PME
42	4.542	V-7	Logistics Computer Simulation	TSOC
43	4.513	V-1	Basic Statistics	PME
44	4.395	IV-6	Commercial Carrier Rate Computation	BTOC
45	4.382	IV-3	Capabilities of Military Sea Transportation	BTOC
46	4.304	IV-8	Packaging Methods and Specifications	BTOC
47	4.105	VI-7	Leadership and Command Role of the President	PME
48	4.079	VI-4	The Soviet Transportation System	PME
49	4.025	IV-2	Water Port Operations	BTOC
50	3.953	V-4	Math Techniques for Decision Analysis	PME
51	3.851	V-2	Advanced Statistical Techniques	PME
52	3.822	V-3	Analytical Inventory Management Techniques	PME
53	3.706	VI-8	Arms Control Policies	PME

RANKED EDUCATION FACTOR INDICES--CAPTAINS

Rank	Index	Topic		Course
1	7.158	I-2	Writing	PME
2	7.114	I-1	Face-to-Face Communication	PME
3	7.073	III-2	Time Management	PME
4	6.866	I-3	Briefing	PME
5	6.699	III-5	Identify Problems and Implement Solutions	PME
6	6.678	II-1	Challenge and Motivate	PME
7	6.554	III-1	Set Realistic Goals	PME
8	6.478	I-4	Listen Effectively	PME
9	6.445	III-3	Conduct Well-Organized Meetings	PME
10	6.438	IV-13	Data Automation Techniques	TSOC
11	6.352	VI-12	War and Mobilization Plans	TSOC
12	6.266	IV-7	Logistics Planning Techniques	TSOC
13	6.223	II-2	Appraise Performance Objectively	PME
14	6.159	IV-11	Capabilities of Military Air Transportation	BTOC
15	6.069	II-3	Counseling Employees	PME
16	5.968	III-7	Reducing Resource Requirements through Work Improvement Techniques	PME
17	5.958	IV-1	Aerial Port Operations	TSOC
18	5.958	III-6	Managing Daily Activities	PME
19	5.865	VI-10	National Transportation System's Impact on USAF Mobility/Contingency Requirements	TSOC

RANKED EDUCATION FACTOR INDICES--CAPTAINS--Continued

Rank	Index	Topic		Course
20	5.826	V-6	Knowledge of Microcomputer Operations	TSOC
21	5.761	III-8	Knowledge of PPBS	PME
22	5.691	II-4	Resolve Conflict in Interpersonal Relationships	PME
23	5.680	III-4	Identifying Stress-Related Problems	PME
24	5.653	III-9	Personnel Legal Requirements	PME
25	5.646	II-5	Administering UCMJ	PME
26	5.607	V-8	Budgeting Techniques	PME
27	5.603	IV-5	Capabilities of Commercial Air Carriers	BTOC
28	5.533	IV-14	Hazardous Cargo Procedures	BTOC
29	5.528	IV-4	Capabilities of Commercial Surface Carriers	BTOC
30	5.481	VI-1	Economics of Transportation Systems	TSOC
31	5.479	IV-10	Traffic Management	BTOC
32	5.424	VI-3	Economics of Military Acquisition	TSOC
33	5.411	VI-11	Management of Common User Transportation Systems	TSOC
34	5.231	VI-5	Managerial Economics	PME
35	5.222	IV-12	National and State Transportation Regulatory Directives	BTOC
36	5.213	V-5	Computer Programming	PME
37	5.147	IV-9	Motor Vehicle Resource and Maintenance Management	BTOC
38	5.056	V-9	Math Techniques to Allocate and Schedule Transportation Resources	TSOC

RANKED EDUCATION FACTOR INDICES--CAPTAINS--Continued

Rank	Index	Topic		Course
39	4.906	VI-2	Economic Regulation/Deregulation of the Transportation Industry	TSOC
40	4.894	VI-6	Government Role in the Allocation of Resources	PME
41	4.740	VI-9	Accounting Techniques for Control	PME
42	4.554	V-7	Logistics Computer Simulation	TSOC
43	4.458	IV-8	Packaging Methods and Specifications	BTOC
44	4.456	V-1	Basic Descriptive Statistics	TSOC
45	4.379	VI-4	The Soviet Transportation System	PME
46	4.337	VI-7	Leadership and Command Role of the President	PME
47	4.328	IV-6	Commercial Carrier Rate Computation	BTOC
48	4.243	IV-3	Capabilities of Military Sea Transportation	BTOC
49	4.090	IV-2	Water Port Operations	BTOC
50	3.983	VI-8	Arms Control Policies	PME
51	3.972	V-2	Advanced Statistical Techniques	PME
52	3.888	V-4	Math Techniques for Decision Analysis	PME
53	3.822	V-3	Analytical Inventory Management Techniques	TSOC

RANKED EDUCATION FACTOR INDICES--MAJORS

Rank	Index	Topic		Course
1	7.234	I-1	Face-to-Face Communication	PME
2	7.132	I-2	Writing	PME
3	6.983	III-2	Time Management	PME
4	6.904	I-3	Briefing	PME
5	6.607	III-1	Set Realistic Goals	PME
6	6.542	III-5	Identify Problems and Implement Solutions	PME
7	6.532	I-4	Listen Effectively	PME
8	6.269	II-1	Challenge and Motivate Subordinates	PME
9	6.225	III-3	Conduct Well-Organized Meetings	PME
10	5.950	IV-7	Logistics Planning Techniques	TSOC
11	5.933	IV-13	Data Automation Techniques	TSOC
12	5.842	II-2	Appraise Performance Objectively	PME
13	5.837	II-4	Resolve Conflict in Interpersonal Relationships	PME
14	5.784	III-8	Knowledge of PPBS	PME
15	5.754	VI-12	War and Mobilization Plans	TSOC
16	5.695	III-6	Managing Daily Activities	PME
17	5.513	II-3	Counseling Employees	PME
18	5.475	IV-11	Capabilities of Military Air Transportation	BTOC
19	5.402	V-6	Knowledge of Microcomputer Operations	TSOC
20	5.359	V-8	Budgeting Techniques	PME

RANKED EDUCATION FACTOR INDICES--MAJORS--Continued

Rank	Index	Topic		Course
21	5.196	III-7	Reducing Resource Requirements through Work Improvement Techniques	PME
22	5.162	VI-10	National Transportation System's Impact on USAF Mobility/Contingency Requirements	TSOC
23	5.117	III-4	Identifying Stress-Related Problems	PME
24	5.037	II-5	Administering UCMJ	PME
25	4.958	IV-10	Traffic Management	BTOC
26	4.903	III-9	Personnel Legal Requirements	PME
27	4.742	IV-4	Capabilities of Commercial Surface Carriers	BTOC
28	4.734	IV-5	Capabilities of Commercial Air Carriers	BTOC
29	4.725	IV-9	Motor Vehicle Resource and Maintenance Management	BTOC
30	4.583	VI-11	Management of Common User Transportation System	TSOC
31	4.575	IV-1	Aerial Port Operations	BTOC
32	4.459	VI-3	Economics of Military Acquisition	TSOC
33	4.376	VI-5	Managerial Economics	PME
34	4.224	IV-14	Hazardous Cargo Procedures	BTOC
35	4.093	V-5	Computer Programming	PME
36	4.073	V-9	Math Techniques to Allocate and Schedule Transportation Resources	TSOC
37	4.061	V-7	Logistics Computer Simulation	TSOC
38	4.037	V-8	Budgeting Techniques	PME

RANKED EDUCATION FACTOR INDICES--MAJORS--Continued

Rank	Index	Topic		Course
39	3.970	VI-1	Economics of Transportation Systems	TSOC
40	3.968	VI-9	Accounting Techniques for Control	PME
41	3.908	VI-2	Economic Regulation/Deregulation of the Transportation Industry	TSOC
42	3.750	IV-3	Capabilities of Military Sea Transportation	BTOC
43	3.536	V-1	Basic Descriptive Statistics	PME
44	3.502	VI-6	Government Role in the Allocation of Resources	PME
45	3.450	IV-2	Water Port Operations	BTOC
46	3.367	VI-4	The Soviet Transportation System	TSOC
47	3.157	V-4	Math Techniques for Decision Analysis	PME
48	3.142	VI-7	*Leadership and Command* Role of the President	PME
49	3.110	IV-8	Packaging Methods and Specifications	BTOC
50	3.068	IV-6	Commercial Carrier Rate Computation	BTOC
51	2.832	V-2	Advanced Statistical Techniques	PME
52	2.823	VI-8	Arms Control Policies	PME
53	2.820	V-3	Analytical Inventory Management Techniques	PME

RANKED EDUCATION FACTOR INDICES--LIEUTENANT COLONELS

Rank	Index	Topic		Course
1	7.148	I-1	Face-to-Face Communication	PME
2	6.999	I-2	Writing	PME
3	6.847	III-2	Time Management	PME
4	6.803	I-3	Briefing	PME
5	6.721	II-1	Challenge and Motivate Subordinates	PME
6	6.592	I-4	Listen Effectively	PME
7	6.572	III-1	Set Realistic Goals	PME
8	6.441	III-5	Identify Problems and Implement Solutions	PME
9	6.385	III-3	Conduct Well-Organized Meetings	PME
10	6.198	II-2	Appraise Performance Objectively	PME
11	6.110	IV-13	Data Automation Techniques	TSOC
12	6.105	V-6	Knowledge of Microcomputer Operations	TSOC
13	6.065	IV-7	Logistics Planning Techniques	TSOC
14	6.022	II-4	Resolve Conflict in Interpersonal Relations	PME
15	5.990	III-6	Managing Daily Activities	PME
16	5.901	II-3	Counseling Employees	PME
17	5.846	VI-12	War and Mobilization Plans	TSOC
18	5.684	III-7	Reducing Resource Requirements through Work Requirement Techniques	PME
19	5.637	IV-11	Capabilities of Military Air Transportation	BTOC
20	5.527	VI-10	National Transportation System's Impact on USAF Mobility/Contingency Requirements	TSOC

RANKED EDUCATION FACTOR INDICES--LIEUTENANT COLONELS--Continued

Rank	Index	Topic		Course
21	5.429	VI-1	Economics of Transportation Systems	TSOC
22	5.388	V-8	Budgeting Techniques	PME
23	5.352	IV-5	Capabilities of Commercial Air Carriers	BTOC
24	5.288	III-8	Knowledge of PPBS	PME
25	5.187	IV-10	Traffic Management	BTOC
26	5.181	IV-4	Capabilities of Commercial Surface Carriers	BTOC
27	5.088	III-9	Personnel Legal Requirements	PME
28	5.044	VI-11	Management of Common User Transportation System	TSOC
29	5.033	VI-3	Economics of Military Acquisition	TSOC
30	4.911	VI-5	Managerial Economics	PME
31	4.897	V-9	Math Techniques to Allocate and Schedule Transportation Resources	TSOC
32	4.890	III-4	Identifying Stress-Related Problems	PME
33	4.824	II-5	Administering UCMJ	PME
34	4.799	IV-14	Hazardous Cargo Procedures	BTOC
35	4.769	VI-2	Economic Regulation/Deregulation of Transportation Industry	TSOC
36	4.758	IV-9	Motor Vehicle Resource and Maintenance Management	BTOC
37	4.739	V-7	Logistics Computer Simulation	TSOC
38	4.685	IV-12	National and State Transportation Regulatory Directives	BTOC

RANKED EDUCATION FACTOR INDICES--LIEUTENANT COLONELS--Continued

Rank	Index	Topic		Course
39	4.670	V-5	Computer Programming	TSOC
40	4.659	IV-1	Aerial Port Operations	BTOC
41	4.511	VI-6	Government Role in Allocation of Resources	PME
42	4.301	VI-9	Accounting Techniques for Control	PME
43	4.011	VI-7	Leadership and Command Role of the President	PME
44	3.967	IV-3	Capabilities of Military Sea Transportation	BTOC
45	3.910	V-4	Math Techniques for Decision Analysis	PME
46	3.853	V-1	Basic Descriptive Statistics	PME
47	3.736	IV-8	Packaging Methods and Specification	BTOC
48	3.626	IV-2	Water Port Operations	BTOC
49	3.573	VI-4	The Soviet Transportation System	PME
50	3.405	V-2	Advanced Inferential Statistics	PME
51	3.308	V-3	Analytical Inventory Management	PME
52	3.253	IV-6	Commercial Carrier Rate Computation	BTOC
53	3.220	VI-8	Arms Control Policies	PME

RANKED EDUCATION FACTOR INDICES--COLONELS

Rank	Index	Topic		Course
1	7.630	I-1	Face-to-Face Communication	PME
2	6.987	I-3	Briefing	PME
3	6.890	I-2	Writing	PME
4	6.880	III-1	Set Realistic Goals	PME
5	6.853	II-1	Challenge and Motivate Subordinates	PME
6	6.800	III-2	Time Management	PME
7	6.778	IV-13	Data Automation Techniques	TSOC
8	6.640	III-5	Identify Problems and Implement Solutions	PME
9	6.592	II-2	Appraise Performance Objectively	PME
10	6.407	I-4	Listen Effectively	PME
11	6.406	VI-12	War and Mobilization Plan	TSOC
12	6.296	V-5	Knowledge of Microcomputer Operations	AFIT
13	6.240	III-3	Conduct Well-Organized Meetings	PME
14	5.923	III-8	Knowledge of PPBS	PME
15	5.846	VI-10	National Transportation System's Impact on USAF Mobility/Contingency Requirements	TSOC
16	5.815	V-8	Budgeting Techniques	TSOC
17	5.778	IV-7	Logistics Planning Techniques	TSOC
18	5.741	II-3	Counseling Employees	PME
19	5.963	III-6	Managing Daily Activities	PME
20	5.629	VI-1	Economics of Transportation Systems	TSOC
21	5.586	IV-1	Aerial Port Operations	TSOC

RANKED EDUCATION FACTOR INDICES--COLONELS--Continued

Rank	Index	Topic		Course
22	5.556	II-4	Resolve Conflict in Interpersonal Relationships	PME
23	5.552	IV-11	Capabilities of Military Air Transportation	TSOC
24	5.500	III-9	Personnel Legal Requirements	PME
25	5.385	III-7	Reducing Resource Requirements through Work Improvement Techniques	PME
26	5.348	IV-5	Capabilities of Commercial Air Carriers	TSOC
27	5.185	VI-2	Economic Regulation/Deregulation of the Transportation Industry	TSOC
28	5.074	VI-5	Managerial Economics	TSOC
29	5.074	VI-11	Management of Common User Transportation System	TSOC
30	4.888	V-9	Math Techniques to Allocate and Schedule Transportation Resources	TSOC
31	4.848	IV-4	Capabilities of Commercial Surface Carriers	TSOC
32	4.838	III-4	Identifying Stress-Related Problems	PME
33	4.778	V-5	Computer Programming	AFIT
34	4.556	IV-10	Traffic Management	BTOC
35	4.518	IV-14	Hazardous Cargo Procedures	BTOC
36	4.481	VI-6	Government Role in Allocation of Resources	PME
37	4.444	V-7	Logistics Computer Simulation	TSOC
38	4.444	IV-12	National and State Transportation Regulatory Directives	BTOC

RANKED EDUCATION FACTOR INDICES--COLONELS--Continued

Rank	Index	Topic		Course
39	4.334	VI-3	Economics of Military Acquisition	TSOC
40	4.101	II-5	Administering UCMJ	PME
41	4.073	VI-7	Leadership and Command Role of the President	PME
42	4.041	IV-3	Capabilities of Military Sea Transportation	TSOC
43	3.790	VI-9	Accounting Techniques for Control	PME
44	3.789	IV-9	Motor Vehicle Resource and Maintenance Management	BTOC
45	3.779	V-1	Basic Descriptive Statistics	PME
46	3.501	IV-8	Packaging Methods and Specification	BTOC
47	3.432	V-4	Math Techniques in Decision Analysis	AFIT
48	3.407	V-3	Analytical Inventory Management	AFIT
49	3.345	IV-6	Commercial Carrier Rate Computation	BTOC
50	3.274	V-2	Advanced Inferential Statistics	AFIT
51	2.964	VI-8	Arms Control Policies	PME
52	2.896	IV-2	Water Port Operations	BTOC
53	2.518	VI-4	The Soviet Transportation System	TSOC

APPENDIX E

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--ALL

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
Communication	1	6.564	.687	5.988	.832	6.614	.765	1
	2	6.591	.687	6.141	.880	6.649	.736	1
	3	6.282	.943	5.931	.930	6.519	.847	1
	4	6.166	.966	5.947	.925	6.313	.918	1
Human Relations and Leadership	1	6.133	1.395	5.998	.927	6.444	.952	1
	2	5.843	1.432	5.906	.933	6.182	1.100	1
	3	5.668	1.455	5.795	.924	5.978	1.098	1
	4	5.811	1.202	5.743	.978	5.944	1.144	1
	5	4.573	1.938	4.882	1.563	5.499	1.462	1
Management	1	6.070	1.103	5.790	.919	6.312	.966	1
	2	6.287	.876	5.743	1.043	6.436	.902	1
	3	5.875	1.144	5.793	.943	6.273	.944	1
	4	4.968	1.696	5.243	1.245	5.566	1.261	1
	5	6.163	1.088	5.930	.936	6.358	.977	1
	6	5.566	1.449	5.645	1.030	5.951	1.141	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--ALL--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	7	5.280	1.507	5.323	1.235	5.690	1.308	1
	8	4.851	1.754	4.860	1.394	5.663	1.390	1
	9	4.788	1.666	4.890	1.343	5.404	1.371	1
Transportation Technical Knowledge	1	5.024	1.966	5.317	1.588	5.538	1.567	2
	2	3.266	1.888	3.295	1.806	3.755	1.753	2
	3	3.586	1.873	3.647	1.781	4.087	1.735	2
	4	4.694	1.790	4.748	1.537	5.233	1.506	2
	5	4.993	1.739	5.148	1.418	5.434	1.459	2
	6	3.254	1.853	3.319	1.762	3.732	1.830	2
	7	5.431	1.499	5.186	1.348	5.853	1.324	3
	8	3.597	1.779	3.675	1.664	3.925	1.674	2
	9	4.763	2.035	5.113	1.532	5.203	1.586	2
	10	4.775	1.872	4.938	1.546	5.264	1.477	2
	11	5.628	1.618	5.800	1.286	5.981	1.280	2
	12	4.189	1.795	4.156	1.670	4.684	1.589	2
	13	5.122	1.663	4.683	1.519	5.803	1.406	3

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--ALL--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	14	4.774	1.828	4.896	1.545	5.053	1.626	2
Management Science Knowledge	1	3.489	1.773	3.628	1.788	4.152	1.806	1
	2	2.918	1.742	3.058	1.797	3.616	1.842	1
	3	2.966	1.774	3.163	1.742	3.603	1.783	1
	4	3.208	1.804	3.454	1.791	3.897	1.827	1
	5	3.517	1.859	3.267	1.723	4.491	1.826	1
	6	4.233	1.940	3.792	1.832	5.354	1.720	3
	7	3.137	1.866	2.971	1.770	4.278	1.879	3
	8	4.591	1.757	4.546	1.570	5.457	1.488	1
	9	3.859	1.949	3.858	1.793	4.689	1.719	3
Advanced Professional Transportation and Management Knowledge	1	4.426	1.848	4.581	1.699	5.316	1.529	3
	2	3.906	1.896	4.157	1.764	4.855	1.630	3
	3	4.202	1.895	4.374	1.624	5.159	1.545	3
	4	2.728	1.813	2.776	1.683	3.829	1.909	1
	5	4.153	1.852	4.292	1.646	5.046	1.594	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--ALL--Continued

Section	Question	Importance in Job (IJ)		Proficiency Level (PL)		Future Importance (FI)		Appropriate Course
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mode
	6	3.736	1.903	4.109	1.644	4.755	1.650	1
	7	3.527	1.862	4.208	1.609	4.564	1.756	1
	8	2.986	1.817	3.640	1.687	4.068	1.856	1
	9	3.605	1.733	3.725	1.645	4.469	1.644	1
	10	4.942	1.833	5.138	1.529	5.782	1.468	3
	11	4.432	1.917	4.588	1.701	5.223	1.601	3
	12	5.344	1.665	5.263	1.475	5.993	1.337	3

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--TSOC GRADUATES

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
Communication	1	6.641	.566	6.093	.757	6.642	.763	1
	2	6.706	.553	6.298	.753	6.694	.744	1
	3	6.423	.811	6.052	.821	6.571	.837	1
	4	6.268	.900	6.053	.839	6.359	.929	1
Human Relations and Leadership	1	6.045	1.534	6.086	.876	6.384	1.044	1
	2	5.770	1.543	6.000	.836	6.130	1.171	1
	3	5.593	1.589	5.858	.902	5.918	1.191	1
	4	5.858	1.168	5.771	.926	5.931	1.134	1
	5	4.551	2.025	4.967	1.593	5.389	1.534	1
Management	1	6.081	1.115	5.845	.893	6.270	1.081	1
	2	6.355	.841	5.836	.976	6.418	.924	1
	3	5.951	1.102	5.882	.904	6.265	.975	1
	4	4.882	1.790	5.291	1.261	5.477	1.283	1
	5	6.187	1.109	6.069	.839	6.322	1.051	1
	6	5.563	1.494	5.667	1.060	5.901	1.180	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--TSOC GRADUATES--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	7	5.230	1.576	5.411	1.208	5.604	1.368	1
	8	4.864	1.828	5.008	1.388	5.665	1.440	1
	9	4.718	1.774	4.930	1.366	5.293	1.452	1
Transportation Technical Knowledge	1	5.040	1.923	5.490	1.445	5.415	1.628	2
	2	3.383	1.854	3.534	1.773	3.740	1.747	2
	3	3.718	1.871	3.931	1.734	4.069	1.754	2
	4	4.694	1.776	4.890	1.468	5.159	1.566	2
	5	5.000	1.719	5.286	1.361	5.392	1.507	2
	6	3.077	1.769	3.347	1.705	3.510	1.805	2
	7	5.581	1.485	5.421	1.269	5.879	1.400	3
	8	3.482	1.706	3.691	1.579	3.816	1.606	2
	9	4.717	2.038	5.089	1.544	5.115	1.624	2
	10	4.692	1.849	5.045	1.426	5.163	1.478	2
	11	5.680	1.554	5.998	1.123	5.976	1.309	2
	12	4.101	1.848	4.305	1.611	4.592	1.634	2
	13	5.117	1.689	4.841	1.461	5.825	1.405	3

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--TSOC GRADUATES--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	14	4.602	1.799	4.955	1.469	4.947	1.615	2
Management Science Knowledge	1	3.359	1.770	3.658	1.791	4.066	1.731	1
	2	2.874	1.725	3.070	1.787	3.517	1.863	1
	3	2.881	1.775	3.112	1.722	3.444	1.793	1
	4	3.139	1.778	3.428	1.776	3.804	1.832	1
	5	3.502	1.832	3.423	1.733	4.439	1.821	1
	6	4.381	1.917	3.980	1.765	5.457	1.680	3
	7	3.215	1.852	3.150	1.781	4.300	1.855	3
	8	4.648	1.831	4.744	1.505	5.435	1.550	1
	9	3.822	1.951	3.972	1.744	4.584	1.748	3
Advanced Professional Transportation and Management Knowledge	1	4.460	1.859	4.780	1.659	5.286	1.607	3
	2	3.895	1.884	4.284	1.681	4.809	1.611	3
	3	4.243	1.933	4.512	1.562	5.126	1.615	3
	4	2.766	1.789	2.842	1.654	3.672	1.915	1
	5	4.094	1.917	4.366	1.622	4.930	1.783	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--TSOC GRADUATES--Continued

Section	Question	Importance in Job (IJ)		Proficiency Level (PL)		Future Importance (FI)		Appropriate Course
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mode
	6	3.750	1.935	4.183	1.660	4.653	1.769	1
	7	3.526	1.906	4.280	1.549	4.537	1.822	1
	8	2.976	1.796	3.642	1.632	3.902	1.871	1
	9	3.667	1.763	3.880	1.672	4.488	1.678	1
	10	5.081	1.837	5.363	1.380	5.762	1.513	3
	11	4.393	1.987	4.711	1.689	5.159	1.680	3
	12	5.383	1.675	5.425	1.377	5.951	1.448	3

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--NON-TSOC ATTENDEES

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
Communication	1	6.318	1.112	5.782	1.000	6.468	.950	1
	2	6.304	1.101	5.842	1.076	6.509	.894	1
	3	5.965	1.269	5.743	1.059	6.406	.926	1
	4	5.901	1.235	5.762	1.040	6.214	.961	1
Human Relations and Leadership	1	6.135	1.358	5.835	1.007	6.435	.978	1
	2	5.851	1.374	5.762	1.045	6.240	1.013	1
	3	5.722	1.309	5.639	.997	5.988	1.063	1
	4	5.631	1.391	5.696	1.048	5.929	1.124	1
	5	4.509	1.842	4.757	1.506	5.637	1.342	1
Management	1	5.942	1.273	5.682	.963	6.341	.878	1
	2	6.106	1.141	5.574	1.127	6.382	1.032	1
	3	5.673	1.310	5.643	1.004	6.229	.985	1
	4	5.012	1.590	5.149	1.197	5.655	1.262	1
	5	6.012	1.260	5.684	1.087	6.337	.987	1
	6	5.440	1.519	5.578	1.040	5.952	1.194	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--NON-TSOC ATTENDEES--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	7	5.350	1.411	5.194	1.266	5.824	1.209	1
	8	4.820	1.655	4.593	1.457	5.639	1.354	1
	9	4.880	1.508	4.790	1.361	5.564	1.216	1
Transportation Technical Knowledge	1	5.018	2.016	5.018	1.832	5.717	1.468	2
	2	3.150	1.962	2.970	1.838	3.845	1.775	2
	3	3.464	1.905	3.232	1.747	4.150	1.706	2
	4	4.960	1.821	4.482	1.616	5.347	1.422	2
	5	5.018	1.775	4.868	1.547	5.506	1.392	2
	6	3.551	1.972	3.246	1.825	4.090	1.826	2
	7	5.214	1.489	4.762	1.432	5.786	1.234	3
	8	3.795	1.891	3.620	1.783	4.129	1.768	2
	9	4.842	2.036	5.076	1.583	5.324	1.556	2
	10	4.836	1.924	4.708	1.751	5.415	1.470	2
	11	5.579	1.694	5.427	1.579	5.977	1.246	2
	12	4.339	1.722	3.901	1.744	4.830	1.526	2
	13	5.129	1.636	4.415	1.655	5.754	1.434	3

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--NON-TSOC ATTENDEES--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	14	5.029	1.867	4.731	1.731	5.205	1.637	2
Management Science Knowledge	1	3.740	1.784	3.544	1.799	4.317	1.767	1
	2	3.071	1.828	3.041	1.814	3.821	1.813	1
	3	3.140	1.806	3.216	1.757	3.898	1.755	1
	4	3.363	1.881	3.453	1.837	4.043	1.834	1
	5	3.503	1.923	3.088	1.797	4.494	1.870	3
	6	3:929	1.960	3.456	1.880	5.083	1.839	3
	7	2.964	1.886	2.709	1.725	4.287	1.927	3
	8	4.491	1.655	4.238	1.627	5.482	1.412	1
	9	3.898	1.971	3.691	1.856	4.848	1.689	3
Advanced Professional Transportation and Management Knowledge	1	4.373	1.850	4.291	1.718	5.355	1.427	3
	2	3.939	1.931	3.982	1.869	4.957	1.644	3
	3	4.116	1.848	4.159	1.701	5.226	1.441	3
	4	2.683	1.866	2.695	1.721	4.091	1.873	1
	5	4.244	1.766	4.189	1.689	5.213	1.426	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--NON-TSOC ATTENDEES--Continued

Section	Question	Importance in Job (IJ)		Proficiency Level (PL)		Future Importance (FI)		Appropriate Course
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mode
	6	3.720	1.878	4.012	1.628	4.933	1.449	1
	7	3.540	1.810	4.110	1.700	4.675	1.663	1
	8	3.012	1.866	3.652	1.771	4.346	1.795	1
	9	3.509	1.705	3.497	1.593	4.559	1.608	1
	10	4.752	1.833	4.830	1.677	5.830	1.413	3
	11	4.405	1.861	4.435	1.743	5.329	1.523	3
	12	5.253	1.676	4.976	1.638	6.006	1.259	3

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--CAPTAINS

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
Communication	1	6.430	.703	5.827	.840	6.511	.783	1
	2	6.494	.766	5.939	.910	6.603	.738	1
	3	6.133	.999	5.789	.986	6.522	.794	1
	4	6.028	.991	5.826	.973	6.275	.931	1
Human Relations and Leadership	1	6.145	1.354	5.978	.956	6.511	.910	1
	2	5.854	1.438	5.847	.997	6.216	1.084	1
	3	5.721	1.499	5.742	.951	6.090	1.064	1
	4	5.877	1.216	5.742	1.025	6.056	1.103	1
	5	4.506	1.869	4.650	1.501	5.790	1.277	1
Management	1	6.011	1.093	5.787	.895	6.330	.947	1
	2	6.287	.811	5.722	1.099	6.508	.833	1
	3	5.778	1.226	5.670	.935	6.337	.895	1
	4	5.085	1.710	5.251	1.132	5.846	1.152	1
	5	6.122	1.175	5.827	.953	6.404	.898	1
	6	5.526	1.485	5.649	.972	6.081	1.121	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--CAPTAINS--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	7	5.385	1.500	5.301	1.263	5.884	1.232	1
	8	4.802	1.771	4.670	1.452	5.629	1.383	1
	9	4.875	1.588	4.846	1.311	5.624	1.231	1
Transportation Technical Knowledge	1	5.301	1.952	5.303	1.628	5.960	1.357	2
	2	3.239	1.977	3.149	1.829	4.000	1.697	2
	3	3.429	1.950	3.420	1.847	4.234	1.704	2
	4	4.785	1.916	4.806	1.607	5.549	1.359	2
	5	5.063	1.889	5.161	1.473	5.701	1.378	2
	6	3.655	1.928	3.549	1.796	4.222	1.738	2
	7	5.277	1.644	4.920	1.456	5.909	1.243	3
	8	4.017	1.856	3.994	1.768	4.435	1.698	2
	9	4.883	2.015	5.236	1.500	5.500	1.430	2
	10	4.838	1.932	4.983	1.520	5.624	1.301	2
	11	5.693	1.706	5.697	1.356	6.163	1.194	2
	12	4.419	1.789	4.264	1.695	5.067	1.421	2
	13	5.084	1.682	4.500	1.563	5.854	1.370	3

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--CAPTAINS--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	14	5.168	1.810	5.163	1.577	5.528	1.443	2
Management Science Knowledge	1	3.706	1.769	3.739	1.827	4.489	1.769	1
	2	3.079	1.782	3.158	1.827	4.051	1.810	1
	3	3.208	1.843	3.362	1.869	4.012	1.785	1
	4	3.250	1.865	3.494	1.858	4.132	1.853	1
	5	3.612	1.926	3.215	1.774	4.816	1.710	3
	6	4.140	2.057	3.596	1.970	5.282	1.803	3
	7	3.113	1.918	2.960	1.931	4.401	1.961	3
	8	4.335	1.814	4.236	1.684	5.508	1.545	1
	9	3.928	2.022	3.855	1.938	4.983	1.717	3
Advanced Professional Transportation and Management Knowledge	1	4.422	1.917	4.455	1.740	5.514	1.482	3
	2	3.843	1.948	4.073	1.837	5.136	1.605	3
	3	4.282	2.008	4.256	1.820	5.398	1.474	3
	4	2.910	2.006	2.915	1.846	4.384	1.901	1
	5	4.242	1.902	4.339	1.745	5.328	1.517	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--CAPTAINS--Continued

Section	Question	Importance in Job (IJ)		Proficiency Level (PL)		Future Importance (FI)		Appropriate Course
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mode
	6	3.815	2.013	4.051	1.683	5.130	1.526	1
	7	3.610	1.862	4.148	1.615	4.875	1.644	1
	8	3.209	1.930	3.746	1.793	4.520	1.803	1
	9	3.586	1.869	3.630	1.753	4.757	1.663	1
	10	4.916	1.884	4.955	1.650	5.904	1.453	3
	11	4.477	1.924	4.491	1.735	5.425	1.544	3
	12	5.285	1.778	5.090	1.617	6.157	1.234	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--MAJORS

Section	Question	Importance in Job (IJ)		Proficiency Level (PL)		Future Importance (FI)		Appropriate Course
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mode
Communication	1	6.617	.611	6.075	.758	6.692	.562	1
	2	6.692	.499	6.308	.708	6.748	.540	1
	3	6.383	.822	5.992	.794	6.513	.832	1
	4	6.250	.928	6.042	.887	6.390	.848	1
Human Relations and Leadership	1	5.882	1.627	5.941	.866	6.328	1.001	1
	2	5.630	1.615	5.941	.826	6.153	1.122	1
	3	5.454	1.661	5.748	.959	5.807	1.188	1
	4	5.692	1.221	5.684	.944	5.829	1.132	1
	5	4.605	2.051	4.983	1.589	5.415	1.434	1
Management	1	5.967	1.250	5.750	.919	6.390	.925	1
	2	6.250	.946	5.717	.989	6.450	.868	1
	3	5.875	1.178	5.883	.999	6.183	1.012	1
	4	4.925	1.740	5.250	1.324	5.442	1.242	1
	5	6.167	1.048	5.992	.903	6.367	.978	1
	6	5.424	1.504	5.500	1.107	5.771	1.150	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--MAJORS--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	7	4.974	1.709	5.197	1.240	5.419	1.452	1
	8	4.931	1.836	5.000	1.396	5.784	1.357	1
	9	4.517	1.806	4.855	1.379	5.241	1.381	1
Transportation Technical Knowledge	1	4.708	1.920	5.358	1.576	5.225	1.693	2
	2	3.258	1.794	3.425	1.841	3.617	1.825	2
	3	3.575	1.743	3.775	1.770	3.950	1.753	2
	4	4.392	1.784	4.550	1.539	4.900	1.574	2
	5	4.633	1.695	4.975	1.481	5.076	1.653	2
	6	2.805	1.671	3.059	1.691	3.322	1.787	2
	7	5.592	1.357	5.425	1.228	5.783	1.540	3
	8	3.100	1.616	3.417	1.580	3.417	1.537	2
	9	4.825	2.003	5.183	1.489	5.083	1.663	2
	10	4.483	1.949	4.908	1.539	4.958	1.611	2
	11	5.575	1.488	5.875	1.261	5.775	1.393	2
	12	3.742	1.826	4.008	1.703	4.303	1.634	2
	13	4.917	1.808	4.742	1.531	5.758	1.478	3

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--MAJORS--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	14	4.383	1.857	4.817	1.438	4.658	1.653	2
Management Science Knowledge	1	3.125	1.790	3.513	1.868	3.924	1.886	1
	2	2.583	1.617	3.050	1.872	3.299	1.872	1
	3	2.608	1.652	3.042	1.707	3.254	1.740	1
	4	2.883	1.691	3.311	1.755	3.585	1.837	1
	5	3.233	1.841	3.358	1.714	4.218	1.856	1
	6	3.842	1.983	3.765	1.784	5.325	1.711	3
	7	2.833	1.712	2.925	1.691	4.153	1.805	3
	8	4.613	1.795	4.712	1.384	5.458	1.424	1
	9	3.458	1.948	3.775	1.742	4.390	1.788	3
Advanced Professional Transportation and Management Knowledge	1	3.858	1.880	4.395	1.757	4.907	1.695	3
	2	3.408	1.845	3.883	1.820	4.383	1.661	3
	3	3.992	1.916	4.475	1.609	4.942	1.721	3
	4	2.600	1.642	2.733	1.613	3.500	1.806	3
	5	3.718	1.898	4.026	1.605	4.684	1.643	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--MAJORS--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	6	3.233	1.850	4.000	1.588	4.269	1.614	1
	7	3.067	1.823	4.042	1.480	4.117	1.788	1
	8	2.697	1.745	3.454	1.588	3.580	1.820	1
	9	3.508	1.708	3.812	1.537	4.272	1.647	1
	10	4.742	1.885	5.143	1.428	5.563	1.608	3
	11	4.100	1.946	4.417	1.658	4.900	1.732	3
	12	5.294	1.612	5.345	1.446	5.805	1.509	3

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--LIEUTENANT COLONELS

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
Communication	1	6.659	.778	6.144	.881	6.633	.999	1
	2	6.637	.738	6.253	.961	6.615	.952	1
	3	6.418	.932	6.099	.967	6.484	1.037	1
	4	6.333	.874	6.056	.884	6.315	.984	1
Human Relations and Leadership	1	6.322	1.225	6.022	1.005	6.411	1.048	1
	2	6.011	1.243	5.956	.977	6.088	1.199	1
	3	5.824	1.160	5.923	.872	6.000	1.066	1
	4	5.878	1.069	5.767	.949	5.911	1.067	1
	5	4.758	1.985	5.198	1.600	5.264	1.569	1
Management	1	6.220	.964	5.824	1.007	6.176	1.207	1
	2	6.341	.934	5.802	1.056	6.308	1.061	1
	3	6.033	.948	5.923	.922	6.275	.967	1
	4	4.835	1.695	5.297	1.287	5.352	1.294	1
	5	6.220	1.009	6.000	.978	6.211	1.137	1
	6	5.824	1.287	5.811	1.027	5.978	1.161	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--LIEUTENANT COLONELS--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	7	5.484	1.214	5.489	1.202	5.689	1.242	1
	8	4.722	1.683	4.956	1.297	5.522	1.516	1
	9	4.857	1.657	5.011	1.346	5.242	1.515	1
Transportation Technical Knowledge	1	4.725	2.044	5.132	1.614	5.066	1.604	2
	2	3.418	1.862	3.418	1.739	3.626	1.691	2
	3	3.780	1.937	3.791	1.677	3.978	1.738	2
	4	4.879	1.645	4.868	1.462	5.165	1.485	2
	5	5.198	1.477	5.253	1.270	5.407	1.183	2
	6	3.143	1.805	3.330	1.745	3.440	1.796	2
	7	5.527	1.478	5.330	1.265	5.868	1.222	3
	8	3.527	1.649	3.505	1.377	3.714	1.493	2
	9	4.648	2.167	4.934	1.576	5.044	1.570	2
	10	4.945	1.629	4.868	1.507	5.110	1.345	2
	11	5.549	1.642	5.835	1.285	5.923	1.213	2
	12	4.286	1.734	4.143	1.644	4.560	1.641	2
	13	5.286	1.493	4.912	1.481	5.736	1.429	3

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--LIEUTENANT COLONELS--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	14	4.633	1.738	4.667	1.565	4.833	1.671	2
Management Science Knowledge	1	3.539	1.699	3.652	1.666	3.966	1.643	1
	2	3.056	1.731	3.011	1.679	3.360	1.660	1
	3	2.989	1.735	3.067	1.587	3.386	1.636	1
	4	3.522	1.750	3.522	1.717	3.910	1.649	1
	5	3.692	1.736	3.275	1.687	4.253	1.936	1
	6	4.767	1.544	4.167	1.602	5.505	1.601	3
	7	3.560	1.904	3.121	1.618	4.300	1.808	3
	8	4.912	1.610	4.846	1.498	5.322	1.549	1
	9	4.133	1.775	3.989	1.620	4.575	1.544	3
Advanced Professional Transportation and Management Knowledge	1	4.956	1.527	5.000	1.556	5.473	1.336	3
	2	4.396	1.659	4.484	1.486	4.857	1.502	3
	3	4.308	1.756	4.451	1.232	5.176	1.355	3
	4	2.659	1.634	2.615	1.489	3.495	1.760	1
	5	4.356	1.582	4.467	1.447	5.022	1.430	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--LIEUTENANT COLONELS--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	6	4.055	1.552	4.244	1.553	4.700	1.652	1
	7	3.789	1.845	4.456	1.664	4.678	1.798	1
	8	2.967	1.670	3.747	1.644	4.000	1.783	1
	9	3.813	1.549	3.868	1.593	4.356	1.516	1
	10	5.077	1.778	5.418	1.391	5.868	1.293	3
	11	4.604	1.897	4.912	1.684	5.352	1.425	3
	12	5.308	1.617	5.385	1.254	5.923	1.302	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--COLONELS

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
Communication	1	6.889	.320	6.148	.770	6.889	.320	1
	2	6.630	.629	6.370	.839	6.630	.629	1
	3	6.370	1.006	6.037	.898	6.654	.485	1
	4	6.148	1.167	5.963	.854	6.222	.934	1
Human Relations and Leadership	1	6.519	.849	6.296	.669	6.630	.565	1
	2	6.148	.989	5.963	.808	6.407	.694	1
	3	5.741	.944	5.926	.730	5.926	.958	1
	4	5.667	1.441	5.926	.917	5.815	1.241	1
	5	4.259	1.745	4.889	1.577	4.731	1.930	1
Management	1	6.440	.768	5.880	.781	6.320	.820	1
	2	6.280	.792	5.800	.866	6.320	.900	1
	3	6.000	1.000	6.000	.707	6.240	.879	1
	4	4.840	1.405	4.960	1.485	4.958	1.574	1
	5	6.240	.926	6.120	.781	6.520	.872	1
	6	5.577	1.447	5.692	1.011	5.808	1.096	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--COLONELS--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	7	5.240	1.363	5.480	1.122	5.625	1.173	1
	8	5.269	1.511	5.192	1.201	5.846	1.120	1
	9	5.192	1.470	4.923	1.440	5.231	1.557	1
Transportation Technical Knowledge	1	5.630	1.644	5.852	1.199	5.808	1.415	3
	2	2.963	1.850	3.259	1.745	3.192	1.855	2
	3	4.000	1.664	4.074	1.639	4.115	1.862	2
	4	4.815	1.272	4.852	1.292	4.885	1.818	3
	5	5.444	1.528	5.481	1.189	5.385	1.627	2
	6	2.963	1.808	2.926	1.774	3.308	2.055	2
	7	5.407	1.083	5.370	1.149	5.741	1.163	3
	8	3.259	1.789	3.296	1.918	3.538	1.816	2
	9	4.074	1.796	4.593	1.693	4.308	1.871	2
	10	4.778	1.847	5.000	1.922	4.778	1.867	2
	11	5.704	1.564	6.037	.854	5.885	1.423	2
	12	4.333	1.617	4.148	1.460	4.259	1.767	2
	13	5.741	1.228	4.852	1.199	5.889	1.281	3

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--COLONELS--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	14	4.370	1.668	4.259	1.457	4.407	1.738	2
Management Science Knowledge	1	3.519	1.805	3.333	1.569	3.593	1.907	1
	2	2.889	1.928	2.577	1.629	2.962	1.969	8
	3	2.889	1.783	2.704	1.409	3.222	1.968	8
	4	3.333	1.922	3.593	1.803	3.692	2.055	8
	5	3.556	1.847	3.185	1.618	4.407	1.803	8
	6	4.815	1.688	3.963	1.698	5.444	1.649	1
	7	3.222	1.867	2.741	1.534	3.963	1.931	3
	8	5.111	1.423	4.852	1.512	5.556	1.188	1
	9	4.259	1.810	3.815	1.615	4.445	1.761	3
Advanced Professional Transportation and Management Knowledge	1	5.185	1.469	4.815	1.415	5.259	1.403	3
	2	4.489	1.847	4.815	1.642	5.111	1.672	3
	3	4.259	1.437	4.444	1.528	4.519	1.528	1
	4	2.333	1.732	2.593	1.474	2.778	1.948	1
	5	4.778	1.867	4.556	1.717	4.852	2.070	1

PARAMETRIC VALUES FOR SURVEY SECTION B QUESTIONS--COLONELS--Continued

Section	Question	Importance in Job (IJ) Mean	Importance in Job (IJ) Std Dev	Proficiency Level (PL) Mean	Proficiency Level (PL) Std Dev	Future Importance (FI) Mean	Future Importance (FI) Std Dev	Appropriate Course Mode
	6	4.370	2.060	4.519	1.909	4.630	2.041	1
	7	4.148	1.748	4.519	1.868	4.444	1.826	1
	8	2.852	1.748	3.407	1.526	3.519	1.968	1
	9	3.444	1.528	3.462	1.581	3.808	1.650	1
	10	5.577	1.238	5.385	1.472	5.654	1.441	3
	11	5.037	1.629	4.889	1.625	4.926	1.730	3
	12	6.074	1.072	5.630	1.214	5.962	1.248	3

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