UNITED STATES AIR FORCE

AIR UNIVERSITY

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

THE EFFECTS OF TENURE AND TASK ORIENTATION ON AIR FORCE PROGRAM MANAGERS' ROLE STRESS

Roger P. Lempke, Captain, USAF
Greg A. Mann, Captain, USAF

SLSR 14-76A

USAF SCN 75-20B AFIT Control Number SLSR 14-76A

AFIT RESEARCH ASSESSMENT

The purpose of this questionnaire is to determine the potential for current and future applications of AFIT thesis research. Please return completed questionnaires to: AFIT/SLGR (Thesis Feedback), Wright-Patterson AFB, Ohio 45433.

1. Did this research contribute to a current Air Force project?

   a. Yes b. No

2. Do you believe this research topic is significant enough that it would have been researched (or contracted) by your organization or another agency if AFIT had not researched it?

   a. Yes b. No

3. The benefits of AFIT research can often be expressed by the equivalent value that your agency received by virtue of AFIT performing the research. Can you estimate what this research would have cost if it had been accomplished under contract or if it had been done in-house in terms of manpower and/or dollars?

   a. Man-years _____ $ _____ (Contract).

   b. Man-years _____ $ _____ (In-house).

4. Often it is not possible to attach equivalent dollar values to research, although the results of the research may, in fact, be important. Whether or not you were able to establish an equivalent value for this research (3 above), what is your estimate of its significance?

   a. Highly Significant b. Significant c. Slightly Significant d. Of No Significance

5. Comments:

Name and Grade _____ Position _____

Organization _____ Location _____

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER: SLSR-14-76A	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle): The Effects of Tenure and Task Orientation on Air Force Program Manager's Role Stress.		5. TYPE OF REPORT & PERIOD COVERED: Master's Thesis
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): Roger P. Lempke, Captain, USAF Greg A. Mann, Captain, USAF		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Graduate Education Division School of Systems and Logistics Air Force Institute of Technology, WPAFB, OH		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS: Department of Research and Communicative Studies (SLGR) AFIT/SLGR, WPAFB, OH 45433		12. REPORT DATE: June 1976 13. NUMBER OF PAGES: 140
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report): Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

APPROVED FOR PUBLIC RELEASE AFR 190-17.

JERRY C. HIX, CAPT., USAF
Director of Information

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Program Manager/Project Manager
Tenure
Role Stress
System Program Office
Conflict and Ambiguity

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Thesis Chairman: John R. Adams, Lieutenant Colonel, USAF

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

This research examines the possible relationship between a program manager's tenure and the degrees to which the organizational nature of a program manager's tasks in a System Program Office (SPO) are "project" oriented, and how these two variables, in turn, relate to his perceived role stress. The organizational nature of a program manager's tasks can range from functionally oriented to program oriented and is measured with a questionnaire designed by the authors. Perceived role stress is measured with a questionnaire tested and used by previous researchers. The sample consisted of managers within SPOs that were either commissioned officers or civilians in the grade of GS-07 or higher. Findings include (1) as program managers remain in a job longer they tend to become more functionally oriented, and (2) program manager's who perceive themselves to be program management oriented tend to perceive greater role stress than program managers who are functionally oriented. The study concludes that program managers do not usually attain sufficient tenure to learn a job thoroughly and thus accomplish it efficiently. The study recommends changes that include improved Air Force job tenure policies and job overlap programs.

SLSR 14-76A

THE EFFECTS OF TENURE AND TASK ORIENTATION ON AIR FORCE PROGRAM MANAGERS' ROLE STRESS

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

Roger P. Lempke, BS
Captain, USAF
(Logistics Management)

Greg A. Mann, BS
Captain, USAF
(Logistics Management,
Procurement Major)

June 1976

Approved for Public release;
distribution unlimited

This thesis, written by

Captain Roger P. Lempke

and

Captain Greg A. Mann

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

MASTER OF SCIENCE IN LOGISTICS MANAGEMENT

DATE: 16 June 1976

John R. Adams
COMMITTEE CHAIRMAN

ACKNOWLEDGEMENTS

When Lt Col John Adams said he would not act only as an advisor but as a member of our thesis team, he meant it. We cannot express in words how much his attention to our thesis efforts meant to us. The highest compliment we can extend is that we hope to have the opportunity to work with him again someday.

There were others who unselfishly provided their time to assist us. Lt Col Steve Barndt was like a second thesis advisor to us. Others that provided valuable assistance were: Lt Col Martin D. Martin, Maj Micheal McCormick, Maj Denis Umstot, Maj Dale McKemey, and Maj Edward Karnasiewicz, and Capt Les Zambo. Our typist, Laura Reams, was without equal in promptly transforming seemingly incomprehensible drafts into polished products. Her prompt, cheerful attention to our requests was often the deciding factor that enabled us to meet established deadlines.

Our wives, Shirlee and Sally, provided something we needed a lot of--understanding. When we worked past midnight on the computer, when our moods fluxuated with each success and failure, when we locked ourselves out from the world in order to get this thesis done, we needed understanding.

We are proud of our product because we feel it reflects our best efforts and the efforts of those mentioned above. Thanks for the experience.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Time was of the essence and the undertaking was "state-of-the-art" in the truest sense of the term when Brig. Gen. Bernard A. Schriever organized a project to develop the first United States Intercontinental Ballistic Missile. Since the time constraint imposed by the arms race was so acute, he chose a management approach to the missile development well known in the airframe industry and not unfamiliar to the Department of Defense--project management. Brig. Gen. Schriever and his hand-picked team, working toward a singular, well-defined objective surprised critics by getting the Atlas missile into operational use ahead of the 1960 deadline. This case in point and many others have shown that "project management is more than just an academic curiosity--it is a practical necessity [10:162]."

Cleland and King (10), Steiner and Ryan (47), and Johnson, Kast, and Rosenzweig (24) all trace the development of project management concepts as a parallel military/industrial circumstance. However, as project management concepts have evolved, the Air Force has adopted practices not always in concert with accepted project management concepts. First, Air Force assignment policies usually preclude a program manager from remaining with a project from start to finish

as project management concepts specify. Second, an Air Force program manager may not always operate in a fluid organizational setting where procedures and rules are, by necessity, held to a minimum. Air Force Systems Command Regulation 800-3 explains that an Air Force program manager's tasks may be highly proceduralized in some situations (51:1-4).

The issues that have unfolded because of these differences are explained in Chapter I. Chapter II develops the issues in detail by comparing Air Force program management concepts to accepted project management theory. This development involves addressing project/program management concepts and also two intervening variables which can greatly influence a program manager's performance--stress and tenure.

STATEMENT OF THE PROBLEM

This study is designed to determine if the tenure of a program manager is related to the degree to which the organizational nature of his tasks are program oriented, and if each of these variables is related to the degree of perceived role stress he experiences on the job.

JUSTIFICATION OF RESEARCH EFFORT

The Department of Defense (DoD) has identified 141 major systems currently being procured at an estimated direct investment of $163 billion (21:12). Entrusted with day-to-day system/subsystem management within these highly complex acquisition efforts, program managers occupy an

unenviable position where mistakes, even small ones, can be very expensive (4:50). Prior to 1964 no integrated career policy existed for these special "men in the middle." Since then, continually increasing emphasis has been directed at better management of program manager careers (4). For example, in the early 1970's, a DoD policy statement directed the armed services to "upgrade the stature, career development, and assignment of these people [program managers] [21:1]."

Program manager career policies have primarily influenced two areas: career progression and tenure within a given program manager assignment. Development of the first area was necessitated by a need to attract personnel with outstanding managerial experience and to control a growing pool of managerial talent (52:2; 53:4; 4:51; 21:12; 2:22). Air Force efforts to improve career progression have met with success, for the program manager position has become highly regarded as a challenging position with excellent career visibility (4). On the other hand, whether program manager assignment tenure has developed to the extent that it is consistent with program/project management concepts is open to question (11:288).

Project management developed around the idea that one man, the project manager, with broad defacto and dejure authority, would act as a central point for decision making and coordination for the duration of a project (11:284-285). The project manager stayed with a project until its

completion, then ". . . returned to his 'permanent' job or to another job . . . [13:109]." This idea is contrary to the long standing military practice of frequent personnel rotation. Studies have shown that, in general, the military bureaucracy has adjusted to frequent rotation so that this practice is no longer unduly disruptive (15:92:6). Nevertheless, the Air Force has recognized a need for personnel stability in certain tenure sensitive positions and has enacted policies accordingly (54:9-1). Though the program manager position is identified as tenure sensitive, many questions go unanswered concerning (1) actual Air Force program manager assignment practice versus stated policy, and (2) the actual need for the program manager position to be identified as tenure sensitive.

Stress is one consequence of not adhering to a desired tenure policy within an organization (25:76). One research study showed that individuals who experience high levels of stress on a job also tend to exhibit job dissatisfaction, decreased personal effectiveness, and ill-disposed attitudes toward associates. Additionally, persons in program manager-type positions tend to experience higher levels of stress than persons in functional positions. As tenure in a position increased, however, stress tended to decrease. This trend was especially salient in program manager-type positions (34:34-36).

In concept, program managers are more vulnerable to high levels of stress than functional managers because their

tasks are largely unstructured and contain only superficial inter-group boundaries, at best (5; 47:12-13,Chap.4; 32:72). However, the idea that program managers actually possess this high degree of flexibility has been increasely questioned in recent years from two points of view.

First, the term "program manager" has become so colloquial in its use that it no longer accurately discriminates, in a conceptual sense, a true program manager from a functional manager. In the Air Force, for example, a program manager may be anyone from the Program Director, who bears responsibility for a multi-million dollar weapon system, to the Item Manager, who may bear only partial responsibility for one small portion of a weapon system (55:4). Yet even the level of responsibility does not necessarily aid in determining who among those titled "program manager" are actually performing with the flexibility inherent in the program manager concept. A Program Director may be so bureaucratically constrained by higher echelons of management that he is actually performing only a functional role, whereas an Item Manager may work in a very flexible environment. In essence, a true program manager is no longer definable by title or position. Evaluating the organizational nature of a manager's tasks is the only way to determine if that manager is project or functionally oriented.

Second, critics point to new conditions that have erroded the program manager position. These conditions

include increased bureaucratic levels between program managers and chief executives, a lack of program manager control over fiscal matters, increased functionalization of program manager duties, increased susceptability to evaluation agencies, and a lack of management continuity (21; 11:289; 36:25-26). If, as these critics contend, the organizational nature of program manager tasks are becoming more functional and less flexible, then the idea that a program manager's job is more tenure sensitive than a functional manager's job seems open to question.

While tenure within civilian industry has been widely studied (41), as has the military practice of frequent personnel rotation (35), a search of the literature revealed no research that has attempted to confirm or refute the tenure sensitivity of the program manager position. With criticism of program manager concepts on the increase, a need exists for research that will validate or refute a requirement for program manager tenure.

RESEARCH OBJECTIVES

The aim of this research is to examine three variables that impact the issues just discussed. These variables are tenure, stress, and the organizational nature of a manager's tasks. Each of these variables are examined by combinatorial pairs in three hypotheses (H1, H2, and H3) as shown in Figure 1.

Specifically, the objective of this research is to determine if a relationship exists between:

(1) tenure and the degree that a program manager perceives his tasks to be functionally and program oriented,

(2) tenure and perceived role stress of program managers, and

(3) a program manager's perceived role stress and his perception of the degree that his tasks are functionally or program management oriented.

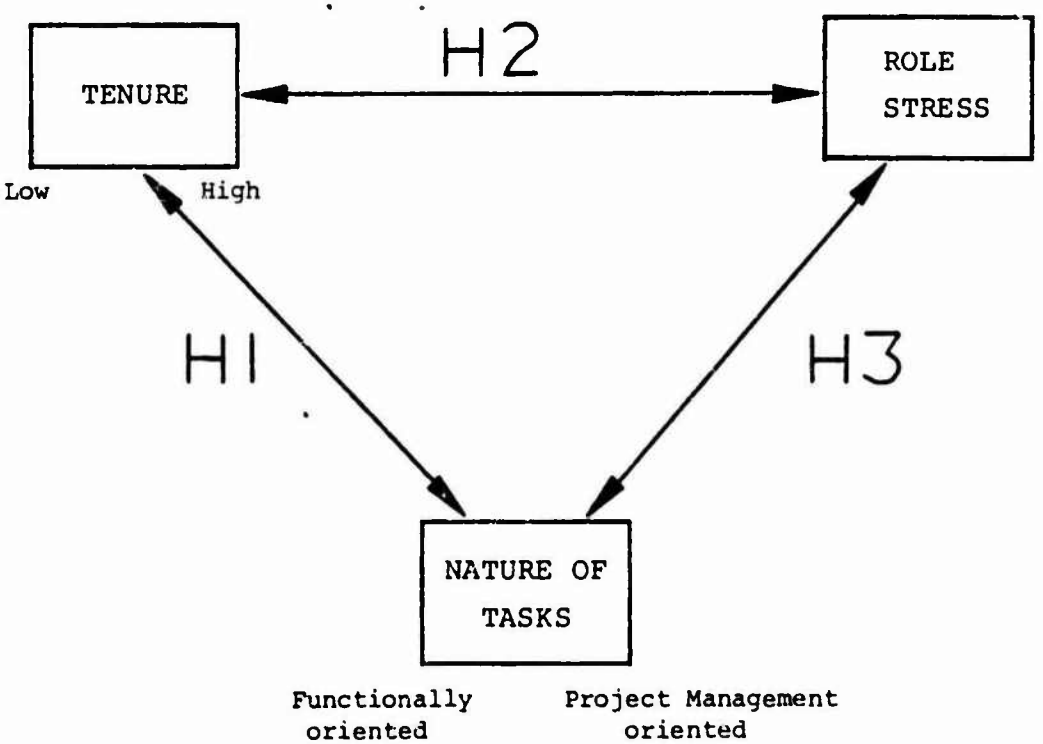


Figure 1. Research Model

SCOPE

The program managers studied will consist of those working in SPOs within Air Force Systems Command's Aeronautical Systems Division at Wright-Patterson Air Force Base. Managers that are commissioned officers or hold a Government Service (GS) grade of GS-07 or higher and are not specifically identified as holding administrative positions will be considered eligible for study in this research.

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this chapter is to consolidate and present findings from a search of the literature pertaining to this thesis. Three areas are explored and interfaced: project/program management, role stress, and organizational tenure. Project/program management concepts are explored to focus in on how the program manager fits into the scheme of the weapons system acquisition process. This section proceeds by presenting underlying project management concepts followed by an examination of program management concepts and practices. The next two sections examine role stress and tenure respectively, developing these concepts and their relationships to the ideas developed in the project/program management section. Finally, three hypotheses are presented that are based on the material developed.

PROJECT/PROGRAM MANAGEMENT

Project Management Concepts

Project management is less a theoretical construct than a technique (10:137; 11:290). It has evolved from descriptions that incorporate key concepts rather than from a universally accepted definition (47:1; 4:84). Cleland and King have described project management in the

following manner:

> Project management is carried out by a set of managers acting as unifying agents for particular projects in respect to the current resources of time, funds, material, people and technology. The project managers act as focal points for their project activities through a unique organization superimposed on the traditional functional organization structure [10:164].

This description incorporates two concepts of project management--the unique organization and the special role that a project manager plays. However, it does not describe the nature of a project. Stewart has described a project as a ". . . one-time undertaking that is (1) definable in terms of a single, specific end result, and (2) bigger than the organization has previously undertaken successfully [48:56-57]." He has further stated that "by definition, [a project] must end at an objective point in time . . . [48:57]."

Recent literature has approached project management from two primary directions. One approach has dealt with mechanical techniques employed in planning, directing, and controlling but has not addressed stress or conflict in project management (16:7-11; 14:21-22; 30:8-15; 5:9; 11:282). The other approach has dealt with stress and conflict in project management and has stressed that a project management approach tends to induce stress and conflict rather than reduce it (9:85; 49:1; 50:2; 42; 48:56,67).

Because project management is so solidly objective oriented, often at the expense of normal organizational stability, it should be reserved for tasks that are large

enough, complex enough, and important enough to warrant an integration of diverse resources toward task accomplishment (48:56-59; 1:3). One of the largest and most complex tasks today, in terms of organizational complexity and state-of-the-art technology, is that part of DoD management that deals with weapon system acquisition. In the late 1950's and early 1960's military planners increasingly recognized that serious inadequacies within traditional management practices were hindering the vital interface of human and nonhuman resources that were necessary to acquire weapon systems. They also recognized that project management concepts could be adapted to the military environment (11:281-283).

Program Management Concepts

Whereas Cleland (11:281-283) has provided a historical background of the evolution of project management within DoD, Morrison has analyzed the first major steps taken by the Air Force to adopt project management concepts. Project management concepts provided the foundation for a series of Air Force Systems Command (AFSC) Manuals called the "375 series" that, in detail, prescribed the Air Force form of project management--program management (36). The 375 series has since been superseded by Air Force 800 series regulations and AFSC 800 series pamphlets (AFSCP's).

AFSCP 800-3 defines program management as:

> The process whereby a single manager is responsible for planning, organizing, coordinating, directing, and

> controlling the combined efforts of Air Force contractors and participating organizations in accomplishing program/project objectives [51:A1-2].

Comparing this definition with Cleland's earlier description of project management reveals the conceptual similarities of project and program management. Figure 2 breaks out and matches Cleland's description with the above definition by key phrases.

PROJECT MANAGEMENT	Concept	PROGRAM MANAGEMENT
Managers acting as unifying agents for particular projects	The Manager	A single manager...responsible[for]...accomplishing program/project objectives.
Time, funds, material, people, and technology	Responsibilities	Planning, organizing, coordinating, directing and controlling the combined efforts of Air Force contractors and participating organizations
A unique organization superimposed on the traditional functional organization structure	Vehicle	(Not specifically covered in definition)

Figure 2. Project Management/Program Management Comparison

Project management and program management are similar conceptually in the way the project/program manager operates in a focal position for the specific effort. From this focal position the manager uses his project/program organization to discharge similar responsibilities. Although the program management definition does not specifically address organization, the next section will include a comparison of the project and program forms of organization.

Project Organization

No set definition exists that specifies the exact form a project organization must take. When initiating a project, a range of variations exist from a pure "functional" to a pure "project" form of organization (10:171; 11:288-289; 48:55). A distinguishable characteristic of the various forms is the amount of formal authority provided the project manager.

Formal authority refers to the legitimate right to influence others that is conferred on a manager by the dictates of the organization. On the other hand, informal authority is the influence a manager acquires due to his personal methods of working with other people (45:Ch.12). Under traditional theories of management, a project manager in a functional organization would possess formal authority commensurate with his responsibility; however, his authority is often inadequate to bring diverse resources from other functional areas of the organization to bear on his project. In a project form of organization a project manager's responsibility and authority may well be greater than in the functional, but his authority is not increased proportionately with the responsibility (10:171; 11:288-289). A project manager must then rely on his informal authority--influence not formally conferred but obtained through his personality by inspiring others to support the project's efforts.

In the project form of organization, the project manager functions in a line capacity reporting directly to

a chief executive, in what John F. Mee has characterized as ". . . a 'web of relationships' rather than a line and staff relationship of work performance [32;72]." The personnel within a project form of organization in most cases remain accountable to their normal line supervisors and, depending on the situation, may or may not come under the direct authority of the project manager (32:72; 11:286-289; 24:147; 47:3; 13:109). The project manager must rely on informal authority to make up any difference between his assigned responsibility and his formal authority, as is shown in Figure 3.

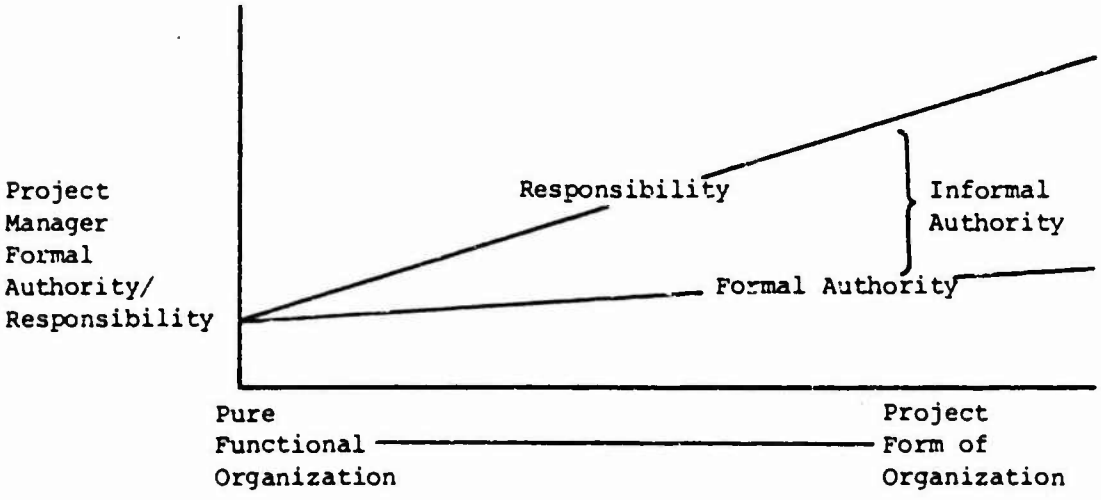


Figure 3. Project Manager Formal Authority/Responsibility Relationship in Different Organizational Forms

Program Organization

Cleland has pointed out that the form of a project organization should be dictated by the situation presented by a particular project (11:289). The Air Force project organization, the System Program Office (SPO), is flexible

in concept and can be shaped to meet the demands of a particular program. By definition, the SPO is: "the office organized by the PM [program manager] to assist him in accomplishing the program tasks [55:5]." The organization is tailored through application of management approaches that vary from management by procedures (step-by-step procedures are followed) to management by objectives (objectives only, not procedures, are provided) (51:1-4); the program manager frequently possesses extensive program responsibilities but, as with the civilian project manager, may not necessarily possess commensurate formal authority.

In concept, the project and program approaches to organization are similar. In either situation a similar problem also arises. Whether it be a project organization or a program organization, an increased level of stress can be expected because functional relationships and formal authority are not completely defined (33:59). The project/program manager must handle the imperfections that result from the project/program forms of organizations with the informal authority that he nurtures (47:2-3; 13:111-113; 11:283-284).

The Project Manager

A project manager occupies a unique and rare position. He is ". . . the focal point within the [project] organization through which major decisions and considerations flow [11:285]." Avots (3:78-79) and other authors

(48:298; 11:286) have stressed the need for carefully choosing the right man to head a project. The nature of project management demands that a project manager possess high degrees of technical and managerial experience and a "knack" for interacting with people to get a job done. In addition, formal authority is necessary if the project manager is to successfully direct day-to-day project operations. Cleland (11:285) has underscored the need for a solid base of formal authority from which relationships with other agencies can be built.

However, as earlier shown in describing project organization types, a project manager frequently does not possess authority commensurate with his responsibility. On the other hand, according to traditional theory, a functional manager receives sufficient authority to discharge his responsibilities (10:151). Table 1 shows a comparison of functional and project viewpoints. This table emphasizes the highly structured environment in which a functional manager operates: line-staff relations are set, a scalar chain dictates operations, and responsibility is specified. Conversely, a project manager ". . . must manage activities that include extensive participation by organizations and people not under direct (line) control [10:152]."

Cleland and King have asserted that:

> One of the project manager's greatest sources of authority involves the manner in which he builds alliances in his environment--with his peers, associates, superiors, subordinates, and other interested parties [10:239].

TABLE 1

Comparison of the Functional and the Project Viewpoints*

PHENOMENA	PROJECT VIEWPOINT	FUNCTIONAL VIEWPOINT
Line-staff organizational dichotomy	Vestiges of the hierarchical model remain, the line functions are placed in a support position. A web of authority and responsibility relationships exists.	Line functions have direct responsibility for accomplishing the objectives; line commands, and staff advises.
Scalar principle	Elements of the vertical chain exist, but prime emphasis is placed on horizontal and diagonal work flow. Important business is conducted as the legitimacy of the task requires.	The chain of authority relationships is from superior to subordinate throughout the organization. Central, crucial, and important business is conducted up and down the vertical hierarchy.
Superior-subordinate relationship	Peer-to-peer, manager-to-technical-expert, associate-to-associate, etc., relationships are used to conduct much of the salient business.	This is the most important relationship; if kept healthy, success will follow. All important business is conducted through a pyramiding structure of superiors and subordinates.
Organizaional objectives	Management of a project becomes a joint venture of many relatively independent organizations. Thus, the objective becomes multilateral.	Organizational objectives are sought by the parent unit (an assembly of suborganizations) working within its environment. The objective is unilateral.
Unity of direction	The project manager manages across functional and organizational lines to accomplish a common interorganizational objective.	The general manager acts as the one head for a group of activities having the same plan.
Parity of authority and responsibility	Considerable opportunity exists for the project manager's responsibility to exceed his authority. Support people are often responsible to other managers (functional) for pay, performance reports, promotions, etc.	Consistent with functional management; the integrity of the superior-subordinate relationship is maintained through functional authority and advisory staff services.
Time duration	The project (and hence the organization) is finite in duration.	Tends to perpetuate itself to provide continuing facilitative support.

*Source: David I. Cleland and William R. King. Systems Analysis and Project Management. New York: McGraw-Hill, 1968, p. 153.

Through informal alliances the project manager compensates for inadequacies in his formal authority, the project organization, and formal and informal communication channels. A case study by Mescher and Kayser (33:57-64) described how one project manager failed to achieve successful project termination because of the support he lost in other departments at a critical point in the project. An observation survey of project manager interactions by Keith Davis (13) revealed that project managers spent most of their time pursuing extradepartmental contacts and performing integrator duties. So much is accomplished outside of normal project organization channels that Cleland and King have cautioned against relying on an organizational chart to ascertain how a project organization (or a project manager) functions (10:191). Because a ". . . project manager is involved in managing diverse and extraorganizational activities which require unification and integration [11: 284] . . ." he, as an individual, is crucial to a project.

The Program Manager

Within an Air Force System Program Office the individual, the focal point, is the program manager. The Air Force defines a program manager as "the single Air Force manager (System Program Director, Program/Project Manager, or System/Item Manager) during any phase of the acquisition life cycle [55:4]." Broad responsibilities for a program manager have been outlined in AFR 800-2;

however, the fact that participating organizations over whom a project manager will possess no authority often supply vital support to a program has also been stressed. Though a program manager can expect to receive ". . . maximum authority and responsibility . . . [55:2]" he will probably not possess authority commensurate with his responsibilities. Still in theory, as with the project manager, ". . . the program manager provides the focal point for leadership of team efforts concerning his program [55:2]."

In practice, however, a program manager may not always operate in a highly unstructured arena where he must rely heavily on informal relationships to overcome insufficient authority. He may be involved in "management by procedures or institutionalized management, whereby step-by-step procedures are provided to the people charged with completing the task [51:1-4]." Therefore, a program manager may operate to some degree much like a functional manager working in a highly structured environment, or he may operate to some degree as a project manager would (51:1-4 - 1-5).

In some situations a program manager may act less as a manager and more as a technical specialist. Again, this situation differs from the theory of how a project/program manager should operate. Stewart has stressed that a project (program) manager should not become involved in strictly technical tasks (44:63).

To capture a more definitive meaning of how a program manager may operate, a previous research effort

chose to operationally define a program manager as:

> a manager or technical specialist in a weapon system program organization who is directly involved in program mission accomplishment, and is in a position to influence the actions of others toward that accomplishment. The term excludes personnel in administrative or other indirect support functions [12:4].

This operational definition meshes program manager theory with actual practice by emphasizing influence while also addressing the fact that a program manager may in some positions be more of a technical specialist. This less than theoretically pure approach to the organizational nature of a program manager's tasks has been subject to criticism.

A contention has been that, in reality, a program manager is not the focal point that a project manager is. Rather a program manager has become little more than a glorified functional manager. For example, Cleland has asserted that the program manager is positioned too low within DoD's organizational structure to be a true focal point for major program decisions (11:289). Hayward has pointed to a lack of program fiscal control, increased management layers, and overpowering evaluation-type agencies as reasons why a program manager cannot perform as the central figure of a program as conceptualized in project management theory (21).

In summary, an Air Force program manager may not always assume the conceptual role as a focal point in an unstructured management environment. A program manager may,

by design, take a highly proceduralized approach to managing a program. Or, an Air Force manager may not, formally or informally, be in a position to act as a true program focal point. No specific guidelines are available to point out the real program managers in a program. Obvious indicators such as grade, job title, or organizational level do not accurately reveal true program managers. One approach is to closely examine the organizational nature of tasks that a manager performs and, if these tasks are program management oriented, that manager can be defined as a program manager in a conceptual sense. A method of determining the organizational nature of a manager's tasks is to determine how a manager perceives his role within the organization.

THE PROJECT/PROGRAM MANAGER'S ROLE

Conflict

In the complex organizational environment of project management, a better understanding of conflict has become vital (9:84). The search for better understanding, however, is hindered by a problem of interpretation that exists because the term conflict has acquired many meanings (40: 298). In an all-encompassing manner conflict has been defined as ". . . two or more entities trying to occupy the same state/space, but only one can do so [18:671]." This broad definition has been narrowed by management scientists and applied to organizational behavior. For example, Kelly has observed that conflict occurs when a group faces a

novel problem or task, or when new values are imported from the social environment into a group (26:512). Opinion on how an organization should treat conflict varies from a classical viewpoint to a neoclassical viewpoint.

Classical theory treats conflict as an organizational aberration that can be avoided or eliminated by proper organizational balance. One way to attain a proper organizational balance is through a scalar process whereby each position within the chain-of-command is defined so that an equality of responsibility and authority exists (45:Ch.3, Chap.10). In other words, classical theory treats conflict as largely a structural problem rather than as an integral part of social intercourse.

The neoclassical theory of management relates conflict to people in that ". . . conflict presupposes clashes of values and interests between groups or individuals [45:189]." Behavioral scientists view conflict as a natural result of the integration of interfunctional activities within organizations. Given then that conflict will always be present, the question becomes how it should be treated.

The answer to this question reveals an advancement from the idea of conflict elimination to viewing conflict as constructive as well as destructive (9:86; 8:305). This second and more recent view has been summarized by Bennis:

> We do not believe that the elimination of conflict is invariable or even typically the desirable goal in wise management of conflict as many who identify consensus with agreement tend to do. Conflicts stem basically from differences among persons and groups.

> Elimination of conflict would mean the elimination of such differences. The goal of conflict management is, for us, better conceived as the acceptance and enhancement of differences among persons and groups . . . [7:152].

Whether a given state of conflict is functional or dysfunctional is not an absolute concept, but rather, depends on the perceptions of the groups or individuals involved.

Perception. Perception is not just an innate conditioned reaction to stimulus but depends largely on past learning and assumptions recalled at a particular occasion. In referring to perceived conflict the inference is to a process where information is received, assembled and compared with past conflict experiences [19:93]. In a further effort to relate the importance of perception with regard to conflict Robert Nye has stated that:

> . . . the way in which interacting parties perceive what is happening is crucial in determining the probability of conflict. If a situation is not perceived as involving competition, domination, or provocation, it is unlikely that hostile reactions will occur [38:88].

Therefore, the assessment as to whether or not conflict is impinging on a party must be made in reference to the party's perceived conflict.

Role Conflict. One reference from which a person perceives conflict is his role. As defined by Hare:

> . . . role refers primarily to the set of expectations which group members share concerning the behavior of a person who occupies a position in the group [19:122].

When expectations are not congruent with a person's perceptions of his role, role conflict occurs.

Role conflict has been defined as ". . . the simultaneous occurrence of two [or more] sets of pressures such that compliance with one would make more difficult compliance with the other [25:19]." For example, Kahn, et al., have expounded a boundary position concept which states that persons in positions that require them to interface with organizations or sub-organizations outside of their own tend to experience high levels of role conflict (25:101). Similarly, Miles has used the term integrator to identify managers in boundary positions (35:34).

Miles administered a questionnaire developed by Rizzo, et al., to a Research and Development organization. The questionnaire was designed to measure perceived levels of role conflict and role ambiguity (44). Miles found significant correlations between perceived levels of role conflict and role ambiguity and various personal outcomes such as job dissatisfaction, tension, and anxiety. In particular, Miles found that managers identified as integrators perceived the highest levels of role conflict and role ambiguity in the organization (34; 35).

The term integrator has been used to describe a program manager whose organizational nature of tasks are program management oriented (10:165). However, as already developed, a program manager may also assume a functional task orientation where he performs few, if any, integrator

duties. With this range of task orientations possible, program managers would be expected to assume varying levels of conflict depending on the organizational nature of their tasks. That is, as the organizational nature of a program manager's tasks become more program management oriented, his perceived level of role conflict would be expected to increase.

Ambiguity

The term conflict tends to be all encompassing when discussing the consequences of social interaction (40:298). However, "conflict" pertains to clashes of values and interests and does not address another condition common in social organizations--ambiguity.

Ambiguity alludes to ". . . the lack of clear, consistent information . . . [25:23]." Lack of good information may result because of the nonexistence of information, inadequately communicated information, or the existence of conflicting information. What constitutes a lack of clear consistent information depends, as conflict does, on a person's perception. As with conflict, one reference from which a person's perception of ambiguity grows is the role in which that person is involved.

Role Ambiguity. The term "expectation," used earlier in the definition of role, refers to ". . . the formal demands made by the organization, and the informal ones made by the groups contacted by the individual in a work situation [45:207]."

From these demands an individual defines his role within an organization. When information is lacking and an individual is unable to clearly define his role, role ambiguity results.

Role ambiguity has been defined as ". . . the lack of the necessary information available to a given organizational position . . . [44:151]." According to classical theory, each position within an organization receives sufficient information to perform specific tasks. When this does not occur role theory states that anxiety and tension result (44: 151). Project management is one situation where information flows and tasks are not completely defined (25:101; 35:34).

As already developed, a project manager's tasks are seldom completely defined. Similarly, the project organization that he integrates with other organizations often does not provide sufficient formal interfaces with them so that an adequate formal communication system can develop. However, because he has tenure in a project, a project manager has time to work toward reducing role ambiguity by defining and stabilizing his formal and informal information systems (35:34-36).

Since the organizational nature of a program manager's tasks may be functional as well as program oriented, in situations where the organizational nature of a program manager's tasks are program management oriented, he should generally experience greater role ambiguity.

In summary, role conflict and role ambiguity are two different conditions that exist within an organization,

(25:35). Though different, their effects may be very similar. Recognizing this, Kahn (25:35) conceived a new term that allows study of these two conditions in concert.

Role Stress

Role stress is the term that has been used by Kahn to collectively address the effects of role conflict and role ambiguity. Role stress is defined as the sum of role conflict and role ambiguity given the assumption that role conflict and role ambiguity are independent (25:Part II). Kahn has pointed out that being able to cope with just one of these factors of role stress will not necessarily reduce role stress significantly if the other factor is very strong (25:54).

In certain situations the program manager has been shown to be very vulnerable to role conflict and role ambiguity (10:165-166; 35:34; 9). From this, the program manager can also be said to be very vulnerable to role stress. More precisely, as the organizational nature of a program manager's tasks become more project oriented, his perceived role stress should be expected to increase.

TENURE

Tenure Concepts

Turnover, personnel movement into and out of an organization, has been widely studied. As job training

becomes more expensive and job experience more valuable, organizations seek to retain individuals longer. Attention has primarily been centered on avoidable turnover--that portion of total turnover that organizations might be able to influence by some positive action (41). In the military the conceptual opposite of turnover--tenure--has been the subject of study

Tenure has been defined as ". . . the length of time the person has been a member of the organization [25:158]." In a study that compared tenure at different levels of management between a business firm and an Air Force base, Grusky found that at middle management levels 97 percent of the business managers had over two years on the job whereas only 49 percent of the Air Force managers had over two years on the job. However, Grusky went on to point out that frequent rotation had become such a common part of the military organization that the adverse affects of short tenure had been discounted. One reason given for the adaptation to frequent rotation was the basic bureaucratic nature of the military organization that emphasizes rules, procedures, and impersonality over personal uniqueness (15).

Project/Program Manager Tenure

Personal uniqueness is important to a project management organization because the project manager is relied upon to counter organizational shortcomings with his ability to move toward project goals through the development of

informal relationships. Because a significant part of a project's mode of operation is shaped by the personality that a project manager interjects, project management concepts call for a project manager to remain with a project from conception to termination. As Davis stated:

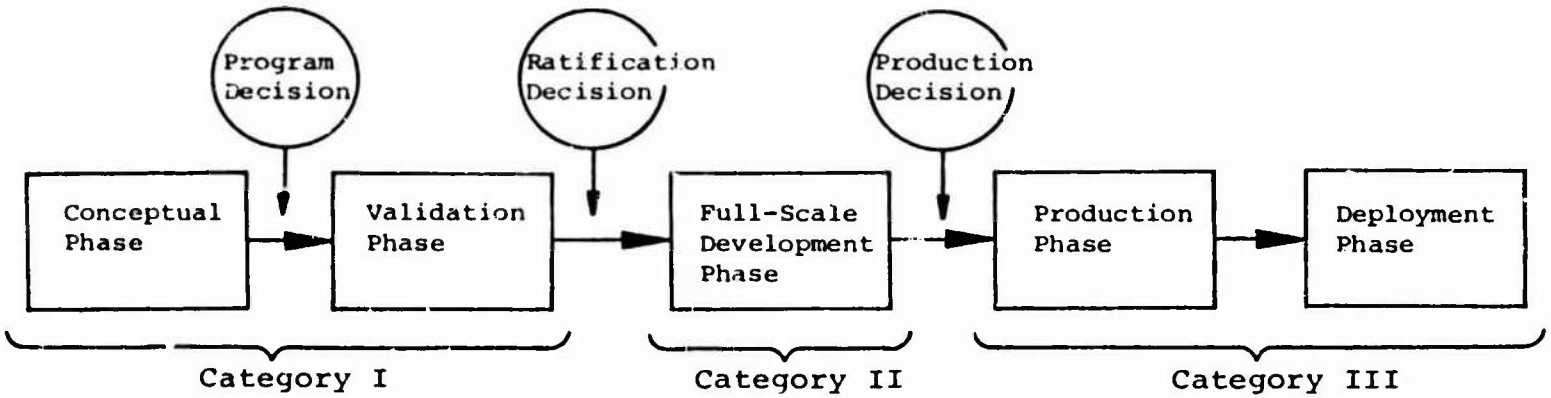
> The project manager generally has complete managerial, budget, and technical responsibility for directing a specialized research or development project. The mix of his group is tailored to fit one specific job, and when the job is finished, he is returned to his 'permanent' job or to another project . . . [18:109].

However, as the complexity and length of projects have tended to increase, the practice of "one man-one project" has been gradually modified.

Butler has alluded to the possibility that project managers might change at certain points during a project life because:

> . . . a uniform leadership style may not be optimal over the project life cycle during which the desired behavior mode tends to evolve from creative discovery, through innovative development of relevant ideas, through programmed production and test of the end product, and finally to introduction and support of the product in use [9:89].

The weapon acquisition process is divided into five major phases, each possessing unique objectives. The first four phases are separated by required program continuation decisions that are made by the Defense Systems Acquisition Review Council. These phases, their definitions, and the required decisions are shown in Figure 4 (51:1-1 - 1-2).



Conceptual Phase: Technical, military, and economic bases are established; and the management approach is delineated.

Validation Phase: Major program characteristics are validated and refined, program risks assessed, resolved or minimized.

Full-Scale Development: Design, fabrication, and test are completed.

Production Phase: The system is efficiently produced and delivered as an effective supportable system.

Deployment Phase: The system reaches its operational ready state and is turned over to the using command and transitioned to AFLC.

Figure 4. Phases of the Acquisition Process (55:1-1 - 1-3)

Larsen and Rupert (28) combined the five phases into the three categories shown in Figure 4, and examined the organizational climate of SPOs within each category. They found that organizational climate did vary between SPOs in different categories, though not always to a significant degree. Their finding supports Butler's idea that project organization behavioral modes change during the life cycle of a project.

Since it has been shown that behavioral modes change during a project, Butler's idea that leadership styles should also change to accommodate these changing behavior modes deserves consideration. Coggeshall and Jasso (12) found no significant differences in leadership styles between SPOs in different categories. However, Air Force policy trends indicate increasing recognition of Butler's ideas.

In 1964, the Air Force instituted a system program manager career field for the purpose of ". . . developing and utilizing system program managers [4:51]." Though this action did not directly address program manager tenure, later guidance by DOD Directive 5000.1 did.

> The assignment and tenure of program managers shall be a matter of concern to DoD Component Heads and shall reflect career incentives designed to attract, retain and reward competent personnel [52:2].

This broad guidance has been supplemented by DOD Directive 5000.23 which states:

> Tenure of assignments must be sufficient to ensure not only effective management and evaluation, but also continuity of management. Changes of Program Managers, if necessary, should <u>normally occur</u>

> near major program milestones, and only with the approval of the Chartering Authority to whom the Program Manager is responsible as specified in the Program Charter. There should be a period of overlap between the Program Manager and his replacement [53:3-4].

A study of SPO staffing practices that pre-dates the above guidance by approximately three years revealed that a number of perceived bureaucratic encumbrances within the Air Force Manpower and Personnel system hindered SPO manning. First, lack of tenure, due to short-term assignments and unexpected losses, was identified and pinpointed as a continuing problem. Second, assignment system rigidity and lag often prevented planned replacement job overlap. These factors contributed to situations where SPOs were forced to operate shorthanded with inexperienced personnel (39:60).

However, the same study also disclosed vestiges of new policies in which certain program managers were identified to receive tenure related assignment control. New policies allowed ". . . freezing the personnel and providing the continuity that is required if the Systems Management program is to function properly [39:60]." The study, then, revealed that a trend toward active control of program manager tenure had existed even before the publication of DODD 5000.23.

DODD 5000.23 recommends that Program Manager changeover occur ". . . near major program milestones . . . [53:4]" which is in concert with Butler's statement that ". . . a uniform leadership style may not be optimal over

the project life cycle . . . [9:89]." As developed earlier, a Program Manager may fill a position where the organizational nature of his tasks may be functionally oriented rather than program management oriented. In a functional position, where tasks are highly proceduralized and depersonalized, tenure greater than what normal Air Force policies allow would not seem necessary. On the other hand, the highly interpersonal requirements of a program manager in a project-oriented organization should be reflected by policies calling for greater tenure within a program organization.

Kahn, et al., have found that as tenure among supervisors increase they tend to profess greater adherence to rules and procedures (25:158-160). Additionally, as tenure increases supervisors tend to support formal organization rules over personal, informal rules (25:159). A similar reaction might be expected from program managers. That is, as a program manager's tenure increases he might be expected to adapt a more formal, functionally oriented approach to his tasks.

Tenure and Role Stress

Kahn has identified rapid organizational change as a major source of role stress. For example, as an organization grows rapidly, frequent personnel changes cause increasing levels of role ambiguity. Thus as tenure decreases role stress tends to increase (25:76).

From experimental research on ad hoc and established groups, Hall and Williams conclude that established groups (high tenure) were able to attain higher levels of group creativity through more objective treatment of role conflict than ad hoc (low tenure) groups (17:221). Ad hoc groups tended to rely on traditional methods of compromise and to avoid radical ideas whereas established groups tended to view conflict and stress as constructive and typically constructed new procedures and methods to foster new ideas and resolve differences (17:221).

As already developed, the ability to interact with others in creative ways is a necessary attribute of a project/program manager. Program managers with stabilized tours of duty that permit high tenure and group maturity should be expected to foster ideas and methods that tend to improve resolution of differences and instabilities. Thus, SPOs in which program manager tenure is high should possess lower levels of role conflict and role ambiguity (role stress) within the organization.

RESEARCH HYPOTHESES

In discussing stress, tenure, and the organizational nature of program manager's tasks, a number of previously researched and expressed relationships were presented. From these relationships, three logical extensions of the concepts contained herein were expressed by the authors as being germane to the program management environment. Expressed as

hypotheses, the logical extensions of the concepts discussed in this chapter are:

H1: The higher the tenure of a program manager the more functionally oriented the organizational nature of his tasks tend to be.

H2: The greater the tenure of program managers within an assigned job, the lower their level of perceived role stress within that organization.

H3: As the program manager's tasks become more project oriented, his perceived level of role stress increases.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

This research effort is part of an ongoing research project that is examining various behavioral factors within System Program Offices (SPOs) of the Aeronautical Systems Division (ASD). Therefore, a number of methodology conventions established in previous research studies are used so that this study can contribute to the ongoing project. Appendix F contains a list of the other research efforts in this project.

DESCRIPTION OF POPULATION

The universe consists of all project/program managers. Within this universe the study focuses on a population consisting of program managers within Air Force Systems Command (AFSC), which has the responsibility for the development and acquisition of Air Force weapon systems. However, time and monetary considerations necessitated limiting the sample-producing population to program managers in SPOs within ASD that could be classified as being both dedicated to one specific weapon system and classified in a particular acquisition category, as presented in Figure 4.

Because the population was necessarily limited, the data-producing sample of program managers is a sample of convenience (22:327). However, common policies and regulations in AFSC govern the selection of program managers throughout the command. Additionally, the military members of the population share a variety of common experiences, including professional education, military training, and a multitude of military socializing influences. These common factors support a consideration that the results of this study may be applied to the broader population.

In concert with previously established convention the sample producing population consists of those managers and specialists within identified SPOs that were either commissioned officers in the Air Force or Air Force employed civilians in the grade of GS-7 or higher (43:25-26; 12:3-4). Administrative and other support personnel were excluded. The purpose of using grade or civilian rating rather than job title as a population descriptor was to permit focusing on a broad spectrum of possible management orientations. Additionally, as established in Chapter 2, in AFSC the job title is not necessarily an accurate indicator of management orientation.

As shown in Table 2, the sample-producing population was stratified into three categories according to the SPO's position in the weapon system acquisition process. Previous research studies had isolated certain variables as being similar in degree among SPOs in a given category. One

study found a significant difference in organizational climate among SPOs of the different categories (29:Chap.III). Two other studies, though not as conclusive, found that certain aspects of leadership and job satisfaction were similar among SPOs within a given category (12; 43).

Table 2

Sample-Producing Population Information

	CATEGORY I	CATEGORY II	CATEGORY III
ACQUISITION PHASE(S)	Conceptual Validation	Development	Production Deployment
SPOs IDENTIFIED	RPV Compass Cope Advanced RPV CCV AMST Advanced Tanker/ Cargo Aircraft	B-1 F-16 ALCM	F-4 F-5 AGM-65 F-15 A-10
POPULATION	92	268	468

Note: Reference Appendix E for program descriptions.

The purpose of population stratification in this study was to acknowledge and attempt to somewhat normalize some of the many complex behavioral variables that exist within the SPO environment. The evidence from previous research, as presented above, suggests that stratification in the manner shown in Table 2 might improve category homogeneity in the areas of organizational climate, leadership, and job satisfaction.

SELECTION OF SAMPLE

Qualified individuals within each category were identified from ASD Manning Documents and given an identification number. A random number generator then selected 50 individuals from each category. A sample size of 50 was selected to accommodate the possibilities of missing data and still permit statistical analysis based on the assumption of normality (56:146).

DATA COLLECTION METHOD

A four-part questionnaire was distributed personally by the researchers to each member of the sample. The purpose of using this distribution method was to:

1. maximize response (reduce nonrespondent bias) by personally encouraging each subject to respond and by answering questions of an administrative nature concerning the questionnaire, and

2. acquire a "feel" for the SPO environment from which the data would come.

Sample members were asked to complete the questionnaire within a reasonable amount of time and return it in pre-addressed enveloped via the inter-office administrative mail system of Wright-Patterson Air Force Base.

Questionnaires were processed and data coded with no reference to individuals or SPOs. Strict confidentiality was maintained at all times on all completed questionnaires. Sample members were given an option whereby they could

remove a study summary request form and forward it under separate cover to the researchers.

DATA COLLECTION INSTRUMENT/VARIABLES

Each section of the questionnaire addressed a particular variable. Therefore, each part of the questionnaire is discussed with the variable it was designed to collect data on. Appendix A contains a complete questionnaire and related documents.

Part I - Tenure

Part I was a demographic data sheet used to obtain general conscious level information. In particular, two questions were structured to obtain a measure of time in a SPO (in months) and a measure of time in the present position in a SPO (in months). Tenure, in this study, is defined as the number of months a program manager had been in his current position.

Part II - Organizational Nature of a Manager's Tasks

An extensive search was unsuccessful in locating an instrument that would measure the degree to which a manager is program or functionally oriented. Therefore, Part II of the questionnaire was structured around the relevant differences between program and functional managers as cited by Cleland (see Table 1) (10:152). The variable organizational nature of a manager's tasks was defined as the degree to

which a manager operated in a program management manner. This variable is envisioned as a continuum ranging from a pure functional orientation to a pure program management orientation (see Chapter II, pp. 17).

Nine questions were composed by the researchers to define the organizational nature of a manager's tasks. The questions solicited responses on a range of values weighted from one to seven. The scores for all the questions were summed and averaged to provide an interval measure of the organizational nature of the respondent's tasks. The lower the respondent's score the more functionally oriented the nature of the individual's tasks. The higher the score the more program management oriented the individual's tasks.

Part III - Stress

Part III of the questionnaire was an instrument developed by Rizzo, et al. to measure role stress and to examine through factor analysis whether role conflict and role ambiguity could be distinctly identified as intervening variables making up role stress (40). Miles used the instrument to collect data that supported hypotheses concerning causal relationships between stress and certain unfavorable personal outcomes within an organization, such as job-related tension and job dissatisfaction. This data also supported a hypothesis that role conflict among managers became less acute as tenure in a position increased (35:34-35).

For the purposes of this study role stress is the sum of role conflict and role ambiguity. Odd numbered questions referred to role conflict; even numbered questions referred to role ambiguity. The seven response options on each question ranged from disagree strongly to strongly agree. Some questions were presented such that response reflection (inversion of the scoring scale) was necessary to maintain a convention that a low score meant a lower level of stress and a high score meant a higher level of stress. The scores of all the questions for each subject were summed and averaged to provide an interval measure of stress. The possible range of scores for a given respondent was one to seven. The higher an individual's score the greater the stress he perceived in performing his tasks.

Part IV - Individual Perception of Task Orientation

The purpose of Part IV was to directly confront the respondent with the issue of whether he perceived himself to be functionally or program management oriented. This question was inserted to provide an additional means of analyzing the responses in Part II.

Interval Scale Data

Parts II, III, and IV of the questionnaire solicit data that is interval in nature; that is, a common and constant unit of measurement is used which assigns a real number to pairs of objects in an ordered set and employs an arbitrary zero point. However, the zero point does not

represent the complete absence of the attribute under consideration. Cardinality in scaling is assumed on the basis that equally-appearing intervals are equal (20:70-76).

A common error that occurs when analyzing interval level data is for a researcher to lose sight of the limitations resulting from not being able to define an absolute zero point. The attractive real number representation of data may invite analysis using techniques only applicable to higher level data. Hays cautions that ". . . the road from objects to numbers may be easy, but the return trip from numbers to properties of objects is not [20:76]." The reader is cautioned against applying statistical methods meant for ratio level data to data collected from Parts II, III, and IV of the instrument.

Part II Question Evaluation

The nine questions written by the researchers in Part II were pre-tested and evaluated by five members of the faculty of the Graduate Education Division, School of Systems and Logistics. In all, the nine questions were evaluated at least three different times by each faculty member.

Instrument Reliability

"Reliability is an indication of the extent to which a measure contains variable error [22:280]." Variable error is defined in terms of random fluctuations in performance which lead a person to get a different score from one testing

session to another (22:283). Test-retest reliability for the data collection questionnaire was determined by distributing the questionnaire twice to a pilot study group of ten individuals. Time interval between distributions was six weeks. Using a Pearson product-moment correlation analysis (reference STATISTICAL TEST section) to compare test-retest responses, a reliability coefficient ($r_{xx'}$) was determined for Part II and Part III of the questionnaire as presented in Table 3.

Table 3

Test-Retest Reliability Coefficients ($r_{xx'}$)

Organizational Nature of Tasks (Part II - 9 questions)	$r_{xx'} = .52$
Stress (Part III - 30 questions)	$r_{xx'} = .80$

Helmstadter cautions that when evaluating measurements of reliability the content of the test and the measurement method should be considered. Questionnaires designed to solicit feelings and attitudes tend to produce low reliability measures because of the fluxuating nature of attitudes and feelings. Additionally, the test-retest reliability measurement method tends to provide a conservative estimate of reliability, provided the time period between test and retest is adequate to minimize spurious responses due to original recall (22:283,284,294).

Attempts to compare Part II and Part III reliabilities may be misleading for two reasons. First, the

two parts were designed to measure different attributes. Second, as Helmstadter points out, questionnaire length tends to influence reliability. The more questions asked about an attribute the closer a questionnaire can come to measuring the true amount of that attribute possessed by a respondent (22:289). Part II uses only nine questions to acquire an estimate of the attributes it was designed to measure, whereas Part III uses 30 questions.

A test-retest reliability of .52 for Part II of the questionnaire is within the boundary values that Helmstadter reported for tests with attitude scales (22:296). Additionally, the lower number of questions would tend to result in a low reliability measurement. Therefore, for the conditions under which Part II was constructed and administered a reliability correlation of .52 is considered suitable to lend confidence that much of the variable error in the responses to Part II questions are external to the questions.

Instrument Validity

Part II of the questionnaire was designed to measure the differences in the functional and program management orientation of a manager's tasks. Cleland maintains that "these differences are possibly more theoretical than actual, yet differences do exist and they affect the manager modus operandi and philosophy [10:153]." Specifically, Part II was constructed using Cleland's comparison of the functional and project viewpoints as presented in Table 1. Since the

questions were designed around the well-supported concepts expounded by Cleland and others, a certain amount of face validity should be attributable to Part II of the questionnaire.

The extensive evaluation of Part II by faculty members of the Management Studies Department and Research and Communicative Studies Department, Graduate Education Division, School of Systems and Logistics, lends a logical validity to the questions in Part II. Logical validity results from extensive subjective evaluation of an instrument by experts to determine if the questions and number of questions are adequate to measure a trait (22:298).

A pilot study was conducted whereby ten individuals with experience as program managers were tested with Part II of the questionnaire and later interviewed. The purpose of the interview was to ascertain if the individuals felt as if Part II of the questionnaire was measuring the organizational nature of their tasks orientation. Their comments provided the impetus to further changes in question construction so as to improve the face validity of Part II.

Finally, the results of an inter-correlation analysis on the questions in Part II are presented in Appendix D. Questions designed to measure the same attribute should correlate highly (22:314). With few exceptions the questions in Part II did correlate highly with each other. In addition, each question correlated highly with the question

in Part IV in which subjects were asked directly how they perceived their tasks to be oriented.

The outcome of the inter-correlation analysis strongly suggests that Part II does measure a specific attribute. This conclusion, in concert with the evidence presented to support face and logical validity, lends support to the validity of Part II of the questionnaire as a measure of the organizational nature of a manager's tasks.

Part III of the questionnaire is an instrument designed by Rizzo, et al., to measure the intervening variables that make up role stress--role conflict and role ambiguity. Rizzo, et al., constructed the odd-numbered questions along role conflict dimensions and the even-numbered questions along role ambiguity dimensions. He then applied factor analysis procedures to the responses acquired by the questionnaire.

Table 15 in Appendix D presents the results of the factor analysis performed by Rizzo et al., and the results of the factor analysis performed on the data collected by Part II of the questionnaire in this study. Both analyses show strong tendencies for data to reduce to the two fundamental variables that are aligned with questionnaire construction such that the two variables can be distinctly labeled role conflict and role ambiguity.

Factor analysis ranks as one of the most sophisticated measures of instrument validity (22:299). "Factor analysis is one of the most powerful tools yet devised for

the study of complex areas of behavioral scientific concern [27:689]." The results of the factor analysis, presented in Appendix D lend confidence that the questions designed by Rizzo, et al., measure two attributes that can be justifiably identified as role conflict and role ambiguity.

In addition to factor analysis, a comparison of the means presented by Rizzo et al. and those acquired in this study is presented in Appendix D, Table 16. For 22 of the 30 questions that made up Part III no significant difference of means existed between the two studies ($\alpha = .001$). This finding shows that Part III yields consistent results when applied to samples drawn from the same conceptual population (in this case the population consists of managerial and technical employees of a large organization).

STATISTICAL TEST

In order to determine the relationships between variables as explicitly stated in the research hypotheses, the Pearson product-moment correlation was used. The interval measurements of one variable were related simultaneously with the interval measurements of another. A value of the Pearson product-moment correlation coefficient (Pearson r) may vary between +1.00 and -1.00. Both of these extremes represent perfect linear relationships between the

variables; 0.00 represents the absence of a linear relationship (20:499).

The computational formula for determining r_{xy} in terms of raw scores is

$$r_{xy} = \frac{n\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{[n\Sigma x^2-(\Sigma x)^2][n\Sigma y^2-(\Sigma y)^2]}}$$

Where: x and y are variable observation values, and

n is the sample size.

A positive Pearson r means that respondents obtaining high scores on one variable tend to obtain high scores on a second variable. The converse is also true, i.e., respondents scoring low on one variable tend to score low on a second variable. A negative Pearson r means that respondents scoring low on one variable tend to score high on a second variable. Conversely, respondents scoring high on one variable tend to score low on a second variable (20:499).

The Pearson r is generally used as a parametric measure of the degree of relationship between variables (46:30). However, there is disagreement among researchers on the selection of correlation coefficients and the assumptions in psychological research regarding the bivariate normal distribution of the joint events (X,Y). Hays, in discussing the appropriateness of Pearson correlations for sample data, states that:

> . . . It is not necessary to make any assumptions at all about the form of the distribution, the variability of Y scores within X columns or 'arrays,' or the true level of measurement represented by the scores in order to employ linear regression and correlation indices to describe a given set of data. So long as there are N distinct cases, each having two numerical scores, X and Y, then the descriptive statistics of correlation and regression may be used. In so doing, we describe the data as though a linear rule were to be used for prediction, and this is a perfectly adequate way to talk about the tendency for <u>these</u> numerical scores to associate or "go together" in a linear way <u>in these data</u>.
>
> The confusion has arisen because in inference about true linear relationships in populations, and in some applications of regression equations to predictions beyond the sample, assumptions do become necessary . . . However, one may apply correlation techniques to any set of paired-score data, and the results are valid descriptions of two things: the particular linear rule that best applies, and the goodness of the linear prediction rule as a summarization of the tendency of Y scores to differ systematically with differences in X <u>in these data</u> (emphasis Hayes) [20:510].

In order to make inference to the population, the assumption of a bivariate normal distribution must be made (20:528). For large samples (n>30) the assumption of a normal distribution is reasonable (20:530; 56:146). The main interest actually is in the value of r_{xy} itself, the estimator of the population correlation coefficient. After making the assumption about the population distribution of joint (X,Y) events, hypothesis tests were constructed to determine the significance of the linear relationships between the variables and also the direction (positive and negative) of the relationship (20:527).

HYPOTHESIS TESTING

All these variables are completely free to take on any value for any observed individual. Each individual of the sample represents the occurrence of a joint X, Y, and Z event. The research hypotheses, stated at the end of Chapter 2, concern the relation between the variables, taking two variables at a time. A Statistical Package for Social Sciences (SPSS) computer package was used to perform the calculations for the Pearson product-moment correlation analysis (37:Chap.13). A complete statistical test summary showing the variables that are tested in each hypothesis and their expected direction of correlation is displayed in Table 4.

LEVEL OF SIGNIFICANCE

A .05 level of significance is widely used in behavioral science research. Each of the three hypotheses was tested against this standard. However, due to the nature of this research, absolute rejection of statistical results around the .05 level of significance and their elimination from consideration seemed inappropriate.

A .10 level of significance was also chosen to test the hypotheses so that all possible significant statistical results would be displayed for the reader to assess. The decision to use a larger alpha-level (.10) was based on the following criteria:

Table 4

Summary of Statistical Tests

Hypothesis	Variables	Level of Data	Scale of Measurement	Statistical Test	Hypothesis Test
1	Organizational Nature of Manager's Tasks	Discrete (Limited)	Interval	Pearson r_{xy}	$H_o: \rho_{XY} \geq 0$
	Tenure	Discrete (Infinite)	Interval		$H_1: \rho_{XY} < 0$
2	Role Stress	Discrete (Limited)	Interval	Pearson r_{yz}	$H_o: \rho_{YZ} \geq 0$
	Tenure	Discrete (Infinite)	Interval		$H_1: \rho_{YZ} < 0$
3	Role Stress	Discrete (Limited)	Interval	Pearson r_{xz}	$H_o: \rho_{XZ} \leq 0$
	Organizational Nature of Manager's Tasks	Discrete (Limited)	Interval		$H_1: \rho_{XZ} > 0$

1. Exploratory nature of the research - The purpose of this study was to explore relationships rather than choose between well-developed but contrasting theories. A larger error rate allows the development of more specific hypotheses for future study.

2. Degree of confidence in direction of hypothesis - Research provided strong indications of hypothesis directionality. Since directionality (one-tail versus two-tail) seemed easily predictable a larger significance level was deemed appropriate to focus more attention on strength of the relationships.

3. Practical consequences - This research, in its present form, is too conceptual in nature to be the basis for a crucial decision at this time. Therefore, a larger level of significance will not cause any practical harm and may prove to be helpful if supported hypotheses encourage further research under more stringent conditions (28).

CRITERIA TEST

A subjective, but structured, comparison is made between statistical results and the three criteria tests described below.

The most current guidance concerning program manager tenure is contained in DODD 5000.23, System Acquisition Management Careers. This document spells out three desirable precepts intended to govern program manager assignments:

1. assignment tenure should be sufficient to ensure effective management and continuity of management

2. key program manager rotation should occur near major program milestones

3. a period of overlap should exist between the outgoing program manager and his replacement (52:3-4). The term "Key program manager" applies to those program managers whose tasks are program oriented rather than functional oriented. Those program managers in compliance with all of the above precepts will be deemed to be operating under the most ideal assignment conditions within ASD. These program managers should be experiencing the least amount of role stress among key program managers. In addition, those program managers that operate at a functional level, and therefore, are not considered "key program managers," should not be expected to be in compliance with the above precepts to the extent the program managers with program oriented tasks are.

Patchett and Talley reported that highly experienced program managers pointed to short term assignments and unexpected losses of program managers as disruptive to a SPO's mission (39:60). To the extent that these conditions still exist within a SPO, role stress should be a prevalent factor.

Finally, opinions were obtained from informal interviews with program managers. The interviews are used

to confirm or deny expected relationships among the three variables under study.

ASSUMPTIONS

The assumptions under which this research was conducted are as follows:

1. The selected sample of program managers from ASD are representative of the population of program managers in AFSC.

2. Definitions and assumptions from supportive research studies are valid and reasonable (12; 28; 43). For example, stratified categories within the weapon system acquisition process are logically and sufficiently defined to allow further research.

3. Uncontrolled variables that exist in SPO's at different categories of the weapon system acquisition process remain distinctive to those categories (28).

4. The full cooperation of the randomly selected program managers within ASD was obtained and resulted in the collection of unbiased data.

LIMITATIONS

1. The use of an untried and unproved data collection instrument limits the validity for determining the organizational nature of the program manager's tasks.

2. Time and money limit the scope of the research.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter presents data analysis results. First, the sample response and respondent profile are displayed. Next, the findings of a comprehensive analysis of each of the three research variables (organizational nature of manager's tasks, stress, and tenure) are presented and discussed. Following this, the results of a Pearson product-moment correlation test conducted on each of the three hypotheses are presented and evaluated.

RESPONSE PROFILE

Out of 150 questionnaires distributed to managers in 13 different System Program Offices (SPOs) within Aeronautical Systems Division (ASD), 142 were returned, a response rate of 95 percent. The response profile by category is presented in Table 5. All returned questionnaires were usable for data analysis. The response from each category was sufficient to allow the use of parametric statistics (20:530; 56:146). A respondent profile brief is presented in Table 6.

Table 5

Response Profile Statistics

	Sent	Received	% Response
Category I	50	46	92%
Category II	50	48	96%
Category III	50	48	96%
Total	150	142	95%

VARIABLE ANALYSIS

Tenure

To more meaningfully present the results of a comprehensive statistical analysis, tenure data was transformed from ratio level to interval level by constructing equal-interval tenure year-groups. A complete Pearson product-moment correlation analysis of the hypotheses using both classified and non-classified tenure data yielded identical results. Therefore, transformation of tenure data into year-group intervals did not mask any true hypothesis relationships. Classification does permit a more meaningful presentation of tenure data analysis results.

Table 6

Respondent Profile

	Category I	Category II	Category III	Composite
Rank (rank/number)				
Military				
Highest	Lt Col/3	Lt Col/5	Col/1	Col/1
Lowest	Capt/11	Capt/10	2Lt/1	2Lt/1
Mode	Capt	Capt	Capt	Capt
Civilian				
Highest	GS-15/3	GS-15/2	GS-16/1	GS-16/1
Lowest	GS-12/4	GS-7/1	GS-11/1	GS-7/1
Mode	GS-14	GS-13	GS-13	GS-13
Military/Civilian				
Number military	23	22	27	72
Number civilian	23	26	21	70
Average Tenure (months)				
Military	18	17	16	17
Civilian	39	68	48	53
Organizational Level*				
Military				
Highest Level	1	2	2	1
Lowest Level	3	4	5	5
Mode	3	3	3	3
Civilian				
Highest Level	2	2	2	2
Lowest Level	5	5	4	5
Mode	3	3	3	3

* Organizational level was defined as the Program Director being the highest level, those reporting directly to him being the second level, and so on through five levels of the SPO organization.

A minor response deviation to the two tenure questions in Part I of the questionnaire was discovered and rectified. A few civilian respondents answered the tenure question (number of months in present position) by recording their tenure in a given technical specialty rather than the time in a job within the SPO to which they were assigned. In these cases "months in present position" exceeded "months assigned to SPO." After confirming the misunderstanding with a number of respondents the data was corrected by using "months assigned to SPO" as the tenure observation whenever it was exceeded by "months in present position."

The bar graph in Figure 5 shows how respondent tenure saturated the four-year-and-less year-groups at the expense of later year-groups. Ninety percent of the sample had four years or less tenure. Ninety-three percent of the military respondents had three years or less tenure, and no military respondent had more than four years tenure in a job. All respondents with more than four years tenure were civilian, and 50 percent of these respondents came from Category II. This data is displayed in Figure 6.

Seventy-eight percent of the military respondents had two-years-or-less tenure and 46 percent had one-year-or-less tenure. For the Air Force's "ideal" three-to-four year assignment policy, it would be expected that tenure would be distributed somewhat evenly among the year-groups with each year group possessing slightly less than 33 percent of the sample. Apparently assignment rotation

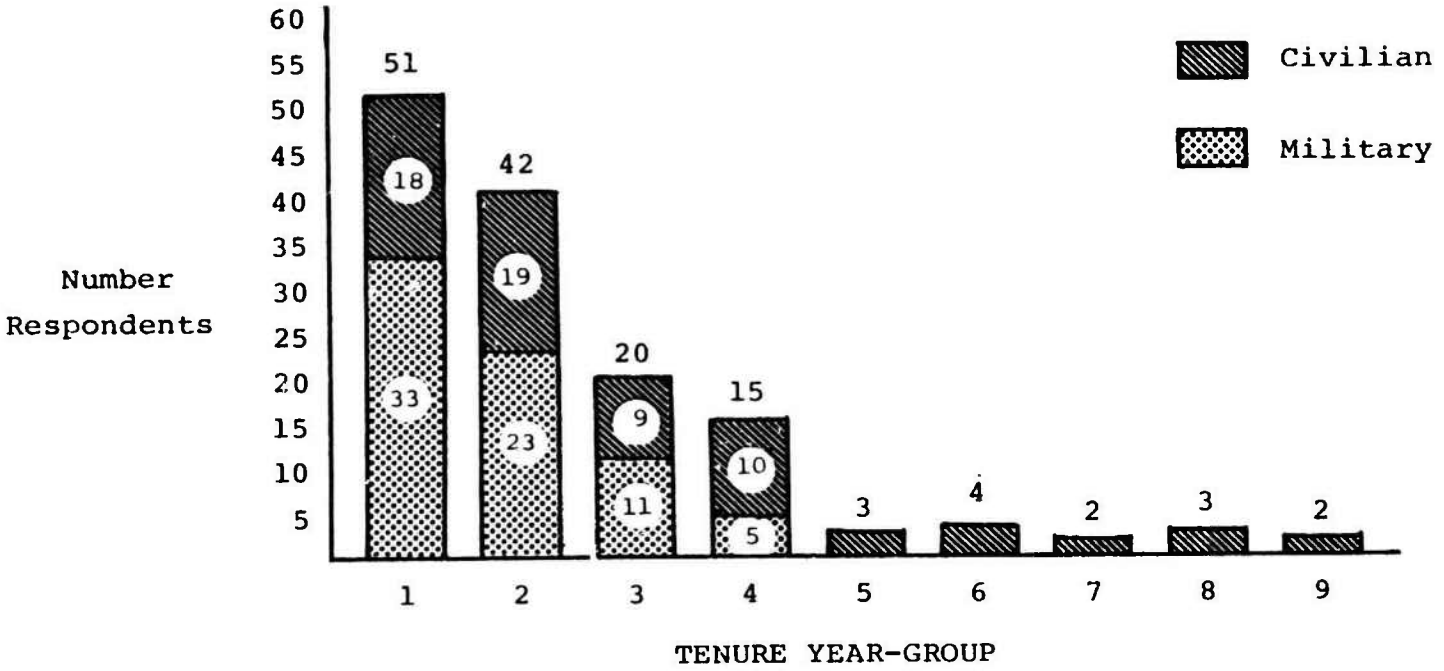


Figure 5. Military/Civilian Respondents by Tenure Year-Group

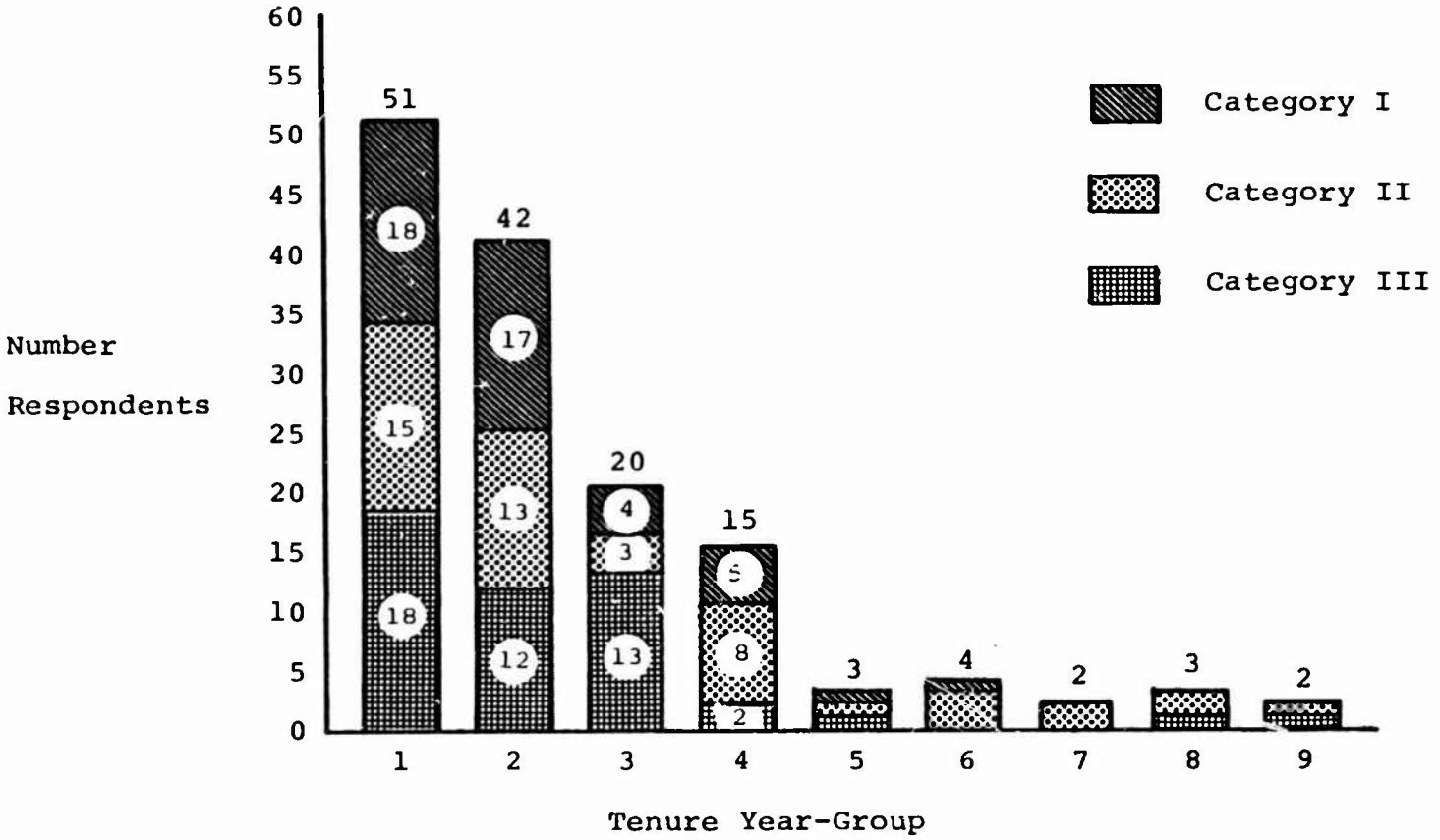


Figure 6. Number Respondents (Per Category) by Tenure Year-Group

priorities require some military managers with less than three years tenure in a SPO to rotate to new jobs.

Civilian tenure declined by year-group; however 20 percent of the civilian respondents had more than four years tenure. Generally, civilian tenure was more evenly spread across the year-groups than military tenure.

Except for Category II, tenure was not as evenly distributed across the year-groups as hoped. The number of over-four-years-tenure respondents was too small to accomplish statistically significant year-group analysis. However, the later year-groups were combined in some instances to search for trends that might aid future research.

Organizational Nature of Tasks

The sample manifested strong program manager task orientations. Analysis of the sample by category and military/civilian breakdowns did not diminish this strong tendency. In Part II of the questionnaire a response less than four was designed to indicate that a respondent tended to act more as a functional manager than a program manager in the task element evaluated. A response greater than four indicated a tendency toward a program management orientation to tasks. The question-by-question response profile in Figure 7 shows the strength with which the sample perceived their orientation toward most tasks as being program management oriented. Additionally, Table 7 shows that the sample responded to the direct question (Part IV of the

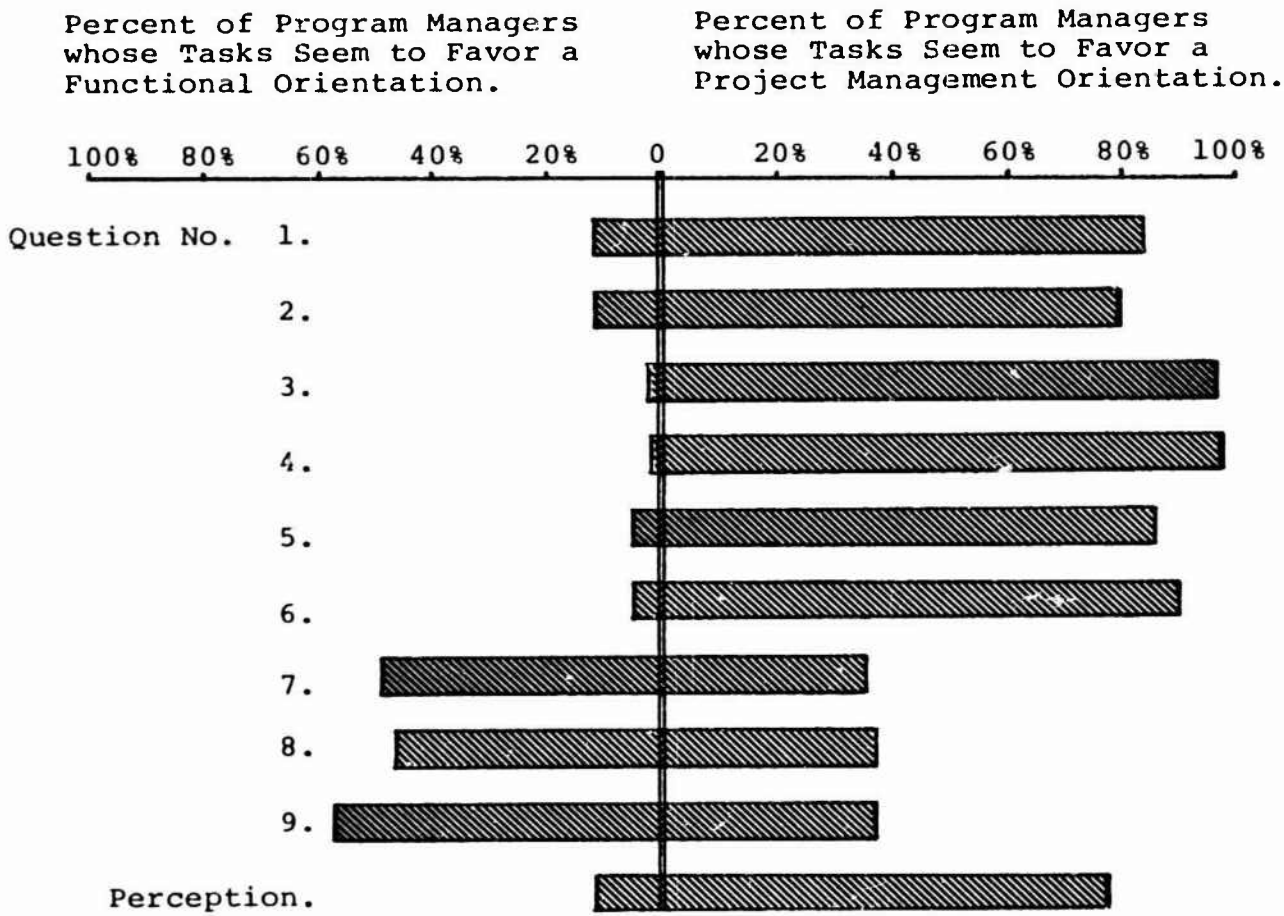


Figure 7. Response Range for Organizational Nature of Tasks Questions

Table 7

Organizational Nature of Tasks - Actual and Perceived
Mean
(Standard Deviation)

Category	Actual (Questionnaire Part II)		Perceived (Questionnaire Part IV)		Category Composite	
	Civilian	Military	Civilian	Military	Actual	Perceived
I	5.271	5.242	5.391	5.739	5.256[a]	5.565
(n=46)	(.800)	(.786)	(1.588)	(1.657)	(.782)	(1.615)
II	4.547[a]	5.131[a]	5.308	5.546	4.815[b,c]	5.417
(n=48)	(1.016)	(.623)	(1.517)	(1.535)	(.900)	(1.514)
III	4.942	5.424	5.191	5.8148	5.213[b]	5.542
(n=48)	(.844)	(.520)	(1.460)	(1.242)	(.715)	(1.352)
Composite of MIL/CIV Scores	4.903	5.276	5.300	5.708	5.092	5.507
	(.936)	(.649)	(1.497)	(1.458)	(.822)	(1.486)

[a] Difference of means significant at above .05 (2-tailed t-test)

[b], [c] Difference of means significant at above .05 (2-tailed normal test)

questionnaire) of how they perceived the organizational nature of their tasks with higher scores than those achieved in Part II of the questionnaire. Although Air Force Systems Command Pamphlet 800-3 expounds a range of management styles from functional to program management in nature (55:1-5) the strength of the sample response to Part II and Part IV of the questionnaire indicates that a majority of managers within SPOs perceive themselves to be program management oriented rather than functional management orientation.

The heavily skewed program management orientated response was unexpected. This study had hoped to evaluate a range of task orientations from a functional to program management orientation. However, data is only adequate to draw conclusions about managers within SPOs who consider the nature of their tasks to be to some degree program management oriented.

Figure 7 shows that responses to questions seven, eight, and nine were much lower than the responses to the other six questions about the organizational nature of a manager's tasks. A question-by-question parametric correlation, presented in Appendix D, did not uncover adequate response inconsistencies to these three questions to warrant their elimination from the data. The reasons for low responses to question seven are not apparent. Question eight response was low because very few managers apparently felt that they significantly controlled resources--especially money. Question nine was intended to ascertain the degree to

which a manager coordinated activities with other organizations both within and outside the SPO (boundary spanning). Most respondents interpreted the question to mean activities coordinated with organizations strictly outside a SPO. The marked difference in the responses to questions seven, eight, and nine as compared to responses to questions one through six may indicate that the subject matter addressed by the last three questions deserves further study. Even with the mellowing effect of questions seven, eight, and nine a number of interesting and significant relationships and comparisons among program managers were uncovered.

Managers in Categories I and III scored significantly higher than did Category II managers as shown in Table 7. This outcome parallels Larsen and Ruppert's finding that SPOs in Categories I and III practice more participative management, yielding greater individual identification with organization goals, than do SPOs in Category II (28:57-58). Generally, Category I SPOs are small in terms of manpower, and managers tend to assume more individual responsibility and are expected to represent the SPO in more varied areas of responsibility. On the other hand, SPOs tend to reach their maximum manpower size during Category II (full-scale development). This growth may lead to a functionalization of tasks to facilitate overall management of the large organization. SPO size typically decreases in Category III so that managers may again achieve a more broad grouping of responsibilities, requiring them to move across

organizational lines in order to accomplish their tasks. Not only did organizational nature of tasks scores vary significantly between categories, military versus civilian scores also varied significantly.

In Categories II and III military managers achieved higher program management oriented scores than did civilian managers. Overall, the difference was significant at above .05, as shown in Table 7. Discussions with program managers revealed that civilian program managers tended to identify with professional specialties such as airframe engineering as well as with the SPO; whereas, military program managers displayed a general allegiance to the SPO rather than to any specialty. Because of this broader outlook it would seem reasonable that military program managers would reflect higher program management task oriented scores than civilians.

Stress

When examined across categories, stress remained relatively stable; however, when military and civilian stress scores were compared, a trend became apparent. Except for Category I, military respondents perceived higher levels of stress than did civilian respondents. This difference in perceived stress was significant for Category II respondents and the military/civilian composite comparison, as is shown in Table 8.

The stress variable was decomposed into two intervening variables (role conflict and role ambiguity) for more

Table 8

Perceived Stress Levels

Mean
(Standard Deviation)
n=number of respondents

	Category I	Category II	Category III	Military/Civilian Composite
Military	3.610	3.880[a]	3.842	3.780[b]
	(.565)	(.808)	(.758)	(.710)
	n=23	n=22	n=27	n=72
Civilian	3.701	3.450[a]	3.552	3.565[b]
	(.929)	(.808)	(.985)	(.869)
	n=23	n=26	n=21	n=70
Category Composite	3.651	3.647	3.715	3.674
	(.762)	(.828)	(.824)	(.801)
	n=46	n=48	n=48	n=142

[a] Difference of means significant at above .10 (2-tailed t-test)

[b] Difference of means significant at above .10 (2-tailed normal test)

detailed examination. Rizzo, et al. demonstrated a factorial independence between role conflict and role ambiguity in the questionnaire developed by them and used in this study. Table 15 in Appendix D shows that the stress under discussion herein demonstrated a factorial independence similar to that published by Rizzo, et al (40:160).

Civilian respondents tended to maintain similar levels of role conflict and role ambiguity when viewed across categories (Table 9). Additionally, no significant difference existed between military and civilian levels of role conflict and role ambiguity (Table 9), though military respondents generally showed higher levels of both intervening variables.

Military respondents tended to score higher in role conflict than role ambiguity. This difference was significant in Category III scores and the military composite scores. This trend was strong enough to promote a significant difference between role conflict and role ambiguity in the Category III total sample composite.

Miles found that perceived role conflict varied directly with job activities (tasks) (34:36). Persons involved in personnel supervision and boundary spanning or integrator activities perceived significantly higher degrees of role conflict than persons involved in scientific research activities.

In this research effort the number of military and civilians involved in personnel supervision tasks were

Table 9

Perceived Role Conflict and Role Ambiguity
Mean
(Standard Deviation)

	Category I		Category II		Category III		Military/Civilian Composite	
	Role Conflict	Role Ambiguity	Role Conflict	Role Ambiguity	Role Conflict	Role Ambiguity	Role Conflict	Role Ambiguity
Military	3.739	3.481	3.985	3.776	4.104[a]	3.580[a]	3.951[b]	3.608[b]
	(.574)	(.768)	(.816)	(.919)	(.681)	(.991)	(.702)	(.898)
Civilian	3.706	3.728	3.497	3.403	3.816	3.290	3.654	3.475
	(.917)	(1.179)	(.802)	(.949)	(.996)	(1.001)	(.898)	(1.046)
Category Composite	3.713	3.604	3.721	3.574	3.987[c]	3.453[c]	3.805[d]	3.543[d]
	(.757)	(.991)	(.837)	(.944)	(.836)	(.995)	(.815)	(.972)

[a] Difference of means significant at above .05 (2-tailed t-test)

[b], [c], [d] Difference of means significant at above .05 (2-tailed normal test)

similar, 38.9 percent and 35.7 percent respectively. Therefore, personnel supervision tasks do not seem to have influenced the difference in perceived role conflict between military and civilian program managers.

However, military program managers may perform more boundary spanning tasks within the SPO; whereas civilians may perform more tasks that require a well-defined technical specialty. Under these conditions military program managers would be expected to perceive greater role conflict than civilian program managers.

The significantly higher level of role conflict over role ambiguity shown by respondents in Category III may be the result of increased boundary spanning activities and manpower changes. In Category III (production and deployment) program managers may perform a greater number of boundary spanning activities because of increased interfaces with the contractor, the weapon system using command, and Air Force Logistics Command. Also, in Category III SPO manpower decreases from a Category II high. Role conflict may increase because the managers remaining in the program must assume tasks previously performed by others.

One known uncontrollable variable may have influenced civilian respondent stress scores. Recent budget considerations had forced ASD to examine the possibility of reducing civilian manpower authorizations. For civilian respondents the prospect of losing their jobs or accepting a grade reduction may have influenced them to score

unusually high on stress questions. However, it is not possible at this time to isolate the effect of this situation. Future researchers who may use the stress data gathered in this research effort should be aware that this condition existed at the time of data collection.

HYPOTHESIS ANALYSIS

As shown in Table 10 Hypotheses 1 and 3 were supported by this research effort at .10 and .05 levels of significance respectively. Additionally, Hypothesis 1 was supported by Category II data and Hypothesis 3 by Categories I and II data. Hypothesis 2 was not supported overall or in any of the categories. Each of the hypothesis variables has been individually analyzed. Each hypothesis is examined below by further analyzing the relationships between hypothesis variables.

H1: The higher the tenure of a program manager the more functionally oriented the organizational nature of his tasks tend to be.

The rationale for this hypothesis was that as program managers gain experience in a job and perform that job long enough they should acquire personal techniques and procedures that in effect allow them to functionalize their tasks to some degree. Although this hypothesis was supported at above the .10 level by Category II and the composite results there is reason to believe a stronger relationship exists.

Table 10

Results of Pearson Correlation (r) Test Applied to Hypotheses

Hypothesis No.	Variables Tested	Relationship Expected +/-	Correlation (Level of Significance) Cat I n=46	Cat II n=48	Cat III n=48	Composite n=142
1	[1]Tenure with Organizational Nature of Tasks	-	.1324 (.190)	-.2031** (.083)	-.0095 (.474)	-.1205** (.077)
2	Tenure with Perceived Role Stress	-	.0334 (.413)	.1350 (.464)	-.1135 (.221)	-.0268 (.376)
3	Organizational Nature of Tasks with Perceived Role Stress	+	.5885* (.001)	.3452* (.008)	.1297 (.190)	.3441* (.001)

Note: [1]Tenure Data was classified by year-group; i.e., Tenure $\leq$ 12 months became year-group one, etc. Strength of significance of r not affected by classification of tenure data.

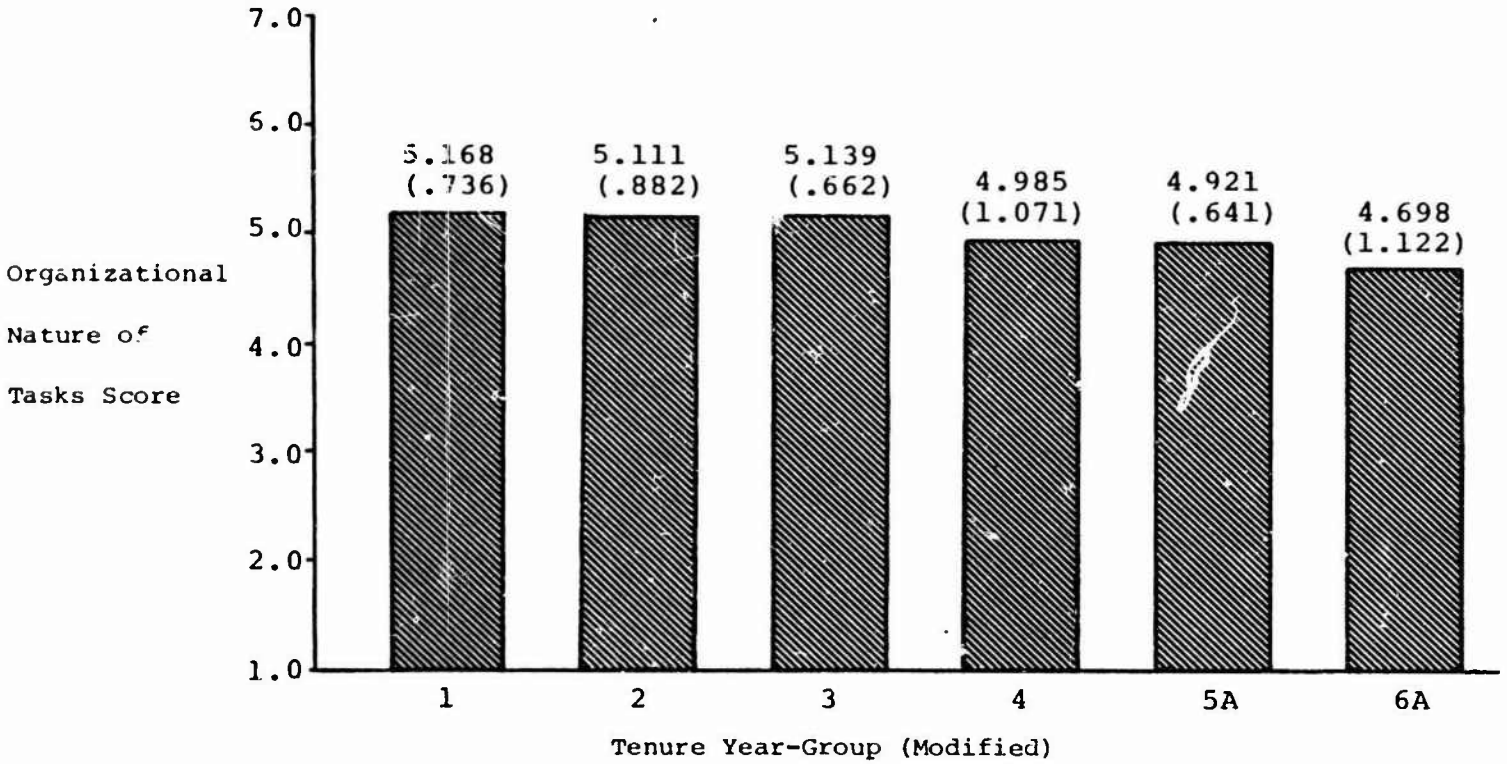
*Pearson's correlation coefficient (r) found to be statistically significant at the 5 percent level of significance (one-tailed).

**Pearson's correlation coefficient (r) found to be statistically significant at the 10 percent level of significance (one-tailed).

As discussed earlier, the sample only reflected adequate data in year-groups one through four. Category II was the only category to possess a more even distrubition of tenure across the nine year-groups and it supported Hypothesis 1 at above the .10 level. The other categories did not support Hypothesis 1 at above the .10 level; however, the inadequate tenure data spread in Categories I and III may have prevented the true strength of the Hypothesis 1 relationship from surfacing in these categories. Had data been more evenly distributed across the nine year groups a stronger relationship may have been uncovered.

Year-groups five and six responses were compiled and placed into a single cell (designated 5A in Figure 8). Similarly, year-groups seven, eight, and nine responses were compiled and placed into a single cell (designated 6A in Figure 8). This operation on the tenure data reduced the number of year-groups from nine to six and evened out the distribution of tenure across year-groups.

This modified year-group arrangement, shown in Figure 8, revealed that after the three-year point the organizational nature of program managers' tasks steadily become more functionally oriented, though not to a statistically significant degree. This decreasing trend after the three-year point is similar to Miles finding that division managers and group leaders in Research and Development (R&D) organizations become noticeably more comfortable at their jobs after about two-and-one-half years experience (34:34).



Notes: 1. Year Groups 5 and 6 combined to form year-group 5A and year-groups 7, 8 and 9 combined to form year-group 6A.

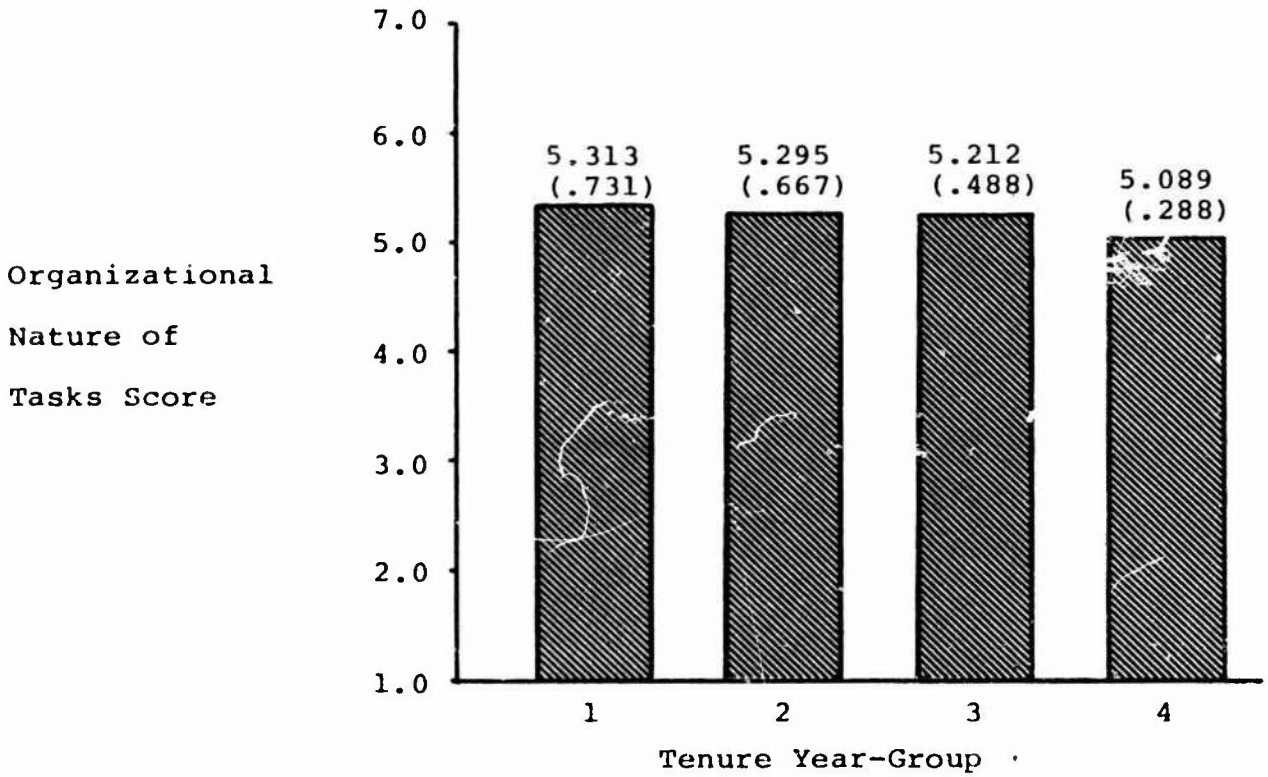
2. Standard Deviation in Parenthesis

Figure 8. Organizational Nature of Tasks Scores by Modified Tenure Year-Group

This decrease in the organizational nature of tasks scores may be attributed primarily to civilian influence. When military program managers are examined by year-group in Figure 9 they show relatively stable task orientations for their entire tenure range of up through four years. Military program managers may view their assignments as time constrained projects in which they pass through "newcomer," "old head," and "short-timer" phases. This idea supports Grusky's contention that military assignments are so short as to consist mainly of learning a job and preparing to leave with very little time in between for applying acquired experience to job improvement efforts (15:96). The environment within a SPO may change steadily enough over time to prevent a military program manager from ever learning his job well enough to develop the techniques and procedures which might make that job more structured and his performance of it more efficient.

H2: The greater the tenure of program managers within an assigned job, the lower their level of perceived role stress within that organization.

The longer a manager has to adjust to his environment and to make adjustments to his environment the more he should be able to cope with and reduce stress. Though Hypothesis 2 was well supported by the literature it was not supported by either category or composite results. Again, the lack of an adequate distribution of tenure data may have obscured



Note: Standard Deviation in Parenthesis

Figure 9. Organizational Nature of Tasks Scores for Military Respondents by Tenure Year-Group

relationships in the higher tenure year-groups. An examination of stress by year-group yielded no significant reduction in stress as tenure increased.

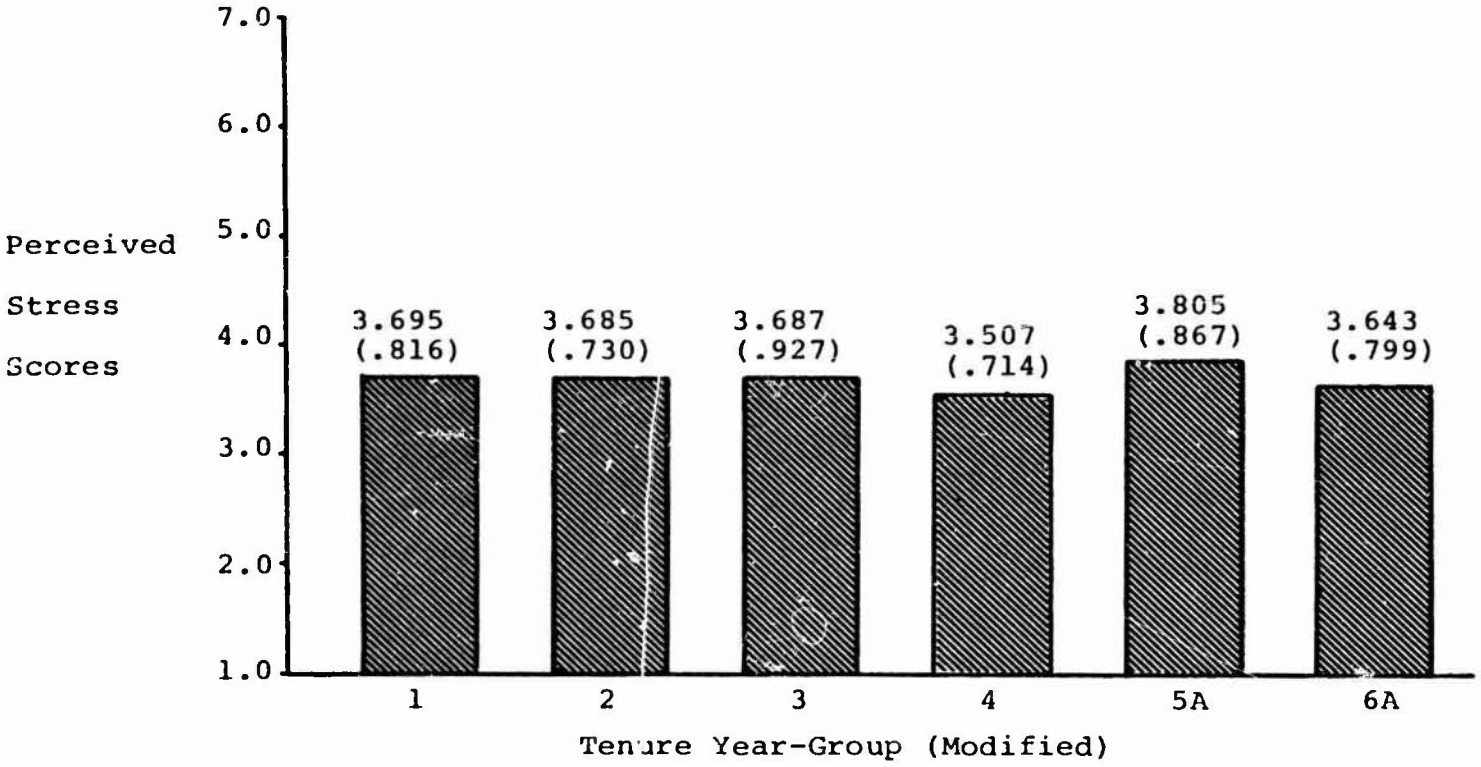
Over the first four year-groups stress remains at a relatively constant level. When the later year-groups are combined into two classes (5A and 6A) as shown in Figure 10 stress still remains at approximately the same level. Similarly, there are no significant changes in role conflict or role ambiguity when examined by year-group.

Miles has supported by research (35:337-338) that the variables stress, role conflict, and role ambiguity may remain at relatively stable levels while the sources of these variables may change. He goes on to suggest the researchers should perhaps focus on the sources of stress, role conflict, and role ambiguity.

From the analysis of Hypothesis 2 two questions naturally follow:

1. If stress does decrease after a certain amount of tenure on a job, as stated in the literature and supported by research, at what point does that occur for a program manager in a SPO, and

2. If stress does not decrease with increased tenure, what are the sources that keep it at a certain level for program managers in SPOs.



Note: 1. Year-groups 5 and 6 combined to form year-group 5A and year-groups 7, 8 and 9 combined to form year-group 6A.

2. Standard Deviation in Parenthesis

Figure 10. Perceived Stress Scores by Modified Tenure Year-Group

H3: As the program manager's tasks become more project oriented, his perceived level of role stress increases.

This hypothesis proposed that a manager whose organizational nature of tasks were program management oriented would perceive higher levels of stress than a manager who was more functionally oriented. The program management oriented manager would be expected to work in a less structured environment under incomplete guidelines, and perform more organizational boundary spanning activities than a functional manager. Hypothesis 3 was supported at the .05 level by Categories I and II data and the composite data.

Category III did not correlate with the strength or significance of the other categories. Additionally, Category III respondents were the only group to show a significant difference of means between role conflict and role ambiguity. Not only do Category III program managers perform more boundary spanning activities under conditions of reduced manpower, as discussed earlier, but, in addition, SPOs in Category III are in different stages of elimination. Some SPOs in Category III may be just into weapon system production while other SPOs in Category III may be near termination. In this respect, placing SPOs that are in the production and deployment phases of the weapon system acquisition life cycle into a single category (Category III) may mask significant differences in attitude among program managers in these SPOs.

CRITERIA TEST ANALYSIS

DODD 5000.23 Guidance

Chapter III presented three desirable precepts to govern program manager assignments, as gathered from DODD 5000.23, System Acquisition Management Careers. Each precept is now examined in light of data analysis performed earlier.

1. Assignment tenure should be sufficient to ensure effective management and continuity of management. Consistent stress levels across year-groups indicate that program managers may not have enough time on a job to develop and perpetuate effective management practices. Additionally, nearly 50 percent of the military program managers sampled had one year or less tenure in their jobs. As pointed out earlier, program manager rotation practices do not appear to have changed appreciably from earlier practice even though current policy calls for longer assignment tenure.

2. Key program manager rotation should occur near major program milestones. No evidence could be found that program manager tenure is being affected by any milestone criteria. Discussions with numerous questionnaire respondents revealed general dismay with Air Force assignment rotation policies because key personnel in special projects of short duration often had to leave at key points in the project efforts simply to comply with normal Air Force assignment rotation policies.

3. A period of overlap should exist between the outgoing program manager and his replacement. Only 20 percent of the program managers who responded had any job overlap with the program managers they replaced. Of those who did experience a period of job overlap, the amount of job overlap was typically a month or less.

The findings of this study indicate that program manager assignments are not being managed as effectively as they could be, and that Air Force program management may be suffering as a result. Though policy guidance is available, implementation of that policy is apparently contrary to normal Air Force administrative procedures and is therefore being largely ignored.

Assignment Rotation Disruption

Assessment of the disruption caused within SPOs due to frequent assignment rotation is difficult because of the lack of data available on long-tenured program managers. However, personnel managers should be concerned with the constant levels of stress that program managers seem to retain for at least their first three years on the job. To some extent improved job continuity in line with DODD 5000.23 guidance may help reduce stress levels. Additionally, programs to insure job overlap and effective job transition training may help reduce the stress that weighs on program managers for their entire assignments.

Perceptions from Interviews

Discussions with many of the program managers within the sample confirmed statistical findings that managers in ASD are program management oriented in the manner in which they perform their tasks. Role conflict and role ambiguity were prevalent also, as interviewees often expressed (1) confusion over when they felt it necessary to use the formal chain of command in performing their tasks and (2) concern about what they were expected to do in their jobs.

Interviewees frequently expressed concern about the lack of tenure among program managers and the inability to extend assignments for short periods of time until critical tasks were completed. A typical complaint was that a military program manager may be required to rotate during a crucial time period when his experience and expertise are needed to guide a small project team through a critical task.

Most program managers felt that very little correlation existed between major program milestones and their workloads. Workload levels were felt to be more a function of such factors as weapon system development problems, surprise differences in contract interpretation, and other "spur-of-the-moment" situations that required time constrained solutions. Therefore, most program managers did not feel that assignment rotation in concert with major program milestones was as important as having a few months flexibility in deciding exactly when to leave the SPO.

The general finding is that a more flexible assignment rotation policy may be desirable to enhance program manager effectiveness within a SPO. One aspect of the policy would be to provide each individual program manager with more authority in determining when his own assignment and those of his subordinates should be terminated.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FUTURE STUDY

Although Air Force program management grew from the same conceptual base as civilian industry project management, many critics today argue that program management no longer complies with these concepts. In particular, critics point to how Air Force assignment rotation policy prevents program managers from staying with a program from inception to termination. With this impetus, this study investigated (1) whether or not Air Force managers under conditions of low tenure in System Program Offices (SPOs) are actually able to approach the organizational nature of their tasks with a program management orientation, (2) whether program managers' perception of stress vary with their tenure in a SPO, and (3) how program managers' perceptions of stress vary with the nature of their jobs.

RESEARCH SUMMARY

This study was designed to determine what relationships exist between a program manager's tenure and the degree to which the organizational nature of his tasks are program oriented, and how these variables, in turn, relate to the role stress that he perceives on the job.

The variables stress, tenure, and organizational nature of a program manager's tasks formed the basis for three hypotheses. The sample was selected from a population of military and civilian program managers assigned to the SPOs within Aeronautical Systems Division (ASD). The sample was stratified in three categories according to the SPO's present phase in the weapon system acquisition process. Data was gathered via a questionnaire presented in Appendix A. The hypotheses were evaluated using a Pearson product-moment correlation test. The results are summarized below.

H1: The higher the tenure of the program manager the more functionally oriented the organizational nature of his tasks tend to be.

A moderate strength inverse correlation supported H1; however, an inadequate distribution of tenure data by year-group may have prevented a stronger relationship from being uncovered. Data trends indicated that a potentially stronger relationship may exist. This hypothesis supported the idea that a program manager with higher tenure in a job is able to functionalize his tasks, making that job more structured and his performance of it more efficient. However, evidence also indicated that military program managers did not typically acquire sufficient tenure to functionalize their approach to their assigned tasks.

H2: The greater the tenure of program managers within an assigned job, the lower their level of perceived role stress within that organization.

This hypothesis could not be statistically supported. Inadequate tenure data may have hindered the statistical analysis. However, an analysis of tenure data did show that a military program manager tends to rotate to a new assignment on an average of less than three years. Additionally, the stress level of a military program manager tends to remain at a constant level throughout his tour in the SPO. These findings raise a question concerning how much tenure a program manager requires in a job to acclimate himself so that his perceived role stress may decrease. Theory would indicate that a program manager cannot perform at his highest potential when he must cope with constant, unrelenting stress throughout his assignment in an organization as structurally and politically ill-defined as a SPO.

H3: As the program manager's tasks become more project oriented, his perceived level of role stress increases.

A strong positive correlation supported this relationship. H3 was well supported by literature and a strong relationship was expected. A surprising corollary finding was that program managers throughout ASD generally perceived their tasks to be heavily program oriented. The sampling plan has been devised with the expectation that some managers with

perceived functional orientations would be discovered. This did not occur with sufficient frequency to allow a comparison of stress levels between program managers with functional orientations and those with project orientations. Because of this, no conclusions could be drawn about the significance of the levels of stress encountered within SPOs.

CONCLUSIONS

Military Bureaucracy Hindrances

Assignment policies in the military are currently under review. For example, an extended assignment tenure policy is currently viewed as one means of saving money. However, tenure policy in the military has long been a subject for debate for other reasons.

A reason supporting the development of the military structure into a massive bureaucracy is the frequent rotation of personnel that results in more reliance on rules and procedures than on personal initiative. The military is losing the benefit of the inherent creativity that people can apply to a job after thay have been in the position long enough to understand both its purpose and function--say 2 to 3 years as a minimum. In civilian industry, programs exist to maintain tenure, i.e., to prevent turnover, so that people may contribute more to the jobs in which, over time, they have acquired an expertise.

In a project environment, a military program manager may perceive himself to be program management oriented but may still be much more encumbered by rules and procedures than his counter-part, the project manager in civilian industry. Bureaucratic rules and procedures may be necessary in the Air Force due, at least in part, to the very short tenure characteristic of program manager positions. Before these rules and procedures can be reduced, therefore, tenure policies must be changed to allow program managers to learn their jobs completely. In turn, these managers should be able to apply their initiative and expertise to improve their performance and their effectiveness.

Reducing Stress Levels in a SPO

The finding that the perceived level of stress for a military program manager remains relatively constant throughout an assignment in a SPO seems particularly significant. An individual new in a job is expected to experience high levels of stress, but stress is expected to subside as the individual learns his job and what is expected of him. The finding may indicate that insufficient job preparation, combined with the flexible nature of the program environment, prevents the program manager from thoroughly learning his job during a normal three-year assignment. The best solution would be to increase his tenure within the SPO to provide sufficient time for learning the job and thus reducing the associated stress. However, even with no changes in

assignment rotation policy, Program Directors can work to reduce program managers' stress. For example, an effective job overlap program could be designed to provide the new program manager initial training and monitoring to assist him in learning his assigned job and adjusting to the SPO environment. Another approach would be to encourage assignment changes within a SPO whereby a program manager would spend one tour of duty in one part of a SPO, and another follow-on tour of duty in another part of the same (or a similar, perhaps related) SPO.

Assignment Rotation in Concurrence with Milestones

The literature search reviewed the concept that program managers should rotate from the SPO only at major program milestones during the program's life cycle. The contention by management theorists is that major milestones offer a period where program manager change induces minimum disruption in the organization. This study could find no significant support for this concept. SPOs do change, but that change appears to be gradual and continuous. The milestone concept correlates institutional decisions with the behavioral mode of a SPO; this relationship does not appear to exist to any perceptable degree in the sample studied.

Within a SPO program managers are often required to comply with normal Air Force rotation policies and leave top priority SPO tasks during a critical decision period.

These crucial tasks are generally of short duration (measured in months) and require the attention of program managers who possess highly specific expertise and experience if the tasks are to be accomplished in an effective and expeditious manner. The untimely departure of a selected program manager from a project can be very disruptive.

One solution might be to allow the SPO more flexibility in determining exactly when key program managers should depart for a new assignment. A three to six month "window" could be established that would allow a program manager to depart the SPO upon completing his work on a high priority task.

System Program Office Category Classification

This study used previously established convention which classified each SPO by one of three categories according to its current phase of the weapon system acquisition life cycle. The intent was to normalize some of the uncontrollable behavioral variables impinging on program managers by stratifying the population. Classification by this category scheme yielded little additional insight in this and in three other research efforts (12; 29; 43).

Each SPO has a unique organizational structure designed to provide the best possible environment for acquisition of its weapon system. Though Air Force Systems Command provides guidelines, these guidelines do not imply a standardized approach to weapon system acquisition.

Additionally, some programs exist for many years, often experiencing distinct organizational changes within a given phase of the weapon system acquisition life cycle. For example, the F-4 and F-5 programs are both currently in the deployment phase; yet the F-4 program is looking toward termination in the near future, while the F-5 program has found new program vitality in foreign sales and aircraft modification.

Future researchers should question whether classifying SPOs in these categories will enhance their research efforts. A classification scheme constructed around other criteria might provide more insight into the variables under study. The criteria might consist of a set of attributes such as organizational size, weapon system status or importance, and cost thresholds along with weapon system phase of acquisition.

SUGGESTIONS FOR FUTURE RESEARCH

The Variable Tenure

Tenure traditionally has been treated simply as a demographic variable--total time in a job. Yet total time does not account for many of the factors that affect a person's ability to grow in experience and contribute to achieving the organization's goal.

One factor is the time cycle of the job. That is, the length of time an individual performs differing major tasks in a job before these major tasks must be repeated.

When the time cycle is only a few minutes or days, tenure beyond three years may lead to extreme boredom and dissatisfaction. When the time cycle is nearly three years or more, relatively long tenure is essential if the individual is to be given the opportunity to contribute to the job.

Another factor is past experience. A person with past experience in an area can usually become productive at a job in that area in a relatively short time. Unfortunately, whether or not a person possesses the appropriate experience is difficult to ascertain.

Finally, organizing around the job should be considered. Some jobs are highly structured and supported by experienced people in related jobs. These jobs are conducive to low tenure policies because organizational disruption is minimal when individuals rotate. Other jobs, especially those that are essentially unstructured, require policies which allow sufficient time for an individual to completely learn the job and, in turn, apply his experience to enhance job performance.

Research needs to be conducted to establish a taxonomy of variables that affect tenure. This taxonomy might be used to formulate an experience quotient useful in establishing tenure policies. This quotient would be particularly useful to the Air Force Personnel Staff as it would provide better information with which to establish tenure policies for the variety of jobs in the Air Force, including the job of being a program manager.

Role Stress - Causal Relationships

Miles (34; 35) used the instrument designed by Rizzo, et al., (Part III of this study's questionnaire) to search for a causal relationship between role stress and certain personal experience, such as job-related tension and dissatisfaction. Research of this nature could be useful to the SPO Program Director as it could provide insight into the conditions of dissatisfaction, distrust, and job-related tension that may exist in SPOs. In turn, the Program Director could more effectively establish policies to reduce or deal with the levels of stress that impinge on his program managers. Research is thus needed that would carry on Miles' work (34; 35) to determine its application in a military environment.

Control Group Research

A control group approach was not used in this study to verify statistical results and provide a baseline from which to make comparisons. Research is needed that will apply the questionnaire used in this study to a sample of clearly definable functional managers, thus essentially expanding the range of this study. The stress data could be compared to that acquired in this study to evaluate the differences in stress levels between managers that are functional and program management oriented.

FINAL THOUGHTS

Interfacing the technical aspects of weapon system acquisition with the behavioral aspects of program management is a difficult proposition at best. But if the Air Force is to refine its approach to weapon system acquisition to achieve desired results at less cost, it must understand these complex interfaces. To get the best technical decisions from its program managers the Air Force must realize that these people need more time to learn their jobs. The highly complex weapon system acquisition process is well documented as an inherently stressful environment; but this inherent stress need not be aggravated by factors that are controllable. The Air Force should act to improve program manager assignment tenure policies, encourage management ideas such as job overlap and departure "windows" for program managers, and continue research into behavioral aspects of program management. The technical/behavioral interface may be complex, but research can provide insight that will make this interface more tenable.

APPENDICES

APPENDIX A

DATA COLLECTION INSTRUMENT

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

REPLY TO ATTN OF: SLGR (SLSR 14-76A/Capt Lempke/Capt Mann/ AUTOVON 78-74240)

23 January 1976

SUBJECT: Program Managers' Job Perceptions and Role Stress Perceptions Questionnaire

TO:

1. The attached questionnaire was prepared by a research team at the Air Force Institute of Technology, Wright-Patterson AFB, Ohio. The purpose of the questionnaire is to acquire data concerning a program managers' perception of his job and his perception of the role stress that he must deal with in that job.

2. You are requested to provide an answer or comment for each question. Headquarters USAF Survey Control Number 76-73 has been assigned to this questionnaire. Your participation in this research is voluntary.

3. Your responses to the questions will be held confidential. Please remove this cover sheet before returning the completed questionnaire. Your cooperation in providing this data will be appreciated and will be very beneficial in examining the environment in which a program officer works.

RONALD R. CALKINS, Lt Col, USAF
Head, Department of Research and Communicative Studies
School of Systems and Logistics

1 Atch
Questionnaire

SURVEY OF PROGRAM MANAGERS' JOB PERCEPTIONS

AND ROLE STRESS PERCEPTIONS

1. This survey of Program Manager job and role stress perceptions will provide data for use in an Air Force Institute of Technology student thesis project. The questionnaire is divided into four parts and will take approximately 15 minutes to complete.

   (a) Part one consists of general duty information.

   (b) Part two contains questions that ask you to describe your primary duties.

   (c) Part three contains questions that ask you to indicate your feelings about your job.

   (d) Part four contains one question that asks you to provide your opinion about nature of your assigned tasks.

2. The questionnaire is not intended to assess organization or individual performance. All responses will be held in the strictest confidence. Individuals or SPO organizations will not be associated with any of the data.

3. There are no "trick" questions. Please answer each item as honestly and frankly as possible.

4. Your cooperation and assistance in completing this questionnaire will be appreciated.

USAF SCN 76-73

PRIVACY STATEMENT

In accordance with paragraph 30, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority:

(1) 10 U.S.C., 80-12, Secretary of the Air Force, Powers, Duties, Delegation by Compensation; and/or

(2) EO 93-97, 22 Nov 43, Numbering System for Federal Accounts Relating to Individual Persons; and/or

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

(4) AFR 178-9, 9 Oct 73, Air Force Military 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 elects not to participate in any or all of this survey.

PART I

GENERAL DUTY INFORMATION

PLEASE PRINT

DUTY ORGANIZATION (SPO) _____

MILITARY RANK OR CIVILIAN GRADE _____

JOB TENURE:

NUMBER OF MONTHS IN PRESENT POSITION: _____ MOS.

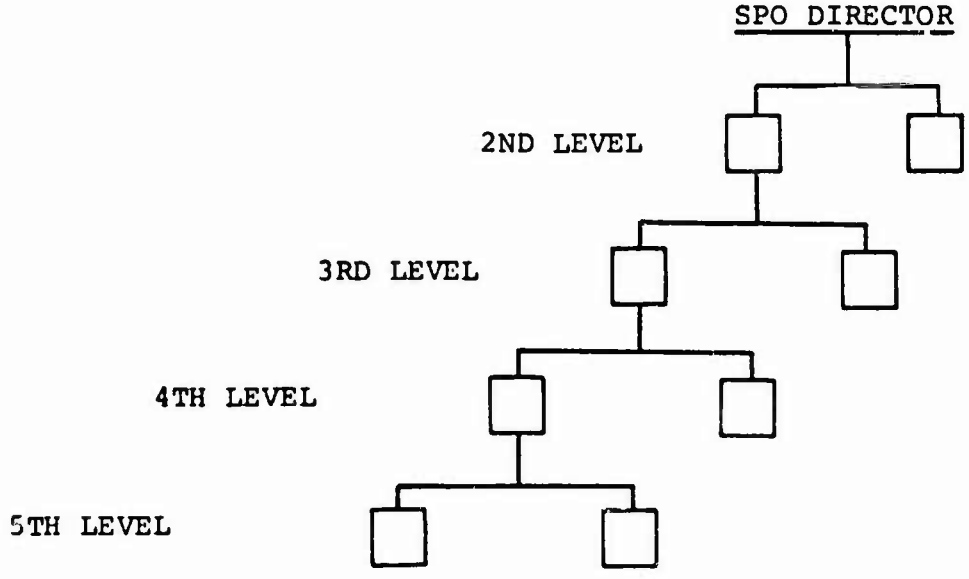
NUMBER OF MONTHS ASSIGNED TO PRESENT SPO: _____ MOS.

WAS THERE A PERIOD OF JOB OVERLAP BETWEEN YOU AND THE LAST JOB INCUMBENT WHEN YOU ASSUMED YOUR PRESENT POSITION (YES/NO)?_____
IF SO, HOW MUCH _____MOS.

NUMBER OF PERSONNEL WHO YOU WRITE EFFECTIVENESS OR PERFORMANCE REPORTS ON: _____ PEOPLE

NUMBER OF PERSONNEL DIRECTLY SUPERVISED BY YOUR IMMEDIATE SUPERVISOR (INCLUDING YOURSELF): _____ PEOPLE

ORGANIZATIONAL LEVEL. PLEASE PLACE A CHECKMARK IN THE BOX IN THE FOLLOWING ORGANIZATIONAL CHART THAT BEST CORRESPONDS TO THE LEVEL OF YOUR DUTY ASSIGNMENT.



PART II

THIS PART OF THE QUESTIONNAIRE ASKS YOU TO DESCRIBE
HOW YOU CARRY OUT YOUR PRIMARY DUTIES.

Please put a checkmark in the box which is the most accurate description of your primary duties. The job descriptions presented represent the outermost boxes. The five intermediate boxes represent degrees of "inbetweenness" of the descriptions.

---

1. To what extent do you work outside of the chain-of-command of your organization to discharge your primary duties?

I can discharge all my primary duties by working strictly within the chain-of-command.

My primary duties require frequent use of horizontal and diagonal contacts that are outside of my specific chain-of-command.

2. To what extent do your primary duties require you to coordinate activities through a common supervisor who directly controls the activities of most groups contributing to the overall goal of your organization?

I only coordinate activities with my supervisor who has responsibility for a group of activities having the same overall goal.

My primary duties require me to personally coordinate activities across functional and organizational lines to accomplish an overall organizational goal.

3. To what extent do you determine how the objective of your job will be accomplished?

Specific procedures dictate exactly what I am supposed to do.

I am allowed to determine the best way to accomplish the objectives of my job.

4. To what extent do you accomplish your primary duties by dealing with people outside of your immediate working unit (branch, section, etc.)?

I work only with people within my working unit.

I work with people outside of my working unit frequently.

5. To what extent can you rely on previously developed methods of procedures to accomplish your primary duties?

My primary duties are generally repetitive, routine, and proceduralized.

I must search for new methods and ideas in order to accomplish each duty. They vary so much that they cannot be proceduralized.

6. To what extent do you deal with groups outside of the strict chain-of-command in order to accomplish your primary tasks?

I accomplish all my primary duties by working solely with my supervisor and my subordinates.

My working contacts vary in the accomplishment of my primary duties; therefore, I frequently work with groups that are outside the strict chain-of-command.

7. To what extent is your authority commensurate with your responsibilities?

I have complete authority to accomplish my primary duties for which I am held responsible; i.e., authority equals responsibility.

My authority for the accomplishment of my primary duties for which I am held responsible is incomplete; i.e., responsibilities exceed authority.

8. To what extent are you allowed to obtain and use resources (material, money, time) from outside of your chain-of-command to accomplish your primary duties?

I use only those resources provided through the formal chain-of-command.

I obtain and use resources from outside the chain-of-command in order to accomplish my primary duties.

9. To what extent do the primary duties that you are involved with support more than one organization's objectives?

My primary duties involve only the direct support of my SPO's objectives.

My primary duties involve a joint venture supported by many relatively independent organizations.

PART III

THIS PART OF THE QUESTIONNAIRE ASKS YOU TO INDICATE HOW YOU PERSONALLY FEEL ABOUT YOUR PRIMARY DUTIES.

Each of the statements below is something that a person might say about his or her job. Please indicate your own, personal feelings about your job by marking how much you agree or disagree with each of the statements.

Write a number in the blank for each statement, based on this scale:

How much do you agree with the statement?

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly

___ 1. I have enough time to complete my work.

___ 2. I feel certain about how much authority I have.

___ 3. I perform tasks that are too easy or boring.

___ 4. There are clear, planned goals and objectives for my job.

___ 5. I have to do things that should be done differently.

___ 6. There are a lack of policies and guidelines to help me.

___ 7. I am able to act the same regardless of the group I am with.

___ 8. I am corrected or rewarded when I really don't expect it.

___ 9. I work under incompatible policies and guidelines.

___10. I know when I have divided my time properly.

___11. I receive my assignment without the manpower to complete it.

___12. I know what my responsibilities are.

___13. I have to buck a rule or policy in order to carry out an assignment.

___14. I have to "feel my way" in performing my duties.

___15. I receive assignments that are within my training and capability.

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly

___16. I feel certain how I will be evaluated for a raise or promotion.

___17. I have the right amount of work to do.

___18. I am unsure on how to divide my time.

___19. I work with two or more groups who operate quite differently.

___20. I know exactly what is expected of me.

___21. I receive incompatible requests from two or more people.

___22. I am uncertain as to how my job is linked.

___23. I do things that are apt to be accepted by one person and not accepted by other.

___24. I am told how well I am doing my job.

___25. I receive an assignment without adequate resources and material to execute it.

___26. Explanation is clear of what has to be done.

___27. I work on unnecessary things.

___28. I have to work under vague directives or orders.

___29. I perform work that suits my values.

___30. I do not know if my work will be adequate to my boss.

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly

PART IV

THIS PART OF THE QUESTIONNAIRE ASKS YOU TO PROVIDE YOUR OPINION ABOUT THE NATURE OF YOUR ASSIGNED TASKS.

Consider the following two statements. After reading them please place a checkmark in the box below that best indicates the extent to which your primary duties are described by one of the definitions or a combination of the definitions.

A PROJECT MANAGER is considered to be one involved in managing a unique activity to a specifically defined objective using primarily horizontal and diagonal relationships that are outside of his normal chain-fo-command.

A FUNCTIONAL MANAGER is considered to be one involved in managing on-going activities to accomplish open-ended objectives using primarily a strict vertical chain-of-command relationship.

Functional Manager

Project Manager

Thank you for your consideration. If you would like to receive a summary of the results of this survey: (1) fill in the information requested below, (2) remove this page from the questionnaire, and (3) send this page to AFIT/SLG, Class 76A, Capt Lempke. A summary will be available in approximately six weeks.

NAME _____

MAILING
ADDRESS _____

APPENDIX B

QUESTIONNAIRE RAW DATA

APPENDIX B

QUESTIONNAIRE RAW DATA

The raw data responses to the questionnaire are presented with an alpha identifier atop each column of the raw data to represent the respective questionnaire items.

A. Input Line Number.
B. Military Rank or Civilian Grade.
C. Number of Months in Present Position.
D. Number of Months Assigned to Present SPO.
E. Job Overlap (1 if Yes; 0 if No).
F. Number of Months of Job Overlap.
G. Number of Personnel Supervised.
H. Number of Personnel Immediate Supervisor Supervises.
I. Level in Organization.
J. Organizational Nature of Tasks Question Responses (Questionnaire Part II).
K. Perceived Role Stress Question Responses (Unreflected Data) (Questionnaire Part III).
L. Organizational Nature of Tasks (Perceived) (Questionnaire Part IV).

In order to maintain the convention that high scores represents a higher role stress, certain question responses require reflection. For example, a response of 1 becomes a score of 7. Questions requiring response reflection in Part III of this study are 1, 2, 4, 7, 10, 12, 15, 16, 17, 20, 24, 26 and 29. Raw data shown presents the original unreflected responses.

RAW DATA: CATEGORY I

A	B	C	D	E	F	G	H	I	J	K	L
0101#	0	5	0	2	0	0	2	6	1	0	6	1	1	0	8	1	4	6	6	7	5	7	1	6	2	3	7	1	3	1	2	1	1	1	6	6	7	2	5	6	3	4	2	7	6	4	1	6	4	5	3	7	2	7	2	4
0102#	1	4	0	0	3	0	0	3	0	0	0	1	0	6	2	2	7	6	6	4	2	2	2	6	2	2	5	5	2	4	4	5	5	6	5	6	6	3	7	3	3	2	5	2	3	3	6	2	5	6	5	2
0103#	0	4	0	0	7	0	1	9	1	1	2	0	2	0	8	2	5	5	6	6	6	2	4	3	2	6	2	6	5	6	2	1	6	6	7	2	2	7	6	3	2	6	7	2	1	6	5	3	6	2	1	6	2	6
0104#	0	4	0	1	6	0	1	6	0	0	0	0	0	4	3	7	6	7	7	6	6	2	6	1	2	6	2	3	4	2	6	6	5	6	4	6	4	5	3	2	4	2	6	6	2	1	2	3	4	3	2	6	6	2	6
0105#	0	4	0	0	7	0	0	7	0	0	0	0	0	4	3	6	6	4	7	6	6	4	6	3	2	3	2	2	2	4	3	6	5	2	4	4	2	7	3	3	2	5	2	3	5	4	5	5	6	2	4	5	6	4	6
0106#	1	2	0	5	4	0	0	6	0	0	0	0	0	5	3	6	3	6	7	6	3	2	4	1	6	4	2	2	2	2	5	2	6	7	4	2	6	6	3	3	1	4	5	2	2	5	6	4	5	3	5	5	2	6
0107#	1	5	0	1	4	0	1	4	0	0	0	0	6	0	7	2	6	6	6	7	6	6	2	4	2	1	6	6	4	6	3	1	4	5	7	6	6	6	3	4	1	2	7	6	6	2	2	6	5	3	6	5	6	2	7
0108#	0	3	0	1	2	0	1	2	0	0	0	0	0	5	4	3	4	6	4	5	2	1	1	3	6	1	5	5	4	2	2	2	6	4	6	2	3	5	1	3	3	5	5	2	2	5	6	5	5	3	4	5	3	2
0109#	1	4	0	0	9	0	0	9	0	0	0	0	5	0	6	3	5	7	6	7	6	7	4	5	2	2	3	2	5	5	4	4	4	3	6	6	6	4	6	6	4	2	2	6	5	6	2	6	4	6	4	4	6	6	4	3
0110#	1	4	1	0	8	0	1	4	0	0	0	0	1	0	5	3	6	6	6	7	6	7	2	6	2	6	6	2	5	3	2	6	2	2	6	2	6	2	5	6	5	3	2	2	5	2	2	5	3	2	6	3	6	3	5
0111#	0	3	0	1	5	0	1	5	0	0	0	0	0	4	3	7	6	6	7	6	4	3	1	5	5	2	6	5	5	4	3	5	5	5	5	5	7	6	5	6	5	3	3	5	6	3	3	4	3	5	3	7
0112#	0	3	0	1	5	0	5	2	0	0	0	0	0	1	5	6	6	4	7	4	3	4	1	1	6	6	4	6	2	2	6	4	5	6	3	6	5	2	6	1	6	2	5	6	5	2	5	4	3	6	2	2	6	4
0113#	1	5	0	0	5	0	2	3	0	0	0	6	0	5	2	5	2	7	6	5	5	2	5	1	3	6	2	6	2	2	2	5	5	6	3	6	6	5	5	6	3	1	2	6	5	6	2	2	6	4				
0114#	0	4	0	1	9	0	1	9	0	0	0	0	0	3	3	6	6	6	7	5	7	5	5	6	2	4	1	2	4	5	7	2	3	6	4	6	5	5	6	1	2	4	2	6	2	4	6	5	4	2	5	6	2	6
0115#	1	5	0	5	5	0	2	2	0	0	0	3	0	4	3	7	7	7	5	7	3	5	1	5	6	1	6	3	3	6	2	2	6	2	7	3	2	2	3	5	1	6	5	4	1	6	6	3	5	1	5	6	2	6
0116#	1	4	0	0	3	0	0	3	0	0	0	0	0	7	3	6	6	6	6	6	2	7	1	4	5	2	5	4	6	5	5	2	6	3	5	6	4	4	5	4	5	2	2	4	2	6	2	6	6	6				
0117#	1	3	0	0	9	0	0	9	0	0	0	0	0	1	2	3	7	4	5	7	5	7	7	2	1	3	2	3	3	6	3	3	5	3	3	4	6	4	6	4	2	3	5	5	3	4	3	6	3	5	2	2	6	5	4	4
0118#	1	4	0	2	4	0	2	4	0	0	0	0	2	0	5	3	2	5	7	7	5	6	2	3	5	3	6	2	3	5	4	3	2	2	3	5	6	2	6	6	6	5	2	6	6	2	2	6	3	5	3	2	6	2	6
0119#	0	5	0	1	4	0	2	4	0	0	0	0	4	0	6	2	7	4	6	7	6	6	3	5	3	2	3	2	3	6	2	2	6	5	6	2	5	6	6	3	2	5	5	3	2	6	5	5	6	5	4	6	3	6
0121#	0	3	0	0	6	0	0	6	0	0	0	0	0	4	3	6	6	6	7	4	6	6	3	6	2	6	6	6	4	2	4	2	6	7	5	6	6	6	3	3	2	6	2	5	3	7	5	6	0	2	5	1	6	5	7
0122#	0	3	0	0	5	0	0	5	0	0	0	0	0	4	2	7	7	7	5	7	2	1	1	3	3	1	7	7	6	6	2	2	3	6	6	4	6	7	2	2	5	7	3	2	1	7	6	5	2	1	5	6	2	7
0123#	0	4	0	0	4	0	0	4	0	0	0	0	0	2	3	5	6	6	6	5	5	3	4	1	5	5	2	6	5	2	6	4	3	6	2	7	5	5	2	5	2	2	5	5	2	2	6	2	6					
0124#	0	4	0	1	8	0	1	8	0	0	0	0	2	0	5	3	6	7	7	7	7	1	7	7	4	6	5	5	1	3	5	4	2	3	2	6	4	5	6	3	3	6	5	3	2	5	6	2	2	3	5	6	2	7
0125#	0	3	0	1	8	0	1	8	0	0	0	0	0	0	3	5	6	6	5	6	7	2	4	2	5	6	2	6	2	2	6	2	6	2	6	6	6	6	2	6	2	2	2	3	2	2	6	2	7					
0126#	0	3	0	1	8	0	1	8	0	0	0	0	0	0	3	3	6	5	6	7	5	6	5	5	3	5	4	6	3	6	6	5	4	5	6	5	5	3	3	6	2	6	5	4	4	3	6	2	3	6	6	3	6	
0127#	1	3	0	0	7	0	6	7	0	0	0	0	0	1	7	4	6	4	6	5	5	2	4	4	6	6	2	6	2	4	4	1	6	4	6	2	5	6	6	6	2	6	4	2	2	6	2	4	6	2	7			
0128#	0	5	0	1	9	0	3	3	0	0	0	0	8	0	6	2	7	7	6	7	6	2	5	7	3	3	1	6	5	2	2	4	2	6	5	6	5	2	7	4	3	2	7	6	5	2	6	4	5	3	5	5	7	4	7
0129#	0	4	0	0	7	0	0	7	0	0	0	0	0	7	3	7	6	5	7	7	4	2	1	3	3	2	3	5	3	2	2	6	3	5	3	4	7	6	2	3	5	2	2	2	5	3	3	5	5	4	6	5	7	
0130#	1	2	0	4	8	0	4	8	0	0	0	0	1	0	2	4	6	4	7	7	6	7	1	1	6	4	1	2	3	4	2	4	2	2	3	2	6	6	6	4	2	2	6	2	2	2	3	2	4	6	4	5		
0131#	0	3	0	3	6	0	3	6	0	0	0	0	1	5	4	5	7	6	6	5	7	5	3	3	5	3	3	2	3	2	6	2	4	5	3	2	6	6	6	4	5	6	5	3	2	2	5	3	2	5	2	5	2	6
0132#	1	4	1	6	8	0	7	0	0	0	0	0	2	0	3	6	7	6	6	6	2	3	1	6	6	2	2	5	2	5	2	2	6	2	6	5	6	6	5	5	3	6	5	3	2	5	3	2	3	5	6	6	2	7
0133#	0	4	0	4	4	0	4	4	1	0	3	0	0	5	2	2	4	7	7	6	7	2	7	7	6	3	4	2	4	6	7	4	5	4	4	2	5	4	7	7	6	3	7	5	4	2	6	3	2	5	5	3	2	1
0134#	1	4	0	9	0	0	6	0	0	0	0	0	2	0	4	6	7	6	6	6	2	2	4	6	7	5	6	2	2	6	2	2	6	3	6	5	2	6	2	6	6	2	2	2	4	5	3	5	2	6				
0135#	1	3	0	0	8	0	2	0	1	0	1	8	1	0	3	7	7	3	7	7	7	5	7	1	1	2	1	6	6	1	1	7	5	6	2	5	7	6	1	1	6	7	1	7	7	5	5	1	6	6	2	6	5	
0137#	0	3	0	3	7	0	1	3	1	0	2	0	2	1	8	2	7	7	7	7	7	7	1	7	3	2	1	1	4	5	6	6	7	5	6	7	7	7	7	1	6	5	7	4	6	5	7	1	7	3	1	3	7	4	7
0138#	1	3	0	3	3	0	5	6	0	0	0	0	1	6	4	7	7	6	7	7	7	4	4	6	2	3	1	6	7	4	4	7	2	4	1	4	7	6	2	4	5	6	1	6	6	7	2	6	1	4	6	6	7	7
0139#	1	4	0	1	4	0	3	0	1	0	4	0	0	1	8	3	7	7	7	7	6	6	7	7	2	1	4	6	6	6	2	2	6	5	7	1	2	5	7	2	6	6	7	2	2	1	6	4	6	7	1	4	6	7
0140#	1	2	1	1	1	0	4	0	0	0	0	0	1	8	3	7	7	4	7	7	7	7	4	1	1	6	6	7	6	5	7	7	7	1	2	6	7	2	5	6	7	1	2	1	6	7	4	7						
0141#	1	3	0	0	2	0	0	2	0	0	0	0	0	6	4	3	6	6	7	7	2	1	6	6	1	7	7	2	4	5	2	5	3	7	4	2	6	4	6	2	6	6	4	2	2	6	2	6	1	2	7	1	2	
0142#	1	3	0	2	4	1	0	4	0	0	0	0	1	7	4	7	7	6	7	7	6	6	7	2	5	2	5	7	6	4	4	6	6	6	4	5	6	3	5	2	6	3	4	4	4	6	4	4	6	6	2	7		
0143#	1	3	0	3	6	0	4	8	0	0	0	2	1	6	3	5	5	7	6	5	5	4	4	2	2	6	6	5	6	2	6	6	7	5	4	6	7	4	2	6	6	2	2	4	5	4	4	2	2	4	4	5		
0145#	1	4	0	3	6	0	3	6	0	0	0	0	6	1	7	3	6	6	7	5	5	7	1	6	6	6	1	6	5	4	4	6	6	5	7	5	5	7	3	7	2	2	5	2	6	5	6	3	3	5	6	2	4	
0146#	0	3	0	1	2	0	1	2	0	0	0	0	0	6	5	6	5	6	7	6	2	4	5	6	5	2	7	2	6	6	2	4	5	5	6	3	6	6	3	6	2	2	6	2	5	5	4	1	2	6				
0148#	1	2	0	4	1	0	4	1	0	0	0	0	1	6	5	7	7	5	7	3	5	4	3	6	4	2	5	5	4	2	3	4	3	3	6	5	6	3	4	5	6	3	6	4	5	1	4	2	5	6	4	3	6	
0149#	0	3	0	1	2	0	2	7	0	0	0	0	1	1	4	7	6	7	6	7	6	7	7	6	3	3	6	6	2	3	3	5	5	5	7	5	3	5	3	7	3	5	4	6	5	5	2	3	5	5	3	7		
0150#	0	4	0	4	6	0	4	6	0	0	0	0	1	2	0	4	7	2	7	5	7	5	1	7	7	3	6	4	6	7	4	5	2	4	5	6	6	6	5	5	6	3	5	6	6	2	5	4	6	5	5	2	3	4

RAW DATA: CATEGORY II

A	B	C	D	E	F	G	H	I	J	K	L
0201#	0	5	0	0	6	0	0	6	0	0	0	1	0	5	3	6	5	6	7	5	6	5	1	7	2	3	2	3	4	5	6	4	2	5	5	6	3	5	6	4	2	3	6	3	2	3	3	5	5	3	4	4	3	3	7
0202#	0	3	0	1	4	0	1	4	0	0	0	0	2	1	3	6	6	7	7	6	6	3	5	1	3	6	2	4	2	5	3	1	5	3	3	6	5	5	6	2	3	5	7	6	3	2	6	2	4	4	5	3	6	2	7
0203#	0	5	0	3	3	0	3	3	0	0	0	0	0	8	3	5	5	5	7	7	5	4	3	2	3	2	2	6	4	3	4	3	5	6	5	6	5	3	2	2	4	5	5	5	3	6	4	5	3	6	5	6	4	7
0204#	1	4	0	1	4	0	1	4	0	0	0	0	4	0	8	2	2	7	6	7	6	6	1	4	5	6	6	2	3	2	2	4	2	2	6	2	6	2	4	6	6	6	2	6	6	6	2	6	4	2	4	2	6	6	2	4
0205#	1	5	0	4	8	0	4	8	0	0	0	0	4	0	8	2	7	7	7	7	7	7	7	7	2	7	1	1	2	6	6	2	2	5	3	6	5	5	6	6	2	5	5	2	2	5	6	3	3	3	5	5	2	7
0206#	1	3	0	5	5	0	5	5	1	1	7	0	0	0	8	4	4	6	5	6	5	5	6	2	6	2	6	2	2	4	2	4	4	5	3	6	6	5	4	6	4	2	4	5	6	5	2	7	6	3	6	5	4	4	4	4
0207#	1	2	1	1	2	0	1	3	0	0	0	0	0	8	4	1	4	4	4	4	1	4	1	1	6	5	2	4	2	2	6	2	6	2	4	2	2	6	6	4	3	2	3	2	4	2	4	2	4	2	2	6	2	6
0208#	0	3	0	0	6	0	0	6	0	0	0	0	0	8	4	7	6	6	7	6	7	1	4	7	6	5	2	2	2	6	6	5	4	7	3	4	5	5	3	7	6	2	6	5	4	3	6	3	2	4	2	3	5	2	6
0209#	0	3	0	0	4	0	3	6	1	3	2	0	6	4	2	3	4	4	6	7	3	6	2	6	1	6	5	2	6	4	2	6	4	2	6	5	6	4	3	6	5	6	2	2	6	2	1	2	4	2	6	2	2	6	2	6
0210#	0	5	0	2	5	0	4	6	1	0	1	0	9	0	5	3	3	4	5	6	4	5	5	3	2	2	6	3	2	5	6	6	5	4	6	6	6	5	5	3	2	2	5	4	2	5	3	6	2	6	2	6	5	5	5	3
0211#	1	2	0	2	5	0	2	5	0	0	0	0	0	1	3	3	6	6	4	7	5	6	6	3	6	2	1	2	1	6	2	6	6	2	4	4	6	4	5	6	6	3	5	6	2	4	6	6	5	2	3	3	5	5	5	6
0212#	0	3	0	2	1	0	2	1	0	0	0	0	0	7	4	6	7	6	7	3	7	2	6	2	1	6	2	3	6	2	2	3	2	6	6	6	3	5	7	6	1	6	2	6	6	1	2	5	6	2	6	6	6	2	6
0213#	0	5	0	1	8	0	3	0	1	0	6	0	2	0	6	3	7	3	6	7	6	7	1	2	1	1	6	1	2	4	2	5	4	5	5	6	6	3	6	6	2	1	2	6	6	2	1	6	5	4	2	5	2	6	2	3
0214#	0	5	0	1	2	0	1	2	0	0	0	1	5	1	6	2	7	6	7	7	6	4	6	5	2	6	1	2	2	3	2	4	5	6	4	6	5	7	6	3	4	4	6	3	6	4	3	2	2	6	4	4	7		
0215#	1	2	0	6	1	0	6	1	0	0	0	0	0	1	0	3	7	4	6	7	6	6	7	6	2	6	1	2	6	5	7	6	2	6	3	2	7	3	1	5	2	7	1	6	5	6	1	2	1	5	5	7	7		
0216#	0	3	0	0	5	0	0	5	0	0	0	0	0	0	3	4	6	6	6	5	5	4	5	2	5	2	2	3	6	3	2	6	2	5	3	3	6	2	2	2	4	4	2	5	6	5	2	3	6	2	6	4			
0217#	0	3	0	1	0	0	5	1	0	0	0	0	0	1	2	4	6	7	6	6	6	7	5	5	3	1	3	2	3	6	5	3	2	6	4	6	5	5	5	6	6	2	5	6	5	6	2	6	4	6	2	3	5	6	2	5
0218#	0	7	0	2	4	0	2	4	0	0	0	0	0	9	3	4	1	7	7	4	4	3	1	1	6	3	3	4	4	6	2	5	7	1	6	1	3	6	2	3	1	5	4	2	4	2	4	2	6	2	2	5	2	1		
0219#	0	4	0	4	2	0	4	2	1	0	6	0	0	1	0	3	7	7	7	5	7	1	1	3	6	7	2	7	1	1	5	2	1	7	2	7	1	2	7	6	6	1	6	7	4	1	1	7	2	6	1	1	7	1	6	
0220#	0	3	0	0	9	0	3	3	0	0	0	0	1	0	3	6	4	6	6	6	2	2	2	5	6	2	4	3	3	2	4	3	6	2	6	2	6	6	1	6	2	6	5	4	2	5	6	1	5	1	5	7	2	2		
0221#	0	5	0	0	8	0	5	7	0	0	0	0	0	1	7	3	7	6	7	5	7	6	1	6	2	5	2	5	6	6	5	4	6	3	4	6	6	6	1	3	5	6	7	2	5	3	5	2	3	6	7	3	7			
0222#	0	5	0	1	8	0	1	8	1	0	1	0	2	1	5	3	6	2	6	6	4	6	2	5	1	5	5	3	2	6	6	5	3	3	6	6	3	5	6	5	2	3	5	6	3	6	5	6	2	6	3	2	5	5	7	
0223#	1	3	0	4	0	0	9	0	0	0	0	0	1	7	4	6	6	5	7	6	6	4	1	1	2	2	1	2	2	2	3	4	4	4	3	5	5	2	6	2	6	3	5	6	6	4	4	4	3	6	6	5	7			
0224#	1	3	0	6	2	0	6	2	0	0	0	0	0	6	4	5	6	5	6	4	5	3	3	1	5	6	2	5	5	2	6	2	5	6	2	5	6	2	6	5	5	2	6	6	1	5	5	2	6	3	2	5	2	5		
0225#	0	3	0	0	2	0	0	2	0	0	0	0	0	8	4	7	5	7	6	6	7	1	4	1	6	2	2	4	5	4	4	2	5	4	2	6	2	5	6	1	3	4	2	5	2	4	6	5	2	3	4	4	6	5	6	
0226#	1	3	0	7	3	0	8	2	1	0	9	0	0	5	3	6	6	5	7	5	6	3	6	1	2	6	2	6	5	2	6	3	2	6	5	6	4	6	6	5	3	2	6	6	2	2	4	3	2	6	2	2	6	2	6	
0227#	1	3	0	1	2	0	1	2	0	0	0	0	0	3	3	4	6	6	7	6	7	5	4	2	5	2	2	6	5	7	4	2	6	2	6	5	5	6	7	6	4	5	7	2	6	5	5	2	6	5	7	7	4	4	6	
0228#	1	3	0	8	0	0	8	0	1	0	3	0	0	0	6	3	4	3	3	5	3	4	2	3	2	3	3	5	1	5	6	2	3	5	2	5	4	5	5	5	5	4	5	5	3	6	4	6	5	5	3	5	5	4	6	
0229#	1	1	0	7	0	0	7	0	0	0	0	0	0	3	4	4	2	6	6	5	7	2	6	2	4	3	2	2	5	4	2	1	2	6	5	6	4	2	6	2	3	2	6	3	4	2	3	3	4	2	5	2	2	2	6	
0230#	1	4	0	4	1	0	4	1	0	0	0	0	0	1	9	3	2	1	6	4	3	2	4	1	1	6	6	2	5	2	3	2	4	3	6	2	6	2	2	6	5	5	2	2	6	2	2	5	2	6	3	2	2	2	5	
0231#	1	3	1	0	4	1	0	8	0	0	0	0	1	3	3	7	4	6	7	5	7	7	1	1	6	6	2	2	4	4	6	2	4	6	2	6	4	6	6	7	4	2	2	6	4	5	5	1	2	3	7	7	6	4	6	
0232#	1	3	1	8	0	0	9	0	0	0	0	0	1	9	3	2	2	4	3	5	2	4	3	2	2	3	2	3	6	5	2	2	5	3	6	3	5	5	6	3	2	5	4	5	6	3	6	4	6	3	6	5	3	3	2	
0233#	1	3	1	2	6	0	9	6	0	0	0	0	1	8	4	5	6	6	6	6	5	5	3	6	2	2	4	4	4	2	1	6	2	2	6	4	6	2	6	6	4	2	4	6	2	5	3	5	2	2	4				
0234#	1	5	0	2	4	0	3	6	1	1	2	4	2	0	4	3	5	5	7	6	5	5	1	1	6	6	2	6	4	2	2	4	2	6	2	2	6	6	6	2	2	6	2	2	6	2	6	2	2	4	2	6			
0236#	1	3	0	4	2	0	4	2	0	0	0	0	0	4	1	4	3	3	6	6	5	3	4	1	1	3	6	2	5	4	2	6	6	2	5	4	6	2	3	6	4	2	3	5	6	2	2	5	4	6	2	2	6	2	3	
0237#	0	5	0	4	4	0	4	4	0	0	0	0	0	2	2	6	7	7	6	6	2	1	1	6	6	2	6	5	6	2	4	6	5	6	2	5	6	6	3	2	5	5	2	6	5	5	2	3	6	2	6				
0239#	0	4	0	2	4	0	4	2	0	0	0	0	5	0	5	2	7	7	5	7	4	6	3	6	6	2	6	2	3	5	5	2	2	4	2	7	6	5	6	6	2	2	5	7	2	7	5	6	5	6	2	6	5	5	4	
0240#	0	3	0	4	2	0	4	2	0	0	0	0	0	5	4	6	6	6	5	6	5	2	3	3	4	3	4	3	3	4	6	4	5	2	6	3	6	6	2	6	5	5	2	5	6	4	3	2	3	6	2	4			
0241#	1	2	0	1	2	0	1	2	1	0	2	0	0	6	3	5	2	5	6	4	5	2	1	1	6	6	2	2	6	3	2	5	3	6	2	3	6	3	5	2	3	3	2	2	2	5	2	6	2	2	6	2	5		
0242#	0	4	0	1	8	0	4	4	0	0	0	0	9	0	6	3	6	7	6	6	5	5	3	2	3	6	2	1	6	5	4	4	5	5	6	6	4	6	4	7	3	2	5	3	6	2	4	4	5	2	4	6	4	2	6	
0243#	1	4	0	1	7	0	1	7	1	0	3	0	0	8	4	6	6	6	7	6	6	7	1	2	4	5	2	5	4	4	6	4	5	5	4	6	2	6	6	5	5	4	6	3	6	5	4	3	6	5	4	3	2	6	5	6
0244#	1	4	0	1	1	0	1	6	1	0	4	0	0	6	5	7	7	6	7	6	5	2	2	4	6	3	2	1	5	4	6	1	5	6	2	6	5	5	7	7	5	1	6	6	5	2	5	6	5	2	1	5	6	1	5	
0245#	0	3	0	0	3	0	1	8	0	0	0	0	2	0	2	7	7	7	6	7	5	6	7	6	3	2	2	5	3	7	3	2	6	0	5	6	5	6	3	5	2	6	5	5	6	6	3	5	5	5	2	7			
0246#	1	3	0	1	5	0	1	5	1	0	3	0	0	6	3	7	6	6	5	7	3	3	1	6	6	2	2	5	5	3	3	5	7	6	6	4	2	6	2	6	5	5	3	1	5	5	5	3	7						
0247#	0	4	0	0	1	0	0	7	0	0	0	0	0	6	3	5	4	6	6	7	2	1	7	2	2	2	4	6	2	2	5	2	4	3	2	5	6	3	4	3	7	3	3	6	6	4	5	3	3	6	4	2	6		
0248#	1	3	1	9	2	0	1	0	0	0	0	0	0	7	4	6	2	7	7	6	3	6	6	2	2	1	7	6	3	6	4	2	6	5	6	6	7	2	6	2	1	5	6	3	6	2	5	7	5	6					
0249#	1	3	2	8	8	0	1	9	1	0	1	0	0	7	4	5	5	7	6	5	6	3	2	2	4	6	2	6	2	2	4	4	2	6	2	6	2	2	6	6	6	1	6	6	2	1	5	6	3	6	2	2	6	1	6	
0250#	1	4	0	4	8	0	4	9	1	0	1	0	8	4	5	3	5	6	7	5	6	6	2	2	5	5	3	1	2	4	4	2	6	2	5	5	6	4	4	6	5	6	3	7	6	4	1	2	6	3	6	1	3	7	2	6

RAW DATA: CATEGORY III

A	B	C	D	E	F	G	H	I	J	K	L
0301#	1	5	0	3	9	0	7	0	0	0	0	3	2	5	2	6	7	7	6	6	7	6	6	7	4	3	2	1	3	3	4	3	2	5	6	3	5	7	6	3	4	4	7	3	5	5	7	5	5	2	4	5	6	5	6
0302#	0	6	0	1	8	0	3	0	0	0	0	3	1	0	2	6	7	7	7	7	6	1	5	1	6	1	2	6	4	7	4	5	2	6	7	5	2	7	4	2	4	7	3	5	1	6	2	5	2	5	4	6	5	7
0303#	0	3	0	0	1	0	0	1	0	0	0	0	0	3	4	3	7	7	6	7	5	7	7	5	1	6	6	3	6	3	3	6	2	2	6	2	2	6	6	6	2	4	5	3	4	2	6	2	6	5	2	6	2	7
0305#	0	3	0	2	4	0	2	4	0	0	0	0	3	0	8	3	7	7	7	4	7	6	6	1	2	6	1	7	4	2	6	2	2	4	2	4	5	3	5	6	3	5	7	6	2	4	7	6	4	3	1	3	6	1	6
0307#	0	3	0	0	4	0	1	9	0	0	0	0	0	9	9	3	5	5	7	7	7	5	3	1	5	1	6	2	4	2	2	2	4	2	2	5	7	6	6	7	4	1	2	6	6	4	1	6	7	4	4	1	2	7	3	6
0308#	1	5	0	0	8	0	0	8	1	0	1	0	0	1	2	2	6	4	7	7	4	5	3	4	3	6	6	2	6	3	2	7	4	3	6	4	6	5	3	6	6	4	2	6	4	5	2	6	4	2	6	5	5	6	2	7
0309#	0	4	0	2	6	0	3	8	0	0	0	0	6	0	5	3	6	6	5	6	4	6	6	4	2	2	2	3	5	5	4	5	4	5	6	6	5	5	4	1	4	4	6	3	6	2	6	3	7	5	5	3	2	4
0310#	0	4	0	3	3	0	3	3	0	0	0	0	8	2	5	3	7	6	7	7	5	5	2	4	5	1	6	2	6	4	2	6	4	3	6	7	6	2	6	6	4	1	2	6	6	5	2	6	2	2	2	2	6	1	6
0311#	1	1	0	4	8	0	4	8	0	0	0	0	0	4	3	2	6	6	7	5	5	3	2	1	6	5	2	3	5	2	5	2	3	6	5	6	2	5	5	6	6	2	6	3	2	5	2	5	6	6	2	5	3	6
0312#	1	2	1	1	2	0	1	9	1	0	6	0	5	1	4	3	7	7	7	7	7	1	7	7	6	6	2	2	2	6	6	6	6	3	2	2	6	6	4	2	6	6	2	2	2	2	6	6	2	4
0313#	0	3	0	0	8	0	1	1	0	0	0	0	1	1	5	3	7	7	6	7	5	7	3	1	6	2	6	1	7	5	2	6	2	1	3	3	6	2	5	6	6	5	6	6	2	1	7	6	2	6	2	2	7	2	7
0314#	0	3	0	0	7	0	0	7	0	0	0	0	1	1	5	3	6	7	6	7	6	6	4	1	6	2	3	2	6	6	3	4	2	2	5	3	6	2	6	6	6	5	3	7	6	3	1	5	6	3	6	2	2	6
0315#	0	3	0	0	8	0	0	8	0	0	0	0	0	2	2	3	7	5	7	7	5	5	6	6	1	2	3	1	3	6	6	2	4	4	4	5	6	5	5	4	6	4	5	6	5	5	2	6	6	5	2	4	6	6	4	5
0316#	0	4	0	2	7	0	3	6	0	0	0	0	6	0	6	3	7	7	6	6	7	3	2	2	3	7	2	2	5	2	7	4	5	6	2	6	4	2	7	7	3	1	7	5	5	2	5	7	2	6	6	2	6	1	6
0317#	0	3	0	0	2	0	2	3	1	0	1	0	1	2	0	3	7	6	5	7	5	3	5	2	1	5	1	4	2	2	4	4	2	4	7	6	4	5	6	6	1	2	6	5	5	2	4	4	2	6	4	2	6	2	7
0318#	0	4	0	1	3	0	1	3	0	0	0	0	1	0	9	2	6	7	6	7	6	5	2	2	3	1	5	3	7	5	4	5	3	6	2	6	6	5	6	2	5	6	3	7	4	6	3	5	5	6	2	7		
0319#	1	4	0	2	3	0	2	3	0	0	0	1	0	2	4	3	3	5	5	6	4	5	5	2	2	1	6	1	6	4	5	2	4	3	6	7	6	7	2	2	6	1	2	4	6	6	2	7	5	6	2	6	4	4	2	7
0320#	0	3	0	0	6	0	4	3	1	3	7	0	0	0	7	4	4	7	7	7	5	3	7	1	3	5	7	2	7	1	6	7	4	6	6	4	6	4	7	7	1	5	1	7	4	6	4	6	1	7	1	6	7	1	7	2
0321#	0	2	0	1	9	0	1	9	0	0	0	0	0	0	6	5	5	5	6	6	5	6	4	1	1	5	2	6	1	4	5	4	4	4	4	1	4	5	6	2	2	5	4	1	4	6	4	4	4	5	4	4	4	7		
0322#	0	5	0	3	0	0	3	0	0	0	0	3	1	2	3	7	6	6	7	6	6	5	5	2	6	4	3	5	5	3	2	5	6	5	6	6	6	2	3	5	6	4	3	2	6	5	5	3	5	5	2	6		
0323#	0	4	0	0	8	0	2	7	0	0	0	0	3	1	2	3	6	7	7	7	6	7	5	6	7	2	3	6	5	6	3	2	2	5	3	5	6	5	5	6	6	2	5	6	5	5	5	6	3	3	5	5	2	6		
0324#	0	4	0	3	2	0	3	2	0	0	0	0	0	3	4	7	5	6	7	6	6	5	1	2	2	6	2	6	4	5	2	2	5	6	4	6	2	5	6	6	3	2	6	6	6	2	5	6	2	5	4	5	5	2	6	
0325#	0	4	0	1	8	0	1	8	0	0	0	0	2	0	4	3	6	5	6	7	5	6	4	4	1	2	5	2	6	5	4	3	4	5	3	3	5	6	5	5	3	6	3	5	7	6	4	1	5	6	5	4	5	5	6	
0326#	1	2	0	6	0	0	0	2	0	0	0	0	7	0	5	3	7	7	6	7	5	6	3	4	7	6	6	1	5	3	2	6	5	3	6	1	6	2	5	7	7	6	2	6	6	2	1	2	6	5	1	2	6	2	6	
0327#	0	4	0	3	6	0	3	6	0	0	0	0	1	0	0	4	3	6	6	7	7	3	6	2	6	1	7	7	7	6	2	2	6	4	2	6	2	7	4	2	6	4	2	1	2	6	1	1	6	4	2	5	2	2	4	
0328#	1	2	0	3	5	0	3	5	0	0	0	0	0	0	8	4	5	2	5	5	4	4	3	1	2	6	5	3	6	2	2	4	4	2	6	2	6	2	2	6	6	6	2	2	6	2	6	3	5	2	6	2	2	6	3	
0329#	1	3	0	0	8	0	9	8	1	0	1	0	5	2	5	4	3	6	5	6	6	4	4	2	1	3	6	5	4	5	2	4	5	3	6	5	6	4	2	7	5	5	2	6	5	5	2	6	4	4	6	5	5	6	3	
0330#	1	3	0	5	1	0	1	3	0	0	0	0	0	5	4	6	6	5	4	6	4	1	6	4	6	2	6	5	2	3	2	4	6	4	6	4	5	6	6	4	1	7	6	6	2	6	4	2	6	1	5			
0331#	1	3	0	0	3	0	1	5	1	0	1	0	4	2	8	3	6	6	5	6	5	5	6	2	3	3	2	4	3	6	5	4	2	4	5	6	3	4	6	4	2	3	3	6	5	6	3	6	2	5	5	4	2	3		
0332#	1	3	1	8	0	0	1	8	0	0	0	0	0	1	3	4	1	3	3	6	5	4	5	1	3	6	6	2	1	7	6	6	4	6	1	2	2	4	3	1	2	6	2	3	3	3	4	2	5	2	5	6	2	4		
0333#	1	3	0	2	0	0	2	0	0	0	0	0	1	1	4	7	6	7	7	6	5	5	2	6	3	2	4	1	1	2	2	3	5	3	7	4	6	3	3	1	1	3	6	2	5	4	6	2	7	2	7	6	1	5	6	
0334#	0	1	0	1	8	0	1	8	0	0	0	0	0	1	0	3	7	7	7	6	6	5	5	6	2	3	5	2	5	5	6	2	5	6	5	5	2	5	6	6	3	5	6	3	6	5	6	2	3	2	5	6	3	5	4	
0335#	1	3	1	0	9	1	3	1	0	0	0	1	0	1	6	4	5	6	6	7	6	4	3	5	6	6	2	6	2	2	2	2	6	2	6	6	2	6	6	6	2	6	6	2	2	6	2	6	2	2	6	2	6	2	2	6
0336#	0	3	0	2	6	0	2	6	0	0	0	0	1	0	4	7	6	5	6	4	7	4	6	6	3	2	4	2	3	5	5	4	6	3	3	2	4	6	4	2	3	4	7	1	7	6	6	2	4	2	5	6	4	5	7	
0337#	0	3	0	0	9	0	0	9	0	0	0	0	0	0	6	2	7	5	7	7	6	7	3	6	7	1	6	1	5	3	5	6	2	5	4	5	6	5	5	5	2	5	5	6	6	5	4	2	6	6	5	4	2	6	2	5
0338#	1	2	0	2	6	0	2	6	0	0	0	0	0	0	5	3	5	4	5	5	3	5	4	3	5	6	6	2	6	5	2	6	2	2	6	2	2	6	6	6	2	2	2	6	2	6	2	2	6	2	2	6	2	2	6	2
0339#	1	2	0	5	6	0	5	6	0	0	0	0	0	0	5	4	5	6	6	6	5	4	4	2	5	3	5	4	2	5	5	4	5	6	5	3	3	5	6	5	6	5	5	3	6	4	6	6	6	5	2	6	6	5	6	3
0340#	0	3	0	0	7	0	0	7	0	0	0	0	0	0	7	3	7	5	5	7	4	5	6	1	4	3	2	2	2	6	7	2	4	4	3	3	2	6	6	2	2	2	6	3	6	2	6	5	6	2	3	5	2	5	4	
0341#	1	4	0	3	0	0	3	0	0	0	0	0	0	1	2	2	7	6	6	7	5	7	4	2	6	5	6	1	6	2	2	2	2	4	2	6	5	5	6	6	6	5	6	1	2	6	6	2	2	6	2	5			
0342#	1	6	0	2	3	0	2	3	0	0	0	0	0	7	1	1	2	6	6	7	6	6	6	3	3	1	2	6	2	5	6	3	6	6	5	6	6	6	5	5	6	1	6	2	7	2	6	6	5	2	3	6	3	6	6	7
0343#	0	3	0	0	8	0	0	8	0	0	0	0	0	6	4	6	6	6	6	6	4	6	4	2	5	3	2	6	2	2	6	4	2	6	4	2	4	2	6	4	5	2	5	2	2	5	5	5	5	4	6					
0344#	1	3	0	1	2	0	3	6	0	0	0	0	1	0	6	4	5	5	7	7	5	4	1	5	2	3	3	4	2	4	6	5	4	6	5	5	6	6	4	2	6	6	5	2	5	6	4	3	3	5	6					
0345#	0	3	0	3	6	0	3	6	0	0	0	0	0	6	4	7	7	7	6	7	6	2	1	3	3	2	6	5	5	2	1	2	6	5	6	5	5	6	2	3	2	5	6	5	2	6	5	2	6	2	2	2	2	4	2	6
0346#	1	4	0	3	6	0	3	6	1	0	2	1	4	0	7	2	7	7	5	7	5	6	6	5	2	2	6	2	6	5	2	2	1	2	4	2	6	5	2	6	6	6	2	5	6	3	2	3	2	2	6	2	4			
0347#	1	2	0	3	4	0	3	4	0	0	0	0	0	1	3	3	3	5	6	5	6	3	6	2	6	4	5	1	6	7	2	6	2	6	4	7	5	1	2	7	2	1	6	2	6	7	4	2	6	1	4	6	2	1	6	
0348#	0	3	0	1	2	0	1	3	0	0	0	0	0	7	3	6	6	6	7	6	7	7	2	7	3	6	2	2	6	5	3	1	2	4	4	2	5	7	6	1	4	5	7	2	6	5	5	2	4	3	7	7	7			
0349#	0	4	0	0	8	0	4	3	1	0	1	0	0	0	8	2	5	6	6	6	4	6	4	2	3	3	4	3	2	5	6	2	5	6	4	3	3	5	6	5	5	4	7	3	3	4	5	6	3	3	2	5	6	3	6	
0350#	1	3	0	8	8	0	8	8	0	0	0	0	0	5	3	7	6	7	7	6	7	4	1	7	6	6	6	6	4	4	2	4	4	6	2	6	4	4	6	4	6	2	6	4	2	2	6	2	2	4	4	4	4	4	7	

APPENDIX C

SUPPLEMENTAL DATA ANALYSIS

Table 11

Organizational Nature of Program Manager's Tasks

Mean

Question Number	Category I n=46	Category II n=48	Category III n=48	Composite n=142
1	5.804	5.396	5.833	5.676
2	5.674	4.042	5.833	5.514
3	6.087	5.833	6.104	6.007
4	6.565	6.333	6.583	6.493
5	5.848	5.186	5.208	5.409
6	6.174	5.771	5.917	5.951
7	3.261	3.542	4.417	3.747
8	4.283	3.250	3.292	3.599
9	3.609	2.979	3.729	3.437

Note:

Pure Functional Manager: 1.00

Pure Program Manager: 7.00

Table 12

Role Stress

Mean

Question Number	Category I n=46	Category II n=48	Category III n=48	Composite n=142
1	4.02	3.85	3.52	3.80
2	4.63	4.69	4.88	4.73
3	2.33	2.06	2.63	2.34
4	4.11	3.31	4.21	3.87
5	4.33	4.08	4.17	4.19
6	4.02	3.83	3.71	3.85
7	4.37	4.25	5.24	4.29
8	3.39	3.17	3.25	3.27
9	3.59	3.60	3.67	3.62
10	5.09	4.98	4.96	5.00
11	4.37	4.15	4.00	4.17
12	5.39	5.44	5.10	5.31
13	4.07	3.54	4.13	3.91
14	5.07	4.63	4.31	4.66
15	5.72	5.60	5.42	5.58
16	3.63	4.04	4.54	4.08
17	4.17	3.94	3.73	3.94
18	3.11	3.04	2.94	3.03
19	5.30	5.19	5.81	5.44
20	4.65	4.56	4.50	4.57
21	3.61	4.23	4.42	4.09
22	2.72	2.92	2.92	2.85
23	4.78	4.67	5.25	4.90
24	4.24	4.27	4.35	4.29
25	3.94	3.73	3.73	3.80
26	3.74	3.85	3.79	3.80
27	3.24	3.37	3.85	3.49
28	4.22	4.21	4.04	4.15
29	5.59	5.17	5.06	5.27
30	3.02	2.96	2.96	2.98

Note:

Odd numbered questions are role conflict oriented.

Even numbered questions are role ambiguity oriented.

Table 13

Questionnaire Response by System Program Office

System Program Office	Number of Responses	
Category I:		
RPV Compass Cope	6	
Advanced RPV	9	
CCV	8	
AMST	12	
Advanced Tanker/Cargo Aircraft	11	
n =		46
Category II:		
B-1	28	
F-16	8	
ALCM	12	
n =		48
Category III:		
F-4	10	
F-5	12	
AGM-65	3	
F-15	4	
A-10	19	
n =		48
Total Questionnaire Response		142

APPENDIX D

VALIDITY ANALYSIS RESULTS

Table 14

Intercorrelation of Part II Questions: Organizational Nature of Program Manager's Tasks

Question No.	2	3	4	5	6	7	8	9	Perception
1	.3966 (.001)	.2493 (.001)	.4612 (.001)	.2777 (.001)	.5711 (.001)	.1652 (.025)	.2477 (.001)	.2343 (.003)	.4493 (.001)
2		.1535 (.034)	.4242 (.001)	.3168 (.001)	.4804 (.001)	.2204 (.004)	.1246 (.070)	.2939 (.001)	.2839 (.001)
3			.2626 (.001)	.2555 (.001)	.2738 (.001)	-.2506 (.001)	.1454 (.042)	.1441 (.044)	.1191 (.079)
4				.3147 (.001)	.5603 (.001)	.1805 (.016)	.1974 (.009)	.1821 (.015)	.2856 (.001)
5					.3862 (.001)	.0546 (.259)	.1738 (.019)	.3795 (.001)	.1907 (.011)
6						.0867 (.152)	.3715 (.001)	.2891 (.001)	.4486 (.001)
7							-.0962 (.127)	.1556 (.032)	.1229 (.073)
8								.2676 (.001)	.1652 (.025)
9									.1123 (.092)

Note:

Top Number is "r," correlation coefficient

Bottom number in parentheses is level of significance.

Table 15

Factor Analysis

Lempke/Mann Results (Factor Loadings > .30)			Rizzo's Results (Factor Loadings > .30)		
? No.	Role Conflict	Role Ambiguity	? No.	Role Conflict	Role Ambiguity
1	.72		1		
2	.31	.39	2		.51
3			3		
4		.57	4		.42
5	.38		5	.60	
6	.34	.55	6	.43	
7			7		.31
8			8		
9		.53	9	.60	
10	.35		10		.62
11	.73		11	.56	
12		.65	12		.61
13	.51		13	.54	
14	.42	.34	14	.36	.35
15			15		
16		.38	16		.34
17	.50		17		.32
18	.45	.33	18		.50
19	.31		19	.43	
20		.80	20		.61
21	.53	.35	21	.56	
22		.74	22		
23	.43		23	.41	
24		.53	24		
25	.73		25	.52	
26	.50	.51	26		.35
27	.37		27	.52	
28	.33	.60	28	.59	
29		.38	29		.39
30		.63	30	.30	

Note: Rizzo, et al., used an image covariance factor analysis with varimax rotation. This study used a SPSS factor analysis package (principal factoring with iteration [PA2] with varimax rotation).

Table 16

Instrument Validity - Part III

Lempke/Mann Results (n=142)			Rizzo Results (n=275)		
Question Number	Mean	Standard Deviation	Question Number	Mean	Standard Deviation
1	3.80	1.82	1	3.85	1.81
2*	4.73	1.65	2	4.00	1.80
3*	2.34	1.26	3	4.00	1.88
4	3.87	1.96	4	3.95	1.70
5	4.19	1.61	5	4.19	1.80
6	3.85	1.63	6	4.12	1.80
7	4.29	1.76	7	4.46	1.72
8	3.27	1.41	8	2.87	1.61
9	3.62	1.64	9	3.60	1.93
10*	5.00	1.38	10	4.16	1.48
11	4.17	1.63	11	4.50	2.04
12	5.31	1.46	12	5.05	1.80
13	3.91	1.49	13	3.66	1.98
14	4.66	1.60	14	4.33	1.92
15	5.58	1.25	15	5.90	1.14
16	4.08	1.99	16	4.05	1.88
17*	3.94	1.66	17	3.01	1.63
18*	3.03	1.43	18	3.96	1.68
19*	5.44	1.51	19	4.70	2.06
20	4.57	1.58	20	4.20	1.67
21	4.09	1.66	21	3.88	2.04
22	2.85	1.58	22	3.01	1.88
23	4.90	1.61	23	4.35	1.89
24*	4.29	1.66	24	3.66	1.76
25	3.80	1.63	25	4.24	1.82
26	3.80	1.62	26	3.92	1.58
27	3.49	1.71	27	3.66	1.88
28	4.15	1.69	28	3.76	1.77
29*	5.27	1.36	29	4.52	1.58
30	2.98	1.47	30	3.32	1.69

* Denotes significant difference between means (α=.001).

Notes:

1. Odd numbered questions are oriented to role conflict; even numbered questions are oriented to role ambiguity.

2. Question 18 was changed to correct an administrative error in Rizzo's instrument.

APPENDIX E

SYSTEM PROGRAM OFFICE (SPO) DESCRIPTIONS

APPENDIX E

SYSTEM PROGRAM OFFICE (SPO) DESCRIPTIONS

RPV Compass Cope. The objective of the Remotely Piloted Vehicle (RPV) Compass Cope Program is to design, develop and test two high altitude sensor platform vehicles. A decision will be made in mid 1976 on whether to proceed from validation into the full-scale engineering development of one of the high altitude, long endurance (HALE) vehicles. To accomplish a wide range of military and civilian missions, this unmanned aircraft has been planned for a number of payload, command, control and communications systems presently under development within the Department of Defense.

Advanced RPV. The Advanced RPV Program is a study effort exploring a new system design to provide improved cost effective capability to perform certain electronic warfare, reconnaissance and strike missions. Upon completion of this concept development phase, the Air Force will have sufficient definition of the Advanced RPV, its mission and concepts of operation, costs, and preliminary design approaches necessary to begin a hardware development validation program.

CCV. The Control Configured Vehicle (CCV) Program is designed to investigate new and additional use of control surfaces on an aircraft for better performance and less demanding work load for the pilot, including the ability to fly the aircraft in combat maneuvers not previously possible. Test bed for the CCV is the F-16 aircraft which was chosen because it is a modern high-performance fighter with a fly-by-wire flight control system compatible with CCV technology. If tests prove successful, future fighters may not only look different, but may include radically different performance characteristics.

AMST. The Advanced Medium STOL (short takeoff and landing) Transport (AMST) Program is in the validation phase of acquisition with two aerospace companies under Air Force contracts for the design and development of AMST prototypes. The objectives of the AMST prototype program are to demonstrate in hardware the application of advanced technology and to provide options for modernizing tactical airlift.

Advanced Tanker/Cargo Aircraft. The Air Force is currently increasing its mobility and flexibility by developing the Advanced Tanker/Cargo Aircraft (ATCA) to meet the demanding long-endurance aerial refueling requirements for airlift, tactical and strategic forces. The ATCA Program is investigating ways to modify the internal structure of an existing wide-body cargo aircraft such as the Boeing 747 or Douglas

DC-10 to provide aerial refueling along with their inherent strategic airlift capabilities.

B-1. The B-1 Strategic Bomber is being developed by the Air Force to modernize its strategic bomber force. The production go-ahead is scheduled for late 1976 with the first production B-1s to enter the Air Force inventory in mid-1979. Designed to take its place in this nation's triple-threat strategic defenses, the B-1 is an extremely versatile airplane. This medium gross weight bomber will be capable of carrying nuclear air-to-surface missiles, nuclear or conventional gravity bombs, mines, other weapons or fuel as required by varying mission requirements.

F-16. The F-16 Air Combat Fighter Program is the surviving development effort of the former lightweight prototype program. Overall, the objective, in light of fiscal realities, was to apply advanced technology in a simple way to achieve performance objectives in a lightweight fighter size aircraft. The F-16 is currently undergoing extensive flight testing prior to the DSARC production approval scheduled for late 1977. Four NATO countries have entered into a Memorandum of Understanding with the U.S. to co-produce the F-16 with operational delivery to begin in early 1979.

ALCM. The primary purpose of the Air Launched Cruise Missile (ALCM) Program is the development of a missile to enhance the effectiveness of the B-52 strategic bomber

force. It will increase the flexibility of the bomber and improve its capability to penetrate enemy air defenses. Designated the AGM-86, the ALCM resembles a small airplace and capable of high subsonic speeds at low altitudes.

F-4. The F-4 Phantom II fighter aircraft is primarily in the deployment phase of acquisition with some production continuing on the various versions of the two-seat twin engined fighter for the Air Force as well as for allies. The first production delivery was in March 1965.

F-5. The F-5 International Fighter Program Office is currently involved in the production and deployment phase of acquisition. The F-5A was the earlier version of the single place, highly maneuverable, supersonic aircraft designed primarily as an air superiority fighter for local air defense with a secondary air-to-ground capability. The F-5E is the latest model and entered the Air Force inventory in November 1975. The F-5E meets the needs of USAF allies and other friendly nations for a modern air superiority fighter.

AGM-65. The Maverick (AGM-65) air-to-surface missile program is in the production/deployment phase with the first deliveries in August 1972. The missile which is carried by the F-4D and E and A-7D aircraft is a relatively small, television-guided tactical missile designed for use against small concentrated targets such as armoured vehicles,

revetments, gun positions, parked aircraft and communications vans. The Maverick program was approved by DoD in 1965 with Hughes Aircraft awarded the prime contract with production options up to 17,000 missiles.

F-15. The F-15 is highly maneuverable air-superiority fighter which entered the Air Force inventory in early 1976. The SPO is currently in the production phase of acquisition with McDonnell Douglas as the prime contractor and engines built for the Air Force by Pratt & Whitney Division of United Aircraft Corporation. Tactical Air Command expects the F-15, with its sophisticated fire control systems and combat thrust-to-weight ratio of 1.4 to 1, capable of outperforming potential threat aircraft into the 1980's.

A-10. In November 1975, the A-10, a single-seat close-air support weapon system, entered the Air Force inventory. Fairchild Industries is under contract for 733 A-10's. The aircraft's high payload, its long loiter, rapid turnaround and high survivability make it most effective in its close-support role.

APPENDIX F

SUMMARY OF RELATED THESES

APPENDIX F

SUMMARY OF RELATED THESES

Three previous master's thesis studies conducted in the Aeronautical Systems Division of the Air Force Systems Command have respectively concentrated on the organizational climate, job satisfaction and leadership styles within the System Program Office (SPO), in different phases of the weapon system acquisition process. Although the same respondents were not used in this study as in the previous studies, the population stratification was designed to parallel these previous efforts. For the continuity of and convenience to future interest in the SRP activities at different phases of the weapon system acquisition process, a brief overview is presented on each of the three former studies.

1. "A Comparative Analysis of Organizational Climate Existing in System Program Offices in Different Phases of the Weapon System Acquisition Process." SLSR 1-75B. (DDC #ADA016261). The researchers in this study were interested in determining if organizational climate differed in SPOs in different phases of the weapon system acquisition process. SPOs in the conceptual and validation phases (Category I) have a tendency to more nearly practice participative management, indicative of better

supervisor-employee relationships. As the SPO progresses through full-scale development (Category II) the organizational climate changes wherein individuals have less tendency to identify with the organization's goals, and tend to replace them with individual goals. In Category III, production and deployment phases of the acquisition process, the SPO reverses its climate and returns to participative management, however, not to the degree attained in the first two phases of acquisition (29).

2. "A Study of Job Satisfaction as it Relates to the System Program Office and the Weapon Acquisition Process." SLSR 22-75B. (DDC #ADA016030). The researchers administered the Hackman and Oldman Job Diagnostic Survey to SPO managers in each of the three categories. The study failed to show a significant relationship between stages of the weapon acquisition process and job satisfaction. However, conclusions indicated that program managers at the top echelon of SPO organizations perceive the greatest sense of satisfaction. This sense of satisfaction was attributed to the top manager's sense of dedication and task identity in the overall accomplishment of the SPO's mission (43).

3. "A Comparative Analysis of Leadership Styles Existing in System Program Offices in Different Phases of the Weapon System Acquisition Life Cycle." SLSR 6-75B. (DDC #ADA016265). The Leadership Opinion Questionnaire (LOQ) was administered to military and civilian managers

to determine if differences in leadership style exist among the various phases of the weapon system acquisition process. Although the results of statistical analyses indicated that leadership styles did not vary significantly among phases categories, strong evidence of differences was reported between the leadership styles of military and civilian managers. Additionally, the study revealed strong indications that leadership style may vary with the length of time managers were assigned to the SPO (12).

SELECTED BIBLIOGRAPHY

SELECTED BIBLIOGRAPHY

A. REFERENCES CITED

1. Adams, Major John R., USAF, and David L. Wileman. "A Decision Model for Project Design and Development." Paper presented at the American Institute for Decision Sciences Western Regional Meeting, Las Vegas, Nevada, March 20-21, 1975.

2. Army Logistician. "Improving Project Management," September-October 1975, pp. 20-23.

3. Avots, Ivors. "Why Does Project Management Fail," California Management Review, Vol. 12, No. 1 (Fall, 1969), pp. 77-82.

4. Baumgartner, J. Stanley. "Project/Program Management: A Career with Visibility," Defense Management Journal, October, 1974, pp. 49-52.

5. Baumgartner, John Stanley. Project Management. Homewood, Illinois: Richard D. Irwin, Inc., 1963.

6. Bennett, Captain William R., USAF and Captain James S. Childress, USAF. "Some Consequences of Rapid Managerial Succession in Complex Organizations: A Validation Study." Unpublished master's thesis, SLSR 6-74B, School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB, Ohio, 1975.

7. Bennis, Warren G., Kenneth D. Benne, and Robert Chin, eds., The Planning of Change. 2d ed., New York: Holt, Rinehart and Winston, Inc., 1969.

8. Boulding, Kenneth E. Conflict and Defense. New York: Harper and Row Publisher, 1962.

9. Butler, Arthur G. "Project Management: A Study in Organizational Conflict," Academy of Management Journal, XVI, No. 1 (March, 1973), pp. 84-99.

10. Cleland, David I., and William R. King. Systems Analysis and Project Management. New York: McGraw-Hill, 1968.

11. Cleland, David I. "Project Management," Air University Review, XVI, No. 2 (January-February, 1965), as reprinted in David I. Cleland and William R. King, eds., Systems, Organizations, Analysis, Management: A Book of Readings. New York: McGraw-Hill Book Co., 1969.

12. Coggeshall, Lieutenant Jerry W., USN and Captain Juan G. Jasso, USAF. "An Analysis of Systems Program Office Leadership Style During Weapon System Acquisition Life Cycle." Unpublished master's thesis, SLSR 6-75B, School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB, Ohio, 1975.

13. Davis, Keith. "The Role of Project Management in Scientific Manufacturing," IRE Transactions on Engineering Management, September, 1962, pp. 109-113.

14. Frankwicz, Michael J. "A Study of Project Management Techniques," Journal of Systems Management, October, 1973, pp. 18-22.

15. Grusky, Oscar. "The Effects of Succession: A Comparative Study of Military and Business Organization," The New Military: Changing Patterns of Organizations, ed. Morris Janowitz, New York: Russell Sage Foundation, 1964.

16. Gunderman, James R., and Frank W. McMurry. "Making Project Management Effective," Journal of Systems Management, February, 1975, pp. 7-11.

17. Hall, Jay, and Martha S. Williams. "A Comparison of Decision-Making Performances in Established and Ad-Hoc Groups," Journal of Personality and Social Psychology. Vol. 3, No. 2 (1966), pp. 214-222.

18. Hampton, D.R., C.E. Summer, and R.A. Webber. Organizational Behavior and the Practice of Management. Glenview, Illinois: Scott-Foresman, 1973.

19. Hare, Paul A. Handbook of Small Group Research. New York: The Free Press, 1962.

20. Hays, William L. Statistics. New York: Holt, Rinehart and Winston, 1963.

21. Hayward, John T. "Program Managers: Reality or Myth," Government Executive. Vol. 7, No. 1 (January, 1975), pp. 12-13.

22. Helmstader, G.C. Research Concepts in Human Behavior. New York: Meredith Corporation, 1970.

23. House, Robert J. "Role Conflict and Multiple Authority in Complex Organizations," California Management Review, XII, No. 4 (Summer, 1970), pp. 53-60.

24. Johnson, Richard A., Fremont E. Kast, and James E. Rosenzweig. The Theory and Management of Systems. New York: McGraw-Hill Book Co., 1967.

25. Kahn, Robert L., and others. Organizational Stress: Studies in Role Conflict and Ambiguity. New York: John Wiley & Sons, Inc., 1964.

26. Kelly, Joe. Organizational Behavior. Homewood, Illinois: Richard D. Irwin, Inc., and The Dorsey Press, 1969.

27. Kerlinger, Fred N. Foundations of Behavioral Research. New York: Holt, Rinehart and Winston, Inc., 1974.

28. Labovitz, Sanford. "Criteria for Selecting a Significance Level: A Note on the Sacredness of .05," The American Sociologist, Vol. 3, No. 3 (1968), pp. 220-222.

29. Larsen, Captain Julius C., USAF and Captain Peter J. Ruppert, USAF. "A Comparative Analysis of Organizational Climate in System Program Offices During Selected Phases of the Weapon System Acquisition Process." Unpublished master's thesis, SLSR 1-75B, School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB, Ohio, 1975.

30. Maciariello, Joseph A. "Making Project Management Work," Journal of Systems Management, June, 1974, pp. 8-15.

31. Mathis, Major General Robert C. Letter, subject: F-15/F-16 Transfer of Management Experience, to ASD/CV, 10 April 1975.

32. Mee, John F. "Matrix Organization," Business Horizons, Summer, 1964, pp. 70-72.

33 Mezcher, Arlyn J., and Thomas A. Kayser. "Leadership Without Formal Authority: The Project Department," California Management Review, XIII (Winter, 1970), pp. 57-64.

34. Miles, Robert H. "An Empirical Test of Causal Inference Between Role Perceptions of Conflict and Ambiguity and Various Personal Outcomes," Journal of Applied Psychology, Vol. 60, No. 3 (1975), pp. 334-339.

35. _____. "How Job Conflicts and Ambiguity Affect R&D Professionals," Research Management, July, 1975, pp. 32-37.

36. Morrison, Edward J. "Defense Systems Management: The 375 Series," California Management Review, Summer, 1967, pp. 17-26.

37. Nie, Norman, Dale H. Bent, and C. Hadlai Hall. SPSS: Statistical Package for the Social Sciences. New York: McGraw-Hill Book Company, Inc., 1970.

38. Nye, Robert D. Conflict Among Humans. New York: Springer Publishing Company, Inc., 1973.

39. Patchet, Major Ronald D., and Major Dorawy J. Talley. "An Analysis of Possible Improvements in the Staffing of System Program Offices." Unpublished master's thesis, SLSR 7-71A, Air Force Institute of Technology (AU), Wright-Patterson AFB, Ohio, 1971.

40. Pondy, Louis R. "Organization Conflict: Concepts and Models," Administrative Science Quarterly, September, 1967, pp. 296-320.

41. Porter, Lyman W. and Richard M. Steers. "Organizational, Work, and Personal Factors in Employee Turnover and Absenteeism," Psychological Bulletin. Vol. 80, No. 2 (1973), pp. 151-176.

42. Ressor, Clayton. "Some Potential Human Problems of the Project Form of Organization," Academy of Management Journal, XII (December, 1969), pp. 459-467.

43. Rigsbee, Captain David J., USAF and Captain Charles T. Roff, USAF. "A Study of Job Satisfaction as it Relates to the System Program Office and the Phases of the Weapon Acquisition Process." Unpublished master's thesis, SLSR 22-75B, School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB, Ohio, 1975.

44. Rizzo, John R., Robert J. House, and Sidney I. Lirtzman. "Role Conflict and Ambiguity in Complex Organizations," Administrative Science Quarterly, Vol. 15, No. 2 (June, 1970), pp. 150-163.

45. Scott, William G., and Terence R. Mitchel. Organization Theory: A Structural and Behavioral Analysis. Homewood, Illinois: Richard D. Irwin, Inc., and The Dorsey Press, 1972.

46. Siegel, Sidney. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill Book Company, Inc., 1956.

47. Steiner, George A., and William G. Ryan. Industrial Project Management. New York: Macmillian Co., 1968.

48. Stewart, John M. "Making Project Management Work," Business Horizons, Fall, 1965, as reprinted in David I. Cleland and William R. King, eds., Systems, Organizations, Analysis, Management: A Book of Readings. New York: McGraw-Hill Book Co., 1969.

49. Thamhain, Hans J. and David L. Wilemon. "Conflict MGT in Project Life Cycles," Sloan MGT Review, Vol. 16, No. 3 (Spring, 1975), pp. 31-50.

50. _____. "Conflict Management in Project - Oriented Work Environments." Paper Presented to Sixth Annual International Meeting of the Project Management Institute, September, 1973.

51. U.S. Air Force Systems Command. A Guide for Program Management. AFSCP 800-3, 14 May 1971. Andrews AFB, Maryland, 1971.

52. U.S. Department of Defense. Acquisition of Major Defense Systems. DOD Directive 5000.1, July, 1974.

53. U.S. Department of Defense. System Acquisition Management Careers, DOD Directive 5000.23, November, 1974.

54. U.S. Department of the Air Force. Officer Assignments. AFR 36-20, 1 April 1973. Washington: Government Printing Office, 1973.

55. U.S. Department of the Air Force. Program Management. AFR 800-2, 16 March 1972. Washington: Government Printing Office, 1972.

56. Yamane, Taro. Statistics, An Introductory Analysis. New York: Harper and Row, Publishers, 1967.

B. RELATED SOURCES

Andrews, Frank M., and others. A Guide for Selecting Statistical Techniques for Analyzing Social Science Data. Ann Arbor, Michigan Survey Research Center, The University of Michigan, 1974.

Argis, Chris. Interpersonal Competence and Organizational Effectiveness. Homewood, Illinois: The Dorsey Press, Inc., 1962.

Bobrowski, Thomas M. "A Basic Philosophy of Project Management," Journal of Systems Management, May, 1974, pp. 30-32.

Cartwright, Dorwin and Alvin Zander. Group Dynamics Research and Theory. New York: Harper and Row, Publishers, 1968.

Cleland, David I. "Understanding Project Authority," Business Horizons, Winter, 1964, pp. 81-88.

Corwin, Ronald G. "Patterns of Organizational Conflict," Administrative Science Quarterly, Vol. 14, No. 4 (1969), pp. 507-520.

Dahrendorf, Ralf. Class and Class Conflict in Industrial Society. Stanford, California: Stanford University Press, 1959.

Drucker, Peter F. The Age of Discontinuity. New York: Harper and Row, 1968.

Fox, David J. The Research Process in Education. New York: Holt, Rinehart, and Winston, Inc., 1969.

Gaddis, Paul O. "The Project Manager," Harvard Business Review, May-June, 1959, pp. 89-97.

Gemmill, G.R., and Hans J. Thamhain. "Influence Styles of Project Managers: Some Project Performance Correlates," Academy of Management Journal, June, 1974, pp. 216-224.

Gove, Phillip B., ed. Websters Third New International Dictionary. Springfield, Mass.: G. & C. Merriam Company, 1965.

Hellriegel, Don, and John W. Slocum, Jr. "Organizational Climate: Measuring Research and Contingencies," Academy of Management Journal, Vol. 17, No. 2 (June, 1974), pp. 256-277.

Hodgetts, Richard D. "Leadership Techniques in Project Organization," Academy of Management Journal, XI (June, 1968), pp. 211-19.

Holzapfel, F.J. "Multiple Ladders in an Engineering Department," Chemical Engineering, February 27, 1967.

Katz, Daniel. "Approaches to Management Conflict," Power and Conflict in Organizations, ed. Robert L. Kahn and Elise Boulding, New York: Basic Books, Inc., 1964.

Katz, Daniel and Robert L. Kahn. The Social Psychology of Organizations. New York: John Wiley & Sons, 1966.

Logistics Management Institute. Introduction to Military Program Management. LMI Task 69-28. Washington D.C., 1971.

Logistics Management Institute. The Program Manager Authority for Responsibilities. LMI Task 72-6. Washington D.C., 1972.

McClelland, Major David., USAF. "The System Program Office (SPO)." Unpublished Term Paper for Seminar in Acquisition Management (MS 5.47), School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB, Ohio, January, 1975.

Montonaga, Captain Bert T., USAF. "Study of the Authority and Responsibility Relationship Perceptions in a Program Management Environment." Unpublished master's thesis, GSM/SM/70-14, School of Systems Management, Air Force Institute of Technology (AU), Wright-Patterson AFB, Ohio, 1970.

Morris, William, ed. The American Heritage Dictionary. New York: American Heritage Publishing Co., Inc. and Houghton Mifflin Company, 1970.

Pheiffer, J. William and Richard Heslin. Instrumentation In Human Relations Training. Iowa City, Iowa: University Associates, 1973.

Pondy, Louis R. "A Systems Theory of Organizational Conflict," Academy of Management Journal, Vol. 9, No. 3 (September, 1966), pp. 246-256.

_____. ed. "Varieties of Organizational Conflict," Administrative Science Quarterly, December, 1969, pp. 499-505.

Robbins, Stephen P. Managing Organizational Conflict. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1974.

Tsukamoto, Captain Wilfred A., USAF. "A Study of the Personnel Problems in a U.S. Air Force Matrix Organization." Unpublished Master's Thesis, GSM/SM/73-25, School of Systems Management, Air Force Institute of Technology (AU), Wright-Patterson AFB, Ohio, 1973.

Wilemon, David and John Cicero. "The Project Manager-Anomalies and Ambiguities," Academy of Management Journal, XIII (September, 1970), pp. 269-82.

Winer, B.J. Statistical Principles in Experimental Design. New York: McGraw-Hill Book Company, 1971.

AUTHOR BIOGRAPHICAL SKETCHES

Captain Roger P. Lempke was born in [redacted] in [redacted]. He graduated from the Air Force Academy in 1969 with a B.S. degree in Aeronautical Engineering. Since completing Undergraduate Pilot Training at Webb, AFB, Texas, in 1970, he has served as a T-41C and T-37B instructor pilot in Air Training Command. His last assignment before AFIT was the T-37 Academics Section Chief at Columbus AFB, Mississippi. His next assignment will be with the Integrated Logistics Support Division, B-1 SPO, Wright-Patterson AFB, Ohio. He is married to the former [redacted] They have [redacted]

Captain Greg A. Mann was graduated in 1965 from Texas A & M University, College Station, Texas with a B.S. degree in Aerospace Engineering. Upon completion of Undergraduate Pilot Training in 1966, he flew a combat tour in Southeast Asia. His operations background continued until selected for the ASTRA program with an assignment to HQ USAF/DPX, Personnel Plans. His prior assignment was with HQ AFSC Standardization/Evaluation Directorate as an F-4 Flight Management Evaluator at Kirtland AFB, New Mexico. His next assignment will be with the B-1 System Program Office, Aeronautical Systems Division, Wright-Patterson AFB, Ohio.