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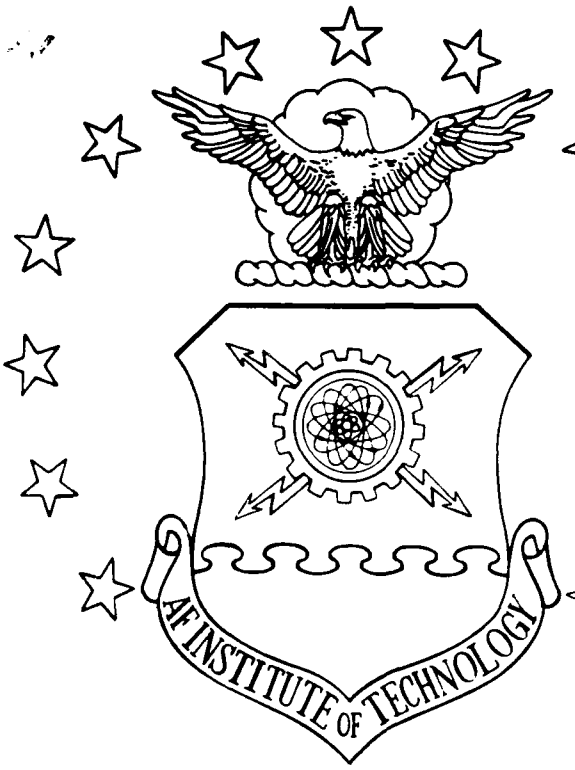

THE STRATEGIC AIR COMMAND READINESS ORIENTED LOGISTICS SYSTEM (ROLS): A COMPARISON OF THE WORK ATTITUDES OF AIRCRAFT MAINTENANCE SPECIALISTS

THESIS

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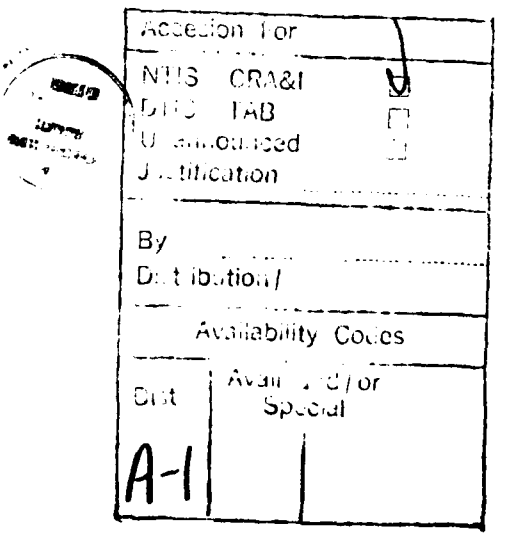

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THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
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Abstract

This study compared the work attitudes of the aircraft maintenance specialists assigned to on-equipment maintenance (OMS), against the work attitudes of the aircraft maintenance specialists assigned to off-equipment maintenance (AMS/FMS) under the Strategic Air Command Readiness Oriented Logistics System (ROLS).

Hackman and Oldham's job characteristics model was used as the basis for the comparison. A modified short-form of the Job Diagnostic Survey was administered to the aircraft maintenance specialists of the 379th Bombardment Wing, Wurtsmith AFB, Michigan. The collected data was analyzed through hypothesis testing using the two-sample t-statistic for two independent samples.

The calculated results show that off-equipment aircraft maintenance specialists perceive a higher degree of task identity, task significance, autonomy, feedback from the job, internal work motivation, growth satisfaction, and a higher motivating potential score. The results were indeterminate if there is a difference in the perceived degree of skill variety, dealing with others, job related satisfaction, and individual growth need strength.

Recommendations for future research highlight the additional use of Hackman and Oldham's job characteristics model to evaluate redesigning specific areas of on- and off-equipment aircraft maintenance specialist's jobs.

STRATEGIC AIR COMMAND
READINESS ORIENTED LOGISTICS SYSTEM (ROLS):
A COMPARISON OF THE WORK ATTITUDES OF
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I. Introduction

General Issue

In August 1985, General Larry D. Welch, then Commander in Chief of the Strategic Air Command (CINCSAC), directed that the following three units develop their own feasible decentralized aircraft maintenance concept: The 92nd Bombardment Wing (BMW), Fairchild Air Force Base (AFB), Washington; the 319th BMW, Grand Forks AFB, North Dakota; and the 410th BMW, K.I. Sawyer AFB, Michigan (26:33). General Welch's purpose for moving towards decentralized aircraft maintenance was to meet increased operational sortie requirements and to increase the flexibility in which to deploy operational units (26:35). These goals were to be accomplished through decentralizing the decision making process, that is, by placing the decision making authority at the lowest possible level. Naisbitt describes decentralization as, "The rebuilding from the bottom up into a stronger, more balanced, more diverse organization which

empowers one to tackle problems and create change at a lower level" (17:103). French explains that decentralization comes from the desire for workers to have greater participation, as well as involvement, in the planning and decision making process (7:604).

The Strategic Air Command (SAC) designated this decentralized aircraft maintenance concept as the Readiness Oriented Logistics System (ROLS). At a meeting chaired by General Welch on 2 June 1986, and attended by Numbered Air Force commanders, the three ROLS units, and members of the SAC staff, specific parts from each of the three developmental decentralized aircraft maintenance concepts were synthesized into one SAC ROLS concept (3:7). From this meeting, the directives for the ROLS concept, SAC Regulation 66-14, Readiness Oriented Logistics System - Maintenance Management Volumes I and II, were developed (1,2). That same Fall, ROLS was implemented at SAC bases with collocated B-52 bomber and KC-135 tanker aircraft. ROLS now exists at all SAC host and tenant aircraft maintenance units (26:33).

One of the main impacts of ROLS to the aircraft maintenance effort has been the permanent placement of aircraft maintenance specialists, enlisted airmen and Noncommissioned Officers (NCOs), to the flightline, or Organizational Maintenance Squadron (OMS). These aircraft maintenance specialists are now solely responsible for repairing on-equipment discrepancies. On-equipment

discrepancies refer to those actions in which the actual maintenance repair takes place at the aircraft. Discrepancies repaired in this category include adjustment and replacement of aircraft assemblies, subassemblies, and core parts to include weapon system servicing. The aircraft maintenance specialists who remained in the Avionics and Field Maintenance Squadrons (AMS/FMS) worked solely off-equipment discrepancies. Off-equipment discrepancies refer to those actions in which the actual maintenance repair takes place in a backshop environment, away from the aircraft. Discrepancies repaired in this category include the calibration, repair, and replacement of damaged or unserviceable assemblies, components, or core parts.

SAC has traditionally structured its aircraft maintenance forces around the centralized organizational concept. General Curtis E. LeMay, upon his appointment as CINCSAC, established the centralized aircraft maintenance concept for SAC in August 1949 (25:92). Because of the operational mission profile and the numbers of large aircraft, the centralized concept was deemed as the most appropriate. The implementing directive was SAC Regulation 66-12, Maintenance Management (25:8).

Prior to the implementation of ROLS, a typical SAC centralized maintenance organization at the wing level was comprised of the following four squadrons. OMS consisted of crew chiefs who were responsible for basic aircraft

servicing. FMS consisted of specialists who were responsible for the structural, fuel, electrical, pneudraulic, propulsion, and egress systems. AMS's specialists were responsible for repairing avionic systems and components such as: Communication, navigation, instruments, auto-pilot systems and where applicable, bombing, fire control, and electronic countermeasures systems. The Munitions Maintenance Squadron (MMS) was responsible for the weapon suspension and release systems, as well as loading and maintaining conventional and nuclear weapons on SAC's bomber force. MMS was not directly affected by the implementation of ROLS and no further thesis research pertains to that squadron.

All four squadrons collectively comprised the maintenance complex lead by the Deputy Commander for Maintenance (DCM) with administrative and technical support from staff agencies. The DCM was responsible for planning, scheduling, controlling, and directing the use of all maintenance resources to meet the mission requirements. Furthermore, the DCM provided direction and guidance for all maintenance activities (1:2-1).

The decentralized maintenance organization of ROLS still retains the same basic structure of squadrons, as well as the DCM's responsibilities and staff agencies. But personnel shifts, due to the separating of specialists, has increased the size of OMS while decreasing the size of AMS

and FMS. Internally, all squadrons were realigned through the consolidation of shops and branches. Specialists assigned to OMS can be consolidated, at the DCM's discretion, into a specialist branch or incorporated into the bomber and tanker branches as separate flights.

Under the centralized maintenance concept, all aircraft maintenance actions requiring the use of specialists on the flightline, were directed by the function of Job Control (JC). JC would dispatch specialists from the backshops of AMS and FMS to work on-equipment discrepancies. If the repair action warranted the removal of a component from the aircraft to the backshop, these same specialists would work the off-equipment discrepancy. With the advent of ROLS and its decentralized maintenance concept, the backshops which had specialists who performed both on- and off-equipment maintenance actions, divided their specialists between themselves (AMS/FMS) and OMS.

This concept has developed into OMS with its specialists, working on-equipment discrepancies, and AMS/FMS with their remaining specialists, working off-equipment discrepancies. OMS no longer consists solely of crew chiefs, but now contains specialists. The duties of JC no longer call for the directing of maintenance actions on a normal daily basis. The Aircraft Readiness Center (ARC) has replaced JC and is responsible for tracking and monitoring the daily maintenance activities and resources. The

controlling function has been transferred to OMS and its production supervisors on the flightline, hence the concept of decentralized aircraft maintenance.

Purpose of Study

The decision to implement ROLS represents a marked change from the prior established centralized maintenance concept. The use of aircraft maintenance specialists in the ROLS concept has drastically transformed their previous work doctrine. Aircraft maintenance specialists are no longer able to diverse themselves in both on- and off-equipment maintenance actions. These specialists have had their work environments segregated. There are those specialists who work in the ever changing environment of the flightline and others who work in the controlled environment of the backshops. The aircraft maintenance specialists who were divided between on- and off-equipment, incurred the most dramatic changes of any group of aircraft maintenance personnel that were involved with the ROLS process.

Since the implementation of ROLS, the comparison of the work attitudes of aircraft maintenance specialists have never been officially documented. A literature review on the subject of ROLS has produced research papers detailing the development of the ROLS concept, but none compare the work attitudes of the aircraft maintenance specialist under the ROLS concept. In June 1990 a study was concluded by the Air Force Logistics Management Center (AFLMC) at Gunter AFB,

Alabama on ROLS. This study was sponsored by Headquarters SAC/LG and managed by AFLMC/LGM. The AFLMC study focused on ascertaining the attitudes of maintenance personnel in regards to efficiency, teamwork, availability of resources, level of decision making, and NCO strength under ROLS. The sample population used for the research effort was derived from four Air Force Bases and encompassed only those OMS maintenance personnel responsible for on-equipment maintenance (19:2).

In contrast, this thesis is focused on comparing the work attitudes of the aircraft maintenance specialists assigned to on-equipment maintenance, versus those aircraft maintenance specialists assigned to off-equipment maintenance under the ROLS concept; rather than towards ascertaining the current overall "grass roots" perception of ROLS. The AFLMC sample population contains only those maintenance personnel from OMS, whereas the sample population for this thesis encompasses not only OMS, but also AMS and FMS. Strategic aircraft maintenance technicians (crew chiefs) were the main focus of the AFLMC study, whereas in this thesis, crew chiefs are not part of the sample population. Furthermore, the data collected in this thesis was analyzed through hypothesis testing. In contrast, hypothesis testing was not conducted by AFLMC.

With a large number of aircraft maintenance specialists involved in sophisticated and critical maintenance tasks,

their work attitudes can have a direct bearing on the productivity and success of a maintenance organization. By comparing these work attitudes through the job characteristics model developed by Hackman and Oldham, a determination can be made if ROLS has had an impact on the work attitudes of aircraft maintenance specialists either as a whole or as separate on- and off-equipment entities. The job characteristics model is a useful tool for understanding employee's work attitudes (4:250).

Specific Problem

The specific purpose of this thesis research is to compare, under the ROLS concept, the work attitudes of the aircraft maintenance specialists assigned to on-equipment maintenance (OMS), against the work attitudes of the aircraft maintenance specialists assigned to off-equipment maintenance (AMS/FMS). The research objectives examined were twofold:

1. What are the work attitudes of the aircraft maintenance specialists assigned to on-equipment maintenance in OMS under the ROLS aircraft maintenance concept?

2. What are the work attitudes of the aircraft maintenance specialists assigned to off-equipment maintenance in AMS and FMS under the ROLS aircraft maintenance concept?

Research Hypotheses

ROLS was implemented to meet increased operational sortie requirements and to increase the flexibility in which to deploy units. One way to help maximize the success for attaining these goals, is through strong and positive work attitudes. Based on that premise this research will, under the ROLS concept, compare the work attitudes of on- and off-equipment aircraft maintenance specialists.

The following eleven hypotheses will be used to evaluate the thesis research objectives on work attitudes:

Hypothesis one: On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of skill variety under the ROLS aircraft maintenance concept.

Hypothesis two: On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of task identity under the ROLS aircraft maintenance concept.

Hypothesis three: On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of task significance under the ROLS aircraft maintenance concept.

Hypothesis four: On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of autonomy under the ROLS aircraft maintenance concept.

Hypothesis five: On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of feedback from the job under the ROLS aircraft maintenance concept.

Hypothesis six: On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of dealing with others under the ROLS aircraft maintenance concept.

Hypothesis seven: On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of job-related satisfaction under the ROLS aircraft maintenance concept.

Hypothesis eight: On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of internal work motivation under the ROLS aircraft maintenance concept.

Hypothesis nine: On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of growth satisfaction under the ROLS aircraft maintenance concept.

Hypothesis ten: On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of individual growth need strength under the ROLS aircraft maintenance concept.

Hypothesis eleven: On-equipment and off-equipment aircraft maintenance specialists will obtain differing degrees of motivating potential scores under the ROLS aircraft maintenance concept.

Limitations of Study

In conducting this thesis research, the following limitations applied. Only those aircraft maintenance specialists whose Air Force Specialty Code (AFSC) was mandated by directives governing ROLS to segregate into on- and off-equipment maintenance, are used as part of the sample population. Strategic aircraft maintenance technicians (crew chiefs) from OMS, MMS maintenance personnel, and other maintenance complex support personnel are not included in the sample population. The particular AFSCs used in the sample population, and the squadrons they are assigned to, are listed below by both the converted AFSC and the old AFSC:

1. Avionics Guidance and Control Systems - AMS, OMS (new; 455X1B old; 325X0, 325X1, 328X4)
2. Communication and Navigation Systems - AMS, OMS (new; 455X2B old; 328X0, 328X1, 328X4)
3. Bombing-Navigation Systems - AMS, OMS (new; 456X0 old; 321X0)
4. Defensive Fire Control Systems - AMS, OMS (new; 456X2A old; 321X1E)
5. Electronic Warfare Systems - AMS, OMS (new; 456X1A old; 328X3)
6. Aerospace Propulsion - FMS, OMS (new; 454X0A, 454X0B old; 426X2, 426X3)
7. Aircraft Pneudraulic Systems - FMS, OMS (new; 454X4 old; 423X4)
8. Strategic Electrical and Environmental Systems - FMS, OMS (new; 454X5 old; 423X0, 423X1). (16)

This thesis does not research any affect that ROLS may have towards maintenance actions such as: The number of aircraft in fully mission capable status, the amount of aircraft aborts, the number of cannibalization actions, or any other measure dealing with production performance.

II. Literature Review

Overview

The literature reviewed for this thesis is divided into three major sections. The first section highlights literature and research pertaining to the development of ROLS. This review entailed literature describing the concept of ROLS, research conducted on ROLS, and the governing regulations for ROLS. The second section presents the studies conducted by Hackman and Oldham on their job characteristics model, including its limitations. The final section describes previously completed theses in the aircraft and missile maintenance enlisted career fields, which used a similar research concept and methodology as employed in this thesis.

Literature on ROLS

Only a few documents on the subject of ROLS have been published and primarily contribute information on the development of ROLS. One paper by Doran and two papers by Voveris, specifically explain the background into why and how ROLS was developed. Doran, in his paper, explains the development of ROLS that occurred through the testing of various concepts by the three Air Force units previously identified in Chapter One. The decentralized maintenance concept employed by each unit is examined in detail to

compare and contrast organizational structure and principles of operation (3:7-8).

Fairchild AFB organized into two Aircraft Maintenance Units (AMU) by dividing its bomber and tanker fleet, along with its aircraft maintenance specialists. These specialists were divided into on- and off-equipment as well as further subdivided among the AMUs. Grand Forks AFB established bomber and tanker maintenance units. Specialists were also divided between on- and off-equipment. The third concept test unit, K.I. Sawyer AFB, allowed the bomber and tanker branches to remain as previously organized. Specialists in both AMS and FMS were separated into on- and off-equipment, but still retained in their respective backshop squadrons as separate flightline branches (3:7-8).

The original principles that governed the ROLS concept were as follows:

1. Large specialist shops with a heavy flightline workload will be assigned to OMS.
2. OMS branch and flight chiefs are responsible and accountable for maintenance production.
3. Production Control functions in AMS and FMS are dissolved; shop chiefs are responsible for shop production.
4. Each bomber and tanker branch will have a minimum of two flights.
5. OMS specialists dispatch will be located on the flightline.
6. The maximum possible number of senior supervisors will be moved to the flightline. (3:8)

The ROLS concept was formed by combining those parts from the developmental units that provided the best

environment for these principles to succeed in. With the development of the SAC ROLS concept, Doran details the basic structure of a standard maintenance complex (3:8-10). Although variations do exist, Chapter One provided an outline of a standard ROLS maintenance complex. The conclusion of Doran's paper explains some of the benefits to be gained through ROLS; increased efficiency, better teamwork, and more resources on the flightline. He states that the command emphasis is on allowing units the organizational flexibility to meet their mission requirements (3:10).

A paper written during the same period as Doran's by Voveris, also provides information to the formation of SAC's decentralized maintenance concept. Voveris' paper contains the same information as Doran's paper, although it does not provide the high level of detail. However, Voveris' paper does highlight the level of flexibility the DCM now has in organizing the maintenance complex. She concludes by stating that due to the dynamic nature of the ROLS structure, the first few years will be laced with continuing changes in order to improve ROLS (27:7). This provides the impetus for her follow-up paper.

Voveris' second paper, eighteen months later, was a duplication of Doran's paper with all its details and highlights. This was accomplished because her second paper was published in a different journal than Doran's original

paper and the repeated information was necessary to establish the foundation for the last section of her paper. This last section contained an update on the status of ROLS, now that two years had passed since its full implementation.

Voveris explains how units have gravitated towards a basic structure and organizational philosophy. She then highlights increased maintenance production performance as well as serious difficulties with personnel and training shortfalls. Voveris states that ROLS was not initiated, "As a cost savings or efficiency model," and that the decentralized maintenance concept, "Is more manpower and equipment intensive" (26:35). Neither the increased production performance nor the shortfalls of personnel and training are part of this thesis research.

The next two papers in this literature review are from the United States Air Force's Professional Military Education programs and provide a historical insight to the development of SAC's aircraft maintenance organizational structure. Taylor's Air Command and Staff College paper explores the history of SAC, from World War II through the Vietnam conflict, to determine a doctrine for its aircraft maintenance. Taylor's research does not provide any additional ROLS development information, but does provide insight into its relationship with combat support doctrine.

Taylor states that, "The concepts of ROLS are congruent with the historical and doctrinal foundations for organizing

aircraft maintenance to support SAC forces" (23:20). Taylor further explains that ROLS is especially congruent with four principles of war; command unity, objective, security, and logistics. He explains that ROLS provides the organizational structure for flexibility, mobility, and readiness and that ROLS emphasizes three combat support doctrine principles: Leadership, effectiveness, and synchronization (23:20). Taylor concludes his doctrinal analysis of ROLS by stating that, "The aim of ROLS is to perform the basic combat support processes of maturation, integration, preservation, and restoration" (23:22).

In an Air War College paper written by Reiter, he describes the development of different aircraft maintenance organizational concepts that existed, and exist in the United States Air Force today, along with the future direction for these concepts. These organizational concepts consist of primarily two types, centralized and decentralized. Reiter explains how each major command developed and used both the centralized and decentralized maintenance concepts during different time periods of their own development (20:33). In regards to the ROLS concept, Reiter uses Voveris' paper as a reference to briefly explain the structural organization of the maintenance complex and the changes that ROLS has created (20:30-32).

As described in Chapter One, LMDC was contracted by SAC/LG to survey and measure the attitudes towards ROLS from

the perspective of its maintenance personnel (19:1). The survey was administered to OMS maintenance technicians at the following SAC bases: 319th BMW Grand Forks AFB, North Dakota; 416th BMW Griffis AFB, New York; 384th BMW McConnell AFB, Kansas; 19th Air Refueling Wing Robins AFB, Georgia (19:1). The survey instrument used was developed by LMDC and The United States Air Force Military Personnel Center specifically for this study. Neither verification nor validation information was supplied with the report. The survey was divided into four major parts: Job satisfaction, supervisor and subordinate work relationships, comparison of aircraft maintenance before and after ROLS, and general comments on ROLS (19:1).

The results of the study conducted by LMDC reported positive attitudes towards efficiency, teamwork, and availability of resources under ROLS. However, the results also indicated that a problem exists in executing effective decisions. Respondents perceived poor decision making due to the level at which the decision was made, or the experience of the decision maker. In addition, the survey also highlighted a perceived negative bias towards opportunities for promotion and advancement (19:5). Recommendations towards additional decision management training and research into the perceived promotion disparity were highlighted in the study.

The governing regulation which provides policy and procedures for ROLS is SAC Regulation 66-14, Readiness Oriented Logistics System - Maintenance Management volumes I and II. This regulation covers general policy, squadron maintenance, and DCM staff activities by providing a broad management framework for DCM's to adjust procedures to compensate for mission, facilities, and geographical differences of the unit under command (1:i). All phases of the maintenance complex's organization, structure, and responsibilities are outlined in detail throughout the sections of the regulation. The past four years of refining and reshaping the ROLS concept is evident in the development of this regulation. The ROLS regulation has transitioned from the original draft, in which wide general guidance was given, through a more structured, and in some parts nonflexible version, to the most recent modified version which allows the unit to tailor itself to the mission.

Literature on Hackman and Oldham's Model

The job characteristics model was developed by Hackman and Oldham in 1974 as a basis to study those attributes that are built into a job which create conditions for high work motivation, satisfaction, and performance. The model is further used to study work attitudes and the jobs themselves to determine if a job redesign would derive benefits for both the employer and employee. It is understood by Hackman and Oldham that people will respond differently to the same

job (12:59). This thesis uses the model only as a basis for a comparison study among two sample populations with regards to the separate job characteristics, and not as a method to determine job redesign as the model highlights.

The origins of the job characteristics model belong to studies conducted by Turner and Lawrence (24). Their work looked at specific attributes of tasks and how employees reacted to their work. The attributes studied by Turner and Lawrence consisted of task variety in the work being performed, the level of employee autonomy, the amount of interaction, and the level of knowledge and skill involved (12:59). Turner and Lawrence predicted that the higher the level in which these attributes were present in a job, the more satisfied an employee would be. Additional work was conducted by Hackman and Lawler regarding the work attitudes of employees of a telephone company (9). They used the job characteristics of variety, task identity, autonomy, and job-based feedback in their study and predicted that those jobs which scored high in these areas would provide the workers with a positive, self-generated level of satisfaction (12:60).

The basic job characteristics model, as described by Hackman and Lawler, shows that, "Five 'core' job characteristics are seen as prompting three critical psychological states which, in turn, lead to a number of beneficial personal and work outcomes" (11:255). The links

between the core job dimensions and the critical psychological states, and between the critical psychological states and the personal and work outcomes, are shown as moderated by individual growth need strength (11:255). The model asserts that people with high growth needs are more likely to experience the critical psychological states when their jobs are relatively high in scope than are people with less strong growth needs. Also, high growth need strength people are more likely to react favorably to the critical psychological states (8:39). These relationships are displayed in Figure 1, Relationship Among Core Job Dimensions, Critical Psychological States, and Personal and Work Outcomes.

The three psychological states are the casual core of the model and are postulated as critical in affecting a person's motivation and satisfaction on the job as defined below:

> Experienced meaningfulness of the work: The degree to which the individual experiences the job as one which is generally meaningful, valuable, and worthwhile.
> Experienced responsibility for work outcomes: The degree to which the individual feels personally accountable and responsible for the results of the work that he or she does.
> Knowledge of results: The degree to which the individual knows and understands, on a continuous basis, how effectively he or she is performing the job. (11:257)

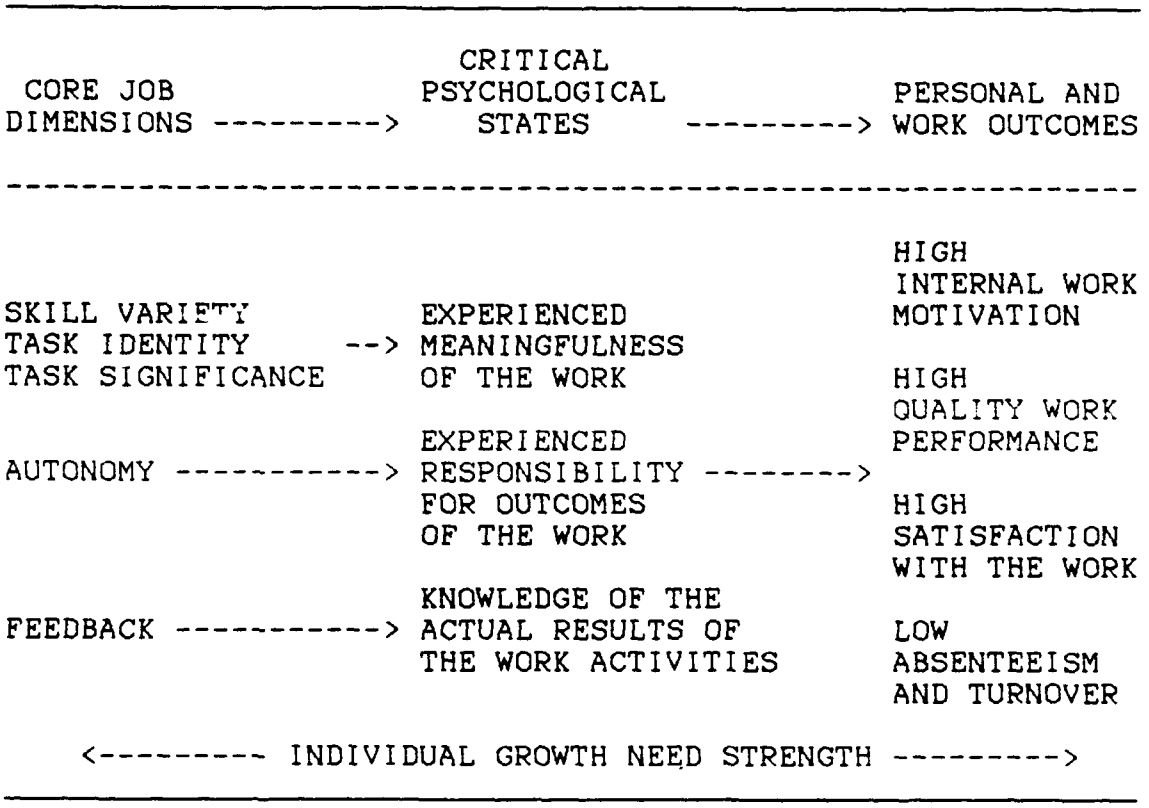

FIGURE 1

RELATIONSHIP AMONG CORE JOB DIMENSIONS, CRITICAL PSYCHOLOGICAL STATES, AND PERSONAL AND WORK OUTCOMES (13:58)

The more that these conditions are present, the more people feel good about themselves when they perform well and these good feelings will prompt the worker to continue to do well so as to obtain the same positive feelings in the future (13:58). The model claims that:

> Internal rewards are obtained by individuals when they learn (knowledge of results) that they personally (experienced responsibility) have performed well on a task that they care about (experienced meaningfulness). (11:256)

Of the five core job characteristics, three contribute to the experienced meaningfulness of the work. They are defined as follows:

> Skill variety: The degree to which a job requires a variety of different activities in carrying out the work, which involves the use of a number of different skills and talents of the employee.
> Task identity: The degree to which the job requires the completion of a 'whole' and identifiable piece of work, doing the job from the beginning to the end with a visible outcome.
> Task significance: The degree to which the job has a substantial impact on the lives or work of other people whether in the immediate organization or in the external environment. (12:78-79)

These three job characteristics are important for experiencing meaningfulness in a job. If the job contains a high degree of all three, then a worker is most likely to experience the job as meaningful. However, not all three job characteristics need to be of a high level. A worker could still experience meaningfulness in the job if just one of these three job characteristic is perceived as high enough (13:59).

The job characteristic that contributes towards experienced responsibility for work outcomes is defined as follows:

> Autonomy: The degree to which the job provides substantial freedom, independence, and discretion to the employees in scheduling their work and in determining the procedures to be used in carrying it out. (12:79)

Through autonomy, an individual will view the work outcomes as depending on their own initiatives and decisions rather than from those of a supervisor or provided in the form of technical data.

The final job characteristic contributes towards knowledge of results and is defined as follows:

> Feedback from the job: The degree to which carrying out the work activities required by the job results in the employees obtaining information about the effectiveness of their performance. (12:80)

Feedback is most powerful when it comes from the work activity itself in a continuous manner and not from a supervisor or co-worker who collects data and makes a judgement on the work performed.

Hackman and Oldham established an index which combined the results from the five core job characteristics. This index reflects the overall potential of the job to prompt self-generated work motivation on the part of job incumbents

(12:81). The combination of the five job characteristics scores resulted in the following arithmetic formula defined as the Motivating Potential Score (MPS): (12:81)

$$MPS = \frac{(SKILL\ VARIETY + TASK\ IDENTITY + TASK\ SIGNIFICANCE)}{3} \times AUTONOMY \times FEEDBACK$$

A low score in either autonomy or feedback will significantly reduce the overall MPS, whereas a low score in any of the three experienced meaningfulness of the work attributes alone, will not significantly lower the MPS. The MPS provides a single summary index of the degree to which the objective characteristics of the job will prompt high internal work motivation (13:59). The MPS scale ranges from a low of 1 to a high of 343.

Studies conducted on the job characteristics model are supportive of its theoretical foundation and predictions. Hackman and Oldham summarize two result as follows:

> People who work on jobs high on the core job characteristics are more motivated, satisfied, and productive than people who work on jobs that score low on these characteristics.
> Responses to jobs high in objective motivating potential are more positive for people who have strong needs for growth than for people with weak needs for growth. (12:97)

Hackman and Oldham recognize particular limitations in their job characteristics model. They state that:

> While there is support in the research literature for the basic job characteristics model, it would be inappropriate to conclude that the model provides a correct and complete picture of the motivational effects of job characteristics. (12:97)

Also, Hackman and Oldham highlight that the model only deals with those aspects that can be redesigned to create a positive motivational incentive for workers. The model does not interact directly with dysfunctional aspects of repetitive work (12:61). In addition, the job characteristics model does not address the social, technical, and situation factors that affect work systems. The model focuses on jobs which workers do independently and not as interacting work group members (12:61).

One criticism of the model is that it is lacking in any dimension of time. Jobs which are perceived as motivating at the present period, may not be perceived as motivating in the future after several months, or years, of worker expectation for career advancement. Conversely, jobs which are perceived as being low, based on the core job characteristics, may be tolerated and performed well because they are seen as necessary for future career advancement (8:69).

Despite the limitations and criticism highlighted in the previous paragraphs, the job characteristics model is still useful in the study of job measurement and redesign. The model provides a proven technique for conducting a comparative study based on its identified job characteristics as implemented in this thesis.

Literature From Previous Theses

The following review of previously completed theses in the aircraft and missile maintenance enlisted career fields will center around their use of the job characteristics model in studying work attitudes. None of the theses reviewed used the identical methodology as applied in this thesis, but portions of these theses helped shape and define the methodology employed. The results and recommendations that were annotated in these theses are not of concern for they do not directly apply to the research questions posed by this thesis, hence they will not be outlined.

A thesis by Foster and Olson provided a comparative study of the effects on the maintenance performance of a unit and the work behaviors and attitudes of assigned maintenance personnel under the Production Oriented Maintenance Organization (POMO) (6:15). POMO was a decentralized maintenance concept established by the United States Air Force Tactical Air Command. The portion of the thesis that studied the personal attitudes of aircraft maintenance personnel was the focus for reviewing its content. Foster and Olson's thesis did not use the same survey instrument, although some questions were the same as those employed by this thesis' survey instrument. These questions mainly pertained to areas of the job characteristics model that measures work group effectiveness and job-related satisfaction (6:19-20). The review of this

thesis provided insight into those areas of work attitudes and their application to an aircraft maintenance organization in a decentralized maintenance concept.

Flynn's thesis used the job characteristics model to investigate work redesign for three of SAC's aircraft maintenance enlisted career fields (5:5). One of the career fields, Bombing-Navigation Systems, was also evaluated in this thesis. The thesis explored the use of job enrichment as a tool for increasing the job satisfaction, motivation, and performance of aircraft maintenance technicians (5:6). In a thesis written by Price, he too used the job characteristics model to research SAC missile maintenance enlisted career fields. His overall objective was to determine whether a job enrichment program could enhance both the quality of work life and the individual's work motivation (18:10).

Both Flynn and Price utilized the same model, job characteristics, and general survey instrument as was used in this thesis. Their literature reviews provided additional sources pertaining to the job characteristics model and its associated questionnaire, as well as providing a comparative format. Price and Flynn's use of the job characteristics model and survey instrument was to evaluate specific enlisted career fields and, where necessary, make recommendations for work redesigns. Whereas this thesis employs the same model and survey instrument for a

comparative study on the work attitudes of two sample populations of aircraft maintenance specialists, it does not address the subject of work redesign.

The final thesis addressed in this literature review was a comparative study on the job satisfaction of senior NCOs in decentralized versus centralized aircraft maintenance organizations (22:4). Snyder's thesis was of interest due to the fact that it was comparing the means of two population samples by way of hypothesis testing. The statistical analysis performed on the data is the same structure as used for this thesis and his methodology portion provided additional insight into the procedure of hypothesis testing.

Summary

This chapter was divided into three sections which reviewed relevant literature pertaining to this thesis. The first section highlighted those papers which addressed the subject of ROLS. These papers mainly dealt with the development of ROLS, research conducted on ROLS, and the governing regulations. The second section described Hackman and Oldham's job characteristics model. The information presented in this section established the basic model for the comparative study conducted in this thesis. The last section reviewed those theses which used the job characteristics model and a similar methodology as employed in this thesis.

III. Methodology

Overview

This chapter is structured into four sections. The first section describes the sample population used for data collection. The AFSCs and the Air Force Base where the data was obtained are described. The second section describes the survey instrument, which was administered by this researcher, in detail as well as its validity.

The third section identifies the concepts which the survey instrument measured and what these concepts pertained to. The four major parts that the concepts represented are:

1. The measure of the job's objective characteristics.
2. The effective reactions or feelings employees get from working on their job.
3. The individual growth need strength of the employee.
4. The motivating potential score of the individual.

The last section describes the statistical technique and computer application that were used in analyzing the data and solving the hypotheses statements.

Data Collection: The Sample Population

In order to compare the work attitudes of aircraft maintenance specialists, data was required from an aircraft

maintenance organization after ROLS had been firmly established. The Job Diagnostic Survey (JDS) provided the means for collecting the data needed for this post-ROLS evaluation, that is, the time period after the implementation of ROLS in 1986. The JDS will be described in the next section. The following paragraphs detail the sample population for this thesis.

The sample population consisted of those aircraft maintenance specialists whose AFSC's were segregated into on- and off-equipment maintenance per ROLS directives. The survey was personally administered by the researcher to the aircraft maintenance specialists assigned to the 379th BMW (Heavy), Wurtsmith AFB, Michigan on 21-23 March 1990. This sample population was chosen because of the researcher's experience with and knowledge of the Wurtsmith AFB aircraft maintenance community, thereby increasing the probability for a large percentage of survey completions. With the implementation of ROLS occurring three and one-half years prior to the administering of the research questionnaire, the initial turmoil created through ROLS has tended to stabilize, thereby increasing the accuracy of the responses.

The following paragraphs provide a general description, as outlined in SAC Regulation 66-14, of the particular aircraft maintenance specialists and the squadrons in which they are assigned, that comprised the sample population.

1. Avionics Guidance and Control Systems Specialists, AMS and OMS.

Maintains instruments, instrument systems, attitude reference systems, flight director systems, fuel savings advisory/cockpit avionics systems, fuel quantity systems, auxiliary flight reference systems, pitot/static systems, periscope sextant systems, attitude heading and gyroscope systems, flight control augmentation systems, compass systems, flight load data recording systems, and automatic flight control systems. (2:2-16)

2. Communication and Navigation Systems Specialists, AMS and OMS.

Maintains aircraft communication and navigation systems and components. Special responsibilities include maintenance of radar altimeters, radio altimeters, search, weather, and rendezvous radars, identification friend or foe and mark XII systems, automatic direction finding, direction finding, instrument landing system, microwave landing system, doppler radar, tactical air navigation systems, VHF omni range systems, airborne radio systems, radar and rendezvous beacons, Air Force satellite communication systems, intercommunication systems, airborne public address systems, crash position indicating system, secure voice system, and global positioning system. (2:2-17)

3. Bombing-Navigation Systems Specialists, AMS and OMS.

Maintains the offensive avionics system, terrain avoidance system, electro-optical viewing system, and airborne photographic systems to include vertical strike, radar recording, and video recorders. (2:2-16)

4. Defensive Fire Control Systems Specialists, AMS and OMS.

Maintains the defensive fire control system components such as turrets, turret mounted guns, computers, receivers-transmitters, electrical power supplies, compressors, and ammunition chutes. (2:2-16)

5. Electronic Warfare Systems Specialists, AMS and OMS.

Maintains the B-52 bomber's electronic countermeasures systems, components, and configuration. (2:2-16)

6. Aerospace Propulsion Specialists, FMS and OMS.

Provides maintenance capability for propulsion units and propulsion unit components, including aircraft APUs. Completes engine removal, installation, inspection, repair, test, adjustment, trim, conditioning, and component replacement. (2:2-17)

7. Aircraft Pneudraulic Systems Specialists, FMS and OMS.

Accomplishes maintenance on aircraft pneudraulic systems including engine mounted hydraulic pumps, B-52 stability augmentation system and KC-135 series power rudder system, yaw damper system, and air refueling system. (2:2-17)

8. Strategic Electrical and Environmental Systems Specialists, FMS and OMS.

Accomplishes maintenance on aircraft electrical systems and electrical distribution systems, oxygen, environmental, pneumatic, installed fire extinguishing, vacuum and bleed air systems, and their components. (2:2-17)

A total of one-hundred and seventy-seven surveys were completed to acceptable standards. Data was gathered from sixty-four specialists assigned to AMS and thirty-two specialists assigned to FMS. These two separate populations combined to form a total off-equipment sample population of ninety-six. OMS had eighty-one respondents which comprised the on-equipment sample population. The active duty grade of the respondents ranged from Airman to Senior Master

Sergeant. A detailed analysis of the sample population is provided in Appendix C, Sample Population Demographics.

Data Collection: The Survey Instrument

Collecting data for post-ROLS was accomplished by using a modified version of the Task Characteristics and Job Attitude Questionnaire. This questionnaire is comprised of two parts. The first part consists of a modified short-form JDS divided into five sections containing a total of thirty-five questions, which are designed to measure relevant variables in the job characteristic survey. The second part consists of nine brief items designed to provide demographic characteristics. The original short-form JDS was revised by the researcher to contain only those items required to supply the appropriate data for testing the hypotheses. The actual wording and organization of the selected items was not altered, and all questions necessary to measure an individual job characteristic were included in the survey. This action allowed the survey used in this thesis to retain the same reliability and validity as that of the original short-form JDS. Appendix A, Research Questionnaire, contains the survey instrument used in this thesis while Appendix B, Research Questionnaire Scoring Key, contains the scoring key for the survey.

The JDS was developed by Hackman and Oldham for use in the study of job redesign. It is intended to be used both prior to, and after work redesign efforts, for a comparative

measure on the effects of change agents. The JDS provides a measure of each of the job characteristics concepts as well as several additional measures of respondents' reactions to their work. The JDS was first described by Hackman and Oldham based on previous methodologies developed by Turner and Lawrence and by Hackman and Lawler (24,10). The JDS was rigorously revised over a period of three years and its various forms have undergone scrutiny by those who have analyzed the retrieved data. These actions have shaped the survey while still retaining many of the original scales and items. The JDS is the most widely used questionnaire in task design research and as such, much information exists pertaining to its reliability and validity. Although the principle use of the JDS is in the study of job redesign, it provides a solid base for comparative studies such as that undertaken in this thesis.

Each of the five main job characteristic variables are measured in two different sections of the JDS and by questions written in two different formats. The first part of the JDS is structured with a scale ranging from 1, indicating a strong dissatisfaction or disagreement, to 7, indicating a strong satisfaction or agreement, for use by the respondents when answering the questions. The JDS does not measure the three psychological states previously described in Chapter Two; experienced meaningfulness of the work, experienced responsibility for work outcomes, and

knowledge of results. However, these three states do not need to be directly measured to answer the research questions put forth. The JDS also provides a measure of the number of personal and affective reactions or feelings a person obtains from performing the job (10:162). Growth satisfaction reports directly how satisfied, or dissatisfied, employees are with various aspects of their jobs (10:162). The measured concepts of the JDS are defined in the next section.

The validity of the JDS has been measured throughout its development with the previously mentioned improvement efforts aimed at strengthening it. Hackman and Lawler report that, "In general, the results suggest that both the internal consistency reliability of the scales and the discriminant validity of the items are satisfactory" (10:164). In the area of substantive validity, the variables measured by the JDS relate to one another generally as predicted by the job characteristics model. Furthermore, objectivity measures of the JDS show that a moderate level of convergence and intercorrelations are generally satisfactory (10:168).

Analysis of the validity of the JDS performed by other researchers has revealed shortcomings in this area. Studies have determined that the extent in which the survey is measuring the five core characteristics is not known (8:83). Griffin states that since the comparative data for

respondent is based on individual perceptions and obtained at the same time by the same method, there is the danger that statistical relationships may be artificially inflated (8:84). A second shortcoming noted by Griffin was the dimensional instability of the JDS. The extent to which the JDS actually is measuring specific characteristics seems to vary across settings (8:84).

There are a number of cautions in the use of the JDS that Hackman and Oldham highlight. Where possible, the negative affects from these cautions have been carefully controlled so as not to invalidate the data collection process of this thesis. Respondents must have higher than an eighth grade education with the ability to read english at a moderately literate level. The JDS is readily faked and it must be emphasized to the respondents that the data they provide accurately reflects the objective characteristics of the jobs and their personal reactions to them. It is also best when the survey is taken under the conditions of anonymity on the bases of the respondents (10:169). A limitation of the JDS is that the job dimensions are moderately positively intercorrelated. Hackman and Oldham realize this limitation and state that good jobs are often good in many respects, and bad jobs are generally bad in many job characteristics. However, this limitation does not detract from the results as long as they are accounted for in interpreting the data (10:166).

The Measured Concepts

The JDS will be used to measure the following concepts structured into four parts. The first part will measure the objective characteristics of the job itself. These include:

1. Skill variety: The degree to which a job requires a variety of different activities in carrying out the work, which involves the use of a number of different skills and talents of the employee.
2. Task identity: The degree to which the job requires the completion of a "whole" and identifiable piece of work, doing the job from the beginning to the end with a visible outcome.
3. Task significance: The degree to which the job has a substantial impact on the lives or work of other people whether in the immediate organization or in the external environment.
4. Autonomy: The degree to which the job provides substantial freedom, independence, and discretion to the employees in scheduling their work and in determining the procedures to be used in carrying it out.
5. Feedback from the job: The degree to which carrying out the work activities required by the job results in the employees obtaining information about the effectiveness of their performance.
6. Dealing with others: The degree to which the job requires the employee to work closely with other people in carrying out the work activities. (10:161-162)

The second part measures the private, effective reactions or feelings employees get from working on their job. These include:

1. Job-related satisfaction: The overall measure of the degree to which the employees are satisfied and happy in their work.
2. Internal work motivation: The degree to which the employee is self-motivated to perform effectively on the job.
3. Growth satisfaction: The degree to which an employee perceives the opportunity for personal growth and development on the job. (10:162)

The third part measures the individual growth need strength.

> This scale taps the degree to which the employees have strong versus weak desire to obtain 'growth' satisfaction from their work. (10:163)

The last part uses the measured results from five of the objective characteristics of the job itself and computes the MPS.

> This scale reflects the potential of a job for eliciting positive internal work motivation on the part of employees, especially those with high degree for growth need satisfaction. (12:306)

Statistical Analysis

The statistical analysis method used to solve the hypotheses and subsequently to answer the research questions, is the two-sample t-statistic for two independent samples. This method is a powerful parametric test used to compare two population means. The Statistical Analysis System (SAS), which is a statistical software package installed on the Air Force Institute of Technology's (AFIT) Digital Equipment Corporation VAX/VMS 8550 superminicomputer, was used to compare the two sample population means (21). SAS computes two-tailed two-sample t-statistic tests for sample populations of both equal and unequal variances. These tests are the pooled t-statistic test and the separate-variance t-statistic test, respectively. Results from both techniques were used in this thesis and are explained in the following paragraphs.

For the two-sample pooled t-statistic test, SAS constructs a pooled sample estimator of the population variance for use in calculating the test statistic. The following assumptions must apply in order for the test to be valid:

> 1. Both sampled populations have relative frequency distributions that are approximately normal.
> 2. The population variances are equal.
> 3. The samples are randomly and independently selected from the populations. (15:434)

For the two-sample separate-variance t-statistic test, SAS uses the separate sample variances rather than a pooled variance for use in calculating the test statistic. All the previous assumptions, except for number two, must apply in order for the test to be valid.

For each test statistic generated by SAS, the degrees of freedom and p-value are also calculated. A p-value, or the observed significance level, is defined by McClave and Benson as:

> The p-value for a specific statistical test is the probability of observing a value of the test statistic that is at least as contradictory to the null hypothesis, and as supportive of the alternative hypothesis, as the one computed from the sample data. (15:382)

A significance level of 0.05, which allows for a 95% confidence level, was used throughout the two-tailed hypothesis testing.

The null hypothesis, the hypothesis to be rejected, states that the population mean of the off-equipment aircraft maintenance specialist's data equals, or shows no

difference from, the population mean of the on-equipment aircraft maintenance specialist's data. The alternative hypothesis, the one to be confirmed, states that the population mean of the off-equipment aircraft maintenance specialist's data does not equal, or does show a difference from, the population mean of the on-equipment aircraft maintenance specialist's data.

The analysis of the two-sample t-statistic test for each hypothesis allowed an inference to be made regarding a comparison of the aircraft maintenance specialist's work attitudes under the ROLS concept. The inference from each of these hypothesis tests then enabled an overall inference to be made on the comparison of the work attitudes of aircraft maintenance specialists under the ROLS concept.

Summary

This chapter has provided information on the methodology used in this thesis. Specific sections in this chapter outlined the AFSCs that composed the sample population as well as where and when the survey instrument was administered. The survey instrument, the JDS, was also detailed to highlight its development, structure, reliability, validity, and limitations. The eleven measured concepts were described in detail in the third section of this chapter. The final section described the statistical analysis method that was used to determine the acceptance or rejection of each hypothesis.

IV. Results and Analysis

Overview

This chapter is separated into eleven main sections which describe the results of the hypotheses put forth in Chapter One. Each section will begin with a restatement of the specific hypothesis followed by an overview of the particular job characteristic which is being compared, or in the case of hypothesis eleven, the MPS. Next, the items that pertain to each job characteristic are highlighted along with their number from the questionnaire. Each item was combined as specified in Appendix B, Research Questionnaire Scoring Key, to determine the appropriate sample population means. The results of the statistical analysis are then displayed in tabular format; containing both the descriptive statistics and the two-sample t-statistic test results. Each section is concluded with a determination of either the failure to reject the null hypothesis or rejecting the null hypothesis and hence, accepting the alternative hypothesis as highlighted in Chapter Three. Appendix D, Research Questionnaire Data, contains a complete breakout, by squadron as well as by on- and off-equipment sample populations, for each of the thirty-five items presented in the questionnaire.

Hypothesis One

On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of skill variety under the ROLS aircraft maintenance concept.

The job characteristic of skill variety pertains to the degree in which a variety of different activities, along with a number of different skills and talents of the employee, are used in carrying out the job. The questions presented below ask the respondent to objectively indicate the degree of how accurate the item is in describing their job. The statistical analysis for hypothesis one is displayed in Table 1.

4. How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?
7. The job requires me to use a number of complex or high-level skills.
11. The job is quite simple and repetitive.

TABLE 1

HYPOTHESIS ONE: STATISTICAL ANALYSIS

SAMPLE POPULATION	NUMBER	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
ON-EQUIPMENT	81	4.926	1.278	1.333	7.000
OFF-EQUIPMENT	96	5.066	0.913	2.333	7.000

VARIANCES	T-STATISTIC	DEGREES FREEDOM	P-VALUE
UNEQUAL	0.825	141.7	0.411
EQUAL	0.848	175.0	0.398

Using a significance level of 0.05, the p-values obtained conclude that the null hypothesis cannot be rejected. That is, at this chosen level of significance, it is indeterminate if there is a difference in the perceived degree of skill variety among on- and off-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept.

Hypothesis Two

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of task identity under the ROLS aircraft maintenance concept.

The job characteristic of task identity is the degree to which the job requires the completion of a 'whole' and identifiable piece of work. The employee perceives that they are doing a job from the beginning to the end with a visible outcome. The questions presented below ask the respondent to objectively indicate the degree of how accurate the item is in describing their job. The statistical analysis for hypothesis two is displayed in Table 2.

3. To what extent does your job involve doing a 'whole' and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other people or by automatic machines?
9. The job is arranged so that I do not have the chance to do an entire piece of work from beginning to end.
15. The job provides me the chance to completely finish the pieces of work I begin.

TABLE 2

HYPOTHESIS TWO: STATISTICAL ANALYSIS

SAMPLE POPULATION	NUMBER	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
ON-EQUIPMENT	81	4.885	1.323	1.333	7.000
OFF-EQUIPMENT	96	5.458	1.148	2.000	7.000

VARIANCES	T-STATISTIC	DEGREES FREEDOM	P-VALUE
UNEQUAL	3.051	159.7	0.003
EQUAL	3.088	175.0	0.002

The p-values indicate that at the 0.05 level of significance, the null hypothesis can be rejected. There is a difference in the perceived degree of task identity among on- and off-equipment specialists. A study of the means shows that off-equipment aircraft maintenance specialists perceive a higher degree of task identity than do on-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept.

Hypothesis Three

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of task significance under the ROLS aircraft maintenance concept.

Task significance is the degree to which the employee perceives that their job has a substantial impact on the lives or work of other people, whether in the immediate organization or the external environment. The questions

presented below ask the respondent to objectively indicate the degree of how accurate the item is in describing their job. The statistical analysis for hypothesis three is displayed in Table 3.

5. In general, how significant or important is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?
13. This job is one where a lot of other people can be affected by how well the work gets done.
18. The job itself is not very significant or important in the broader scheme of things.

TABLE 3

HYPOTHESIS THREE: STATISTICAL ANALYSIS

SAMPLE POPULATION	NUMBER	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
ON-EQUIPMENT	81	5.399	1.343	1.667	7.000
OFF-EQUIPMENT	96	5.854	1.086	1.000	7.000

VARIANCES	T-STATISTIC	DEGREES FREEDOM	P-VALUE
UNEQUAL	2.448	153.3	0.016
EQUAL	2.492	175.0	0.014

Based on a level of significance of 0.05, the p-values indicate that the null hypothesis can be rejected. There is a difference in the perceived degree of task significance among on- and off-equipment specialists. The means of the sample populations show that off-equipment aircraft maintenance specialists perceive a higher degree of task

significance than do on-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept.

Hypothesis Four

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of autonomy under the ROLS aircraft maintenance concept.

The job characteristic of autonomy is the degree to which the job provides substantial freedom, independence, and discretion to employees in scheduling their work and determining the procedures to be used in carrying out the work. The questions presented below ask the respondent to objectively indicate the degree of how accurate the item is in describing their job. The statistical analysis for hypothesis four is displayed in Table 4.

2. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work?
14. The job denies me any chance to use my personal initiative or judgement in carrying out the work.
17. The job gives me considerable opportunity for independence and freedom in how I do the work.

TABLE 4

HYPOTHESIS FOUR: STATISTICAL ANALYSIS

SAMPLE POPULATION	NUMBER	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
ON-EQUIPMENT	81	4.383	1.199	2.000	7.000
OFF-EQUIPMENT	96	4.747	1.020	2.667	6.667

VARIANCES	T-STATISTIC	DEGREES FREEDOM	P-VALUE
UNEQUAL	2.152	158.0	0.033
EQUAL	2.182	175.0	0.030

The p-values indicate that at the 0.05 level of significance, the null hypothesis can be rejected. There is a difference in the perceived degree of autonomy among on- and off-equipment specialists. A study of the means conclude that off-equipment aircraft maintenance specialists perceive a higher degree of autonomy than do on-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept.

Hypothesis Five

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of feedback from the job under the ROLS aircraft maintenance concept.

Feedback from the job pertains to the degree to which carrying out the work activities required by the job results in the employee obtaining information about the effectiveness of their performance. The questions presented

below ask the respondent to objectively indicate the degree of how accurate the item is in describing their job. The statistical analysis for hypothesis five is displayed in Table 5.

6. To what extent does doing the job itself provide you with information about your work performance? That is, does the actual work itself provide clues about how well you are doing - aside from any 'feedback' co-workers or supervisors may provide?
10. Just doing the work required by the job provides many chances for me to figure out how well I am doing.
16. The job itself provides very few clues about whether or not I am performing well.

TABLE 5

HYPOTHESIS FIVE: STATISTICAL ANALYSIS

SAMPLE POPULATION	NUMBER	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
ON-EQUIPMENT	81	4.593	1.119	2.000	7.000
OFF-EQUIPMENT	96	4.941	1.027	1.667	7.000

VARIANCES	T-STATISTIC	DEGREES FREEDOM	P-VALUE
UNEQUAL	2.142	164.2	0.034
EQUAL	2.158	175.0	0.032

The p-values, using a significance level of 0.05, conclude that the null hypothesis can be rejected. There is a difference in the perceived degree of feedback from the job among on- and off-equipment specialists. Further study of the means show that off-equipment aircraft maintenance

specialists perceive a higher degree of feedback from the job than do on-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept.

Hypothesis Six

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of dealing with others under the ROLS aircraft maintenance concept.

The job characteristic of dealing with others pertains to the degree in which the job requires an employee to work closely with others in carrying out the work activities. The questions presented below ask the respondent to objectively indicate the degree of how accurate the item is in describing their job. The statistical analysis for hypothesis six is displayed in Table 6.

1. To what extent does your job require you to work closely with other people (people in related jobs in your organization)?
8. The job requires a lot of cooperative work with other people.
12. The job can be done adequately by a person working alone - without talking or checking with other people.

TABLE 6

HYPOTHESIS SIX: STATISTICAL ANALYSIS

SAMPLE POPULATION	NUMBER	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
ON-EQUIPMENT	81	5.309	0.972	2.000	7.000
OFF-EQUIPMENT	96	5.035	1.214	2.000	7.000

VARIANCES	T-STATISTIC	DEGREES FREEDOM	P-VALUE
UNEQUAL	-1.667	174.5	0.097
EQUAL	-1.636	175.0	0.104

Using a significance level of 0.05, the p-values obtained conclude that the null hypothesis cannot be rejected. That is, at this chosen level of significance, it is indeterminate if there is a difference in the perceived degree of dealing with others among on- and off-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept.

Hypothesis Seven

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of job-related satisfaction under the ROLS aircraft maintenance concept.

Job-related satisfaction is the overall measure of degree to which the employees are satisfied and happy in their work. The questions presented below asked the respondent to indicate their degree of personal feelings in

agreeing with the given item. The statistical analysis for hypothesis seven is displayed in Table 7.

20. Generally speaking, I am very satisfied with this job.
22. I frequently think of quitting this job.
24. I am generally satisfied with the kind of work I do in this job.

TABLE 7

HYPOTHESIS SEVEN: STATISTICAL ANALYSIS

SAMPLE POPULATION	NUMBER	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
ON-EQUIPMENT	81	4.514	1.426	1.000	7.000
OFF-EQUIPMENT	96	4.903	1.271	1.000	7.000

VARIANCES	T-STATISTIC	DEGREES FREEDOM	P-VALUE
UNEQUAL	1.896	161.9	0.060
EQUAL	1.915	175.0	0.057

The p-values obtained, using a level of significance of 0.05, conclude that the null hypothesis cannot be rejected. That is, at this chosen level of significance, it is indeterminate if there is a difference in the perceived degree of job-related satisfaction among on- and off-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept.

Further study of the p-values reveal that they are very close to the chosen level of significance, 0.05. This researcher has chosen to strictly adhere to the chosen level

of significance when determining whether to reject, or fail to reject, the null hypothesis. An argument could be made for rejecting the null hypothesis due to the small difference between the p-values and the chosen 0.05 level of significance. In this interpretation, a study of the means would conclude that off-equipment aircraft maintenance specialists perceive a higher degree of job-related satisfaction than do on-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept.

Hypothesis Eight

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of internal work motivation under the ROLS aircraft maintenance concept.

Internal work motivation pertains to the degree to which the employee is self-motivated to perform effectively on the job. The questions presented below asked the respondent to indicate the degree of their personal feelings in agreeing with the given item. The statistical analysis for hypothesis eight is displayed in Table 8.

19. My opinion of myself goes up when I do this job well.
21. I feel a great sense of personal satisfaction when I do this job well.
23. I feel bad and unhappy when I discover that I have performed poorly on this job.
25. My own feelings generally are not affected much one way or the other by how well I do on this job.

TABLE 8

HYPOTHESIS EIGHT: STATISTICAL ANALYSIS

SAMPLE POPULATION	NUMBER	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
ON-EQUIPMENT	81	5.302	0.964	2.500	7.000
OFF-EQUIPMENT	96	5.852	0.766	2.500	7.000

VARIANCES	T-STATISTIC	DEGREES FREEDOM	P-VALUE
UNEQUAL	4.141	151.7	0.001
EQUAL	4.222	175.0	0.001

At the 0.05 level of significance, the p-values conclude that the null hypothesis can be rejected. There is a difference in the degree of internal work motivation among on- and off-equipment specialists. The means show that off-equipment aircraft maintenance specialists perceive a higher degree of internal work motivation than do on-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept.

Hypothesis Nine

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of growth satisfaction under the ROLS aircraft maintenance concept.

The job characteristic of growth satisfaction is the degree in which an employee perceives the opportunity for personal development on the job. The questions presented below asked the respondent to indicate the degree of how

satisfied they are with every aspect of their job listed in each item. The statistical analysis for hypothesis nine is displayed in Table 9.

26. The amount of personal growth and development I get in doing my job.
27. The feeling of worthwhile accomplishment I get from doing my job.
28. The amount of independent thought and action I can exercise in my job.
29. The amount of challenge in my job.

TABLE 9

HYPOTHESIS NINE: STATISTICAL ANALYSIS

SAMPLE POPULATION	NUMBER	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
ON-EQUIPMENT	81	4.407	1.252	1.000	6.750
OFF-EQUIPMENT	96	5.005	1.083	1.750	7.000

VARIANCES	T-STATISTIC	DEGREES FREEDOM	P-VALUE
UNEQUAL	3.365	159.5	0.001
EQUAL	3.406	175.0	0.001

The p-values, using a significance level of 0.05, conclude that the null hypothesis can be rejected. There is a difference in the perceived degree of growth satisfaction among on- and off-equipment specialists. The means show that off-equipment aircraft maintenance specialists perceive a higher degree of growth satisfaction than do on-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept.

Hypothesis Ten

On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of individual growth need strength under the ROLS aircraft maintenance concept.

The scale of individual growth need strength measures the degree to which the employees have strong versus weak desire to obtain 'growth' satisfaction from their work. The questions presented below asked the respondent to indicate the degree to which they would like to have each characteristic present in their job. The statistical analysis for hypothesis ten is displayed in Table 10.

30. Stimulating and challenging work.
31. Chances to exercise independent thought and action in my job.
32. Opportunities to learn new things from my work.
33. Opportunities to be creative and imaginative in my work.
34. Opportunities for personal growth and development in my job.
35. A sense of worthwhile accomplishment in my work.

TABLE 10

HYPOTHESIS TEN: STATISTICAL ANALYSIS

SAMPLE POPULATION	NUMBER	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
ON-EQUIPMENT	81	5.918	0.963	3.333	7.000
OFF-EQUIPMENT	96	6.069	0.976	1.667	7.000

VARIANCES	T-STATISTIC	DEGREES FREEDOM	P-VALUE
UNEQUAL	1.038	170.8	0.301
EQUAL	1.037	175.0	0.301

Using a significance level of 0.05, the p-values obtained conclude that the null hypothesis cannot be rejected. That is, at this chosen level of significance, it is indeterminate if there is a difference in the perceived degree of individual growth need strength among on- and off-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept.

Hypothesis Eleven

> On-equipment and off-equipment aircraft maintenance specialists will obtain differing degrees of motivating potential scores under the ROLS aircraft maintenance concept.

The scale of motivating potential score (MPS) reflects the potential of a job for eliciting positive internal work motivation on the part of employees and is especially true for those employees with a high degree for growth need satisfaction. The MPS is not directly related to a series of questions but is determined through an arithmetic formula which was presented in Chapter Two. The statistical analysis for hypothesis eleven is displayed in Table 11.

TABLE 11

HYPOTHESIS ELEVEN: STATISTICAL ANALYSIS

SAMPLE POPULATION	NUMBER	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
ON-EQUIPMENT	81	107.803	56.785	9.481	326.667
OFF-EQUIPMENT	96	130.530	49.510	40.198	244.938

VARIANCES	T-STATISTIC	DEGREES FREEDOM	P-VALUE
UNEQUAL	2.812	160.1	0.006
EQUAL	2.845	175.0	0.005

The null hypothesis can be rejected at the 0.05 level of significance with regards to the calculated p-values. There is a difference in the degree of motivating potential scores among on- and off-equipment specialists. A study of the means shows that off-equipment aircraft maintenance specialists obtained a higher degree of motivating potential scores than did on-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept.

Summary

This chapter has presented the results and analysis of the eleven hypotheses that were originally posed in Chapter One. The related questions and the statistical analysis results were displayed for each of the tested hypotheses. Four of the eleven hypotheses resulted in the conclusion that at the 0.05 level of significance, it was indeterminate if there was a difference in the perceived degree of the

specific job characteristic in question among on- and off-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept. The results of the other seven hypotheses concluded that there was a difference at the 0.05 level of significance. A study of the calculated means for each of these seven hypotheses all concluded that off-equipment aircraft maintenance specialists perceived a higher degree of the specific job characteristic in question or MPS than did on-equipment aircraft maintenance specialist under the ROLS aircraft maintenance concept.

V. Conclusions and Recommendations

Overview

This chapter is organized into twelve main sections. The first eleven sections pertain to the eleven hypotheses as originally presented in Chapter One. Each of these sections begins with a restatement of the particular hypothesis under study. The result of the hypothesis is then presented along with a possible explanation for its outcome. The last section of this chapter highlights recommendations for future research in the area of work attitudes that can be pursued through the further use of Hackman And Oldham's job characteristics model.

Hypothesis One

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of skill variety under the ROLS aircraft maintenance concept.

The results from testing this hypothesis concluded that there is no difference in the perceived degree of skill variety among on- and off-equipment specialists. They both perceive their jobs to be equal in the degree of complex or high-level skills needed to perform a variety of tasks. A study of the results for each of the three questions that pertained to skill variety, highlighted in Appendix D, Research Questionnaire Data, failed to provided any specific clues as to why a perceived difference does not exist. It

is important to note that both on- and off-equipment specialist's means, as displayed in Table 1, are approximately 5, on the 1 to 7 scale employed in the questionnaire, concluding that they both perceive their jobs to be on the positive side of the scale.

Hypothesis Two

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of task identity under the ROLS aircraft maintenance concept.

The results from testing this hypothesis concluded that there is a perceived difference in the degree of task identity among on- and off-equipment specialists. The means in Table 2 show that off-equipment specialists display a much greater perceived degree of task identity than do on-equipment specialists, although both perceive positive task identity. The differing degrees of perceived task identity may be due to the nature of off-equipment repair actions. These actions consist primarily of specialist repairing components and subassemblies from start to finish on test benches and system mockup consoles without the need for additional assistance from other workers, hence a high degree of task identity. Whereas, on-equipment specialists may perceive a lower level of task identity due to working in repair teams involving maintenance tasks on a large aircraft structure. This lower perceived task identity could be further compounded by the perception of relying on

off-equipment specialists for the repair of malfunctioning components and subassemblies.

Hypothesis Three

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of task significance under the ROLS aircraft maintenance concept.

The results from testing this hypothesis concluded that there is a perceived difference in the degree of task significance among on- and off-equipment specialists. This difference could be obtained by off-equipment specialists identifying more clearly with their job of supplying on-equipment specialists with the necessary parts and components for aircraft operations, and hence perceiving a higher degree of task significance. Whereas, on-equipment specialists may not as clearly perceive their job of providing aircrews with capable and safe aircraft as very task significant, hence recording a lower degree.

The result of this hypothesis is surprising from the stand point that there is a common perception among those in the aircraft maintenance field that on-equipment specialists are more aware of the maintenance organization's goals. That is, on-equipment specialists perform in the flightline environment where the consequences and results of the maintenance complex's efforts are readily apparent and therefore they should exhibit a higher degree of task significance. Furthermore, those in the backshop

environment, off-equipment specialists, are perceived to be removed from the daily aspect of obtaining the maintenance organization's goals and should therefore exhibit a lower degree of task significance.

Every aspect of the aircraft maintenance field impacts the requirement for supporting and maintaining safe and capable aircraft for both peacetime training and wartime engagements. The means for both on- and off-equipment specialists, as displayed in Table 3, suggest that they realize this requirement by perceiving positive task significance. However, it is probable that through the daily operations of maintenance, specialist fail to realize the full significant impact that their jobs have on aircrew safety and the protection of national aircraft assets.

Hypothesis Four

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of autonomy under the ROLS aircraft maintenance concept.

The results from testing this hypothesis concluded that there is a perceived difference in the degree of autonomy among on- and off-equipment specialists. Although off-equipment specialists perceived a higher degree of autonomy, a study of the means, presented in Table 4, suggest that neither on- nor off-equipment specialists perceived a strong positive degree of autonomy under the ROLS concept. The means calculated for this hypothesis are disturbing due to the fact that an underlining theme of

decentralized maintenance is a high level of autonomy. ROLS, as a decentralized maintenance concept, was designed to provide the freedom, independence, and discretion to maintenance personnel in scheduling their repair priorities, along with the appropriate resources necessary to complete the assigned tasks. It is apparent from these results, that the degree of autonomy hoped for under ROLS has not yet been fully developed.

The possibility exists that the respondents to the questions pertaining to autonomy, answered in regards to how much autonomy they have in performing the actual repair task, rather than the autonomy they have in choosing which task to repair. That is, specialists may perceive their jobs as lacking sufficient autonomy due to the controlling nature of technical data. Technical data is written guidance which generally restricts and controls the method in which malfunctioning systems are diagnosed and subsequently repaired. Under this scenario, the restrictive nature of technical data would naturally lead to a lower perceived degree of autonomy.

Hypothesis Five

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of feedback from the job under the ROLS aircraft maintenance concept.

The results from testing this hypothesis concluded that there is a perceived difference in the degree of feedback

from the job among on- and off-equipment specialists. The means, displayed in Table 5, show that although off-equipment specialists perceive a higher degree of feedback from the job, neither on- nor off-equipment specialists display a high positive degree of this job characteristic.

This researcher believes that the low perceived degree of feedback from the job is not a true representation of the specialist's job. The task of aircraft maintenance repair is one where generally the results of a successful repair action are immediately apparent. However, this occurrence is more true for off-equipment specialists since they mainly concentrate on repairing self-contained components and subassemblies. On-equipment specialists may not always receive such instant feedback due to the complexity of diagnosing and repairing whole systems on a large aircraft. These whole systems may contain numerous different components and yards of wiring or tubing. And at times, the verification of a successful repair requires the particular aircraft system to be flight tested, this action delays the feedback response. It has been the researcher's experience though, that on-equipment specialist are concerned and well aware of the outcome of their repair actions, and hence actively seek out the feedback from the job.

Off-equipment specialist's perceived degree of feedback from the job may be depressed due to a delayed or

nonexistent response once the repaired component is returned to the flightline and reinstalled by on-equipment specialists. Both on- and off-equipment specialist's perceived degree of feedback from the job could be at a mid-range level due to the respondents inability to separate this type of feedback, from the feedback obtained from agents such as co-workers or maintenance supervisors.

Hypothesis Six

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of dealing with others under the ROLS aircraft maintenance concept.

The results from testing this hypothesis concluded that there is no difference in the perceived degree of dealing with others among on- and off-equipment specialists. The aircraft maintenance field is dependent on the close cooperation among its workers. This relationship is especially true for on-equipment specialists, who generally perform maintenance as members of a repair team. The close cooperation is evident by the means, as displayed in Table 6, for both on- and off-equipment specialists which relate a positive perceived degree of dealing with others.

Hypothesis Seven

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of job-related satisfaction under the ROLS aircraft maintenance concept.

Through the strict interpretation of the results obtained from testing this hypothesis, as discussed in Chapter Four, it was concluded that there is no difference in the perceived degree of job-related satisfaction among on- and off-equipment specialists. A study of the means, as displayed in Table 7, show that neither on- nor off-equipment specialists have a strong positive perceived degree of job-related satisfaction. A further review of each question used to measure job-related satisfaction, as highlighted in Appendix D, Research Questionnaire Data, revealed that an equal portion of both on- and off-equipment specialists frequently thought about quitting their job. Also, on-equipment specialists perceived a strong negative degree towards being dissatisfied with their job.

Hypothesis Eight

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of internal work motivation under the ROLS aircraft maintenance concept.

The results from testing this hypothesis concluded that there is a perceived difference in the degree of internal work motivation among on- and off-equipment specialists. Although off-equipment specialists perceive a higher degree of internal work motivation than on-equipment specialists, both record means on the positive side of the scale, which is evident through a study of their means as displayed in Table 8. The results further imply that both on- and

off-equipment specialists are generally self-motivated towards effectively performing their jobs. A positive internal work motivation is an important characteristic for a specialist to have in a decentralized maintenance concept. This trait will allow a specialist to take the initiative and exercise their own judgement in accomplishing maintenance actions. The development and utilization of this characteristic further helps in the process of obtaining the full benefits of ROLS.

Hypothesis Nine

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of growth satisfaction under the ROLS aircraft maintenance concept.

The results from testing this hypothesis concluded that there is a perceived difference in the degree of growth satisfaction among on- and off-equipment specialists. The means, as displayed in Table 9, suggest that off-equipment specialists perceive a stronger positive degree of growth satisfaction than do on-equipment specialists. This conclusion shows that off-equipment specialists perceive a greater opportunity for personal development on the job.

A study of the questions pertaining to this hypothesis, highlighted in Appendix D, Research Questionnaire Data, revealed that on-equipment specialists perceive a strong negative degree towards the amount of personal growth and development, along with the feeling of worthwhile

accomplishment, they receive from doing their job. The underlining reasons for this disparity is not readily apparent. Possible explanations cannot be presented here due to insufficient information regarding the internal organizational environment that affected the responses provided by both on- and off-equipment specialists.

Hypothesis Ten

> On-equipment and off-equipment aircraft maintenance specialists will perceive differing degrees of individual growth need strength under the ROLS aircraft maintenance concept.

The results from testing this hypothesis concluded that there is no difference in the perceived degree of individual growth need strength among on- and off-equipment specialists. Although this hypothesis did not result in a difference among the two sample populations as predicted, the results generated from the collected data are favorable for a ROLS maintenance organization. The means for both on- and off-equipment specialists, as displayed in Table 10, show a high positive degree of perceived individual growth need strength. On the standard scale of 1 to 7, which was used throughout the questionnaire, the mean values recorded for the testing of this hypothesis were the highest of all the previously tested hypotheses. A review of the questions which measured this job characteristic, highlighted in Appendix D, Research Questionnaire Data, suggests that specialists desire work which is challenging, allows for the

exercising of independent thought, and promotes creation and learning, along with a sense of accomplishment.

Hypothesis Eleven

> On-equipment and off-equipment aircraft maintenance specialists will obtain differing degrees of motivating potential scores under the ROLS aircraft maintenance concept.

The results from testing this hypothesis concluded that there is a difference in the degree of MPS among on- and off-equipment specialists. The MPS scale can range from a low of 1 to a high of 343. Reviewing the formula for MPS, as described in Chapter Two, and the results of the first five hypotheses previously presented in Chapter Three, it is not surprising that off-equipment specialists obtained a higher MPS than on-equipment specialists. Due to the relationship among these five job characteristics, their individual hypothesis narrative portions can be summed-up to explain the results of this hypothesis. The job characteristic of skill variety showed no difference among on-and off-equipment specialists. However, off-equipment specialists perceive greater degrees of task identity, task significance, autonomy, and feedback from the job than do on-equipment specialists.

Recommendations For Future Research

The specific purpose of this thesis research was to compare, under the ROLS concept, the work attitudes of the aircraft maintenance specialists assigned to on-equipment

maintenance (OMS), against the work attitudes of the aircraft maintenance specialists assigned to off-equipment maintenance (AMS/FMS). Prior to undertaking this study, the researcher was unaware that any differences in work attitudes existed, and if they did exist, which sample population, on- or off-equipment specialists, would be favored. The results from testing each of the hypotheses are described in Chapter Four, as well as previously highlighted in this chapter. It is apparent that there are differences in the various job characteristics, and where these differences exist, off-equipment specialists always perceive a higher degree of that particular trait.

The determination of the work attitudes for both on- and off-equipment specialists is an important first step into the process of establishing jobs that exhibit positive job characteristic traits which in-turn, create the ability to increase the efficiency and effectiveness of the given job. Now that the work attitudes have been determined and recorded, future studies in this field can concentrate on redesigning the particular jobs so as to increase the perceived degree of each job characteristic that both on- and off-equipment specialists obtain. It is important to note that SAC is undergoing a change in its maintenance philosophy that is different from the ROLS concept. This change deals with the elimination of the intermediate type of maintenance that is performed at base level for many

avionic systems. This change will reduce the number of off-equipment specialists assigned to a maintenance complex, and at some bases, completely eliminate specific AFSCs that work off-equipment maintenance. The elimination of such maintenance repair capability at many of SAC's maintenance organizations is still in the developmental stage and the extent of its organizational and environmental impact is as yet undetermined.

Whatever the final outcome, there is a need to investigate the environment that on- and off-equipment specialists work in. The sample populations both contained the same AFSCs which trained at the same USAF Technical Schools, only the environment in which they worked in differed. ROLS has created separate and distinct work environments for both on- and off-equipment specialists. Future studies should be conducted to determine why the environment has such a dramatic impact on their work attitudes. This study could be conducted by gathering a representative sample of aircraft maintenance specialists and pooling their constructive ideas. Also, a smaller selection of 'expert' specialists and maintenance supervisors could be used with the Delphi Technique.

Hackman and Oldham, as discussed in Chapter Two, have expanded their job characteristics model to help supervisors redesign jobs through the use of change agents so as to increase the positive perceived degree of each job

characteristic. The use of this model is the next important step towards increasing the efficiency and effectiveness of on- and off-equipment aircraft maintenance specialists under the ROLS aircraft maintenance concept. The data gathered from this thesis can then be used as a comparison with future data gathered by the same research questionnaire to determine the impact of the change agents.

Summary

The preceding sections have highlighted the results of each of the particular hypotheses that were studied in this thesis. Where possible, explanations were presented to help develop an insight into the various aspects that lead to the calculated conclusions. The final section of this chapter presented recommendations for future research in the area of work attitudes. Additional research, using Hackman and Oldham's job characteristics model can be utilized to pursue the redesign of both on- and off-equipment specialist's jobs. The undertaking of such research is the next logical step following the determination of the work attitudes as presented in this thesis.

Appendix A: Research Questionnaire

AFIT/LSG (Capt Burke, AUTOVON 785-8989) 20 March 1990

Work Attitudes Survey Package

379th BMW Maintenance Complex

1. Please take the time to complete the attached questionnaire.

2. The survey measures your perceptions and attitudes toward your job and job environment. The data that is gathered will become part of an AFIT research project. Your individual responses will be combined with others and will not be attributed to you personally.

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

CHRISTOPHER J. BURKE, Captain, USAF
Air Force Institute of Technology
Graduate Program of Acquisition Logistics Management

PRIVACY ACT STATEMENT

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

a. Authority:

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

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

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

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

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

SECTION ONE

This part of the questionnaire asks you to describe your job, as objectively as you can.

Please do not use this part of the questionnaire to show how much you like or dislike your job. Instead, try to make your descriptions as accurate and as objective as you possibly can.

A sample question is given below.

A. To what extent does your job require you to work with mechanical equipment?

1-------2-------3------4------5-------6-------7

Very little; the job requires almost no contact with mechanical equipment of any kind.	Very much; the job requires almost constant work with mechanical equipment.

You are to choose the number which is the most accurate description of your job.

If, for example, your job requires you to work with mechanical equipment a good deal of the time - but also requires some paperwork - you might choose the number six.

---------- Please turn the page and begin. ----------

1. To what extent does your job require you to work closely with other people (people in related jobs in your organization)?

1-------2------3------4------5------6-------7

very little; dealing with other people is not at all necessary in doing the job.	Moderately; some dealing with others is necessary.	very much; dealing with other people is an absolutely essential and crucial part of doing the job.

2. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work?

1-------2------3------4------5------6-------7

Very little; the job gives me almost no personal 'say' about how and when the work is done.	Moderate autonomy; many things are standardized and not under my control, but I can make some decisions about the work.	very much; the job gives me almost complete responsibility for deciding how and when the work is done.

3. To what extent does your job involve doing a 'whole' and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other people or by automatic machines?

1-------2------3------4------5------6-------7

My job is only a tiny part of the overall piece of work; the results cannot be seen in the final product or service.	My job is a moderate-sized 'chunk' of the overall piece of work; my own contribution can be seen in the final outcome.	My job involves doing the whole piece of work, from start to finish; the results of my activities are easily seen in the final product or service.

4. How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

1-------2------3------4------5------6-------7

Very little; the job requires me to do the same routine things over and over again.	Moderate variety.	Very much; the job requires me to do many different things using a number of different skills and talents.

5. In general, how significant or important is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?

1-------2------3------4------5------6-------7

Not very significant; the outcomes of my work are not likely to have important effects on other people.	Moderately significant.	Highly significant; the outcomes of my work can effect other people in very important ways.

6. To what extent does doing the job itself provide you with information about your work performance? That is, does the actual work itself provide clues about how well you are doing - aside from any 'feedback' co-workers or supervisors may provide?

1-------2------3------4------5------6-------7

Very little; the job itself is set up so I could work forever without finding out how well I am doing.	Moderately; sometimes doing the job provides 'feedback' to me; sometimes it does not.	Very much; the job is set up so that I get almost constant 'feedback' as I work about how well I am doing.

SECTION TWO

Listed below are a number of statements which could be used to describe a job.

You are to indicate whether each statement is an accurate or inaccurate description of your job.

Once again, please try to be as objective as you can in deciding how accurately each statement describes your job - regardless of whether you like or dislike your job.

How accurate is the statement in describing your job?

1--------2--------3--------4--------5--------6--------7
VERY MOSTLY SLIGHTLY SLIGHTLY MOSTLY VERY
INACCURATE ACCURATE
UNCERTAIN

7. The job requires me to use a number of complex or high-level skills.

8. The job requires a lot of cooperative work with other people.

9. The job is arranged so that I do not have the chance to do an entire piece of work from beginning to end.

10. Just doing the work required by the job provides many chances for me to figure out how well I am doing.

11. The job is quite simple and repetitive.

12. The job can be done adequately by a person working alone - without talking or checking with other people.

13. This job is one where a lot of other people can be affected by how well the work gets done.

14. The job denies me any chance to use my personal initiative or judgement in carrying out the work.

15. The job provides me the chance to completely finish the pieces of work I begin.

1--------2--------3--------4--------5--------6--------7
VERY MOSTLY SLIGHTLY SLIGHTLY MOSTLY VERY
INACCURATE ACCURATE
UNCERTAIN

16. The job itself provides very few clues about whether or not I am performing well.

17. The job gives me considerable opportunity for independence and freedom in how I do the work.

18. The job itself is not very significant or important in the broader scheme of things.

SECTION THREE

Now please indicate how you personally feel about your job.

Each of the statements below is something that a person might say about their job. You are to indicate your own, personal feelings about your job by marking how much you agree with each of the statements.

How much do you agree with the Statement?

1--------2--------3-------4-------5--------6--------7
STRONGLY DISAGREE SLIGHTLY DISAGREE NEUTRAL SLIGHTLY AGREE STRONGLY AGREE

19. My opinion of myself goes up when I do this job well.

20. Generally speaking, I am very satisfied with this job.

21. I feel a great sense of personal satisfaction when I do this job well.

22. I frequently think of quitting this job.

23. I feel bad and unhappy when I discover that I have performed poorly on this job.

24. I am generally satisfied with the kind of work I do in this job.

25. My own feelings generally are not affected much one way or the other by how well I do on this job.

SECTION FOUR

Now please indicate how satisfied you are with each aspect of your job listed below.

How satisfied are you with this aspect of your job?

1--------2--------3-------4-------5--------6--------7
EXTREMELY SLIGHTLY SLIGHTLY EXTREMELY
DISSATISFIED SATISFIED
NEUTRAL

26. The amount of personal growth and development I get in doing my job.

27. The feeling of worthwhile accomplishment I get from doing my job.

28. The amount of independent thought and action I can exercise in my job.

29. The amount of challenge in my job.

SECTION FIVE

Listed below are a number of characteristics which could be present on any job. People differ about how much they like to have each one present in their own jobs. This section is interested in learning how much you personally would like to have each one present in your job.

Using the scale below, please indicate the degree to which you would like to have each characteristic present in your job.

1-------2-------3-------4-------5-------6-------7

Would like having this only a moderate amount (or Less)	Would like having this very much	Would like having this extremely much

30. Stimulating and challenging work.

31. Chances to exercise independent thought and action in my job.

32. Opportunities to learn new things from my work.

33. Opportunities to be creative and imaginative in my work.

34. Opportunities for personal growth and development in my job.

35. A sense of worthwhile accomplishment in my work.

SECTION SIX

BIOGRAPHICAL DATA

All information provided in this section will be held in the strictest confidence; absolutely no one in your organization will be permitted access to individual responses.

**. What is your present active duty grade?

36. 1 - E-1
2 - E-2
3 - E-3
4 - E-4
5 - E-5
6 - E-6

37. 1 - E-7
2 - E-8
3 - E-9

**. What is your current duty specialty code (AFSC)?

38. 1 - 454X0A
2 - 454X4
3 - 454X5

39. 1 - 455X1B
2 - 455X2B
3 - 456X0
4 - 456X1A
5 - 456X2A

40. What is your skill level in your current job specialty?

1 - 3 Level
2 - 5 Level
3 - 7 Level
4 - 9 Level

41. What squadron do you belong to?

1 - AMS
2 - FMS
3 - OMS

42. What is your total years in the Air Force?

1 - Less than 1 year
2 - More than 1 year, less than 5 years
3 - More than 5 years, less than 9 years
4 - More than 9 years, less than 13 years
5 - More than 13 years, less than 17 years
6 - More than 17 years, less than 20 years
7 - More than 20 years

43. What is your total months in the present career field?

1 - Less than 1 month
2 - More than 1 month, less than 6 months
3 - More than 6 months, less than 12 months
4 - More than 12 months, less than 18 months
5 - More than 18 months, less than 24 months
6 - More than 24 months, less than 36 months
7 - More than 36 months

44. What is your total months at this station?

1 - Less than 1 month
2 - More than 1 month, less than 6 months
3 - More than 6 months, less than 12 months
4 - More than 12 months, less than 18 months
5 - More than 18 months, less than 24 months
6 - More than 24 months, less than 36 months
7 - More than 36 months

45. What is your total months in this present position?

1 - Less than 1 month
2 - More than 1 month, less than 6 months
3 - More than 6 months, less than 12 months
4 - More than 12 months, less than 18 months
5 - More than 18 months, less than 24 months
6 - More than 24 months, less than 36 months
7 - More than 36 months

46. What is your usual work schedule?

1 - Day shift, normally stable hours
2 - Swing shift (about 1600-2400 hrs.)
3 - Mid shift (about 2400-0800 hrs.)
4 - Rotating shift schedule
5 - Day or shift work with irregular/unstable hours

Appendix B: Research Questionnaire Scoring Key
(12:303-306)

Each variable measured by the research questionnaire is listed below, along with (a) a one or two sentence description of the variable, and (b) a list of the questionnaire items which are averaged to yield a summary score for the variable.

I. JOB DIMENSIONS: Objective characteristics of the job itself.

A. Skill Variety: The degree to which a job requires a variety of different activities in carrying out the work, which involves the use of a number of different skills and talents of the employee.

Average the following items:

Section One #4
Section Two #7
#11 (reversed scoring--i.e., subtract the number entered by the respondent from 8)

B. Task Identity: The degree to which the job requires the completion of a 'whole' and identifiable piece of work, doing the job from the beginning to the end with a visible outcome.

Average the following items:

Section One #3
Section Two #15
#9 (reversed scoring)

C. Task Significance: The degree to which the job has a substantial impact on the lives or work of other people whether in the immediate organization or in the external environment.

Average the following items:

Section One #5
Section Two #13
#18 (reversed scoring)

D. Autonomy: The degree to which the job provides substantial freedom, independence, and discretion to the employees in scheduling their work and in determining the procedures to be used in carrying it out.

Average the following items:

Section One #2
Section Two #17
#14 (reversed scoring)

E. Feedback From the Job: The degree to which carrying out the work activities required by the job results in the employees obtaining information about the effectiveness of their performance.

Average the following items:

Section One #6
Section Two #10
#16 (reversed scoring)

F. Dealing With Others: The degree to which the job requires the employee to work closely with other people in carrying out the work activities.

Average the following items:

Section One #1
Section Two #8
#12 (reversed scoring)

II. AFFECTIVE RESPONSES TO THE JOB: The private, affective reactions or feelings employees get from working on their job.

A. Job-Related Satisfaction: The overall measure of the degree to which the employees are satisfied and happy in their work.

Average the following items:

Section Three #20
#24
#22 (reversed scoring)

B. Internal Work Motivation: The degree to which the employee is self-motivated to perform effectively on the job.

Average the following items:

Section Three	#19
	#21
	#23
	#25 (reversed scoring)

C. Growth Satisfaction: The degree to which an employee perceives the opportunity for personal growth and development on the job.

Average the following items:

Section Four	#26
	#27
	#28
	#29

III. INDIVIDUAL GROWTH NEED STRENGTH: This scale taps the degree to which the employees have strong versus weak desire to obtain 'growth' satisfaction from their work.

Average the following items:

Section Five	#30
	#31
	#32
	#33
	#34
	#35

IV. MOTIVATING POTENTIAL SCORE: This scale reflects the potential of a job for eliciting positive internal work motivation on the part of employees, especially those with high degree for growth need satisfaction.

$$MPS = \frac{(SKILL\ VARIETY + TASK\ IDENTITY + TASK\ SIGNIFICANCE)}{3} \times AUTONOMY \times FEEDBACK$$

Appendix C: Sample Population Demographics

The following nine items describe the demographics of the sample population. Each item is subdivided by squadron, with AMS and FMS data combined to form the off-equipment sample population, and OMS data used for the on-equipment sample population. The data is displayed with the frequency (FREQ) and percent (%) for each squadron. Not all of the frequency counts add up to the correct total for each squadron due to the incompleteness of ten surveys.

1. What is your present active duty grade?

1 - E-1
2 - E-2
3 - E-3
4 - E-4
5 - E-5
6 - E-6
7 - E-7
8 - E-8
9 - E-9

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	0	0.0
2	4	6.3	5	15.6	9	9.4	8	9.9
3	17	26.6	4	12.5	21	21.9	16	17.6
4	16	25.0	8	25.0	24	25.0	26	28.6
5	18	28.1	9	28.1	27	28.1	18	19.8
6	3	4.7	4	12.5	7	7.3	8	8.8
7	6	9.4	1	3.1	7	7.3	5	5.5
8	0	0.0	1	3.1	1	1.0	0	0.0
9	0	0.0	0	0.0	0	0.0	0	0.0

2. What is your current duty specialty code (AFSC)?

1 - 454X0A
2 - 454X4
3 - 454X5
4 - 455X1B
5 - 455X2B
6 - 456X0
7 - 456X1A
8 - 456X2A

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	15	50.0	15	16.0	9	11.1
2	0	0.0	8	26.7	8	8.5	11	13.6
3	0	0.0	7	23.3	7	7.4	9	11.1
4	10	15.6	0	0.0	10	10.6	10	12.3
5	15	23.4	0	0.0	15	16.0	14	17.3
6	16	25.0	0	0.0	16	17.0	14	17.3
7	18	28.1	0	0.0	18	19.1	10	12.3
8	5	7.8	0	0.0	5	5.3	4	4.9

3. What is your skill level in your current job specialty?

1 - 3 Level
2 - 5 Level
3 - 7 Level
4 - 9 Level

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	11	17.2	8	25.0	19	19.8	10	12.3
2	28	43.8	12	37.5	40	41.7	39	48.1
3	23	35.9	11	34.4	34	35.4	30	37.0
4	2	3.1	1	3.1	3	3.1	2	2.5

4. What squadron do you belong to?

1 - AMS
2 - FMS
3 - OMS

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	64	100.0	0	0.0	64	66.7	0	0.0
2	0	0.0	32	100.0	32	33.3	0	0.0
3	0	0.0	0	0.0	0	0.0	81	100.0

5. What is your total years in the Air Force?

1 - Less than 1 year
2 - More than 1 year, less than 5 years
3 - More than 5 years, less than 9 years
4 - More than 9 years, less than 13 years
5 - More than 13 years, less than 17 years
6 - More than 17 years, less than 20 years
7 - More than 20 years

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	4	6.3	6	20.7	10	10.8	5	6.3
2	31	48.4	8	27.6	39	41.9	35	43.8
3	16	25.0	6	20.7	22	23.7	16	20.0
4	6	9.4	5	17.2	11	11.8	11	13.8
5	2	3.1	2	6.9	4	4.3	5	6.3
6	3	4.7	1	3.4	4	4.3	5	6.3
7	2	3.1	1	3.4	3	3.2	3	3.8

6. What is your total months in the present career field?

1 - Less than 1 month
2 - More than 1 month, less than 6 months
3 - More than 6 months, less than 12 months
4 - More than 12 months, less than 18 months
5 - More than 18 months, less than 24 months
6 - More than 24 months, less than 36 months
7 - More than 36 months

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	1	1.6	0	0.0	1	1.1	0	0.0
2	0	0.0	2	6.9	2	2.2	3	3.8
3	5	7.8	6	20.7	11	11.8	6	7.5
4	6	9.4	1	3.4	7	7.5	4	5.0
5	3	4.7	1	3.4	4	4.3	5	6.3
6	11	17.2	3	10.3	14	15.1	13	16.3
7	38	59.4	16	55.2	54	58.1	49	61.3

7. What is your total months at this station?

1 - Less than 1 month
2 - More than 1 month, less than 6 months
3 - More than 6 months, less than 12 months
4 - More than 12 months, less than 18 months
5 - More than 18 months, less than 24 months
6 - More than 24 months, less than 36 months
7 - More than 36 months

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	5	7.8	0	0.0	5	5.4	0	0.0
2	8	12.5	6	20.7	14	15.1	9	11.3
3	3	4.7	6	20.7	9	9.7	11	13.8
4	8	12.5	2	6.9	10	10.8	11	13.8
5	5	7.8	2	6.9	7	7.5	6	7.5
6	11	17.2	4	13.8	15	16.1	13	16.3
7	24	37.5	9	31.0	33	35.5	30	37.5

8. What is your total months in this present position?

1 - Less than 1 month
2 - More than 1 month, less than 6 months
3 - More than 6 months, less than 12 months
4 - More than 12 months, less than 18 months
5 - More than 18 months, less than 24 months
6 - More than 24 months, less than 36 months
7 - More than 36 months

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREC	%
1	6	9.4	0	0.0	6	6.5	2	2.5
2	10	15.6	15	51.7	25	26.9	17	21.5
3	4	6.3	6	20.7	10	10.8	17	21.5
4	15	23.4	1	3.4	16	17.2	8	10.1
5	5	7.8	1	3.4	6	6.5	6	7.6
6	8	12.5	2	6.9	10	10.8	10	12.7
7	16	25.0	4	13.8	20	21.5	19	24.1

9. What is your usual work schedule?

1 - Day shift, normally stable hours
2 - Swing shift (about 1600-2400 hrs.)
3 - Mid shift (about 2400-0800 hrs.)
4 - Rotating shift schedule
5 - Day or shift work with irregular/unstable hours

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	38	61.3	21	72.4	59	64.8	16	20.8
2	22	35.5	5	17.2	27	29.7	20	26.0
3	0	0.0	0	0.0	0	0.0	16	20.8
4	1	1.6	1	3.4	2	2.2	9	11.7
5	1	1.6	2	6.9	3	3.3	16	20.8

Appendix D: Research Questionnaire Data

The following thirty-five items display the responses associated to the sample population. Each item is subdivided by squadron, with AMS and FMS data combined to form the off-equipment sample population, and OMS data used for the on-equipment sample population. The data is displayed with the frequency (FREQ) and percent (%) for each squadron.

1. To what extent does your job require you to work closely with other people (people in related jobs in your organization)?

1-------2------3------4------5------6-------7

very little; dealing with other people is not at all necessary in doing the job.	Moderately; some dealing with others is necessary.	very much; dealing with other people is an absolutely essential and crucial part of doing the job.

	OFF-EQUIPMENT				ON-EQUIPMENT			
	AMS		FMS		AMS/FMS		OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	0	0.0
2	1	1.6	0	0.0	1	1.0	2	2.5
3	5	7.8	1	3.1	6	6.3	3	3.7
4	13	20.3	4	12.5	17	17.7	17	21.0
5	13	20.3	4	12.5	17	17.7	19	23.5
6	14	21.9	10	31.3	24	25.0	22	27.2
7	18	28.1	13	40.6	31	32.3	18	22.2

2. How much <u>autonomy</u> is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work?

1-------2------3------4------5------6-------7

Very little; the job gives me almost no personal 'say' about how and when the work is done.	Moderate autonomy; many things are standardized and not under my control, but I can make some decisions about the work.	very much; the job gives me almost complete responsibility for deciding how and when the work is done.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT UMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	1	3.1	1	1.0	3	3.7
2	2	3.1	2	6.3	4	4.2	10	12.3
3	6	9.4	2	6.3	8	8.3	9	11.1
4	25	39.1	10	31.3	35	36.5	27	33.3
5	18	28.1	7	21.9	25	26.0	19	23.5
6	11	17.2	4	12.5	15	15.6	9	11.1
7	2	3.1	6	18.8	8	8.3	4	4.9

3. To what extent does your job involve doing a 'whole' and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other people or by automatic machines?

1-------2------3------4------5------6-------7

My job is only a tiny part of the overall piece of work; the results cannot be seen in the final product or service.	My job is a moderate-sized 'chunk' of the overall piece of work; my own contribution can be seen in the final outcome.	My job involves doing the whole piece of work, from start to finish; the results of my activities are easily seen in the final product or service.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	2	2.5
2	0	0.0	1	3.1	1	1.0	3	3.7
3	6	9.4	0	0.0	6	6.3	8	9.9
4	11	17.2	7	21.9	18	18.8	13	16.0
5	15	23.4	4	12.5	19	19.8	17	21.0
6	18	28.1	11	34.4	29	30.2	22	27.2
7	14	21.9	9	28.1	23	24.0	16	19.8

4. How much <u>variety</u> is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

1-------2------3------4------5------6-------7

Very little; the job requires me to do the same routine things over and over again.

Moderate variety.

Very much; the job requires me to do many different things using a number of different skills and talents.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	1	3.1	1	1.0	4	4.9
2	1	1.6	2	6.3	3	3.1	4	4.9
3	1	1.6	2	6.3	3	3.1	7	8.6
4	16	25.0	9	28.1	25	26.0	16	19.8
5	16	25.0	8	25.0	24	25.0	13	16.0
6	23	35.9	5	15.6	28	29.2	21	25.9
7	7	10.9	5	15.6	12	12.5	16	19.8

5. In general, how <u>significant or important</u> is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?

1-------2------3------4------5------6-------7

Not very significant; the outcomes of my work are <u>not</u> likely to have important effects on other people.	Moderately significant.	Highly significant; the outcomes of my work can effect other people in very important ways.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	1	1.6	0	0.0	1	1.0	3	3.7
2	2	3.1	0	0.0	2	2.1	5	6.2
3	4	6.3	0	0.0	4	4.2	3	3.7
4	12	18.8	1	3.1	13	13.5	13	16.0
5	14	21.9	1	3.1	15	15.6	6	7.4
6	11	17.2	9	28.1	20	20.8	20	24.7
7	20	31.3	21	65.6	41	42.7	31	38.3

6. To what extent does doing the job itself provide you with information about your work performance? That is, does the actual work itself provide clues about how well you are doing - aside from any 'feedback' co-workers or supervisors may provide?

1-------2------3------4------5------6-------7

Very little; the job itself is set up so I could work forever without finding out how well I am doing.	Moderately; sometimes doing the job provides 'feedback' to me; sometimes it does not.	Very much; the job is set up so that I get almost constant 'feedback' as I work about how well I am doing.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	1	1.6	1	3.1	2	2.1	1	1.2
2	4	6.3	2	6.3	6	6.3	1	1.2
3	6	9.4	0	0.0	6	6.3	7	8.6
4	17	26.6	9	28.1	26	27.1	25	30.9
5	23	35.9	11	34.4	34	35.4	27	33.3
6	9	14.1	5	15.6	14	14.6	15	18.5
7	4	6.3	4	12.5	8	8.3	5	6.2

The next twelve items (7 - 18) use the following scale:

```
  1--------2--------3--------4--------5--------6--------7
VERY     MOSTLY   SLIGHTLY          SLIGHTLY   MOSTLY   VERY
       INACCURATE                              ACCURATE
                          UNCERTAIN
```

7. The job requires me to use a number of complex or high-level skills.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	0	0.0
2	2	3.1	0	0.0	2	2.1	2	2.5
3	1	1.6	1	3.1	2	2.1	11	13.6
4	1	1.6	2	6.3	3	3.1	6	7.4
5	24	37.5	16	50.0	40	41.7	34	42.0
6	29	45.3	10	31.3	39	40.6	20	24.7
7	7	10.9	3	9.4	10	10.4	8	9.9

8. The job requires a lot of cooperative work with other people.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	0	0.0
2	2	3.1	0	0.0	2	2.1	2	2.5
3	10	15.6	2	6.3	12	12.5	2	2.5
4	2	3.1	0	0.0	2	2.1	8	9.9
5	16	25.0	6	18.8	22	22.9	29	35.8
6	23	35.9	12	37.5	35	36.5	28	34.6
7	11	17.2	12	37.5	23	24.0	12	14.8

9. The job is arranged so that I do <u>not</u> have the chance to do an entire piece of work from beginning to end.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	3	4.7	1	3.1	4	4.2	10	12.3
2	3	4.7	5	15.6	8	8.3	7	8.6
3	2	3.1	4	12.5	6	6.3	7	8.6
4	2	3.1	1	3.1	3	3.1	5	6.2
5	12	18.8	4	12.5	16	16.7	15	18.5
6	25	39.1	11	34.4	36	37.5	29	35.8
7	17	26.6	6	18.8	23	24.0	8	9.9

10. Just doing the work required by the job provides many chances for me to figure out how well I am doing.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	1	1.6	0	0.0	1	1.0	0	0.0
2	1	1.6	1	3.1	2	2.1	8	9.9
3	6	9.4	3	9.4	9	9.4	18	22.2
4	10	15.6	4	12.5	14	14.6	14	17.3
5	22	34.4	13	40.6	35	36.5	22	27.2
6	21	32.8	8	25.0	29	30.2	16	19.8
7	3	4.7	3	9.4	6	6.3	3	3.7

11. The job is quite simple and repetitive.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	2	6.3	2	2.1	4	4.9
2	6	9.4	3	9.4	9	9.4	7	8.6
3	14	21.9	6	18.8	20	20.8	13	16.0
4	1	1.6	3	9.4	4	4.2	3	3.7
5	17	26.6	11	34.4	28	29.2	15	18.5
6	19	29.7	3	9.4	22	22.9	27	33.3
7	7	10.9	4	12.5	11	11.5	12	14.8

12. The job can be done adequately by a person working alone - without talking or checking with other people.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	3	4.7	2	6.3	5	5.2	1	1.2
2	22	34.4	3	9.4	25	26.0	8	9.9
3	16	25.0	3	9.4	19	19.8	7	8.6
4	1	1.6	4	12.5	5	5.2	5	6.2
5	5	7.8	5	15.6	10	10.4	17	21.0
6	10	15.6	9	28.1	19	19.8	27	33.3
7	7	10.9	6	18.8	13	13.5	16	19.8

13. This job is one where a lot of other people can be affected by how well the work gets done.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	1	1.6	0	0.0	1	1.0	0	0.0
2	3	4.7	0	0.0	3	3.1	8	9.9
3	2	3.1	1	3.1	3	3.1	6	7.4
4	0	0.0	0	0.0	0	0.0	6	7.4
5	11	17.2	3	9.4	14	14.6	12	14.8
6	28	43.8	11	34.4	39	40.6	22	27.2
7	19	29.7	17	53.1	36	37.5	27	33.3

14. The job denies me any chance to use my personal initiative or judgement in carrying out the work.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	0	0.0
2	2	3.1	2	6.3	4	4.2	6	7.4
3	5	7.8	4	12.5	9	9.4	11	13.6
4	3	4.7	6	18.8	9	9.4	8	9.9
5	11	17.2	3	9.4	14	14.6	17	21.0
6	34	53.1	9	28.1	43	44.8	27	33.3
7	9	14.1	8	25.0	17	17.7	12	14.8

15. The job provides me the chance to completely finish the pieces of work I begin.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	4	4.9
2	3	4.7	2	6.3	5	5.2	3	3.7
3	4	6.3	1	3.1	5	5.2	9	11.1
4	0	0.0	0	0.0	0	0.0	8	9.9
5	11	17.2	6	18.8	17	17.7	15	18.5
6	34	53.1	16	50.0	50	52.1	34	42.0
7	12	18.8	7	21.9	19	19.8	8	9.9

16. The job itself provides very few clues about whether or not I am performing well.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	1	1.2
2	3	4.7	3	9.4	6	6.3	5	6.2
3	8	12.5	4	12.5	12	12.5	19	23.5
4	2	3.1	2	6.3	4	4.2	9	11.1
5	13	20.3	5	15.6	18	18.8	12	14.8
6	33	51.6	15	46.9	48	50.0	30	37.0
7	5	7.8	3	9.4	8	8.3	5	6.2

17. The job gives me considerable opportunity for independence and freedom in how I do the work.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	3	4.7	0	0.0	3	3.1	2	2.5
2	10	15.6	8	25.0	18	18.8	20	24.7
3	11	17.2	4	12.5	15	15.6	14	17.3
4	3	4.7	4	12.5	7	7.3	8	9.9
5	14	21.9	12	37.5	26	27.1	20	24.7
6	22	34.4	4	12.5	26	27.1	13	16.0
7	1	1.6	0	0.0	1	1.0	4	4.9

18. The job itself is not very significant or important in the broader scheme of things.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	2	3.1	0	0.0	2	2.1	3	3.7
2	1	1.6	1	3.1	2	2.1	6	7.4
3	4	6.3	1	3.1	5	5.2	8	9.9
4	4	6.3	1	3.1	5	5.2	6	7.4
5	6	9.4	3	9.4	9	9.4	5	6.2
6	22	34.4	12	37.5	34	35.4	27	33.3
7	25	39.1	14	43.8	39	40.6	26	32.1

The next seven items (19 - 25) use the following scale:

```
   1--------2--------3-------4-------5--------6--------7
STRONGLY          SLIGHTLY          SLIGHTLY          STRONGLY
      DISAGREE                                AGREE
                          NEUTRAL
```

19. My opinion of myself goes up when I do this job well.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	0	0.0
2	0	0.0	1	3.1	1	1.0	3	3.7
3	0	0.0	0	0.0	0	0.0	4	4.9
4	0	0.0	2	6.3	2	2.1	7	8.6
5	7	10.9	1	3.1	8	8.3	14	17.3
6	41	64.1	11	34.4	52	54.2	35	43.2
7	16	25.0	17	53.1	33	34.4	18	22.2

20. Generally speaking, I am very satisfied with this job.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	2	6.3	2	2.1	6	7.4
2	3	4.7	5	15.6	8	8.3	10	12.3
3	5	7.8	2	6.3	7	7.3	6	7.4
4	4	6.3	7	21.9	11	11.5	15	18.5
5	20	31.3	5	15.6	25	26.0	13	16.0
6	20	31.3	10	31.3	30	31.3	24	29.6
7	12	18.8	1	3.1	13	13.5	7	8.6

21. I feel a great sense of personal satisfaction when I do this job well.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	0	0.0
2	0	0.0	2	6.3	2	2.1	4	4.9
3	0	0.0	1	3.1	1	1.0	5	6.2
4	1	1.6	1	3.1	2	2.1	7	8.6
5	10	15.6	2	6.3	12	12.5	11	13.6
6	34	53.1	13	40.6	47	49.0	33	40.7
7	19	29.7	13	40.6	32	33.3	21	25.9

22. I frequently think of quitting this job.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	4	6.3	3	9.4	7	7.3	9	11.1
2	11	17.2	1	3.1	12	12.5	11	13.6
3	7	10.9	7	21.9	14	14.6	13	16.0
4	11	17.2	8	25.0	19	19.8	11	13.6
5	6	9.4	4	12.5	10	10.4	8	9.9
6	17	26.6	5	15.6	22	22.9	18	22.2
7	8	12.5	4	12.5	12	12.5	11	13.6

23. I feel bad and unhappy when I discover that I have performed poorly on this job.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	2	6.3	2	2.1	3	3.7
2	2	3.1	1	3.1	3	3.1	6	7.4
3	4	6.3	3	9.4	7	7.3	7	8.6
4	7	10.9	1	3.1	8	8.3	10	12.3
5	12	18.8	5	15.6	17	17.7	12	14.8
6	23	35.9	9	28.1	32	33.3	28	34.6
7	16	25.0	11	34.4	27	28.1	15	18.5

24. I am generally satisfied with the kind of work I do in this job.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	1	1.6	2	6.3	3	3.1	3	3.7
2	2	3.1	2	6.3	4	4.2	5	6.2
3	2	3.1	1	3.1	3	3.1	11	13.6
4	5	7.8	5	15.6	10	10.4	8	9.9
5	7	10.9	6	18.8	13	13.5	16	19.8
6	36	56.3	12	37.5	48	50.0	28	34.6
7	11	17.2	4	12.5	15	15.6	10	12.3

25. My own feelings generally are <u>not</u> affected much one way or the other by how well I do on this job.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	1	1.2
2	2	3.1	1	3.1	3	3.1	4	4.9
3	3	4.7	2	6.3	5	5.2	10	12.3
4	5	7.8	5	15.6	10	10.4	16	19.8
5	6	9.4	4	12.5	10	10.4	11	13.6
6	30	46.9	11	34.4	41	42.7	25	30.9
7	18	28.1	9	28.1	27	28.1	14	17.3

The next four items (26 - 29) use the following scale:

```
   1--------2--------3-------4-------5--------6--------7
EXTREMELY          SLIGHTLY        SLIGHTLY         EXTREMELY
      DISSATISFIED                          SATISFIED
                          NEUTRAL
```

26. The amount of personal growth and development I get in doing my job.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	1	1.6	2	6.3	3	3.1	2	2.5
2	4	6.3	4	12.5	8	8.3	20	24.7
3	4	6.3	4	12.5	8	8.3	6	7.4
4	6	9.4	3	9.4	9	9.4	11	13.6
5	27	42.2	9	28.1	36	37.5	25	30.9
6	21	32.8	8	25.0	29	30.2	16	19.8
7	1	1.6	2	6.3	3	3.1	1	1.2

27. The feeling of worthwhile accomplishment I get from doing my job.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	1	1.6	1	3.1	2	2.1	2	2.5
2	2	3.1	2	6.3	4	4.2	11	13.6
3	1	1.6	2	6.3	3	3.1	10	12.3
4	6	9.4	4	12.5	10	10.4	8	9.9
5	22	34.4	5	15.6	27	28.1	24	29.6
6	29	45.3	14	43.8	43	44.8	23	28.4
7	3	4.7	4	12.5	7	7.3	3	3.7

28. The amount of independent thought and action I can exercise in my job.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	1	3.1	1	1.0	3	3.7
2	2	3.1	2	6.3	4	4.2	13	16.0
3	4	6.3	6	18.8	10	10.4	5	6.2
4	10	15.6	3	9.4	13	13.5	15	18.5
5	20	31.3	9	28.1	29	30.2	28	34.6
6	21	32.8	9	28.1	30	31.3	15	18.5
7	7	10.9	2	6.3	9	9.4	2	2.5

29. The amount of challenge in my job.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	2	3.1	0	0.0	2	2.1	2	2.5
2	4	6.3	4	12.5	8	8.3	10	12.3
3	4	6.3	1	3.1	5	5.2	5	6.2
4	3	4.7	6	18.8	9	9.4	14	17.3
5	20	31.3	6	18.8	26	27.1	17	21.0
6	23	35.9	10	31.3	33	34.4	26	32.1
7	8	12.5	5	15.6	13	13.5	7	8.6

The next six items (30 - 35) use the following scale:

1-------2-------3-------4-------5-------6-------7

Would like having this only a moderate amount (or Less)	Would like having this very much	Would like having this <u>extremely</u> much

30. Stimulating and challenging work.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	2	6.3	2	2.1	1	1.2
2	0	0.0	0	0.0	0	0.0	2	2.5
3	2	3.1	2	6.3	4	4.2	6	7.4
4	5	7.8	5	15.6	10	10.4	14	17.3
5	5	7.8	4	12.5	9	9.4	10	12.3
6	23	35.9	6	18.8	29	30.2	25	30.9
7	29	45.3	13	40.6	42	43.8	23	28.4

31. Chances to exercise independent thought and action in my job.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	0	0.0
2	0	0.0	0	0.0	0	0.0	0	0.0
3	1	1.6	1	3.1	2	2.1	2	2.5
4	5	7.8	3	9.4	8	8.3	10	12.3
5	8	12.5	6	18.8	14	14.6	14	17.3
6	25	39.1	8	25.0	33	34.4	24	29.6
7	25	39.1	14	43.8	39	40.6	31	38.3

32. Opportunities to learn new things from my work.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	1	3.1	1	1.0	0	0.0
2	0	0.0	1	3.1	1	1.0	2	2.5
3	0	0.0	0	0.0	0	0.0	0	0.0
4	4	6.3	4	12.5	8	8.3	6	7.4
5	5	7.8	1	3.1	6	6.3	10	12.3
6	20	31.3	8	25.0	28	29.2	22	27.2
7	35	54.7	17	53.1	52	54.2	41	50.6

33. Opportunities to be creative and imaginative in my work.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	0	0.0	0	0.0	1	1.2
2	0	0.0	1	3.1	1	1.0	2	2.5
3	4	6.3	1	3.1	5	5.2	2	2.5
4	3	4.7	5	15.6	8	8.3	8	9.9
5	12	18.8	4	12.5	16	16.7	15	18.5
6	23	35.9	8	25.0	31	32.3	19	23.5
7	22	34.4	13	40.6	35	36.5	34	42.0

34. Opportunities for personal growth and development in my job.

	AMS		FMS		OFF-EQUIPMENT AMS/FMS		ON-EQUIPMENT OMS	
#	FREQ	%	FREQ	%	FREQ	%	FREQ	%
1	0	0.0	1	3.1	1	1.0	1	1.2
2	0	0.0	0	0.0	0	0.0	1	1.2
3	2	3.1	2	6.3	4	4.2	0	0.0
4	1	1.6	2	6.3	3	3.1	6	7.4
5	8	12.5	2	6.3	10	10.4	15	18.5
6	24	37.5	10	31.3	34	35.4	21	25.9
7	29	45.3	15	46.9	44	45.8	37	45.7

35. A sense of worthwhile accomplishment in my work.

#	AMS FREQ	AMS %	FMS FREQ	FMS %	OFF-EQUIPMENT AMS/FMS FREQ	OFF-EQUIPMENT AMS/FMS %	ON-EQUIPMENT OMS FREQ	ON-EQUIPMENT OMS %
1	0	0.0	1	3.1	1	1.0	0	0.0
2	0	0.0	0	0.0	0	0.0	1	1.2
3	1	1.6	1	3.1	2	2.1	0	0.0
4	2	3.1	3	9.4	5	5.2	6	7.4
5	4	6.3	3	9.4	7	7.3	10	12.3
6	22	34.4	1	3.1	23	24.0	19	23.5
7	35	54.7	23	71.9	58	60.4	45	55.6

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Vita

Captain Christopher John Burke [redacted] was raised outside Chicago in Wheaton, Illinois and graduated from Wheaton North High School in 1981. Chris attended the University of Notre Dame and obtained a Bachelor of Science in Aerospace Engineering in May 1985. As a Distinguished Graduate from the Reserve Officers Training Corp, Chris received a regular commission in the USAF and reported to the Aircraft Maintenance Officer Course at Chanute AFB, Illinois in July 1985. Completing the course as a Distinguished Graduate, he was reassigned to the 379th Bombardment Wing (Heavy) Wurtsmith AFB, Michigan. From February 1986 to May 1989, Chris saw duty as the Officer in Charge of the Specialist Branch in the Organizational Maintenance Squadron, Maintenance Supervisor of the Avionics Maintenance Squadron, and Chief of Standardization and Training for the Deputy Commander for Maintenance. Prior to departing Wurtsmith AFB, Chris received a Masters of Science in Administration from Central Michigan University in May 1988. Chris entered the School of Systems and Logistics, Air Force Institute of Technology, Air University, in May 1989 to pursue a Masters of Science in Acquisition Logistics.

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13. ABSTRACT (Maximum 200 words) This study compared the work attitudes of the aircraft maintenance specialists assigned to on-equipment maintenance (OMS), against the work attitudes of the aircraft maintenance specialists assigned to off-equipment maintenance (AMS/FMS) under the Strategic Air Command Readiness Oriented Logistics System (ROLS). Hackman and Oldham's job characteristics model was used as the basis for the comparison. A modified short-form of the Job Diagnostic Survey was administered to the aircraft maintenance specialists of the 379th Bombardment Wing, Wurtsmith AFB MI. The collected data was analyzed through hypothesis testing using the two-sample t-statistic for two independent samples. The calculated results show that off-equipment aircraft maintenance specialists perceive a higher degree of task identity, task significance, autonomy, feedback from the job, internal work motivation, growth satisfaction, and a higher motivating potential score. The results were indeterminate if there is a difference in the perceived degree of skill variety, dealing with others, job related satisfaction, and individual growth need strength. Recommendations for future research highlight the additional use of Hackman and Oldham's job characteristics model to evaluate redesigning specific areas of on- and off-equipment aircraft maintenance specialist's jobs.

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