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COMBAT CREW MEMBERS' ATTITUDES.

10 Robert/Cancellieri Captain, USAF
David J. Willoughby Major, USAF

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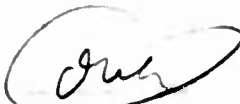
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Since the introduction of the ICBM into the SAC arsenal, numerous researchers have studied the missile operations career field. These studies have been primarily oriented toward the overall attitudes, morale, job satisfaction, and retention rates of Missile Combat Crew Members (MCCMs), both in general and in relation to a specific weapon system (i.e., Titan or Minuteman). The purpose of this study was to determine: (1) if MCCM attitudes differed among the nine missile wings, (2) if the demographic composition of the crew force differed among the nine missile wings, and (3) if demographic differences could be related to attitudinal differences. The authors conclude that there is a significant difference in MCCM attitudes among the wings; however, there is not a significant difference in demographic composition. Thus, the demographic data contained in this study could not be used to explain the differences found in MCCM attitudes.

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A STUDY OF THE RELATIONSHIPS BETWEEN DEMOGRAPHIC
FACTORS AND SAC MISSILE COMBAT
CREW MEMBERS' ATTITUDES

A Thesis

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

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In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Logistics Management

By

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September 1977

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Chapter 1

INTRODUCTION

Personnel problems have existed in the missile operations career field since the introduction of the Intercontinental Ballistic Missile (ICBM) into the Strategic Air Command (SAC) inventory. Some of these problems stem from the frustrations felt by the missile combat crew members (MCCMs). Robert Rodwell, a British writer, foresaw the problem in 1958 when he pointed out that:

There will be no indication to the officers or airmen what their combined efforts are achieving. They will be denied the satisfaction derived from a job well done [40:66].

More recently, in 1973, Alistair Cooke, in his description of the U.S. arsenal wrote of the MCCM.

They are worth a long look, for they are specially trained to keep what is surely the loneliest, and could be the last, vigil of human warfare [14:359].

He refers to them as doomsday warriors, simple family men who may, someday, be the trigger of Armageddon (14:359-363). This awesome responsibility and attendant frustrations have an impact on the MCCM.

Problem Statement

The SAC MCCM has been the subject of numerous studies. The majority of these studies have been concerned with the MCCM's morale, attitudes, job satisfaction, and career intent. The results of various personal observations, surveys, and questionnaires have been evaluated primarily in the terms of the motivation and job satisfaction theories of Maslow, Herzberg, and McGregor (3,6,9,18,24,25,36). Such studies have provided excellent background information for SAC command and staff personnel on the overall attitudes of the MCCMs.

The previous research on MCCM attitudes has consistently shown that considerable dissatisfaction exists among the MCCMs. However, the research does not indicate whether the attitudes are universally negative throughout the missile force, or whether negative attitudes are predominantly localized in certain missile wings. Thus, at this time, it is not known if significant differences in attitudes exist among the various missile wings. If such attitudinal differences actually exist, then their identification and the identification of related factors could be valuable to Headquarters SAC operations and personnel planners, and to commanders at the wing and

squadron level. Given such knowledge, decision makers may be able to take action to create a more favorable climate at those missile wings where attitudes are predominantly negative or significantly lower than others.

LITERATURE REVIEW

The literature review for this study addresses three general areas: (1) motivation theory, (2) attitude theory, and (3) previous missile career field studies.

Motivation Theory

Overview. The majority of previous missile career field studies have been based upon, and provide excellent synopses of, the motivational theories advanced by Maslow, Herzberg, and McGregor (3,6,9,18,24,25,36). Most Air Force managers have been exposed to the basic precepts of these motivational theories through formal education and professional military education. Consequently, this study will only provide a cursory discussion of the Maslow, Herzberg, and McGregor theories.

Victor Vroom's motivational theory, however, has not been popularized in the military environment. Therefore, it will be covered in more detail.

Maslow. A. H. Maslow's dominant theme is the hierarchy of needs. These needs flow upward from the lowest order of survival and physiological needs through safety, social, and esteem needs to the highest order need of self-actualization. The general contention is that individuals are predominantly motivated by the lowest level of unsatisfied needs. As the lower order needs become satisfied, other needs emerge and become dominant. Thus, individuals progress up the hierarchy; and, are then, motivated by the higher order needs. Realistically, all of the needs are present within an individual at any given time. Hence, a complicated mix of need satisfactions may be operating at any given point in time. Additionally, individuals may move either up or down the hierarchy during both the short run and long run (27:257-258).

McGregor. Douglas McGregor proposed the concept of Theory Y management as an alternative to the traditional Theory X approach. Theory X generally assumes that external means (i.e., rewards and punishments) are the dominant features of employee motivation. In contrast, Theory Y contends that the individual can best satisfy his own objectives by self directing his efforts toward the goals

of the organization. That is, internal motivators provide the best means of achieving the desired ends (27:260-261).

Herzberg. Frederick Herzberg's studies have found a distinct difference between the factors which lead to job satisfaction (motivators) and those which lead to job dissatisfaction (hygienes). In order to improve job satisfaction, it is necessary to improve those factors viewed as motivators. However, failure to improve the motivational factors does not lead to job dissatisfaction; rather, it leads to no satisfaction. In a similar manner, fulfilling hygiene needs decreases job dissatisfaction; but, does nothing to improve job satisfaction. In general, hygienes are associated with external environmental factors; whereas, motivators tend to be related to the content of the job itself. As a result, managers need to be aware of (and responsive to) both motivators and hygienes if they desire to both increase job satisfaction and decrease job dissatisfaction (27:262-263). In updating his original theory (now called orthodox job enrichment), Herzberg advises managers to make extensive use of the knowledge and skills of their long term employees. These individuals can often provide valuable information on how to effectively enrich the jobs (21:70-80).

Vroom. Victor Vroom views motivation as a means of explaining why specific choices are made from a variety of possible voluntary responses. His explanation is based upon the concepts of valence, expectancy, and force.

Valence is the preference of one outcome or state of nature over another. It may be considered as a weight used in determining the preferred outcome. This weight may be positive, for outcomes a person prefers to attain, or negative for those that the person prefers not to attain. The second concept, expectancy, is the degree to which a person believes that an outcome is probable. Finally, force is a directional concept of how valences and expectancies combine in determining choices. Thus, the chosen alternative from among several alternatives is the one corresponding to the strongest positive (or weakest negative) force (50:9-19).

Vroom derived two basic propositions from these concepts. Proposition one states that the valence of one outcome is related to the valences (desirability) of attaining each of the other possible outcomes (50:17). The second proposition states that the force on a person to act is directly related to the valences that he places

on all expected outcomes and the individual strengths of the expectancies of those outcomes (50:19). Although these propositions are stated in separate terms, they are, in fact, highly related to one another. Force, however, is the only concept in this model which has been directly linked to any potentially observable events (50:19,20).

In measuring valence, Vroom uses six approaches. The first of these approaches relies upon verbal reports or questionnaire responses. If an individual indicates a preference of one outcome over another, then it may be assumed to have positive valence in relation to the alternative. By extending this procedure, it is possible to provide a measure of the relative attractiveness among several alternatives. Traditionally, this methodology has been used to develop a variety of attitude scales such as: The Allport-Vernon-Lendzey Study of Values, the Strong Vocational Interest Bank, and the Edwards Personal Preference Test (50:20,21).

A second approach is to analyze fantasy. In this approach, the subject is asked to verbally describe the meaning or scene in a picture (50:21).

The third approach involves the use of outcomes that create new learning. If a particular outcome

reinforces the tendency toward a specific response, then it could be assumed to have a positive valence. Valences are measured as the amount or rate of change in response probability when outcomes are made contingent on responses (50:22).

The choice that a person makes in an unstructured environment is the fourth approach. The valences of the possible outcomes can be inferred from the choice among alternative courses of action (50:22).

The fifth approach involves the observation of consummatory behavior. This is primarily applicable to those outcomes such as food, water, and sexual activity. For example, the hungrier a person is the higher the valence of food (50:22).

The sixth approach involves the measurement of decision time. Valence is related to the time required to make a free choice among various alternatives (50:23).

According to Vroom, choices among alternatives are made by combining the valence of an outcome with the expectancy (probability) of attaining a specific outcome. In general, expectancy for a given outcome is based on a priori reasoning or experience (50:25,28).

Vroom's model has been used predominantly to predict job satisfaction, occupational preference, or the

valence of good performance. Essentially, it states that satisfaction is based upon how the job aids an individual in attaining his desired outcomes (37:1054). Since both job satisfaction and job attitude refer to affective orientations toward work by the individuals who are presently performing the work, these terms are often used interchangeably. A positive attitude toward one's job reflects job satisfaction; whereas, a negative attitude equates to job dissatisfaction. If a person is satisfied with an outcome, object, or situation, then Vroom interprets this satisfaction as showing a positive valence toward that outcome, object, or situation (50:99,100).

Thus, Vroom maintains that the term job satisfaction " . . . is the conceptual equivalent of the valence of the job or work role to the person performing it [50:101]."

Differences in job satisfaction may result from many causes. Satisfied individuals may attribute satisfaction to their own success on the job. Unsuccessful workers are more likely to attribute their failure, not to personal inadequacies or deficiencies, but to some factors in the work environment such as policies, procedures, or supervision (50:129-136). Lawler points out

that recent studies have shown that better performers seem to be more satisfied than poor performers. These studies thus suggest that better performance causes satisfaction rather than satisfaction causing better performance (32:83).

The level or status of a job has a positive relationship toward a worker's satisfaction with the job. A perceived deficiency in fulfilling a worker's needs increases at each successively lower echelon of the management hierarchy. Additionally, the age of the worker is related to job dissatisfaction. Younger workers tend to report a high level of monotony as dissatisfying. These younger workers express a preference for variety as indicated by their daily habits and leisure time activities (50:129-136).

Vroom operationalizes job behavior in terms of worker turnover, unexcused absences, accidents and job performance. He consistently found an inverse relationship between job satisfaction and turnover. This supports Lawler's previous findings: (1) turnover tends to be higher among dissatisfied workers; and (2) satisfaction scores can be used to predict turnover (32:85). Vroom also found an indication of an inverse relationship between job satisfaction and accidents. This latter

relationship, however, was too small to permit any firm conclusions. Overall, Vroom was unable to find a simple relationship between job satisfaction and job performance. The correlations between job satisfaction and performance vary widely and have no statistical significance (50:186).

The negative relationship between job satisfaction and both turnover and absences was derived from the proposition that the valence of the work role to its occupant is directly related to the strength of the force acting on him to remain within that work role. In other words, workers who are highly attracted to their jobs should be subject to stronger forces to remain in them than those who are less attracted to their jobs [50:187].

In summary, Vroom has identified a number of motivational determinants of effective job performance. These include: Supervision, work group, job content, wages, promotional opportunities, satisfaction, performance, and the problem of ego-involvement. The level of an individual's performance appears to vary directly with the strength of that individual's need for achievement, particularly when the task is perceived as difficult and/or challenging. Additionally, an individual performs at a higher level when he perceives that the task requires valued abilities (50:211-267). Consequently, Vroom concludes:

The important feature of the model, as far as we are concerned, is its view of behavior as subjectively rational and as directed toward the attainment of desired outcomes and away from aversive outcomes [50:276].

Attitude Theory

Overview. There are almost as many definitions of attitudes as there are theorists on the subject (39:3). However, most of these definitions seem to be more or less interchangeable, especially when researchers are concerned with attitude measurement or hypothesis testing (43:110).

The classic review of attitude theory was conducted by Gordon Allport in 1935. Thomas synthesized Allport's conclusions as follows:

After considering more than one hundred different definitions of attitude, Allport concluded that most investigators basically agreed that an attitude is a learned predisposition to respond to an object or class of objects in a consistently favorable or unfavorable way [47:17].

An attitude, according to D. J. Bem is an individual's description of his affinity for or aversion to some identifiable aspect of his environment (5:323). L. W. Doob defines attitude as an anticipatory and mediating response to stimuli, based upon previous

experience, which produces a drive and is considered socially significant in an individual's society (15:36).

Attitudes have generally been regarded as either mental readiness or implicit predispositions which exert some general and consistent influence on a fairly large class of evaluative responses. These responses are usually directed toward some object, person or group. In addition, attitudes are seen as enduring predispositions, but ones which are learned rather than innate. Thus, even though attitudes are not momentarily transient, they are susceptible to change [52:6].

Thus, while there exists a large number of individual definitions of attitude, the concept of a predisposition to act in a specific manner provides a thread of continuity throughout most of them.

Attitude formation. In the previous section, Zimbardo and Ebbesen indicated that an attitude is learned (52:6). Doob agrees with them, as do most other experts in the field (15:34). Bem explains that attitudes develop as individuals learn to describe the stimuli in their environment through a process of discrimination training (5:324).

Breer and Locke also tie attitudes to an individual's experience. They reason that individuals differ in what they believe, prefer, and value, because they have different bases on which attitudes are formed.

There are many factors involved: the individual's family influence, peer group membership, past events, sources of anxiety, desires and goals, personal defense mechanisms, aptitudes and skills, education level and source, income, occupation, and the effects of the mass media. The individual's task experience (i.e., the things that people do in daily life) serves as a very important determinant of what the individual learns to believe, prefer, and value (8:8,9).

Functions and structure of attitude. Rokeach claims that most theorists tend to agree that an attitude is not one of the basic, irreducible factors within a person's personality. Rather, it represents a cluster or organization of two or more basic beliefs. Thus these underlying beliefs, which may also be termed cognitions, expectancies, or hypotheses, need to be understood (43:112). According to Rokeach, there are three types of beliefs: descriptive (which provides a description of what is), evaluative (which provides criteria for judgement), and prescriptive (which describes an ideal, what should be). Each type of belief contains three components:

1. Cognitive--representing the belief holder's knowledge, with its varying levels of certainty, regarding

true and false, good and bad, desirable and undesirable, etc.,

2. Affective--representing the varying intensity surrounding the object of a belief, and

3. Behavioral--representing the predisposition toward a type of response, such as the parent, adult, or child ego state, with a threshold that differs with the object of the belief (43:113-114).

These beliefs, along with their associated objects and situations, are organized and synthesized within a person into a system of attitudes (43:114). As a result, attitudes are drawn from a system of beliefs. An adult may have tens (or hundreds) of thousands of beliefs, each drawn from experience or learned from his environment. This same individual may also have thousands of attitudes, each supported by many beliefs. But, underlying all of these beliefs and attitudes are relatively few (dozens) values. An individual's value system is a hierarchial organization, a rank ordering, of ideals or values in terms of their importance to the individual (43:124).

The values that an individual holds are centrally located within his attitude, belief, and value system. Values are abstract ideals, not tied to any specific

attitude object, belief, or situation. However, they are the basis for many different attitudes and beliefs. As such, values are protected by the ego-defensive function and are the most difficult to change of an individual's total system of attitudes, beliefs, and values (43:124).

Katz argues that attitudes serve four major functions which can be grouped as follows:

1. The adjustive function stresses the individual's desire to increase pleasure or rewards and minimize pain or punishment. Thus, the individual adjusts his attitudes in order to seek desired goals and avoid undesirable ones.

2. The ego-defensive function is evident in an individual who needs to protect himself from truths about himself or the realities of his environment. This function may be maladjustive since it stems from internal conflict and often results in insecurity.

3. The value-expressive function stresses the importance of self-expression, self-development, and self-realization. The individual derives satisfaction from expressing attitudes that are consistent with his personal self-image and values.

4. The knowledge function represents an inner desire to find meaning, understanding, or organization

for one's perceptions to provide a clarity and consistency of life. This function aids the individual in setting standards or frames of reference for understanding his environment. These four functions do not necessarily work in isolation and should be considered as simultaneous operators of attitudes (39:8,9;28:255-256).

Blum and Naylor contend that attitudes also serve as a means of adapting to frustration. Repetitive, unchallenging tasks that are normally found to be exceedingly unrewarding and dull are primary sources of frustration, which may foster poor attitudes. To the extent that variety and stimulation are present in the work environment, frustrations may be reduced. Thus, an improvement in attitudes may result (7:338-339).

Just as attitudes are the result of complex inter-relationships of a variety of psycho-social factors, so is job satisfaction. Blum and Naylor consider job satisfaction to be the result of various attitudes possessed by an individual (7:364). Job satisfaction can be related to attitudes towards: wages, supervision, steadiness of employment, working conditions, opportunity for advancement, recognition, social relations with peers and co-workers on the job, and other similar items. In

assessing job satisfaction, the individual's life off-the-job and the individual himself need to be considered (7:34).

Jucius emphasized that status had a bearing on attitude development. He listed the following outside influences as affecting work attitudes and job satisfaction:

1. Family relations,
2. Friends and neighbors,
3. His and his family's health,
4. Personal success, for example voting for or picking a winner, and
5. Environmental factors, such as parking and traffic conditions, housing conditions, and air quality [26:313].

Thus, the relationship between attitudes and job satisfaction is extremely complicated. Blum and Naylor summarize this relationship:

In short, job satisfaction is a general attitude which is the result of many specific attitudes in three areas, namely, specific job factors, individual characteristics, and group relations outside the job [7:364].

Employee attitudes are not the same as job satisfaction and job satisfaction is not the same as morale. But, employee attitudes contribute to job satisfaction and job satisfaction contributes to morale (7:365).

Jucius defines morale as an attitude of the mind, an esprit de corps, a state of well (or unwell) being, or an emotional force that affects output, quality, costs, cooperation, discipline, enthusiasm, initiative, and many other aspects of success. Management affects morale not only by what it does, but also by how it does what it does. One result of poor morale is an individual's unwillingness to do the best he can do on the job (26:306-311).

The primary focus of much of the research in the area of job satisfaction has been to discover relationships among attitudes, job satisfaction, and performance. Blum and Naylor concluded that the available evidence seemed to indicate that although attitudes may be poor and job satisfaction may be lacking, mission performance may not be affected (7:365,373).

Attitude change. Since attitudes are learned, and learning is a continuous process from birth until death, attitudes will continuously change. As a result of the learning process, individuals form or modify attitudes and beliefs toward the most effective and consistent way to perform a task or react to new stimuli (7:12). Whenever a process used in a task fails or the responses to certain stimuli are ineffective, learning has occurred.

Therefore, a new attitude may be formed or an old one altered. This is especially true in group situations.

A group develops group attitudes that constitute group norms. If these norms are positively reinforced by any means, then they become legitimized and become the group's basis for reward or punishment (7:12-13).

As Hare explained:

Group members tend to form and conform to norms. Norms are rules of behavior, proper ways of acting, which have been accepted as legitimate by members of a group. Norms specify all kinds of behavior that are expected of group members. These rules or standards of behavior are for the most part derived from the goals which a group has set for itself. . . . if the individual finds that his behavior deviates from the group norms, he has four choices: to conform, to change the norms, to remain a deviant, or to leave the group. Of course, he may also be removed from the group without his consent [20:24].

Thus, the changing of an individual's attitude depends upon the demands of the situation, the role expectations of the individual, the group or peer pressure, the object to be judged, and the individual himself.

Zimbardo and Ebbesen observed that Festinger's cognitive dissonance theory assumed that humans could not tolerate inconsistency. According to this theory, whenever a person detects inconsistency within himself, he will take action to either eliminate or reduce it. The

existence of inconsistency motivates the individual to pursue a course of action aimed at reducing the tension produced by the inconsistency (52:67).

The theory states that dissonance (psychological inconsistency) exists whenever one cognitive element conflicts with (is dissonant with) another cognitive element. These cognitive elements are bits of knowledge (it is raining), or opinions (I like rain), or beliefs (the rain makes flowers grow), either about the environment or about oneself [52:67-68].

The relationship between cognitive elements can be either: dissonant, consonant, or irrelevant. Consonant and irrelevant elements do not lead to changes. An individual can change dissonant cognitive elements to consonant elements by changing his behavior (attitude), if that behavior comprises one of the dissonant elements. There are two variables involved, the importance of each of the cognitive elements and, more difficult to conceptualize, the amount of dissonance that an individual experiences. The greater the number of dissonant elements, in relation to the number of consonant elements, the greater the dissonance that is felt by the individual (52:68-69).

Once an individual detects dissonance, he will have a need to reduce it. Dissonance can be reduced by: reworking the decision or action, if possible, lowering

the importance of the dissonant cognitions and by adding consonant elements to change the ratio (52:69-70).

Summary. Attitudes are learned from many sources within an individual's environment. They are based upon, and interrelated with, a complex hierarchial structure of beliefs and personal values. Attitudes perform the functions of adjusting, defending the ego, expressing values, gaining knowledge, and adapting to frustrations. Since attitudes are learned, they are subject to constant re-evaluation and change.

Previous Missile Career field Studies

Overview. For the past 15 years, students at such professional military schools as Air Command and Staff College (ACSC), Air War College (AWC), and National War College (NWC), have researched various facets of the MCCM's existence. This research effort will highlight the portions of previous research applicable to MCCM attitudes. In addition to a general review of ACSC studies, the specific studies of Bickerstaff, Markisello, McDaniel and Dodd, Brooksher and Scott, and Ashbaugh and Godfrey are treated separately.

ACSC studies. This section will only discuss the most pertinent findings and conclusions of a variety of studies. The findings are aggregated into the general classifications: Career field, MCCM duty and psycho-social factors. Synthesis of their conclusions is presented separately. The interested reader is referred to the original works for a more complete and detailed coverage of each specific topic.

Career field findings. The missile operations career field is approximately 90 percent manned with non-rated officers (17:25). According to data from the AF Military Personnel Center (MPC), 75 percent of the over 800 officers entering the career field in fiscal year 1971 came directly from Officer Training School (School of Military Science: Officer) and the Reserve Officer Training Corps (34:16). The voluntary loss rate separation from the Air Force of missile launch officers with less than eight years commissioned service, based upon MPC data for fiscal years 1967-72, averaged 16.5 percent. The loss rates for the other career fields studied were: Navigators 11.7 percent, pilots 15.2 percent, supply management 23.8 percent, and administrative 28.1 percent (17:19-22). Trend analysis of the non-rated career

fields studied forecasted MOCM losses of up to 25 percent for fiscal year 1973. Supply management and administrative forecasts were 35 to 40 percent respectively (17:27-29).

The missile career field suffers from a lack of internal advancement visibility. Representation of the career field on the Air Staff, one for each 159 in the field, is one of the lowest in the Air Force (51:44). Also, rated supplement officers usually have higher rank or more time in grade than the non-rated officers, and thus tend to be given more of the desirable staff jobs, regardless of missile experience (22:15,49-51;24:33-34; 51:57). Consequently, the non-rated officers only see missile operations as a broadening career field due to this lack of visible opportunity for advancement (4:37).

There are other problems within the career field. Although the missile operations career field is the major officer resource dedicated to one-third of the triad;¹ the land based strategic missile force seems to lack the status enjoyed by the other two-thirds. Major Luckett found that there is less prestige in the missile career

¹The triad consists of the three strategic offensive/deterrent weapon systems: land based missiles, intercontinental bombers, and sea launched ballistic missiles.

field than in the intercontinental bomber force or the submarine launched ballistic missile force (24:31; 25:16-17;33:48).

The supervisory personnel in the career field have had to cope with the problems of supervising and evaluating personnel who do not, individually, produce visible results of their work. The majority of MCCM duty is highly standardized and governed by strict rules and procedures. Consequently, supervisors tend to be primarily concerned with the results of local and higher headquarters evaluations as a measure of MCCM ability, and use these results as a basis for MCCM effectiveness reports (19:22; 22:55-56;25:36).

MCCM duty findings. The characteristics of the missile operations career field have generated a great deal of study, research, and comment. Almost every ACSC researcher of the missile operations career field has found, or derived, a set of descriptive terms with which to characterize the MCCM's job. The most frequently noted terms refer to the monotonous, routine, boring, and rigid nature of the job (4,17,19,22,24,25,30,33,34, 46,51).

The authors of the ACSC studies found missile duty to be isolated, monotonous, and rigid (4:27) with the major portion of crew alert time spent monitoring the silent sentinels (19:10). Thus, monotony, boredom, and frustration among the MCCMs is common place (51:19).

There are many other descriptions used to characterize the MCCM's job; such as glorified telephone operators whose only duties are responsive in nature (19:10; 24:30; 25:17-18, 32). The effects of technical complexity and sophistication have created an impersonal environment within which the MCCM must function (30:2-3). There is little or no opportunity for personal judgement or initiative in the routine day-to-day tasks (51:19). These descriptors indicate that the MCCM's psycho-social environment is worthy of study.

Psycho-social factors findings. Many job and career problems have occurred within the missile combat crew force (30:3). One problem is that if an MCCM was not a volunteer, it could adversely affect his attitude (4:34). Another is

. . . the duty performed by the missile crewmember . . . does not provide the satisfaction required to fulfill the higher, less tangible, needs of the crewmember . . . any motivation toward a career in missiles is non-existent [19:50].

In addition to the routineness of the duties, pressures such as frequent MCCM evaluations by various agencies cause low morale (17:14).

The rated supplement has had a demoralizing effect on missile crews since it detracts from the growth visibility of the non-rated officers (22:49-51;51:58). This is a direct result of the rated supplement officers getting the desirable staff jobs at the units (51:57). Many of the problems in officer morale and motivational behavior stem from the use of the rated officers in the missile operations career field (4:26).

To reduce future attitudinal problems, Major Tantillo proposed that new MCCMs be socialized in what to expect at the operational units prior to their arrival at the unit (46). A related concept was validated by Ilgen and Seeley in a study of West Point cadets (23).

Conclusions. As a result of the specific findings above, and others, the ACSC researchers reached some apparently contradictory conclusions. Examples of such conflict are the conclusions that: (1) loss rates are not indicative of low morale being widespread in the missile career field (17:3), and (2) missile crew duty destroys any motivation that a MCCM may have toward a career in missile operations (19:50). Some conclusions reflect broad generalities:

Jobs in the operations area (10-20XX), which includes the missile career field, have fewer motivators and therefore fewer opportunities for satisfaction than jobs in non-operational areas [51:37].

Others, however, are quite specific (i.e., highly experienced and qualified non-rated officers are available for duty as missile unit commanders and should be utilized as such, and, those officers who are selected to be missile unit commanders should have prior experience on a missile combat crew) (4:41,42).

The remaining literature review covers specific research that is, in some respect, directly related to this research effort.

Bickerstaff. Rodgers W. Bickerstaff provides an excellent review of the missile operations career field studies conducted between 1965 and 1973 (6:9-10). The majority of these studies are concerned with missile combat crew duty on a SAC-wide basis. The findings, conclusions, and recommendations that were reviewed generally indicated that a significant percentage of MCCMs were dissatisfied with their jobs (6:67). Bickerstaff hypothesized that periods of constant activity would be less stressful than long periods of relative inactivity which are interrupted by events requiring an immediate reaction from the MCCM (6:75-78).

He remarks that the confinement and boredom are sources of psychological stress and that boredom can be and is a factor in mistakes (6:78,79).

He found the physiological stress of interrupting normal body cycles and functions due to the 24-hour-a-day nature of the duty to be a source of dissatisfaction. Also, the adverse launch control center environment was a source of stress due to the: (1) constant noise level, (2) reflections and glare from the plexiglass equipment panel covers and acetate page protectors, (3) low humidity, and (4) the body's attempt to respond to the cold and warm zones within the launch control center (6:79-82).

Markisello. Captain Markisello's thesis was based on the personal value systems of Minuteman maintenance officers (35). Specifically, Markisello found a significant variation among the officers of the units in the area of missile safety. The maintenance officers at Minot AFB, North Dakota were found to place the highest emphasis of all units on the value of a good safety program; whereas, Grand Forks AFB, North Dakota had the lowest emphasis on a good safety program by its missile maintenance officers. Markisello's findings were supported on the next SAC Operational Readiness Inspection (ORI) when Minot was

rated satisfactory while Grand Forks was rated marginal in missile safety (35:153-154).

McDaniel and Dodd. These two authors investigated the concept of dissatisfaction as a function of combat crew integrity² (36:2-4). They surveyed 387 MCCMs and collected data on a variety of demographic and attitude/satisfaction areas. Based upon analysis of the data, they concluded that Herzberg's claim, that factors such as personal life and work schedule have no effect on job satisfaction, was invalid. There was a definite relationship between personal life and work schedule, and the level of job satisfaction in the missile crew environment. They also found that although 90 percent of the MCCMs liked their partner, 25 percent felt that crew integrity restricted their social lives. A majority, 70 percent, felt that unit and individual performance would be degraded if crew integrity were not maintained (36:41).

McDaniel and Dodd recommended that the crew integrity policy be modified. The modification would include allowing those who desire a variety of alert

²Crew integrity is the concept of forming MCCMs into stable, identifiable teams. To the maximum extent possible, these teams are treated as single entities for all activities.

partners to have variety and to allow those who want stability in alert partners to be allowed stability (36:41).

Brooksher and Scott. Colonels Brooksher and Scott provided a comprehensive review of literature on motivation, morale, effectiveness, and retention. Their broad study, covered career field selection, career development, and the USAF officer personnel plan (TOPLINE) (9:12-35).

A central point of their research was the collection and analysis of survey data. They conducted three surveys. The first two were unstructured pilot surveys which were sent to senior missile commanders, staff officers, recently retired senior personnel, and middle level staff officers at the 3901st Strategic Missile Evaluation Squadron (SAC). The third (structured) survey included 479 current and former MCCMs. The data were collected and analyzed under three assumptions: (1) the missile force would be active for the foreseeable future, (2) the missile systems would continue to be manned, and (3) the size of the missile force would be relatively stable (9:8-10).

As a result of their analysis, they concluded that there needed to be an increase in career field motivators,

a decrease in some of the dissatisfiers, better supervision, more visible career opportunity and greater prestige for the MCCM (9:135). For a complete list of all 54 pages of conclusions and recommendations, the reader is referred to the original document (9:88-142).

Ashbaugh and Godfrey. The primary purpose of this thesis was to determine whether or not MCCM attitudes, job satisfaction, and retention rates had improved during the time period 1971 to 1976 (3:2-3). Their objectives included:

1. Sampling MCCM attitudes toward the job and missile career field,
2. Comparing current attitudes with previous studies,
3. Measuring the effectiveness of Missile Management Working Group,³
4. Comparing current retention rates to previous rates, and
5. Comparing the proportion of volunteer MCCMs to previous proportions (3:20-21).

³Those portions of the Ashbaugh and Godfrey thesis dealing with the Missile Management Working Group have been omitted from this review since they are not applicable to the present research.

To achieve these objectives, Ashbaugh and Godfrey developed a survey questionnaire to obtain demographic, attitude, and other data (3:29). Several of the questions were taken directly from the questionnaires used by Brooksher and Scott, and McDaniel and Dodd in order to facilitate comparisons of responses from the MCCMs (3:31-32).

A disproportionate stratified random sample was selected. HQ SAC identified 60 MCCMs, on the basis of social security numbers, at each of the nine SAC missile wings for participation in the research survey (3:39,40). There were 372 responses received from the 540 selected MCCMs (3:121-123).

After the data were received, appropriate statistical and criteria tests were used to evaluate the responses. Ashbaugh and Godfrey first tested the data, using the chi square (χ^2) test at the $\alpha = .05$ level, to determine if there was a dependency on weapon system of assignment (3:52). They found six attitude variables which showed significant weapon system dependency:

1. Sense of personal accomplishment,
2. Feeling of individual responsibility,
3. Attitude toward work schedule,

4. Attitude toward physical working environment,
5. Attitude toward opportunity for advancement,
and

6. Attitude toward the missile operations career field (3:52,53,162).

They also found a significant, force-wide dependency among several attitudes and demographic variables (see Table 1-1) (3:53).

Using χ^2 Tests and the Mann Whitney Rank Sum Test to compare their data to the results of previous studies, Ashbaugh and Godfrey found that: (1) the MCCMs did not have favorable attitudes towards either their job or the missile operations career field, and (2) MCCM attitudes had not changed significantly from the attitudes observed in the prior surveys. The factors causing job dissatisfaction were still present in the missile force. Most MCCMs believed that crew irritants had not been removed and that crew duty had not been improved (3:112-114). Paradoxically, Ashbaugh and Godfrey found that although requests for crew duty extensions had approximately tripled between 1971-1975, less than half as many of all MCCMs intended to remain in the career field. They postulated that the Minuteman

Table 1-1

Table of Dependent Relationships

	Type of Crew	Crew Position	Combat Ready Time	Grade	Source of Comsn.	Reg. Comsn.	A.F. Career Intent	Vol. Status
Supervision	No	Yes	No	Yes	No	No	Inc. ^a	No
Work Enjoyment	Yes	No	No	No	No	No	Yes	Yes
Individual Job								
Responsibility	Yes	No	No	No	No	No	Yes	Yes
Salary	No	Yes	No	Yes	No	No	Yes	No
Personal								
Accomplishment	Yes	No	No	No	No	No	Yes	Yes
Social Relations	No	No	No	No	Yes	No	No	No
Physical (ICC) Work								
Environment	No	No	Yes	No	No	No	Inc.	No
Job Like/Dislike	Yes	No	No	No	No	No	Yes	Yes
Job Effect on								
Personal Life	No	No	No	No	No	No	Yes	Yes
Work Schedule	No	Yes	No	No	No	No	Yes	No
Opportunity in								
Missile Operations	Yes	No	No	No	No	No	No	Yes

^aInc.--- χ^2 Test inconclusive at $\alpha = .05$ level.

Source: Adapted from Ashbaugh and Godfrey, Appendix I (3:176-177).

Education Program and/or the overall economy may have been responsible for this apparent disparity (3:114-115). They found that the proportion of volunteers for missile crew duty had increased substantially when compared to the previous studies of Brooksher and Scott, and McDaniel and Dodd (3:109,115). Additionally, the volunteers tended to have a more favorable outlook on missile duty and were " . . . four times as likely to remain in the missile career field [3:115]."

Ashbaugh and Godfrey recommended that future research in the missile operations career field should be directed toward determining whether or not differences existed among the missile wings. They stated:

A cursory examination of MCCM attitudes appears to indicate that there are differences dependent on location or unit assignment. If this is true, and poor attitudes are a result of local policies, procedures, and administration, the approach of trying to effect a change in MCCM attitudes from the higher headquarters level may in fact be futile.

An additional area for possible future research would be to evaluate attitudes of crew members relative to individual and unit performance [3:118].

JUSTIFICATION AND DELIMITATION

Ashbaugh and Godfrey observed that MCCM attitudes and satisfactions appeared to vary among the individual

missile wings. They found that several attitudes were weapon system dependent. They also found a force-wide dependency among attitudes and demographic variables (3:52,53). As a result, they recommended a study, using their data, to determine whether a difference in attitudes among the missile wings does, in fact, exist (3:118). This postulation of potential differences was also made by Markisello in his 1973 study of the personal values of missile maintenance officers (35:153-154).

Headquarters SAC has expressed a keen interest in MCCM attitudes. General Dougherty, Commander-in-Chief, SAC (CINCSAC) voiced his interest and concern toward the attitudes of crewmembers in a letter published in Combat Crew (16:3,21). Also, General Peck--SAC Deputy Chief of Staff, Personnel--expressed his interest in this specific study through Captain Roggero and Captain Twining, SAC Missile and Subsystems Branch (DPXPM) (41,42).

In addition to Headquarters SAC personnel, the individual missile wing and squadron commanders need to understand the MCCM attitudes and behavior since they are required by Air Force Regulation 35-99, Human Reliability Program (HRP), to screen and evaluate MCCMs to insure MCCM reliability (49:1-1,2). To the extent that negative

attitudes may influence MCCM reliability, crew commanders, senior command, and staff personnel need to be aware of attitudes and those factors related to attitudes among and within the individual wings (2:58;22:57-58;25:2,9;45:51).

If significant differences exist among the nine SAC missile wings, then it may be possible to find relationships between MCCM attitudes at the various wings and other factors such as demographic variables, or wing policies and procedures. Any relationships found could not only provide insight into the problem but also serve as a basis for improving MCCM attitudes throughout SAC. At the very least, such relationships would provide an indication of areas requiring further research.

Ashbaugh and Godfrey, as well as most of the other researchers of MCCM attitudes, were prevented from examining potential variations among the nine missile wings because of time constraints. Therefore, this research will use the data obtained from the Ashbaugh and Godfrey questionnaire, to explore potential differences among the wings.

OBJECTIVES

The objectives of this research were to examine the data obtained from responses to the 1976 Ashbaugh and Godfrey questionnaire to:

1. Determine if MCCM attitudes differ from one wing to another.
2. Determine if the demographic composition of the missile crew force differs from one wing to another.
3. Determine if any relationships exist between MCCM attitudes and the demographic composition of the missile crew force from each wing.

RESEARCH PROPOSITIONS AND HYPOTHESES

The research propositions and hypotheses tested were derived from the three research objectives listed previously. These propositions and hypotheses were evaluated by statistical and criteria tests to determine whether or not the postulated relationships exist.

Proposition 1 (Hypotheses 1 through 16)

There is a difference in MCCM attitudes among the nine missile wings.

Hypothesis 1

MCCM attitudes toward their jobs are not the same at all nine missile wings.

Hypothesis 2

MCCM attitudes toward their immediate supervisors are not the same at all nine missile wings.

Hypothesis 3

MCCMs do not have the same sense of personal accomplishment at all nine missile wings.

Hypothesis 4

MCCMs do not have the same attitudes toward the opportunity for individual recognition at all nine missile wings.

Hypothesis 5

MCCMs do not have the same attitudes toward their work at all nine missile wings.

Hypothesis 6

MCCMs do not have the same feelings of individual responsibility toward their job at all nine missile wings.

Hypothesis 7

MCCM attitudes toward their work schedules are not the same at all nine missile wings.

Hypothesis 8

MCCM attitudes toward the opportunity to develop personal friendships are not the same at all nine missile wings.

Hypothesis 9

MCCM attitudes toward the physical working environment are not the same at all nine missile wings.

Hypothesis 10

MCCM attitudes toward adequacy of salary are not the same at all nine missile wings.

Hypothesis 11

MCCM attitudes toward the effects of their job on their personal life are not the same at all nine missile wings.

Hypothesis 12

MCCM attitudes toward the opportunity for advancement provided by the missile operations career field are not the same at all nine missile wings.

Hypothesis 13

MCCM attitudes toward the missile operations career field are not the same at all nine missile wings.

Hypothesis 14

MCCM attitudes toward crew duty improvement efforts are not the same at all nine missile wings.

Hypothesis 15

MCCM attitudes toward higher headquarters personnel's understanding of missile crew duty are not the same at all nine missile wings.

Hypothesis 16

MCCM attitudes toward the understanding of missile crew duty by unit command and staff personnel are not the same at all nine missile wings.

Hypothesis 17

For those attitudinal variables which differ from one wing to another, the differences are systematic.

Proposition 2 (Hypotheses 18 through 26)

There is a difference in the demographic composition of the missile crew force among the nine missile wings.

Hypothesis 18

Source of commission of MCCMs differs among the nine missile wings.

Hypothesis 19

The type of commission (regular or reserve) of the MCCMs differs among the nine missile wings.

Hypothesis 20

The grade status of the MCCMs differs among the nine missile wings.

Hypothesis 21

The type of crew (line, instructor, or stand-board) of the MCCMs differs among the nine missile wings.

Hypothesis 22

Combat ready time of the MCCMs differs among the nine missile wings.

Hypothesis 23

Crew position (commander or deputy) of the MCCMs differs among the nine missile wings.

Hypothesis 24

Missile volunteer status of the MCCMs differs among the nine missile wings.

Hypothesis 25

Career intent of the MCCMs differs among the nine missile wings.

Hypothesis 26

Aeronautical rating (rated or non-rated) of the MCCMs differs among the nine missile wings.

Proposition 3 (Hypothesis 27)

The differences in demographic composition of the missile crew force among the nine missile wings provide an explanation of the differences in attitudes among the wings.

Hypothesis 27

Differences in MCOM attitudes among the nine missile wings are related to differences in the demographic composition of the wings MCOMs.

Figure 1-1 reflects the relationships among research objectives, research propositions, and hypotheses.

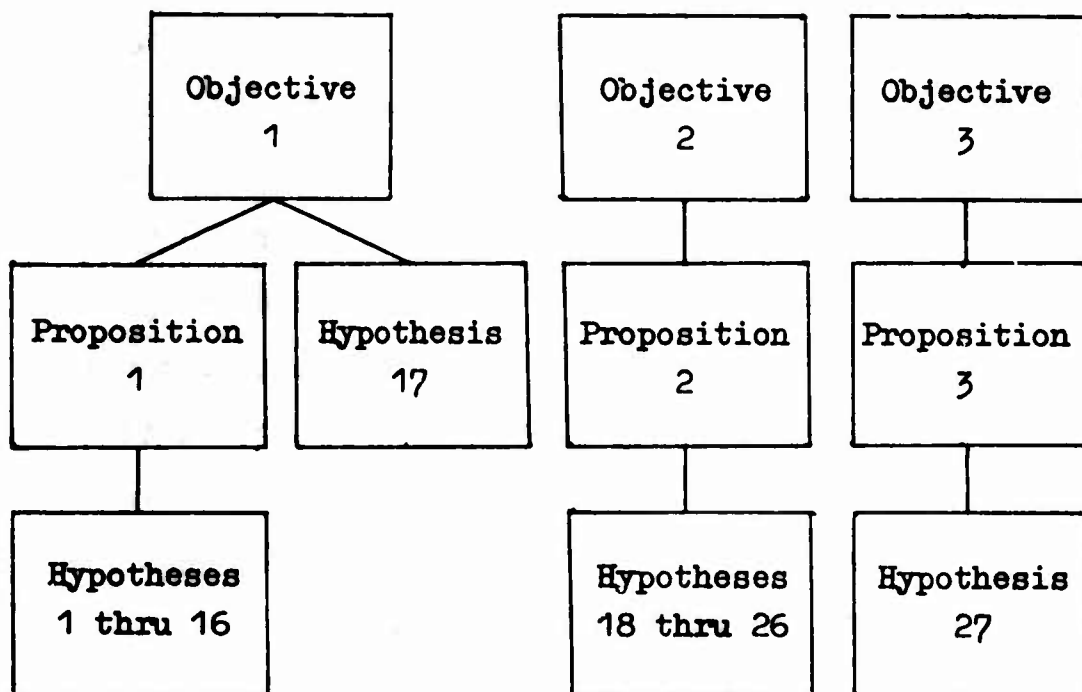


Figure 1-1
Relationship of Objectives, Propositions, and Hypotheses

Chapter 2

METHODOLOGY

Introduction

In their study, Ashbaugh and Godfrey compared MCCM attitudes since the formation of the Missile Management Working Group to the results of two prior MCCM attitude studies. To complete the research, they used a 77 question survey covering five general areas (3:29). See Appendix A for the complete Ashbaugh and Godfrey questionnaire. As a result of their research, Ashbaugh and Godfrey observed that MCCM attitudes and job satisfaction appeared to vary among the nine missile wings (3:52). Because of time constraints, they were unable to explore these potential differences.

Data Description

The 16 attitude measurement questions provided ordinal level data. The questions used corresponded to question numbers 10, 13, 17, 21, 26, 27, 30, 33, 36, 37, 41, 48, 50, 60, 61, and 69 on the Ashbaugh and Godfrey questionnaire. The data were classified as discrete limited since each question, except number 21, had five possible responses: (1) definite yes, (2) qualified yes,

(3) undecided or neutral, (4) qualified no, and (5) definite no (3:135-144). Question number 21 dealt with missile career field intentions and contained only three possible responses: (1) It's a dead end, (2) It's a career field with some future, and (3) It's a career field with a very promising future (3:127). Nine questions solicited demographic data of nominal level which were classified as discrete limited. These questions correspond to numbers 2, 3, 4, 5, 6, 7, 8, 9, and 16 on the Ashbaugh and Godfrey questionnaire (3:123-126).

Sample Selection

The sample for the Ashbaugh and Godfrey thesis was generated by HQ SAC and consisted of 60 randomly selected, commissioned MCCMs from each of the nine missile wings (3:39). The Titan and Minuteman wings have differing proportions of the overall population. Also, the wings at Malmstrom and F. E. Warren have four operational squadrons, in contrast to the three operational squadrons at each of the other four Minuteman wings. Therefore, the random selection of 60 MCCMs from each wing resulted in a disproportionate stratified random sample (3:39). Of the 540 MCCMs selected for participation in the Ashbaugh and Godfrey research effort, 372 MCCMs returned

completed questionnaires (3:123). These survey respondents provided the data which were statistically analyzed for this thesis.

Statistical Tests

Three nonparametric statistical tests were used to analyze the data for this thesis. These tests were the Kruskal-Wallis one-way analysis of variance (ANOVA) by ranks, the Kendall coefficient of concordance: W , and the Chi Square (χ^2) Test for k independent samples. The use of nonparametric statistics was warranted because: (1) the data analyzed was measured at the nominal and ordinal level and (2) the population distribution was unknown and nonparametric statistics do not require any assumptions regarding the distribution of the overall population (10:368).

Kruskal-Wallis One-Way Analysis of Variance by Ranks

One widely accepted method of determining whether or not several independent samples are from the same, or different, populations is the Kruskal-Wallis one-way ANOVA by ranks (44:184;48:30-31). In 1952, William H. Kruskal and W. Allen Wallis developed their test as an extension of the Mann-Whitney rank sum test for two

independent samples¹ (31:583-621).

The Kruskal-Wallis one-way ANOVA tests the null hypothesis (H_0) that all of the independent samples come from the same, or identical, populations with respect to the mean value of their rankings (44:184). Thus, for each of the 16 attitude questions tested, the general statement of the hypotheses were:

H_0 : There is no difference in MCCM attitudes among the nine missile wings.

H_1 : There is a difference in MCCM attitudes among the nine missile wings.

The first step in applying the Kruskal-Wallis test was to rank order all of the approximately 372 observations and then sum the rankings for each of the nine missile wings. Once this had been accomplished, the H statistic, as defined by Kruskal-Wallis, could be calculated (31:586). Since the minimum number of respondents from any one of the nine wings was 31 and there are, at most, five alternative choices for each attitude question (3:123-144), a significant number of

¹W. J. Conover provides a more easily understood mathematical proof that the Kruskal-Wallis test for two samples is identical to a form of the Mann-Whitney test. Reference Conover's text, Practical Nonparametric Statistics, pp. 261-262.

tied rankings occurred. These ties were accounted for by giving each of the responses the mean value of the tied ranks (44:188). The general expression of the Kruskal-Wallis Test, correcting the ties is (31:587):

$$H = \frac{\frac{12}{N(N+1)} \sum_{i=1}^C \frac{R_i^2}{n_i} - 3(N+1)}{1 - \frac{\sum T}{(N^3 - N)}}$$

where:

C = number of samples

n_i = number of items in the i th samples

$N = \sum n_i$ numbers of cases in all samples

R_i = sum of ranks in each sample

$T = t^3 - t$

t = number of tied observations in a tied grouping.

The H statistic defined above is distributed as a chi square (χ^2) for large sample sizes. According to Kruskal and Wallis, the effect of ties on large samples does not alter this distribution:

H for large samples is still distributed as $\chi^2 (C-1)$ when ties are handled by mean ranks; but the tables for small samples $C \leq 3$ and $n_i \leq 5$ while still useful, are no longer exact [31:587].

Since $C=9$ and $n_i \geq 31$ for the thesis, the $\chi^2 (C-1)$ distribution was applicable for evaluating the H statistic. In fact, correcting for ties increases the value of the χ^2 approximation. Therefore, the correction for ties provides a higher level of significance (44:188). Conover emphasized that the chi square approximation furnishes a conservative test in a majority of situations (11:261).

The Kruskal-Wallis test is a very powerful and efficient nonparametric test. According to Siegel:

The Kruskal-Wallis test seems to be the most efficient of the nonparametric tests for $k [C]$ independent samples. It has a power-efficiency $\frac{3}{\pi} = 95.5$ percent, when compared with the F test, the most powerful parametric test [44:194].

Therefore, the Kruskal-Wallis technique provided an excellent method for analyzing the data in this thesis.

The actual computations for the Kruskal-Wallis test were performed by the Control Data Corporation (CDC) Cyber 70 computer system (1;12;13). The computer program was contained in the Northwestern University

Statistical Package for the Social Sciences, Version 6.5 (SPSS 6.5) (38;48:22-23,30-31). The calculated H statistics were then compared to the tabular value of χ^2 (df=8) at the $\alpha = .05$ level of significance to determine whether or not the null hypothesis could be rejected.

Kendall coefficient of concordance: W. Those attitude questions which indicated a difference among the wings as determined by the Kruskal-Wallis test provided the data for determining the Kendall coefficient of concordance: W. The rankings for each of the wings, based on the mean value of responses, reflects the degree of association, W, among the attitude measures of the nine SAC missile wings.

The Kendall coefficient of concordance: W is used to test the null hypothesis (H_0) that each of the sets of rankings are independent (44:236). Thus, for the significant attitude measures, the general statements of the hypotheses were:

H_0 : There is no agreement (independence) among the attitude measures and the rankings of the nine missile wings.

H_1 : There is agreement (no independence) among the attitude measures and the rankings of the nine missile wings.

As with the Kruskal-Wallis test, no assumptions concerning the population distribution were required in order to use the Kendall coefficient of concordance: W . In their original development of the technique, Kendall and Babington Smith indicated that:

The problem in its full generality permits of no assumption about the nature of the quality according to which the objects are ranked, other than that ranking is possible. No hypothesis is made that the quality is measurable, still less that there is some underlying frequency distribution to the quantiles of which the rankings correspond [29:275].

Consequently, the Kendall coefficient of concordance: W was applicable to the data being used for the present study.

To derive W , each of the attitude questions which were significant at the $\alpha = .05$ on the Kruskal-Wallis test provided a data input for each of the nine missile wings. The rankings associated with the significant attitude questions were then summed and divided by the number of wings to obtain a mean value. The mean value was then used to calculate the sum of squares of deviations from the mean. Since the possibility of ties in rankings exists, the general form of the equation for calculating W was used. This equation, as shown by Siegel is (44:234):

$$W = \frac{s}{\frac{1}{12} k^2 (N^3 - N) - k \sum_T T}$$

where:

s = the sum of squares of the observed deviations from the mean of R_i

k = number of sets of rankings (attitude questions)

N = number of objects ranked

$$T = \frac{\sum (t^3 - t)}{12}$$

t = number of tied observations in a group.

$\sum_T T$ = summation of T for all k rankings.

The calculated W reflects the amount of agreement among the attitude measures in rank ordering of the wings.

For samples with $N > 7$, a $\chi^2 (N-1)$ can be computed to determine the significance of W . The formula for computing the sample χ^2 statistic is: $\chi^2 = k (N-1) W$ (44:236).

The Kendall coefficient of concordance: W , and the χ^2 statistic were calculated on the CDC Cyber 70 computer using SPSS 6.5 (48:22-23). The calculated χ^2 was then compared to the tabular χ^2 (df=8) at the $\alpha = .05$ level of significance in order to determine whether or not the null hypothesis should be rejected.

Chi square test for k independent samples. The χ^2 test was used to evaluate each of the nine demographic variables to determine whether or not the proportions within each wing were the same as the proportion within the overall sample. Since the demographic data obtained by the survey is nominal level, the χ^2 test was the most appropriate (44:175).

The null hypothesis (H_0) that the sample from each wing is from the same population as the overall sample was tested using the χ^2 formula shown by Siegel:

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^k \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

where:

O_{ij} = observed number of cases categorized in the i th row of the j th column

E_{ij} = number of cases expected under H_0 to be categorized in the i th row of j th column

r = number of rows

k = number of columns (44:104,175).

The values of each O_{ij} were taken directly from the survey questionnaire. The nine missile wings comprised the columns and the values of a particular

demographic variable constituted the rows. Once the frequency table had been constructed for the specific demographic variable, the expected frequency for each cell was determined by multiplying the row total and column total for the cell and dividing the result by the total sample size (44:105).

The χ^2 value calculated according to the above formula was then compared to the tabular value of χ^2 (k-1) (r-1) for an $\alpha = .05$ level of significance to determine whether or not the null hypothesis should be rejected.

Criteria Tests

In addition to the statistical tests used to evaluate the hypotheses, practical decision rules were necessary. These decision rules (criteria tests) were used to determine if the results of the data analysis would satisfy the research objectives.

Proposition 1 stated that there is a difference in MCOM attitudes among the nine missile wings. The criteria tests for this proposition were based on the following two guidelines: (1) each of the hypotheses was considered to be of equal importance, and (2) a statistically significant difference in at least eight

of the 16 MCCM attitude measures would constitute practical support for this proposition.

Hypothesis 17 stated that for those attitudinal variables which differ from one wing to another, the differences are systematic. The criteria tests for this hypothesis were based on the amount of agreement in rank ordering of the wings on those attitudinal measures in which significant differences were found among the wings. The Kendall coefficient of concordance test, with $\alpha = .05$, was used to determine whether or not the rankings were, in fact, similar.

Proposition 2 stated that there is a difference in the demographic composition of the missile crew force among the nine missile wings. Support for this proposition was determined from a combination of three factors: (1) the number of demographic variables evidencing significant differences among the wings, (2) a subjective evaluation of the impact on MCCM attitudes of each specific demographic variable found to be significant, and (3) the magnitude of the calculated χ^2 test statistic.

Proposition 3 stated that the differences in demographic composition of the missile crew force provided

an explanation of the differences in attitudes among the wings. Support, or non-support, of this proposition was dependent upon the results of the analyses concerning Proposition 1, Hypothesis 17, and Proposition 2. Therefore, practical guidelines could not be formulated until the data analysis was complete.

Chapter 3

DATA ANALYSIS

Introduction

This chapter analyzes the data used to evaluate the research propositions and hypotheses developed to satisfy the research objectives.

Data Presentation Format

The data analysis is presented in numerical order by research proposition and hypothesis. This analysis is organized as follows:

1. The survey question and possible responses to the question. For Hypothesis 17, this section contains a numerical listing of the first 16 hypotheses which were significant at the $\alpha = .05$ level. In those instances where data were grouped to satisfy the χ^2 statistical test cell size criteria of at least five expected observations occurring in at least 80 percent of the cells, a discussion of the rationale used to group the data is included.

2. The type of statistical test conducted and the results of the test, to include:

- a. The total number of valid responses.
- b. The critical χ^2 value taken from a standard χ^2 table for $\alpha = .05$ level of significance with the appropriate degrees of freedom.
- c. The calculated χ^2 value.
- d. The significance level (p) of the calculated χ^2 value. This p-value indicates the level of significance at which the null hypothesis can be rejected.

3. Comments which relate the results to the hypothesis tested and a tabular presentation of the relevant summary data for Hypotheses 1 through 17. These tables reflect the rank ordering of the wings, in terms of attitudes, from highest (1) to lowest (9). This rank ordering is based on a calculated mean value. To calculate the mean value for each wing, all of the individual responses are rank ordered from most favorable to least favorable. Since numerous responses were tied, each tied response was given the average rank of the ranking which would have been obtained if no ties had occurred. For example, if there were 11 responses tied for rank orders 20 to 30, then each of the responses would be given the rank of 25. The ranks of each respondent from an individual wing were then summed and divided by the number

of respondents from that wing to obtain the mean value for each wing. Thus, the wing with the lowest mean rank has the most favorable attitude.

This rank ordering does not indicate, in absolute terms whether the specific attitude tested is favorable or unfavorable at any given wing. The rank ordering simply indicates that a higher ranking wing has a better attitude relative to a lower ranking wing.

The raw data from the survey questions relative to each hypothesis are presented in tabular form in Appendices B, C, and D. These data are identified by research proposition, hypothesis, and survey question. For those questions requiring the data to be grouped, both the grouped and ungrouped data are shown.

Analysis

Proposition 1 (Hypotheses 1 through 16)

There is a difference in MCCM attitudes among the nine missile wings.

Hypothesis 1

MCCM attitudes toward their jobs are not the same at all nine missile wings.

1. Survey Question

36. Do you like your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
370
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 17.7121
- d. Significance: $p = .0235$

3. Comments

Reject the null hypothesis and conclude that there is a significant difference among the wings in MOCM attitudes toward their jobs. The rank ordering in Table 3-1 does not indicate any obvious relationships between attitudes and type of weapon system since the three Titan wings are ranked 1, 3, and 6. Some relationship with respect to geographic factors may exist since the three highest ranking wings are located in the south central region and two of the three lowest ranking wings are located along the northern tier. However, the location of Minot and Davis-Monthan in the rank ordering, fifth and sixth, respectively, raises serious questions as to the viability of this relationship. Overall, the

crew force appears to have mixed attitudes toward their job. Approximately 50 percent responded with either a definite or qualified yes, while 35 percent responded with a definite or qualified no.

Table 3-1

Rank Order of Wings Based on MOCM
Attitudes Toward Their Jobs

Rank Order	Wing	Mean	Number in Sample
1	Little Rock	140.929	42
2	Whiteman	169.244	45
3	McConnell	176.143	42
4	Ellsworth	180.777	47
5	Minot	186.662	37
6	Davis-Monthan	192.833	57
7	Malmstrom	205.191	34
8	Grand Forks	206.703	32
9	F. E. Warren	226.956	34

Hypothesis 2

MOCM attitudes toward their immediate supervisors are not the same at all nine missile wings.

1. Survey Question

10. Are you supervised by your immediate supervisor in a manner which is satisfactory to you?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
371
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 11.9781
- d. Significance: p = .1522

3. Comments

Cannot reject the null hypothesis. There is insufficient sample information to conclude that a significant difference exists among the wings. This is due to the large percentage of favorable responses from each of the wings. For example, at Little Rock (where attitudes toward supervision were most favorable) approximately 95 percent of the respondents selected either a definite or qualified yes, while at F. E. Warren (where attitudes on this variable were the least favorable) 71 percent selected the same response. Overall, 77 percent of the respondents from the wings indicated a favorable attitude toward their immediate supervisor.

Table 3-2

Rank Order of Wings Based on MCCM Attitudes
Toward Their Immediate Supervisors

Rank Order	Wing	Mean	Number in Sample
1	Little Rock	150.976	42
2	Minot	169.355	38
3	Grand Forks	172.906	32
4	McConnell	176.976	42
5	Whiteman	188.922	45
6	Ellsworth	193.989	46
7	Malmstrom	201.941	34
8	Davis-Monthan	205.129	58
9	F. E. Warren	208.088	34

Hypothesis 3

MCCMs do not have the same sense of personal accomplishment at all nine missile wings.

1. Survey Question

27. Do you feel a sense of personal accomplishment when performing your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
371
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 11.5417
- d. Significance: p = .1729

3. Comments

Cannot reject the null hypothesis.

Although not statistically significant, Table 3-3 shows a definite trend. The three Titan wings are all ranked relatively high (i.e., 1, 3, and 4). Thus, the weapon system dependency noted by Ashbaugh and Godfrey is reflected in the rankings (3:162). Table 3-3 also shows a possible relationship between attitudes toward personal accomplishment and geographic location, since the top four wings are located in the milder climates whereas the bottom four are in more severe climates. The strength of the geographical relationship is lessened somewhat by the fact that all of the Titan wings are located in the south. Overall, MCCM attitudes toward personal accomplishment is about evenly split with approximately 48 percent favorable and 39 percent unfavorable responses.

Table 3-3

Rank Order of Wings Based on MCCM Attitudes Toward
a Sense of Personal Accomplishment

Rank Order	Wing	Mean	Number in Sample
1	Little Rock	151.893	42
2	Whiteman	168.511	45
3	McConnell	172.524	42
4	Davis-Monthan	186.621	58
5	Ellsworth	193.426	47
6	Minot	195.013	38
7	Malmstrom	197.632	34
8	Grand Forks	204.984	31
9	F. E. Warren	217.588	34

Hypothesis 4

MCCMs do not have the same attitudes toward the opportunity for individual recognition at all nine missile wings.

1. Survey Question

48. Does your job offer you a reasonable opportunity for individual recognition?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
372
- b. Critical $\chi^2_{.5}$ (df = 8): 15.51
- c. Calculated χ^2 : 18.9668
- d. Significance: p = .0150

3. Comments

Reject the null hypothesis and conclude that there is a significant difference among the wings in MCCM attitudes toward the opportunity for individual recognition offered by their job. The rank ordering of the wings (Table 3-4) does not indicate any obvious relationships with either type of weapon system or geographic location. The responses ranged from approximately 71 percent favorable at Minot to 41 percent favorable at F. E. Warren. Overall, approximately 51 percent of the MCCMs responded favorably and 36 percent unfavorably.

Table 3-4

Rank Order of Wings Based on MCCM Attitudes Toward
the Opportunity for Individual Recognition

Rank Order	Wing	Mean	Number in Sample
1	Minot	144.013	38
2	Whiteman	158.189	45
3	Little Rock	162.333	42
4	Ellsworth	193.585	47
5	Grand Forks	196.797	32
6	Davis-Monthan	200.905	58
7	Malmstrom	204.647	34
8	McConnell	205.357	42
9	F. E. Warren	215.809	34

Hypothesis 5

MCCMs do not have the same attitudes toward
their work at all nine missile wings.

1. Survey Question

13. Do you enjoy doing the actual work
involved in accomplishing your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
370
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 15.3917
- d. Significance: p = .0520

3. Comments

Cannot reject the null hypothesis. Since the p-value (.0520) is quite close to .05, it is possible that a larger sample survey could generate data which would cause the null hypothesis to be rejected. As shown in Table 3-5, the three Titan wings generally rank higher than the Minuteman wings. This suggests a possible relationship between the weapon system and MCCM attitudes toward their work. The poor showing of the northern tier wings suggests that geographic location may also influence MCCM attitudes toward their work. These results appear to be in consonance with the trend in MCCM attitudes toward personal accomplishment. At Little Rock, where attitudes toward the work are the highest, 68 percent of the MCCMs enjoy their work. At the other end of the spectrum, F. E. Warren, only 38 percent of the MCCMs enjoy their work. Overall, approximately 53 percent of the MCCMs responded favorably to this question, while 34 percent responded unfavorably.

Table 3-5

Rank Order of Wings Based on MCCM
Attitudes Toward Their Work

Rank Order	Wing	Mean	Number in Sample
1	Little Rock	143.098	41
2	Whiteman	175.318	44
3	Ellsworth	175.713	47
4	Davis-Monthan	176.483	58
5	McConnell	185.595	42
6	Malmstrom	203.000	34
7	Minot	204.355	38
8	Grand Forks	206.875	32
9	F. E. Warren	219.912	34

Hypothesis 6

MCCMs do not have the same feelings of individual responsibility toward their job at all nine missile wings.

1. Survey Question

17. Do you feel that you are given adequate individual responsibility in your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
372
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 29.5781
- d. Significance: p = .0003

3. Comments

Reject the null hypothesis and conclude that there is a significant difference in MCCM attitudes at the different wings toward the amount of individual responsibility provided by their job. As indicated in Table 3-6, the three Titan wings ranked relatively high (1, 3, and 5). Thus, the weapon system dependency which Ashbaugh and Godfrey reported is reflected in the rankings. Approximately 68 percent of the respondents from the Titan wings felt they were given adequate individual responsibility, while only 55 percent of the respondents from the Minuteman wings expressed similar feelings. Favorable responses, which averaged 60 percent for the sample as a whole, ranged from 83 percent at Little Rock to 35 percent at Malmstrom.

Table 3-6

Rank Order of Wings Based on MCCM Attitudes Toward
Individual Responsibility in Their Job

Rank Order	Wing	Mean	Number in Sample
1	Little Rock	141.988	42
2	Whiteman	150.589	45
3	McConnell	170.893	42
4	Minot	175.447	38
5	Davis-Monthan	183.931	58
6	F. E. Warren	205.574	34
7	Ellsworth	217.649	47
8	Grand Forks	218.156	32
9	Malmstrom	233.103	34

Hypothesis 7

MCCM attitudes toward their work schedules
are not the same at all nine missile wings.

1. Survey Question

41. Are you satisfied with your
work schedule?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
372
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 23.1467
- d. Significance: p = .0032

3. Comments

Reject the null hypothesis and conclude there is a significant difference in the attitudes of MCCMs at the various wings toward their work schedules. Table 3-7 reflects the rank ordering of the wings. Although no obvious trends are evident, it is interesting to note that one Titan wing is ranked high (2nd) while the other two are ranked lowest. Ashbaugh and Godfrey reported a significant weapon system dependency in MCCM attitudes toward their work schedules (3:162). Apparently the two low ranking Titan wings were sufficient to offset the high ranking of Little Rock. At Ellsworth, approximately 70 percent of the respondents had a favorable attitude toward their work schedule. In contrast, only 29 percent of the responses from Davis-Monthan were favorable. Overall, MCCM attitudes toward their work schedule appeared to be evenly split: 45 percent of the MCCMs surveyed were satisfied, 41 percent were not.

Table 3-7

Rank Order of Wings Based on MCCM Attitudes
Toward Their Work Schedule

Rank Order	Wing	Mean	Number in Sample
1	Ellsworth	142.574	47
2	Little Rock	164.619	42
3	Minot	174.553	38
4	Malmstrom	179.118	34
5	Grand Forks	184.031	32
6	Whiteman	189.589	45
7	F. E. Warren	199.353	34
8	McConnell	201.119	42
9	Davis-Monthan	230.940	58

Hypothesis 8

MCCM attitudes toward the opportunity to develop personal friendships are not the same at all nine missile wings.

1. Survey Question

30. Does your job provide you ample opportunity to develop personal friendships with other officers in your unit?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
371
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 15.0785
- d. Significance: p = .0576

3. Comments

Cannot reject the null hypothesis.

Since the p-value (.0576) is very close to .05, another survey could yield different results. The rank ordering of the wings (Table 3-8) does not indicate any systematic arrangement. Overall, MCCM attitudes toward the opportunity to develop personal friendships are quite favorable: 72 percent responded with either a definite or qualified yes, while only 18 percent responded with either a qualified or definite no.

Table 3-8

Rank Order of Wings Based on MCCM Attitudes Toward
the Opportunity to Develop Personal Friendships
With Other Officers in Their Units

Rank Order	Wing	Mean	Number in Sample
1	Ellsworth	164.021	47
2	Little Rock	165.171	41
3	Whiteman	167.922	45
4	Minot	173.961	38
5	Malmstrom	180.721	34
6	Grand Forks	182.484	32
7	McConnell	204.655	42
8	F. E. Warren	208.338	34
9	Davis-Monthan	218.879	58

Hypothesis 9

MCCM attitudes toward the physical working
environment are not the same at all nine missile wings.

1. Survey Question

33. Do you consider the physical working
environment of the capsule (LCC) to be satisfactory?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
370
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 40.0474
- d. Significance: p = .0000

3. Comments

Reject the null hypothesis and conclude that there is a significant difference in the attitudes of MCCMs at the various wings toward the physical working environment. The ordering of the wings on this attitudinal variable (Table 3-9) reflects the weapon systems dependency reported by Ashbaugh and Godfrey (3:162). Since the three Titan wings are ranked quite low, it is evident that the Minuteman MCCMs view their working environment more favorably than do the Titan MCCMs. There is relatively large divergence among the wings on this attitudinal variable: 51 percent of the respondents from Ellsworth view their physical working environment as satisfactory, while only 14 percent of those from Davis-Monthan hold similar feelings. Of greater importance, however, is the fact that only 32 percent of the MCCMs feel that their physical working environment is satisfactory, and 55 percent feel that it is unsatisfactory.

Table 3-9

Rank Order of Wings Based on MCCM Attitudes
Toward the Physical Working Environment

Rank Order	Wing	Mean	Number in Sample
1	Ellsworth	137.521	47
2	F. E. Warren	145.882	34
3	Minot	164.776	38
4	Whiteman	176.267	45
5	Grand Forks	179.438	32
6	McConnell	183.451	41
7	Malmstrom	191.500	34
8	Little Rock	227.341	41
9	Davis-Monthan	240.043	58

Hypothesis 10

MCCM attitudes toward adequacy of salary
are not the same at all nine missile wings.

1. Survey Question

26. Are you paid a reasonable salary?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
371
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 3.3656
- d. Significance: p = .9094

3. Comments

Cannot reject the null hypothesis. The extremely high p-value indicates that the MCCMs view the adequacy of salary almost identically at each of the wings. This may indicate that the economic conditions (i.e., the cost of living) do not vary significantly among the wings. The overall attitude toward salary appears to be very good with 79 percent of the MCCMs responding favorably and only 12 percent responding unfavorably.

Table 3-10

Rank Order of Wings Based on MCCM Attitudes
Toward Adequacy of Their Salary

Rank Order	Wing	Mean	Number in Sample
1	F. E. Warren	174.176	34
2	Ellsworth	177.128	47
3	Minot	179.421	38
4	Whiteman	179.567	45
5	Malmstrom	179.662	34
6	McConnell	190.143	42
7	Grand Forks	190.419	31
8	Davis-Monthan	194.060	58
9	Little Rock	204.940	42

Hypothesis 11

MCCM attitudes toward the effects of their job on their personal life are not the same at all nine missile wings.

1. Survey Question

37. Does your job have a favorable effect on your personal life?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
370
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 14.7304
- d. Significance: $p = .0646$

3. Comments

Cannot reject the null hypothesis. The fact that the p-value is close to .05 indicates that another survey may result in rejection of the null hypothesis. Three of the four southern most wings reflect relatively high attitude rankings in Table 3-11. This may indicate that MCCMs at these wings value the off-duty time associated with missile operations duty. The fourth southern wing, Davis-Monthan, is ranked lowest. Davis-Monthan was also ranked lowest in attitudes toward the work schedule. At the time of this survey, the MCCMs at Davis-Monthan may have perceived their work schedule as adversely effecting their personal lives. Fifty-two percent of the respondents from Little Rock reported that their job had a favorable effect on their personal life. In contrast, only 26 percent of those from Davis-Monthan reported similar views. MCCMs, in general, take a dim view of the effect of their job on their personal life.

Only 28 percent indicated that it had a favorable effect;
52 percent indicated that it had an unfavorable effect.

Table 3-11

Rank Order of Wings Based on MCCM Attitudes Toward
the Effects of Their Job on Their Personal Life

Rank Order	Wing	Mean	Number in Sample
1	Little Rock	137.976	42
2	Whiteman	176.722	45
3	McConnell	179.488	42
4	Malmstrom	181.456	34
5	Ellsworth	181.851	47
6	Grand Forks	195.406	32
7	F. E. Warren	202.382	34
8	Minot	206.905	37
9	Davis-Monthan	207.772	57

Hypothesis 12

MCCM attitudes toward the opportunity for advancement provided by the missile operations career field are not the same at all nine missile wings.

1. Survey Question

50. Do you think the opportunity for advancement in the missile operations career field is at least as good as other Air Force career fields?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
370
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 27.0280
- d. Significance: p = .0007

3. Comments

Reject the null hypothesis and conclude that there is a significant difference in the attitudes of MCCMs at the different wings toward the opportunity for advancement provided by the missile operations career field. The weapon system dependency reported by Ashbaugh and Godfrey is reflected in Table 3-12 (3:162). Approximately 62 percent of the MCCMs from the three Titan wings gave either a definite or qualified yes response. Similar responses were obtained from only 46 percent of the MCCMs surveyed at the six Minuteman wings. Opportunity for advancement in the missile operations career field is perceived to be as good as other Air Force career

fields by 74 percent of the respondents at Little Rock, but only 24 percent of those at Ellsworth. Overall, 51 percent of the MCCMs responded favorably to this question, while 32 percent indicated that opportunity for advancement in missile operations was not as good as in other career fields.

Table 3-12

Rank Order of Wings Based on MCCM Attitudes Toward
the Opportunity for Advancement Provided by
the Missile Operations Career Field

Rank Order	Wing	Mean	Number in Sample
1	Little Rock	146.738	42
2	Minot	161.539	38
3	Davis-Monthan	171.052	58
4	Grand Forks	179.922	32
5	McConnell	182.633	41
6	Whiteman	188.889	45
7	F. E. Warren	191.926	34
8	Malmstrom	196.853	34
9	Ellsworth	248.837	46

Hypothesis 13

MCCM attitudes toward the missile operations career field are not the same at all nine missile wings.

1. Survey Question

21. Which of the following best describes your feelings about the missile operations career field?

- a. It's a dead end
- b. It's a career field with some future
- c. It's a career field with a very promising future

2. Kruskal-Wallis Test Results

- a. Total number of valid responses: 371
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 19.7075
- d. Significance: $p = .0115$

3. Comments

Reject the null hypothesis and conclude that there is a significant difference in the attitudes of MCCMs at the different wings toward the missile operations career field. Table 3-13 also shows the possible weapon system dependency with the three Titan wings ranking relatively high. This result could be anticipated since: (1) the Titan wings ranked high in MCCM attitudes toward the opportunity for advancement provided by the missile career field, and (2) Ashbaugh and Godfrey

reported a significant weapon system dependency on this attitudinal variable (3:162). At Little Rock, approximately 29 percent felt the career field had a very promising future, while only six percent felt the same way at Ellsworth. Overall, the majority of respondents (63 percent) felt the career field offers some future.

Table 3-13

Rank Order of Wings Based on MCOM Attitudes Toward
the Missile Operations Career Field

Rank Order	Wing	Mean	Number in Sample
1	Little Rock	144.690	42
2	Minot	160.947	38
3	Davis-Monthan	183.388	58
4	McConnell	184.714	42
5	Grand Forks	184.922	32
6	F. E. Warren	189.706	34
7	Whiteman	200.943	44
8	Malmstrom	203.103	34
9	Ellsworth	219.234	47

Hypothesis 14

MCCM attitudes toward crew duty improvement efforts are not the same at all nine missile wings.

1. Survey Question

69. Do you feel that adequate efforts have been made to resolve problems generally encountered by missile crew members and to improve missile crew duty?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
371
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 20.9783
- d. Significance: $p = .0072$

3. Comments

Reject the null hypothesis and conclude that there is a significant difference in the attitudes of MCCMs at the different wings toward crew duty improvement efforts. Table 3-14 does not indicate any obvious relationships between the MCCM attitude and weapon system type. The responses from Minot were about 40 percent favorable as compared to only 16 percent favorable from Davis-Monthan. In general, the MCCMs surveyed appear to

feel that adequate efforts have not been made to resolve problems and improve missile crew duty since only 32 percent of the respondents gave favorable responses while 54 percent gave unfavorable responses.

Table 3-14

Rank Order of Wings Based on MCCM Attitudes
Toward Crew Duty Improvement Efforts

Rank Order	Wing	Mean	Number in Sample
1	Minot	162.224	38
2	Little Rock	165.321	42
3	F. E. Warren	169.471	34
4	Whiteman	174.478	45
5	McConnell	174.940	42
6	Malmstrom	180.235	34
7	Ellsworth	184.315	46
8	Grand Forks	205.891	32
9	Davis-Monthan	236.931	58

Hypothesis 15.

MCCM attitudes toward higher headquarters personnel's understanding of missile crew duty are not the same at all nine missile wings.

1. Survey Question

61. Do you feel that command and staff personnel at higher headquarters fully understand and appreciate missile crew duty?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
369
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 7.2602
- d. Significance: p = .5088

3. Comments

Cannot reject the null hypothesis. Table 3-15 does not indicate any systematic arrangement of the wings in terms of weapon system or geographic location. The overall attitude of MCCMs toward higher headquarters personnel's understanding of missile crew duty is unfavorable since only 16 percent of the respondents indicated that they felt personnel in higher headquarters understood and appreciated missile crew duty. In contrast, 72 percent indicated that higher headquarters personnel did not.

Table 3-15

Rank Order of Wings Based on MCCM Attitudes Toward
Higher Headquarters Personnel's Understanding
of Missile Crew Duty

Rank Order	Wing	Mean	Number in Sample
1	McConnell	158.071	42
2	F. E. Warren	166.838	34
3	Malmstrom	178.667	33
4	Little Rock	180.667	42
5	Whiteman	185.700	45
6	Ellsworth	190.815	46
7	Davis-Monthan	197.595	58
8	Minot	197.608	37
9	Grand Forks	205.109	32

Hypothesis 16

MCCM attitudes toward the understanding of
missile crew duty by unit command and staff personnel
are not the same at all nine missile wings.

1. Survey Question

60. Do you feel that the senior command
and staff personnel in your unit fully understand and
appreciate missile crew duty?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

2. Kruskal-Wallis Test Results

- a. Total number of valid responses:
368
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 22.6665
- d. Significance: p = .0038

3. Comments

Reject the null hypothesis and conclude that there is a significant difference in the attitudes of MCCMs at the various wings toward the understanding of missile crew duty by unit command and staff personnel. The rank ordering of the wings (Table 3-16) does not reflect any obvious relationships between weapon system types or location. Of the MCCMs surveyed at Minot, 54 percent responded favorably (i.e., definite or qualified yes) while only 22 percent of the MCCMs at Davis-Monthan gave favorable responses. Overall, the survey respondents were about evenly split on this variable: 41 percent felt that unit command and staff personnel fully understood and appreciated missile crew duty; 48 percent felt that they did not.

Table 3-16

Rank Order of Wings Based on MCCM Attitudes Toward
the Understanding of Missile Crew Duty by
Unit Command and Staff Personnel

Rank Order	Wing	Mean	Number in Sample
1	Minot	152.216	37
2	Whiteman	158.807	44
3	McConnell	167.536	42
4	Little Rock	171.726	42
5	Ellsworth	177.978	46
6	F. E. Warren	185.074	34
7	Malmstrom	192.242	33
8	Grand Forks	213.906	32
9	Davis-Monthan	230.328	58

Hypothesis 17

For those attitudinal variables which differ from one wing to another, the differences are systematic.

1. Hypotheses 1, 4, 6, 7, 9, 12, 13, 14, and 16 were significant at the $\alpha = .05$ level and were used to compute the Kendall coefficient of concordance.

2. Kendall Coefficient of Concordance

Test Results

- a. Total number of valid cases used: 9
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 27.5259
- d. Significance: p = .0006

3. Comments

Reject the null hypothesis and conclude that for those attitudinal variables which differ from one wing to another, the differences are systematic (i.e., there is agreement in the rank ordering of the wings across the variables). Stated another way, MCCM attitudes at some wings are basically better than they are at other wings. Table 3-17 contains the rank ordering of the wings in terms of overall attitudes. It is based upon the calculated mean value of the rankings for each of the nine significant attitudinal variables. Examination of Table 3-17 does not reveal any obvious relationships between MCCM attitudes and other factors such as weapon system type or geographic location.

Table 3-17

Rank Order of Wings Based on the Nine Attitudinal
Variables Found Significant by
the Kruskal-Wallis Tests

Rank Order	Wing	Mean
1	Minot	2.444
2	Little Rock	2.556
3	Whiteman	3.889
4	McConnell	5.000
5	Ellsworth	5.222
6	F. E. Warren	6.111
7	Grand Forks	6.222
8	Davis-Monthan	6.556
9	Malmstrom	7.000

Proposition 2 (Hypotheses 18 through 26)

There is a difference in the demographic composition of the missile crew force among the nine missile wings.

Hypothesis 18

Source of commission of MCCMs differ among the nine missile wings.

1. Survey Question

6. What is your source of commission?

- a. Air Force Academy
- b. ROTC
- c. OTS (SMSO)
- d. AECP
- e. Other

The number of respondents in each of the above categories did not satisfy the χ^2 test criteria of at least five expected observations occurring in at least 80 percent of the cells. Only 18 of the 45 cells (40 percent) contained five or more expected observations. Therefore, the responses were collapsed into two categories by combining Air Force Academy and ROTC into one category and OTS, AECP, and Other into a second category. The decision to collapse the cells in this manner was based upon the Air Force Academy and ROTC being similar in that both military and undergraduate education were received simultaneously; whereas the other programs treated military and undergraduate education as separate and distinct entities. The new categorization resulted in 100 percent of the cells containing five or more expected observations.

2. χ^2 Test Results

- a. Total number of valid responses:
372
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 6.17657
- d. Significance: p = .6275

3. Comments

Cannot reject the null hypothesis. The data do not support the hypothesis that a significant difference exists among the wings in terms of MCCM source of commission.

Hypothesis 19

The type of commission (regular or reserve) of the MCCMs differs among the nine missile wings.

1. Survey Question

- 7. Are you a regular officer?
 - a. Yes
 - b. No

2. χ^2 Test Results

- a. Total number of valid responses:
371
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 3.51980
- d. Significance: p = .8976

3. Comments

Cannot reject the null hypothesis. The data do not support the hypothesis that a significant

difference exists among the wings in terms of the type of commission held by MCCMs.

Hypothesis 20

The grade status of the MCCMs differs among the nine missile wings.

1. Survey Question

5. What is your grade?
 - a. Second Lieutenant
 - b. First Lieutenant
 - c. Captain
 - d. Major
 - e. Lieutenant Colonel

Since there were no Lieutenant Colonel respondents from any of the wings, response e was deleted prior to conducting the χ^2 analysis. Only 27 of the 36 remaining cells (75 percent) contained five or more expected observations. The nine cells which failed the cell size criteria were the Major cells (response d) at all nine wings. Therefore, the responses for Major were collapsed together with Captains which resulted in three categories for the χ^2 test. This new categorization resulted in 100 percent of the cells satisfying the cell size criteria.

2. χ^2 Test Results

- a. Total number of valid responses
372
- b. Critical $\chi^2_{.05}$ (df = 16): 26.30

- c. Calculated χ^2 : 23.72907
- d. Significance: $p = .0956$

3. Comments

Cannot reject the null hypothesis. The data do not support the hypothesis that there is a significant difference among the wings in terms of MCCM grade status. However, the p-value of .0956 does indicate that differences exist at the various wings, but that these differences are not sufficient to be significant at the previously established, $\alpha = .05$, level.

Hypothesis 21

The type of crew (line, instructor, or standboard) of the MCCMs differs among the nine missile wings.

1. Survey Question

2. To what type of crew are you assigned?

- a. Line
- b. Instructor
- c. Standboard

Only 18 of the 27 cells (67 percent) contained five or more expected observations. Since instructor and standboard crew duties are similar in many respects, and both differ substantially from line crew duty, MCCMs were grouped into a single category. The new categorization resulted in all cells satisfying the test criteria.

2. χ^2 Test Results

- a. Total number of valid responses:
372
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 10.90345
- d. Significance: p = .2072

3. Comments

Cannot reject the null hypothesis. The data do not support the hypothesis that there is a difference among the wings in terms of types of crews.

Hypothesis 22

Combat ready time of the MCCMs differs among the nine missile wings.

1. Survey Question

4. How many months of missile combat ready experience do you have?

- a. 0-6 months
- b. 7-12 months
- c. 13-18 months
- d. 19-24 months
- e. 25-30 months
- f. 31-36 months
- g. more than 36 months

Only 42 of the 63 cells (67 percent) contained five or more expected observations. Since year groupings are commonly used, the responses were collapsed into four one year categories: (1) 0 through 12 months, (2) 13 through 24 months, (3) 25 through 36 months, and (4) more

than 36 months. The new grouping resulted in 100 percent of the cells containing five or more expected observations.

2. χ^2 Test Results

- a. Total number of valid responses:
372
- b. Critical $\chi^2_{.05}$ (df = 24): 36.42
- c. Calculated χ^2 : 33.0281
- d. Significance: p = .0995

3. Comments

Cannot reject the null hypothesis. The data do not support the hypothesis that there are significant differences among the wings in terms of MCCM combat ready time. However, the p-value of .0995 does indicate that there are some differences among the wings in this area.

Hypothesis 23

Crew position (commander or deputy) of the MCCMs differs among the nine missile wings.

1. Survey Question

- 3. What is your crew position?
 - a. MCCC
 - b. DMCCC

2. χ^2 Test Results

- a. Total number of valid responses:
372
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 6.37123
- d. Significance: p = .6057

3. Comments

Cannot reject the null hypothesis. The data do not support the hypothesis that differences exist among the wings in terms of MCCM crew position.

Hypothesis 24

Missile volunteer status of the MCCMs differs among the nine missile wings.

1. Survey Question

16. Were you a volunteer for missile crew duty?

- a. Yes, first choice
- b. Yes, second choice
- c. Yes, third choice
- d. No

Only 20 of the 36 cells (56 percent) contained five or more expected observations. To satisfy the cell size criteria, the responses were collapsed into three categories: (1) Yes, first choice, (2) Yes, second choice and third choice, and (3) No. Second and third choice were combined since both of these categories

reflected a degree of interest in becoming a MCCM which, although not as strong as a first choice, was stronger than that held by non-volunteers.

2. χ^2 Test Results

- a. Total number of valid responses: 372
- b. Critical $\chi^2_{.05}$ (df = 16): 26.30
- c. Calculated χ^2 : 62.05422
- d. Significance: $p = .0000$

3. Comments

Reject the null hypothesis and conclude that there is a significant difference among the wings in terms of MCCM volunteer status. These results will be compared to the results obtained from Hypothesis 17 to determine support, or non-support, of Research Proposition 3.

Hypothesis 25

Career intent of the MCCMs differs among the nine missile wings.

1. Survey Question

9. Do you intend to make the Air Force a career?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

Only 23 of the 45 cells (51 percent) contained five or more expected observations. In order to satisfy the cell size criteria, the undecided, qualified no, and definite no responses were grouped into a single category. After collapsing, all of the cells satisfied the test criteria.

2. χ^2 Test Results

- a. Total number of valid responses:
371
- b. Critical $\chi^2_{.05}$ (df = 16): 26.30
- c. Calculated χ^2 : 10.16355
- d. Significance: p = .8579

3. Comments

Cannot reject the null hypothesis. The data do not support the hypothesis that there are differences among the wings in terms of MCCM career intent.

Hypothesis 26

Aeronautical rating (rated or non-rated) of the MCCMs differs among the nine missile wings.

1. Survey Question

- 8. What is your aeronautical rating?
 - a. Pilot
 - b. Navigator
 - c. Not rated

Only nine of 27 cells (33 percent) contained five or more expected observations. Even after the data were

collapsed into two categories (rated and not rated), only 10 of 18 cells (56 percent) satisfied the cell size criteria. Since there was no alternative method of collapsing the data to meet the test criteria, the χ^2 test was conducted for the collapsed data realizing that the approximation may be poor (11:152).

2. χ^2 Test Results

- a. Total number of valid responses:
372
- b. Critical $\chi^2_{.05}$ (df = 8); 15.51
- c. Calculated χ^2 : 9.98105
- d. Significance: p = .2664

3. Comments

Cannot reject the null hypothesis. The data do not support the hypothesis that there are differences among the wings in terms of rated MCCMs. This conclusion must be tempered by the knowledge that only 52 percent of the cells satisfied the χ^2 cell size test criteria. Another survey with sufficient rated respondents may significantly alter the p-value and the conclusions drawn from the test.

Proposition 3 (Hypothesis 27)

The differences in demographic composition of the missile crew force among the nine missile wings provide

an explanation of the differences in attitudes among the wings.

Hypothesis 27

Differences in MCCM attitudes among the nine missile wings are related to differences in the demographic composition of the wings MCCMs.

1. Of the nine hypothesis relating to demographic variables, only Hypothesis 24 (missile crew duty volunteer status) indicated a significant difference among the wings at the $\alpha = .05$ level. In order to determine if a relationship exists between this demographic variable and MCCM attitudes, it was first necessary to rank order the wings in terms of missile crew duty volunteer status. The Kruskal-Wallis One-Way ANOVA was used to obtain this rank ordering. The rank ordering of the wings in terms of volunteer status was then compared to the rank ordering of the wings in terms of attitudes. Table 3-18 contains both rank orderings: the wing with the best attitudes ranks first in the "Attitudes" column; and, the wing with the highest proportion of volunteers ranks first in the "Volunteer Status" column. The Spearman Rank Correlation Test was used to evaluate the statistical relationships between the two sets of rankings.

Table 3-18

Comparison of Rank Ordering of Wings Based
on Hypothesis 17 and Hypothesis 24

Rank Order	Hypothesis 17 Attitudes	Hypothesis 24 Volunteer Status ¹
1	Minot	F. E. Warren
2	Little Rock	Whiteman
3	Whiteman	Davis-Monthan
4	McConnell	Little Rock
5	Ellsworth	Malmstrom
6	F. E. Warren	Ellsworth
7	Grand Forks	Minot
8	Davis-Monthan	McConnell
9	Malmstrom	Grand Forks

¹Kruskal-Wallis Test results for Hypothesis 24.
(a) Total number of valid responses: 372, (b) Critical
 $\chi^2_{.05}$ (df = 8): 15.51, (c) Calculated χ^2 : 49.3955,
(d) Significance: $p = .0000$.

2. Spearman's Rank Correlation Test

The purpose of this test was to determine if any correlation existed between the MCGM attitude rank ordering and volunteer status rank ordering of the nine missile wings. Spearman's test statistic (r_s) was

calculated using the formula (11:246):

$$r_s = 1 - \frac{6 \sum_{i=1}^n [R(X_i) - R(Y_i)]^2}{n(n^2 - 1)}$$

where:

n = number of samples

$R(X_i)$ = rank of the i th sample in rank ordering
 X

$R(Y_i)$ = rank of the i th sample in rank ordering
 Y

For this specific application, the X variable is the ranking by attitudes and the Y variable is the ranking by volunteer status. The Spearman test results were:

a. Critical r_s ($\alpha/2 = .025$) ($n = 9$): $-.6833$

b. Calculated r_s : $-.0667$

Therefore, cannot reject the null hypothesis that r_s is significantly different from zero at the $\alpha = .05$ level. The data do not support the hypothesis that differences in the demographic variable(s) at the various wings is related to MCOM attitudes at those wings.

Chapter 4

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter presents the conclusions and recommendations derived from this research effort. In addition to discussing the three research objectives, two additional topics which were investigated as a result of the data analysis are addressed. The first topic was concerned with the effect of selecting a given level of significance on the results of the study. The second was to determine the effect of decreasing the data base to include only non-rated, company grade, line MCCMs. The results of these areas of inquiry, along with other insights gained during this research, provided the basis for recommended future research.

Research Objective and Conclusions

Research objective 1. This research objective was to determine if MCCM attitudes differ from one wing to another. Research Proposition 1 and Hypotheses 1 through 17 were used to accomplish this objective.

The test results from Hypotheses 1 through 16 indicated a significant difference existed among the wings for nine of the 16 attitudinal variables measured. Those MCCM attitudes which showed significant differences, at the $\alpha = .05$ level, were attitudes toward: (1) their job, (2) the opportunity for individual recognition, (3) the amount of individual responsibility provided by the job, (4) work schedules, (5) the physical working environment, (6) the opportunity for advancement provided by the missile operations career field, (7) the missile operations career field, (8) crew duty improvement efforts, and (9) the understanding of missile crew duty by unit command and staff personnel. These attitudinal variables provided individual, relative rank orderings of the wings from highest to lowest. The individual rank orderings were then combined, under Hypothesis 17, to derive a general rank ordering of the wings.

The accomplishment of Objective 1 led to the findings that MCCM attitudes do, in fact, differ from one wing to another.

Research objective 2. This research objective was to determine if the demographic composition of the missile

crew force differs from one wing to another. Research Proposition 2 and Hypotheses 18 through 26 were used to accomplish this objective.

Of the nine demographic variables tested, only missile crew volunteer status showed a significant difference among the wings. Although both the χ^2 and Kruskal-Wallis tests were significant at $p = .0000$ for missile crew volunteer status, the fact that the other eight demographic variables were not significant suggested that Research Proposition 2 could not be supported. Other demographic variables (such as age or time in service) which were not sampled by the Ashbaugh and Godfrey survey may alter this result. However, based on the available data, there was insufficient evidence to conclude that, in general, the demographic composition of the missile crew force differs from one wing to another.

Research objective 3. This research objective was to determine if any relationships exist between MCCM attitudes and the demographic composition of the missile crew force from each wing. Research Proposition 3 and Hypothesis 27 were used to evaluate this objective.

There was no significant correlation between the rank ordering of the wings based on missile crew volunteer

status and the rank ordering based on overall MCCM attitudes. Additionally, no significant correlation was found between missile crew volunteer status and any of the individual rank orderings of the nine significant MCCM attitudes. Therefore, this research proposition was not supported. There was insufficient evidence to conclude that any relationships exist between MCCM attitudes and the demographic composition of the missile crew force from each wing.

Significance Level Selection

During the data analysis, the authors questioned the possible effect that selecting an $\alpha = .05$ level of significance might have had on the results of the research effort. By increasing α from a .05 to a .10 level, the rank ordering of the wings for three additional MCCM attitudinal variables became significant. These variables were MCCM attitudes toward: (1) their work, (2) the opportunity to develop personal friendships, and (3) the effects of their job on their personal life.

The rank ordering of the wings based on the 12 attitudinal variables which were significant at $\alpha = .10$ was found to be significant ($p = .0000$) by the Kendall coefficient of concordance test. This rank ordering was

then compared to the rank ordering of the wings based on the nine attitudinal variables which were significant at the $\alpha = .05$ level. Table 4-1 shows this comparison. Spearman's test statistic reflected a high degree of correlation ($r_s = .8833$) between the two rankings. Thus, there was not a significant difference in the rank ordering of the wings based on $\alpha = .10$ and $\alpha = .05$ levels of significance. It was concluded that the selection of the alpha level (.05 rather than .10) did not impact the overall results for MCCM attitudinal variables.

Table 4-1
Rank Ordering of Wings for $\alpha = .10$ and $\alpha = .05$

Rank Order	Wing $\alpha = .10$	Wing $\alpha = .05$
1	Little Rock	Minot
2	Minot	Little Rock
3	Whiteman	Whiteman
4	Ellsworth	McConnell
5	McConnell	Ellsworth
6	Grand Forks	F. E. Warren
7	Malmstrom	Grand Forks
8	F. E. Warren	Davis-Monthan
9	Davis-Monthan	Malmstrom

Two additional demographic variables (time on crew and grade) were found significant when α was increased to .10. As was done previously for volunteer status, the Kruskal-Wallis one-way ANOVA was used to rank order the wings for each of these additional variables. These three rank orderings were then compared to the rank ordering of the wings based on MCCM attitudes at $\alpha = .10$. Table 4-2 shows these rank orderings: the wing with the best attitude is ranked first in the "Attitude" column; the wing with the highest proportion of volunteers is ranked first in the "Volunteer Status" column; the wing with the most time on crew is ranked first in the "Time on Crew" column; and the wing with the highest average grade is ranked first in the "Grade" column.

Table 4-2

Rank Ordering of Wings Based on MCCM Attitudes and
Demographic Variables ($\alpha = .10$)

Rank Order	Attitudes	Volunteer Status	Time on Crew	Grade
1	Little Rock	F. E. Warren	Little Rock	F. E. Warren
2	Minot	Whiteman	Minot	Little Rock
3	Whiteman	Davis-Monthan	Malmstrom	Whiteman
4	Ellsworth	Little Rock	Davis-Monthan	Davis-Monthan
5	McConnell	Malmstrom	Whiteman	Malmstrom
6	Grand Forks	Ellsworth	F. E. Warren	Minot
7	Malmstrom	Minot	McConnell	McConnell
8	F. E. Warren	McConnell	Grand Forks	Ellsworth
9	Davis-Monthan	Grand Forks	Ellsworth	Grand Forks

The Spearman Rank Correlation Test was used to evaluate the statistical relationship between MCCM attitudes and each of the demographic variables. Table 4-3 shows very low relationships between these variables.

Table 4-3

Spearman Rank Correlation Test Results

Variables	r_s^*
Attitudes vs Volunteer Status	.2166
Attitudes vs Time on Crew	.3166
Attitudes vs Grade	-.0333

*Critical r_s ($\alpha / 2 = .05$) ($df = 9$): .5833.

Thus, the data with $\alpha = .10$ does not support the hypothesis that differences in demographic variables at the various wings are related to MCCM attitudes at those wings. In conclusion, the selection of the alpha level (.05 rather than .10) did not alter the overall results of the research effort.

Selected Data Base

As an extension of the primary research effort, the authors decided to evaluate the attitudes of non-rated, company grade, line MCCMs and compare their attitudes to the total data base. Since line crews constitute the majority of both the operational force and survey respondents (278 out of 372), the instructor and standboard crew members were culled from the data base. The decision to include only non-rated, company grade officers was based on the relatively small number of rated (30 out of 372) and field grade (14 out of 372) respondents. Appendices E, F, and G contain the revised data base and the results of the statistical tests for each of the hypotheses.

With the selected data base, only six MCCM attitudinal variables showed significant differences at the $\alpha = .05$ level.¹ These six variables were MCCM attitudes toward: (1) individual responsibility, (2) work schedules, (3) the opportunity to develop personal friendships, (4) the physical working environment,

¹ There were no additional MCCM attitudinal variables which would have been significant at an $\alpha = .10$ level.

(5) crew duty improvement efforts, and (6) the understanding of missile crew duty by unit command and staff personnel. Five of these six attitudinal variables were significant at $\alpha = .05$ for both data bases. The MCCM attitude which was not significant for the total data base (attitude toward the opportunity to develop personal friendships) had a p-value of .0576. The rank ordering of the wings for each of the individual MCCM attitudinal variables reflected relatively high positive correlations. The correlation between the overall rank ordering of wings for the two separate data bases was lower; however, it did indicate a reasonably high positive correlation. Table 4-4 shows the Spearman's test statistic calculated to compare the rank orderings from the two data bases. Based on these results, there were no discernable differences between the two data bases.

Table 4-4
Rank Order Correlation

MCCM Attitude	r_s
Individual Responsibility	.9166
Work Schedules	.7333
Personal Friendships	.9166
Physical Working Environment	.8333
Improve Efforts	.8333
Crew Duty Understanding	.9500
Overall	.6958

The four attitudinal variables found to be significant for the total data base, but not for the selected data base, were MCCM attitudes toward: (1) their job, (2) the opportunity for individual recognition, (3) the opportunity for advancement provided by the missile operations career field, and (4) the missile operations career field. Two of these four variables showed extremely large variations in the p-values calculated by the Kruskal-Wallis test. MCCM attitudes toward the opportunity for individual recognition had $p = .0150$ for the total data base and $p = .4438$ for the

selected data base. MCCM attitudes toward the missile operations career field had $p = .0115$ for the total data base and $p = .5307$ for the selected data base. The magnitude of the fluctuations in p-values for these two attitudinal variables indicated that for these variables, the attitudes of instructor and standboard crew members vary widely among the wings. Due to time limitations, it was not possible to further pursue the potential causes of the wide variations between the two data bases.

Recommendations for Further Research

Based on the data analysis and personal experience as MCCMs, the authors feel that further research into the following areas may provide additional insight into MCCM attitudes and their relationships to other factors.

The number of demographic variables contained in the data base was a definite limitation on this research effort. Additional demographic variables may, or may not, reflect significant difference among the wings. If differences are found, these differences may help to explain the variation in MCCM attitudes among the wings. If MCCM attitude differences cannot be explained by testing a comprehensive list of demographic variables, then future research should be focused on other areas.

It is possible that MCCM attitudes at each of the wings may fluctuate over time. These attitude changes may be related to a variety of factors which affect all wings, are weapon system dependent, or are wing unique. For example, the recent policy change concerning Minuteman MCCM alert tours (24 hours) and the associated manning reduction of approximately one-third of the crew force may alter MCCM attitudes at Minuteman wings. As a result of factors such as these, it would be worthwhile to use portions of this data base as the basis for a longitudinal study to ascertain the impact of changes of this type upon MCCM attitudes.

In view of the apparent wide divergence in attitudes of instructor and standboard MCCMs at the different wings, further research into the attitudes of this portion of the crew force appears warranted. Knowledge of these differences in attitudes, and their possible causes, could be useful to command and staff personnel at both wing and higher headquarters levels.

It would also be extremely useful to know if a relationship exists between MCCM attitudes and wing performance on either previous or subsequent higher headquarters inspections/evaluations. It may also be

valuable to determine whether or not individual MOCM attitudes can be related to individual MOCM evaluation results or Officer Effectiveness Reports.

APPENDIX A
MISSILE COMBAT CREW MEMBER SURVEY

MISSILE COMBAT CREW MEMBER SURVEY

PART I.

Please circle the appropriate response for each of the following questions.

1. What is your base of assignment?
 - a. Davis Monthan
 - b. Little Rock
 - c. McConnell
 - d. Malmstrom
 - e. Ellsworth
 - f. Minot
 - g. Whiteman
 - h. F. E. Warren
 - i. Grand Forks
2. To what type of crew are you assigned?
 - a. Line
 - b. Instructor
 - c. Standboard
3. What is your crew position?
 - a. MCCC
 - b. DMCCC
4. How many months of missile combat ready experience do you have?
 - a. 0-6 months
 - b. 7-12 months
 - c. 13-18 months
 - d. 19-24 months
 - e. 25-30 months
 - f. 31-36 months
 - g. More than 36 months
5. What is your grade?
 - a. Second Lieutenant
 - b. First Lieutenant
 - c. Captain
 - d. Major
 - e. Lieutenant Colonel

6. What is your source of commission?
 - a. Air Force Academy
 - b. ROTC
 - c. OTS (SMSO)
 - d. AECP
 - e. Other
7. Are you a regular officer?
 - a. Yes
 - b. No
8. What is your aeronautical rating?
 - a. Pilot
 - b. Navigator
 - c. Not rated
9. Do you intend to make the Air Force a career?
 - a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no

PART II.

10. Are you supervised by your immediate supervisor in a manner which is satisfactory to you?
 - a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
11. How much has the civilian economic situation influenced your decision to stay in (or leave) the Air Force?
 - a. Large influence
 - b. Some influence
 - c. No influence

12. If your missile duty is a career broadening assignment, do you believe it enhances your career opportunities?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
13. Do you enjoy doing the actual work involved in accomplishing your job?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
14. Have you received individual career counseling by a member of the Missile Management Working Group (MMWG) Traveling Team?
- a. Yes
 - b. No
 - c. No, I did not know they provided individual counseling
 - d. No, I am not aware of the MMWG Traveling Team
15. Do you believe that the MMWG has been effective in opening the lines of communication between HQ SAC and the missileman in the field?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
16. Were you a volunteer for missile crew duty?
- a. Yes, first choice
 - b. Yes, second choice
 - c. Yes, third choice
 - d. No

17. Do you feel that you are given adequate individual responsibility in your job?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
18. If not participating in the Minuteman Education Program, what influenced you not to enroll or to drop out after enrollment?
- a. Conflict with duty
 - b. Not interested in the degree offered
 - c. Had established a date of separation
 - d. Already had a master's degree
 - e. Not available (I am in Titan)
 - f. Other reason. Specify: _____
 - g. N/A; I am participating
19. Do you consider the Minuteman Education Program to be a significant career benefit of missile duty?
- a. Yes, large benefit
 - b. Yes, some benefit
 - c. No benefit
 - d. N/A--Titan
20. Do you feel that missile crew duty is fully understood and appreciated by senior command and staff personnel in your unit?
- a. Yes
 - b. No
21. Which of the following best describes your feelings about the missile operations career field?
- a. It's a dead end
 - b. It's a career field with some future
 - c. It's a career field with a very promising future

22. How often do you see members of the wing staff in the field?

- a. Never
- b. Seldom
- c. Occasionally
- d. Frequently

23. From the factors listed below, select the three that are most significant to you as to their positive influence on missiles as a career field.

_____ Most significant
_____ Second most significant
_____ Third most significant

- a. Prestige of the military officer
- b. Job satisfaction
- c. Opportunity for achievement
- d. Career opportunity
- e. Personal attitude toward the military
- f. Pay and allowances
- g. Geographic location of missile bases
- h. Quality of supervision
- i. Job security
- j. Prestige of crew members
- k. Wife's attitude toward the military
- l. Policy, procedures, and administration
- m. Individual recognition for achievement
- n. Job responsibility
- o. Working environment
- p. Educational opportunity
- q. Personal relationships with subordinates, peers, and supervisors

24. From the factors listed in 23, select the three that are most significant to you as to their negative influence on missiles as a career field.

_____ Most significant
_____ Second most significant
_____ Third most significant

25. Have you used the Missile Career Development Handbook in planning your career and in preparing your Form 90?
- a. Yes
 - b. No
 - c. No. I am not familiar with the Missile Career Development Handbook
 - d. No. I do not plan to remain in the missile career field
26. Are you paid a reasonable salary?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
27. Do you feel a sense of personal accomplishment when performing your job?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
28. Do you feel that the Missile Career Development Handbook is an aid to missile crew members in career planning?
- a. Yes
 - b. No
 - c. Don't know. I am not familiar with the Missile Career Development Handbook
29. Do you feel that the information and assistance provided by HQ SAC and the AFMPC Palace Missile Program actually provides realistic guidance for you to plan and influence your career?
- a. Yes
 - b. No

30. Does your job provide you ample opportunity to develop personal friendships with other officers in your unit?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
31. Do you feel that missile crew duty is fully understood and appreciated by command and staff personnel at higher headquarters?
- a. Yes
 - b. No
32. Are you participating in the Minuteman Education Program?
- a. Yes
 - b. No
 - c. Not applicable (I am in Titan)
33. Do you consider the physical working environment of the capsule (ICC) to be satisfactory?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
34. How much influence did the opportunity to earn a master's degree through the Minuteman Education Program have on your decision to volunteer for missile duty?
- a. Large influence
 - b. Some influence
 - c. No influence
 - d. I did not volunteer for missile duty
 - x. N/A--Titan

35. Have you been briefed by the Missile Management Working Group Traveling Team?
- a. Yes
 - b. No
 - c. No. I did not know there was a traveling team
36. Do you like your job?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
37. Does your job have a favorable effect on your personal life?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
38. How do you feel about the current four year tour?
- a. It is too short
 - b. It is about right
 - c. It is too long
39. Do you desire to remain in the missile career field?
- a. Yes
 - b. No
40. How much influence did the civilian economic situation have on your decision to enter the Air Force?
- a. Large influence
 - b. Some influence
 - c. No influence

41. Are you satisfied with your work schedule?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
42. Do you believe the Headquarters, SAC Missile Management Working Group has been effective in its efforts to improve the missile career field and the image of the missileman?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
 - f. I am not familiar with the Missile Management Working Group
43. Do you believe that the MTWG has been effective in improving the working/living conditions for the MCCM?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
 - f. I am not familiar with the MTWG
44. If you are participating in the Minuteman Education Program, is it because you feel an advanced degree is necessary for career progression?
- a. Yes
 - b. No
 - c. Not applicable, I am not participating
 - x. N/A--Titan
45. Do you believe development of a program, such as the rated supplement, for missile officers to permit career broadening assignments with certain return to missile duty to be desirable?
- a. Yes
 - b. No

46. Do you feel that adequate efforts have been made to improve missile crew duty and to resolve problems generally encountered by missile crew members?
- a. Yes
 - b. No
47. How did ORT affect your motivation toward the missile career field?
- a. Demotivated me
 - b. Tended to demotivate me
 - c. No effect
 - d. Tended to motivate me
 - e. Motivated me
48. Does your job offer you a reasonable opportunity for individual recognition?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
49. If you don't like your job in the missile operations career field, is it because?
- a. You don't like the military career in general
 - b. You don't like the missile operations career field
 - c. Both a and b
 - d. Not applicable
 - e. Other reasons: _____
50. Do you think the opportunity for advancement in the missile operations career field is at least as good as other Air Force career fields?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no

51. Do you feel that the availability and use of electrical entertainment devices in the Launch Control Centers (LCC) has a negative effect on job performance?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
52. Do you think the work of the MMWG has influenced the best qualified personnel to remain in the missile career field to fill the missile staff positions?
- a. A definite yes
 - b. A qualified yes
 - c. Don't know
 - d. A qualified no
 - e. A definite no
53. Do you believe the best qualified MCCMs stay in the missile career field to fill the missile staff positions?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
54. Do you feel that having AM radios in MCCM crew vehicles is desirable and worthwhile?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no

55. Do you believe the MMWG played any part in obtaining permission to install AM radios in MCCM crew vehicles?
- a. A definite yes
 - b. A qualified yes
 - c. Don't know
 - d. A qualified no
 - e. A definite no
56. Do you feel that the authorization to wear the lightweight Blue Jacket with the crew uniform was a worthwhile change?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
57. Do you think the MMWG was instrumental in obtaining the authorization to wear the Lightweight Blue Jacket with the crew uniform?
- a. A definite yes
 - b. A qualified yes
 - c. Don't know
 - d. A qualified no
 - e. A definite no
58. Do you feel that the information in the MMWG Travel Team Briefing on the missile maintenance career field was informative and worthwhile?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
 - f. I have not heard the briefing

59. Do you feel that the information in the MMWG Travel Team Briefing on the importance of education to officer promotions and the availability of educational opportunities was important?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
 - f. I have not heard the briefing
60. Do you feel that the senior command and staff personnel in your unit fully understand and appreciate missile crew duty?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
61. Do you feel that command and staff personnel at higher headquarters fully understand and appreciate missile crew duty?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
62. Do you feel that the information included in the MMWG Travel Team Briefing on the Form 90 was worthwhile?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
 - f. I have not heard the briefing

63. Do you feel that the information included in the MMWG Travel Team Briefing on the AF Reduction in Force (RIF) program was worthwhile?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
 - f. I have not heard the briefing
64. Do you feel that the award of the Missileman Badge should be limited to MCCMs and maintenance personnel?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
65. Did you think the MMWG was instrumental in changing AFR 35-42 to tighten the criteria for awarding the Missileman Badge?
- a. A definite yes
 - b. A qualified yes
 - c. Don't know
 - d. A qualified no
 - e. A definite no
66. Do you think the MMWG Travel Team Briefing on missile assignments was beneficial to you in career planning?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
 - f. I have not heard the briefing

67. Do you think the MMWG Travel Team Briefing on officer promotions was informative and worthwhile?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no
- f. I have not heard the briefing

68. Do you desire to permanently leave the missile career field?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no
- f. I do not intend to remain in the Air Force

69. Do you feel that adequate efforts have been made to resolve problems generally encountered by missile crew members and to improve missile crew duty?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

70. Do you think the MMWG Travel Team Briefing on the new OER system was informative and worthwhile?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no
- f. I have not heard the briefing

71. Do you think the MMWG Travel Team Briefing on the Defense Officer Personnel Management Act (DOPMA) was beneficial?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
 - f. I have not heard the briefing
72. Do you feel that the reduction in the crew time required for award of the Combat Readiness Medal from four years to three years was appropriate?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
73. Do you think the MMWG was instrumental in obtaining a reduction in the crew time required to receive the Combat Readiness Medal for MCCMs?
- a. A definite yes
 - b. A qualified yes
 - c. Don't know
 - d. A qualified no
 - e. A definite no
74. Do you feel that the use of the MAJCOM Career Brief by the MMWG Travel Team was beneficial in your individual career counseling?
- a. A definite yes
 - b. A qualified yes
 - c. Undecided
 - d. A qualified no
 - e. A definite no
 - f. I did not receive career counseling using the MAJCOM Career Brief

75. (For Titan MCCMs Only) Do you feel that the MMWG has been effective in obtaining increased educational opportunities for Titan MCCMs?
- a. A definite yes
 - b. A qualified yes
 - c. Don't know
 - d. A qualified no
 - e. A definite no
 - x. N/A--Minuteman
76. Do you feel that the working/living conditions in the ICC are improved by the availability of electrical entertainment devices?
- a. A definite yes
 - b. A qualified yes
 - c. Neutral
 - d. A qualified no
 - e. A definite no
77. Do you think the MMWG played an important role in obtaining the approval for MMCMs to use electrical entertainment devices in the Launch Control Centers?
- a. A definite yes
 - b. A qualified yes
 - c. Don't know
 - d. A qualified no
 - e. A definite no

APPENDIX B
ATTITUDE DATA APPLICABLE TO ALL SURVEYED MCCMs

Hypothesis 1

MCCM attitudes toward their jobs are not the same at all nine missile wings.

36. Do you like your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table B-1
Job Attitude

Wing	Response						Z*	Total
	A	B	C	D	E			
Davis-Monthan	6	23	8	5	15	1		58
Little Rock	12	16	5	6	3	0		42
McConnell	6	18	4	7	7	0		42
Malmstrom	3	11	6	6	8	0		34
Ellsworth	8	15	9	7	8	0		47
Minot	6	11	4	12	4	1		38
Whiteman	7	20	6	4	8	0		45
F. E. Warren	2	9	6	6	11	0		34
Grand Forks	1	13	5	6	7	0		32
Total	51	136	53	59	71	2		372

* Missing or no response.

Hypothesis 2

MCCM attitudes toward their immediate supervisors are not the same at all nine missile wings.

10. Are you supervised by your immediate supervisor in a manner which is satisfactory to you?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table B-2
Supervision

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	20	22	7	5	4	0	58
Little Rock	23	17	2	0	0	0	42
McConnell	20	14	4	2	2	0	42
Malmstrom	15	6	4	9	0	0	34
Ellsworth	19	15	5	4	3	1	47
Minot	19	14	1	2	0	0	38
Whiteman	19	15	6	2	3	0	45
F. E. Warren	11	13	6	3	1	0	34
Grand Forks	18	6	2	3	3	0	32
Total	164	122	37	32	16	1	372

* Missing or no response.

Hypothesis 3

MCCMs do not have the same sense of personal accomplishment at all the missile wings.

27. Do you feel a sense of personal accomplishment when performing your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table B-3
Personal Accomplishment

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	10	15	11	14	8	0	58
Little Rock	13	10	6	12	1	0	42
McConnell	8	15	5	8	6	0	42
Malmstrom	4	11	5	7	7	0	34
Ellsworth	5	17	7	9	9	0	47
Minot	5	11	4	14	4	0	38
Whiteman	8	20	4	4	9	0	45
F. E. Warren	4	7	6	8	9	0	34
Grand Forks	3	11	3	6	8	1	32
Total	60	117	51	82	61	1	372

* Missing or no response.

Hypothesis 4

MCCMs do not have the same attitudes toward the opportunity for individual recognition at all nine missile wings.

48. Does your job offer you a reasonable opportunity for individual recognition?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table B-4
Individual Recognition

Wing	Response					Total
	A	B	C	D	E	
Davis-Menthon	5	20	12	11	10	58
Little Rock	5	20	5	9	2	42
McConnell	5	13	7	7	10	42
Malmstrom	6	7	4	12	5	34
Ellsworth	4	17	9	13	4	47
Minot	8	19	3	6	2	38
Whiteman	7	23	3	9	3	45
F. E. Warren	1	13	3	12	5	34
Grand Forks	4	12	1	10	5	32
Total	46	144	47	89	46	272

Hypothesis 5

MCCMs do not have the same attitudes toward their work at all nine missile wings.

13. Do you enjoy doing the actual work involved in accomplishing your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table B-5
Work Attitude

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	15	17	8	9	9	0	58
Little Rock	15	13	4	7	2	1	42
McConnell	7	15	7	8	5	0	42
Malmstrom	3	14	4	7	6	0	34
Ellsworth	12	16	3	8	8	0	47
Minot	5	12	6	8	7	0	38
Whiteman	10	17	5	3	9	1	45
F. E. Warren	3	10	6	7	8	0	34
Grand Forks	6	7	5	7	7	0	32
Total	76	121	48	64	61	2	372

* Missing or no response.

Hypothesis 6

MCCMs do not have the same feelings of individual responsibility toward their job at all nine missile wings.

17. Do you feel that you are given adequate individual responsibility in your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table B-6

Individual Responsibility

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	21	12	3	13	9	58
Little Rock	18	17	0	5	2	42
McConnell	14	14	2	9	3	42
Malmstrom	4	8	6	9	7	34
Ellsworth	6	15	7	13	6	47
Minot	15	8	4	4	7	38
Whiteman	19	16	1	5	4	45
F. E. Warren	7	13	2	3	9	34
Grand Forks	8	7	0	8	9	32
Total	112	110	25	69	56	372

Hypothesis 7

MCCM attitudes toward their work schedules are not the same at all nine missile wings.

41. Are you satisfied with your work schedule?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table B-7

Work Schedule

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	1	16	7	15	19	58
Little Rock	4	19	7	6	6	42
McConnell	0	15	10	10	7	42
Malmstrom	6	9	2	14	3	34
Ellsworth	4	29	3	7	4	47
Minot	4	13	8	9	4	38
Whiteman	3	16	6	14	6	45
F. E. Warren	2	11	6	8	7	34
Grand Forks	4	11	4	6	7	32
Total	28	139	53	89	63	372

Hypothesis 8

MCCM attitudes toward the opportunity to develop personal friendships are not the same at all nine missile wings.

30. Does your job provide you ample opportunity to develop personal friendships with other officers in your unit?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table B-8

Personal Friendships

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	15	16	10	13	4	0	58
Little Rock	17	16	2	6	0	1	42
McConnell	11	18	2	6	5	0	42
Malmstrom	12	13	4	4	1	0	34
Ellsworth	23	11	6	5	2	0	47
Minot	12	20	3	1	2	0	38
Whiteman	18	17	6	3	1	0	45
F. E. Warren	8	15	3	4	4	0	34
Grand Forks	9	17	2	3	1	0	32
Total	125	143	38	45	20	1	372

* Missing or no response.

Hypothesis 9

MCCM attitudes toward the physical working environment are not the same at all nine missile wings.

33. Do you consider the physical working environment of the capsule (LCC) to be satisfactory?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table B-9

Physical Working Environment

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	1	7	3	19	28	0	58
Little Rock	1	5	3	16	16	1	42
McConnell	3	11	3	13	11	1	42
Malmstrom	1	8	5	11	9	0	34
Ellsworth	2	22	9	8	6	0	47
Minot	3	14	4	7	10	0	38
Whiteman	2	15	4	13	11	0	45
F. E. Warren	3	12	7	7	5	0	34
Grand Forks	3	6	8	6	9	0	32
Total	19	100	46	100	105	2	372

*Missing or no response.

Hypothesis 10

MCCM attitudes toward adequacy of salary are not the same at all nine missile wings.

26. Are you paid a reasonable salary?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table B-10

Salary

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	18	26	5	4	5	0	58
Little Rock	8	25	5	4	0	0	42
McConnell	13	20	3	4	2	0	42
Malmstrom	12	16	1	4	1	0	34
Ellsworth	17	22	1	7	0	0	47
Minot	14	16	4	3	1	0	38
Whiteman	18	16	5	4	2	0	45
F. E. Warren	11	19	3	0	1	0	34
Grand Forks	11	11	5	3	1	1	32
Total	122	171	32	33	13	1	372

* Missing or no response.

Hypothesis 11

MCCM attitudes toward the effects of their job on their personal life are not the same at all nine missile wings.

37. Does your job have a favorable effect on your personal life?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table B-11

Job Effect on Personal Life

Wing	Response					Z*	Total
	A	B	C	D	E		
Davis-Monthan	3	12	6	16	20	1	58
Little Rock	8	14	4	10	6	0	42
McConnell	2	10	11	9	10	0	42
Malmstrom	1	10	6	9	8	0	34
Ellsworth	0	9	15	17	6	0	47
Minot	1	7	7	10	12	1	38
Whiteman	3	8	11	17	6	0	45
F. E. Warren	1	8	5	9	11	0	34
Grand Forks	2	6	6	9	9	0	32
Total	21	84	71	106	88	2	372

*Missing or no response.

Hypothesis 12

MCCM attitudes toward the opportunity for advancement provided by the missile career field are not the same at all nine missile wings.

50. Do you think the opportunity for advancement in the missile operations career field is at least as good as other Air Force career fields?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table B-12

Advancement

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	6	30	10	6	6	0	58
Little Rock	10	21	1	7	3	0	42
McConnell	8	12	10	4	7	1	42
Malmstrom	6	10	5	5	8	0	34
Ellsworth	3	8	6	15	14	1	47
Minot	11	10	7	7	3	0	38
Whiteman	4	20	7	8	6	0	45
F. E. Warren	5	10	9	5	5	0	34
Grand Forks	5	14	2	6	5	0	32
Total	58	135	57	63	57	2	372

* Missing or no response.

Hypothesis 13

MCCM attitudes toward the missile operations career field are not the same at all nine missile wings.

21. Which of the following best describes your feelings about the missile operations career field?

- a. It's a dead end
- b. It's a career field with some future
- c. It's a career field with a very promising future

Table B-13

Career Future

Wing	Response			Z*	Total
	A	B	C		
Davis-Monthan	12	35	11	0	58
Little Rock	2	28	12	0	42
McConnell	11	21	10	0	42
Malmstrom	10	19	5	0	34
Ellsworth	15	29	3	0	47
Minot	5	23	10	0	38
Whiteman	9	32	3	1	45
F. E. Warren	8	20	6	0	34
Grand Forks	4	25	3	0	32
Total	76	232	63	1	372

* Missing or no response.

Hypothesis 14

MCCM attitudes toward crew duty improvement efforts are not the same at all nine missile wings.

69. Do you feel that adequate efforts have been made to resolve problems generally encountered by missile crew members and to improve missile crew duty?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

Table B-14

Improve Duty

Wing	Response						Z*	Total
	A	B	C	D	E			
Davis-Monthan	2	7	4	20	25	0		58
Little Rock	1	16	8	8	9	0		42
• McConnell	0	16	7	9	10	0		42
Malmstrom	0	11	6	10	7	0		34
Ellsworth	0	15	5	17	9	1		47
Minot	2	13	6	11	6	0		38
Whiteman	2	15	2	19	7	0		45
F. E. Warren	1	11	9	5	8	0		34
Grand Forks	0	7	4	13	8	0		32
Total	8	111	51	112	89	1		372

*Missing or no response.

Hypothesis 15

MCCM attitudes toward higher headquarters personnel's understanding of missile crew duty are not the same at all nine missile wings.

61. Do you feel that command and staff personnel at higher headquarters fully understand and appreciate missile crew duty?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

Table B-15

HHQ Understanding

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	3	6	5	24	20	0	58
Little Rock	0	9	3	19	11	0	42
McConnell	1	8	8	17	8	0	42
Malmstrom	0	6	5	13	9	1	34
Ellsworth	1	3	7	23	12	1	47
Minot	3	2	3	17	12	1	38
Whiteman	0	5	3	29	8	0	45
F. E. Warren	1	7	7	9	10	0	34
Grand Forks	0	3	5	12	12	0	32
Total	9	49	46	163	102	3	372

* Missing or no response.

Hypothesis 16

MCCM attitudes toward the understanding of missile crew duty by unit command and staff personnel are not the same at all nine missile wings.

60. Do you feel that the senior command and staff personnel in your unit fully understand and appreciate missile crew duty?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

Table B-13

Unit Understanding

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	3	10	7	20	18	0	58
Little Rock	4	17	5	9	7	0	42
McConnell	3	19	4	11	5	0	42
Malmstrom	3	9	6	8	7	1	34
Ellsworth	8	8	7	20	3	1	47
Minot	9	11	3	10	4	1	38
Whiteman	6	18	2	15	3	1	45
F. E. Warren	4	11	3	9	7	0	34
Grand Forks	1	6	6	14	5	0	32
Total	41	109	43	116	59	4	372

* Missing or no response.

APPENDIX C

RANK ORDER DATA APPLICABLE TO ALL SURVEYED MCCMs

Table C-1

**Summary of Wing Rank Order By Attitude Questions
Which Were Significant at $\alpha = .05$**

Attitude Question	<u>Wing</u>						
	Davis- Monthan	Little Rock	McConnell	Malmstrom	Ellsworth	Minot	Whiteman Warren Forks
Hypo 1 Ques 36 p = .0235	6	1	3	7	4	5	2
Hypo 4 Ques 48 p = .0150	6	3	8	7	4	1	2
Hypo 6 Ques 17 p = .0003	5	1	3	9	7	4	2
Hypo 7 Ques 41 p = .0032	9	2	8	4	1	3	6
Hypo 9 Ques 33 p = .0000	9	8	6	7	1	3	4
Hypo 12 Ques 50 p = .0007	3	1	5	8	9	2	6
Hypo 13 Ques 21 p = .0115	3	1	4	8	9	2	7
Hypo 14 Ques 69 p = .0072	9	2	5	6	7	1	4
Hypo 16 Ques 60 p = .0038	9	4	3	7	5	1	2

Table C-2

Summary of Wing Rank Order By Attitude Questions Which
Were Not Significant at $\alpha = .05$

Attitude Question	Wing						
	Davis- Monthan	Little Rock	McConnell	Malmstrom	Ellsworth	Minot	Whiteman Warren Forks
Hypo 2 Ques 10 p = .1522	8	1	4	7	6	2	5 9 3
Hypo 3 Ques 27 p = .1729	4	1	3	7	5	6	2 9 8
Hypo 5 Ques 13 p = .0520	4	1	5	6	3	7	2 9 8
Hypo 8 Ques 30 p = .0576	9	2	7	5	1	4	3 8 6
Hypo 10 Ques 26 p = .9094	8	9	6	5	2	3	4 1 7
Hypo 11 Ques 37 p = .0646	9	1	3	4	5	8	2 7 6
Hypo 15 Ques 61 p = .5088	7	4	1	3	6	8	5 2 9

APPENDIX D

DEMOGRAPHIC DATA APPLICABLE TO ALL SURVEYED MCCMs

1. What is your base of assignment?

- | | |
|------------------|-----------------|
| a. Davis-Monthan | f. Minot |
| b. Little Rock | g. Whiteman |
| c. McConnell | h. F. E. Warren |
| d. Malmstrom | i. Grand Forks |
| e. Ellsworth | |

Table D-1

Number of Respondents By Base

<u>Base</u>	<u>Respondents</u>
Davis-Monthan	58
Little Rock	42
McConnell	42
Malmstrom	34
Ellsworth	47
Minot	38
Whiteman	45
F. E. Warren	34
Grand Forks	32
Total	372

Hypothesis 18

Source of commission of MCCMs differs among the nine missile wings.

6. What is your source of commission?

- a. Air Force Academy
- b. ROTC
- c. OTS (SMSO)
- d. AECP
- e. Other

Table D-2

Source of Commission

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	4	33	18	2	1	58
Little Rock	0	30	10	0	2	42
McConnell	0	31	10	1	0	42
Malmstrom	2	17	11	3	1	34
Ellsworth	3	26	16	2	0	47
Minot	0	20	13	3	2	38
Whiteman	2	27	12	3	1	45
F. E. Warren	4	17	11	2	0	34
Grand Forks	1	18	9	2	2	32
Total	16	219	110	18	9	372

Hypothesis 18

Source of commission of MCCMs differs among the nine missile wings.

6. What is your source of commission?

- a. Air Force Academy
- b. ROTC
- c. OTS (SMSO)
- d. AECP
- e. Other

Table D-3

Source of Commission (Collapsed)

Wing	Response		Total
	A + B	C + D + E	
Davis-Monthan	37	21	58
Little Rock	30	12	42
McConnell	31	11	42
Malmstrom	19	15	34
Ellsworth	29	18	47
Minot	20	18	38
Whiteman	29	16	45
F. E. Warren	21	13	34
Grand Forks	19	13	32
Total	235	137	372

Hypothesis 19

The type of commission (regular or reserve) of the MCCMs differs among the nine missile wings.

7. Are you a regular officer?

- a. Yes
- b. No

Table D-4
Type of Commission

Wing	Response			Total
	A	B	Z*	
Davis-Monthan	17	41	0	58
Little Rock	11	31	0	42
McConnell	7	35	0	42
Malmstrom	9	25	0	34
Ellsworth	12	34	1	47
Minot	7	31	0	38
Whiteman	12	33	0	45
F. E. Warren	10	24	0	34
Grand Forks	8	24	0	32
Total	92	278	1	372

* Missing or no response.

Hypothesis 20

The grade status of the MCCMs differs among the nine missile wings.

5. What is your grade?

- a. Second Lieutenant
- b. First Lieutenant
- c. Captain
- d. Major
- e. Lieutenant Colonel

Table D-5

Rank

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	14	15	28	1	0	58
Little Rock	7	15	18	2	0	42
McConnell	10	12	20	0	0	42
Malmstrom	7	11	15	1	0	34
Ellsworth	19	6	19	3	0	47
Minot	11	7	19	1	0	38
Whiteman	10	13	19	3	0	45
F. E. Warren	3	14	14	3	0	34
Grand Forks	13	5	14	0	0	32
Total	94	98	166	14	0	372

Hypothesis 20

The grade status of the MCCMs differs among the nine missile wings.

5. What is your grade?

- a. Second Lieutenant
- b. First Lieutenant
- c. Captain
- d. Major
- e. Lieutenant Colonel

Table D-6

Rank (Collapsed)

Wing	Response			Total
	A	B	C + D	
Davis-Monthan	14	15	29	58
Little Rock	7	15	20	42
McConnell	10	12	20	42
Malmstrom	7	11	16	34
Ellsworth	19	6	22	47
Minot	11	7	20	38
Whiteman	10	13	22	45
F. E. Warren	3	14	17	34
Grand Forks	13	5	14	32
Total	94	98	180	372

Hypothesis 21

The type of crew (line, instructor, or standboard) of the MOCMs differs among the nine missile wings.

2. To what type of crew are you assigned?

- a. Line
- b. Instructor
- c. Standboard

Table D-7
Type of Crew

Wing	Response			Total
	A	B	C	
Davis-Monthan	40	13	5	58
Little Rock	27	10	5	42
McConnell	33	7	2	42
Malmstrom	29	3	2	34
Ellsworth	35	9	3	47
Minot	26	3	9	38
Whiteman	32	8	5	45
F. E. Warren	30	1	3	34
Grand Forks	26	6	0	32
Total	278	60	34	372

Hypothesis 21

The type of crew (line, instructor, or standboard) of the MCCMs differs among the nine missile wings.

2. To what type of crew are you assigned?

- a. Line
- b. Instructor
- c. Standboard

Table D-8

Type of Crew (Collapsed)

Wing	Response		Total
	A	B + C	
Davis-Monthan	40	18	58
Little Rock	27	15	42
McConnell	33	9	42
Malmstrom	29	5	34
Ellsworth	35	12	47
Minot	26	12	38
Whiteman	32	13	45
F. E. Warren	30	4	34
Grand Forks	26	6	32
Total	278	94	372

Hypothesis 22

Combat ready time of the MCCMs differs among the nine missile wings.

4. How many months of missile combat ready experience do you have?

- | | |
|-----------------|------------------------|
| a. 0-6 months | e. 25-30 months |
| b. 7-12 months | f. 31-36 months |
| c. 13-18 months | g. More than 36 months |
| d. 19-24 months | |

Table D-9

Time On Crew

Wing	Response							Total
	A	B	C	D	E	F	G	
Davis-Monthan	6	9	7	5	6	7	18	58
Little Rock	6	4	2	5	5	5	15	42
McConnell	5	9	6	3	4	4	11	42
Malmstrom	3	6	3	3	6	3	10	34
Ellsworth	6	13	6	11	1	4	6	47
Minot	2	4	7	5	4	6	10	38
Whiteman	3	7	6	6	6	6	11	45
F. E. Warren	1	8	3	3	7	6	6	34
Grand Forks	4	9	6	5	4	0	4	32
Total	36	69	46	46	43	41	91	372

Hypothesis 22

Combat ready time of the MCCMs differs among the nine missile wings.

4. How many months of missile combat ready experience do you have?

- | | |
|-----------------|------------------------|
| a. 0-6 months | e. 25-30 months |
| b. 7-12 months | f. 31-36 months |
| c. 13-18 months | g. More than 36 months |
| d. 19-24 months | |

Table D-10

Time On Crew (Collapsed)

Wing	Response				Total
	A + B	C + D	E + F	G	
Davis-Monthan	15	12	13	18	58
Little Rock	10	7	10	15	42
McConnell	14	9	8	11	42
Malmstrom	9	6	9	10	34
Ellsworth	19	17	5	6	47
Minot	6	12	10	10	38
Whiteman	10	12	12	11	45
F. E. Warren	9	6	13	6	34
Grand Forks	13	11	4	4	32
Total	105	92	84	91	372

Hypothesis 23

Crew position (commander or deputy) of the MCCMs differs among the nine missile wings.

3. What is your crew position?

- a. MCCC
- b. DMCCC

Table D-11
Crew Position

Wing	Response		Total
	A	B	
Davis-Monthan	29	29	58
Little Rock	23	19	42
McConnell	23	19	42
Malmstrom	21	13	34
Ellsworth	23	24	47
Minot	24	14	38
Whiteman	31	14	45
F. E. Warren	18	16	34
Grand Forks	17	15	32
Total	209	163	372

Hypothesis 24

Missile volunteer status of the MCCMs differs among the nine missile wings.

16. Were you a volunteer for missile crew duty?

- a. Yes, first choice
- b. Yes, second choice
- c. Yes, third choice
- d. No

Table D-12

Volunteer Status

Wing	Response				Total
	A	B	C	D	
Davis-Monthan	37	5	7	9	58
Little Rock	25	3	5	9	42
McConnell	12	9	5	16	42
Malmstrom	20	4	2	8	34
Ellsworth	24	1	3	19	47
Minot	16	3	3	16	38
Whiteman	30	4	5	6	45
F. E. Warren	28	2	1	3	34
Grand Forks	7	2	3	20	32
Total	119	33	34	106	372

Hypothesis 24

Missile volunteer status of the MCCMs differs among the nine missile wings.

16. Were you a volunteer for missile crew duty?

- a. Yes, first choice
- b. Yes, second choice
- c. Yes, third choice
- d. No

Table D-13

Volunteer Status (Collapsed)

Wing	Response			Total
	A	B + C	D	
Davis-Monthan	37	12	9	58
Little Rock	25	8	9	42
McConnell	12	14	16	42
Malmstrom	20	6	8	34
Ellsworth	24	4	19	47
Minot	16	6	16	38
Whiteman	30	9	6	45
F. E. Warren	28	3	3	34
Grand Forks	7	5	20	32
Total	199	67	106	372

Hypothesis 25

Career intent of the MCCMs differs among the nine missile wings.

9. Do you intend to make the Air Force a career?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

Table D-14

Air Force Career Intent

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	29	16	6	3	4	0	58
Little Rock	19	13	1	4	5	0	42
McConnell	21	9	8	1	3	0	42
Malmstrom	20	9	1	2	1	1	34
Ellsworth	20	13	5	3	2	0	47
Minot	18	13	5	2	0	0	38
Whiteman	28	10	4	2	1	0	45
F. E. Warren	18	7	4	2	3	0	34
Grand Forks	16	8	3	2	3	0	32
Total	189	98	41	21	22	1	372

* Missing or no response.

Hypothesis 25

Career intent of the MCCMs differs among the nine missile wings.

9. Do you intend to make the Air Force a career?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

Table D-15

Air Force Career Intent (Collapsed)

Wing	Response				Z*	Total
	A	B	C	D + E		
Davis-Monthan	29	16	13		0	58
Little Rock	19	13	10		0	42
McConnell	21	9	12		0	42
Malmstrom	20	9	4		1	34
Ellsworth	20	13	14		0	47
Minot	18	13	7		0	38
Whiteman	28	10	7		0	45
F. E. Warren	18	7	9		0	34
Grand Forks	16	8	8		0	32
Total	189	98	84		1	372

* Missing or no response.

Hypothesis 26

Aeronautical rating (rated or non-rated) of the MCCMs differs among the nine missile wings.

8. What is your aeronautical rating?

- a. Pilot
- b. Navigator
- c. Not rated

Table D-16

Aeronautical Rating

Wing	Response			Total
	A	B	C	
Davis-Monthan	2	0	56	58
Little Rock	2	1	39	42
McConnell	4	0	38	42
Malmstrom	2	0	32	34
Ellsworth	3	0	44	47
Minot	3	0	35	38
Whiteman	2	0	43	45
F. E. Warren	2	3	29	34
Grand Forks	5	1	26	32
Total	25	5	342	372

Hypothesis 26

Aeronautical rating (rated or non-rated) of the
MCCMs differs among the nine missile wings.

8. What is your aeronautical rating?

- a. Pilot
- b. Navigator
- c. Not rated

Table D-17

Aeronautical Rating (Collapsed)

Wing	Response		Total
	A + B	C + D + E	
Davis-Monthan	2	56	58
Little Rock	3	39	42
McConnell	4	38	42
Malmstrom	2	32	34
Ellsworth	3	44	47
Minot	3	35	38
Whiteman	2	43	45
F. E. Warren	5	29	34
Grand Forks	6	26	32
Total	30	342	372

APPENDIX E

**ATTITUDE DATA APPLICABLE TO SURVEYED NON-RATED,
COMPANY GRADE, LINE MCCMs**

Hypothesis 1

MCCM attitudes toward their jobs are not the same at all nine missile wings.

36. Do you like your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table E-1

Job Attitude

Wing	Response						Z*	Total
	A	B	C	D	E			
Davis-Monthan	2	16	4	2	12	1		37
Little Rock	3	11	5	4	1	0		24
McConnell	4	13	4	4	6	0		31
Malmstrom	2	10	4	6	5	0		27
Ellsworth	3	10	5	6	7	0		31
Minot	1	8	2	10	2	1		24
Whiteman	5	13	3	1	7	0		29
F. E. Warren	1	7	4	4	9	0		25
Grand Forks	1	10	2	4	5	0		22
Total	22	98	33	41	54	2		250

* Missing or no response.

Kruskal-Wallis Test Results

- a. Total number of valid responses: 248
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 9.5265
- d. Significance: $p = .2998$

Table E-2

Rank Order of Wings Based on MCCM
Attitudes Toward Their Jobs

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Little Rock	100.979	24
2	Whiteman	107.672	29
3	McConnell	114.468	31
4	Malmstrom	127.315	27
5	Grand Forks	127.455	22
6	Ellsworth	129.968	31
7	Davis-Monthan	131.139	36
8	Minot	132.196	23
9	F. E. Warren	149.980	25

Hypothesis 2

MCCM attitudes toward their immediate supervisors are not the same at all nine missile wings.

10. Are you supervised by your immediate supervisor in a manner which is satisfactory to you?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table E-3

Supervision

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	11	15	5	4	2	37
Little Rock	12	10	2	0	0	24
McConnell	14	9	4	2	2	31
Malmstrom	12	6	4	5	0	27
Ellsworth	11	12	2	4	2	31
Minot	10	9	1	4	0	24
Whiteman	11	11	3	1	3	29
F. E. Warren	9	10	5	1	0	25
Grand Forks	14	6	0	1	1	22
Total	104	88	26	22	10	250

Kruskal-Wallis Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 9.4351
- d. Significance: $p = .3069$

Table E-4

Rank Order of Wings Based on MCCM Attitudes
Toward Their Immediate Supervisor

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Grand Forks	95.500	22
2	Little Rock	105.250	24
3	McConnell	123.984	31
4	Minot	124.375	24
5	F. E. Warren	128.580	25
6	Malmstrom	129.278	27
7	Whiteman	130.810	29
8	Ellsworth	134.823	31
9	Davis-Monthan	141.662	37

Hypothesis 3

MCCMs do not have the same sense of personal accomplishment at all nine missile wings.

27. Do you feel a sense of personal accomplishment when performing your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table E-5

Personal Accomplishment

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	4	10	7	11	5	37
Little Rock	5	6	4	8	1	24
McConnell	6	10	4	5	6	31
Malmstrom	3	9	3	7	5	27
Ellsworth	1	12	3	8	7	31
Minot	0	6	4	10	4	24
Whiteman	4	13	3	2	7	29
F. E. Warren	2	5	6	5	7	25
Grand Forks	1	8	3	4	6	22
Total	26	79	37	60	48	250

Kruskal-Wallis Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 8.5530
- d. Significance: $p = .3814$

Table E-6

Rank Order of Wings Based on MCCM Attitudes Toward a
Sense of Personal Accomplishment

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Little Rock	106.917	24
2	Whiteman	110.845	29
3	McConnell	111.565	31
4	Malmstrom	123.944	27
5	Davis-Monthan	124.649	37
6	Ellsworth	133.645	31
7	Grand Forks	134.659	22
8	F. E. Warren	141.960	25
9	Minot	146.792	24

Hypothesis 4

MCCMs do not have the same attitudes toward the opportunity for individual recognition at all nine missile wings.

48. Does your job offer you a reasonable opportunity for individual recognition?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table E-7

Individual Recognition

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	1	13	8	6	9	37
Little Rock	2	9	4	7	2	24
McConnell	3	8	5	5	10	31
Malmstrom	4	7	3	11	2	27
Ellsworth	2	10	6	9	4	31
Minot	2	13	2	5	2	24
Whiteman	1	17	2	6	3	29
F. E. Warren	0	10	2	9	4	25
Grand Forks	3	8	0	7	4	22
Total	18	95	32	65	40	250

Kruskal-Wallis Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 7.8950
- d. Significance: $p = .4438$

Table E-8

Rank Order of Wings Based on MCCM Attitudes Toward
the Opportunity for Individual Recognition

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Minot	103.625	24
2	Whiteman	108.621	29
3	Little Rock	118.250	24
4	Malmstrom	122.500	27
5	Grand Forks	123.841	22
6	Ellsworth	128.387	31
7	Davis-Monthan	136.378	37
8	F. E. Warren	137.720	25
9	McConnell	141.903	31

Hypothesis 5

MCCMs do not have the same attitudes toward their work at all nine missile wings.

13. Do you enjoy doing the actual work involved in accomplishing your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table E-9

Work Attitude

Wing	Response						Z*	Total
	A	B	C	D	E			
Davis-Monthan	7	12	6	4	8	0		37
Little Rock	5	9	3	6	0	1		24
McConnell	4	11	7	5	4	0		31
Malmstrom	2	12	2	6	5	0		27
Ellsworth	6	8	3	8	6	0		31
Minot	0	7	6	5	6	0		24
Whiteman	5	12	3	2	6	1		29
F. E. Warren	2	7	6	4	6	0		25
Grand Forks	4	4	5	4	5	0		22
Total	35	82	41	44	46	2		250

*Missing or no response.

Kruskal-Wallis Test Results

- a. Total number of valid responses: 248
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 9.3096
- d. Significance: $p = .3169$

Table E-10

Rank Order of Wings Based on MCCM Attitudes Toward Their Work

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Little Rock	98.935	23
2	Whiteman	112.000	28
3	McConnell	118.839	31
4	Davis-Monthan	118.865	37
5	Ellsworth	126.806	31
6	Malmstrom	127.426	27
7	Grand Forks	132.614	22
8	F. E. Warren	138.980	25
9	Minot	150.792	24

Hypothesis 6

MCCMs do not have the same feelings of individual responsibility toward their job at all nine missile wings.

17. Do you feel that you are given adequate individual responsibility in your job?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table E-11

Individual Responsibility

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	11	8	3	7	8	37
Little Rock	9	10	0	3	2	24
McConnell	9	10	2	7	3	31
Malmstrom	3	7	5	8	4	27
Ellsworth	3	9	7	7	5	31
Minot	6	5	3	4	6	24
Whiteman	13	10	1	2	3	29
F. E. Warren	5	10	2	2	6	25
Grand Forks	4	4	0	6	8	22
Total	63	73	23	46	45	250

Kruskal-Wallis Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 21.3225
- d. Significance: $p = .0063$

Table E-12

Rank Order of Wings Based on MCOM Attitudes Toward
Individual Responsibility in Their Job

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Whiteman	90.103	29
2	Little Rock	95.479	24
3	McConnell	114.371	31
4	Davis-Monthan	126.959	37
5	F. E. Warren	127.560	25
6	Minot	134.750	24
7	Ellsworth	143.532	31
8	Malmstrom	144.741	27
9	Grand Forks	156.682	22

Hypothesis 2

MCCM attitudes toward their work schedules are not the same at all nine missile wings.

41. Are you satisfied with your work schedule?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table E-13

Work Schedule

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	1	10	3	9	14	37
Little Rock	2	9	5	6	2	24
McConnell	0	10	5	10	6	31
Malmstrom	5	7	2	12	1	27
Ellsworth	3	18	3	4	3	31
Minot	4	5	7	6	2	24
Whiteman	2	13	5	6	3	29
F. E. Warren	2	7	5	7	4	25
Grand Forks	4	8	1	6	3	22
Total	23	87	36	66	38	250

Kruskal-Wallis Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 19.0789
- d. Significance: $p = .0144$

Table E-14

Rank Order of Wings Based on MCCM Attitudes
Toward Their Work Schedule

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Ellsworth	98.065	31
2	Grand Forks	112.909	22
3	Whiteman	114.103	29
4	Little Rock	117.063	24
5	Malmstrom	117.463	27
6	Minot	117.604	24
7	F. E. Warren	132.720	25
8	McConnell	145.048	31
9	Davis-Monthan	160.108	37

Hypothesis 8

MCCM attitudes toward the opportunity to develop personal friendships are not the same at all nine missile wings.

30. Does your job provide you ample opportunity to develop personal friendships with other officers in your unit?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table E-15

Personal Friendships

Wing	Response						Z*	Total
	A	B	C	D	E			
Davis-Monthan	6	10	7	11	3	1		37
Little Rock	9	9	1	4	0	0		24
McConnell	8	13	1	4	5	0		31
Malmstrom	10	10	3	3	1	0		27
Ellsworth	16	7	4	3	1	0		31
Minot	5	14	3	1	1	0		24
Whiteman	11	12	4	2	0	0		29
F. E. Warren	3	12	3	3	4	0		25
Grand Forks	8	10	1	2	1	0		22
Total	76	97	27	33	16	1		250

* Missing or no response.

Kruskal-Wallis Test Results

- a. Total number of valid responses: 249
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 22.4220
- d. Significance: $p = .0042$

Table E-16

Rank Order of Wings Based on MCCM Attitudes Toward
the Opportunity to Develop Personal Friendships
With Other Officers in Their Units

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Ellsworth	101.016	31
2	Whiteman	107.086	29
3	Little Rock	109.848	23
4	Grand Forks	110.023	22
5	Malmstrom	114.389	27
6	Minot	123.417	24
7	McConnell	135.339	31
8	F. E. Warren	151.740	25
9	Davis-Monthan	159.500	37

Hypothesis 9

MCCM attitudes toward the physical working environment are not the same at all nine missile wings.

33. Do you consider the physical working environment of the capsule (LCJ) to be satisfactory?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table E-17

Physical Working Environment

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	0	5	1	13	18	37
Little Rock	0	3	2	11	8	24
McConnell	3	8	1	10	9	31
Malmstrom	1	7	4	8	7	27
Ellsworth	1	14	6	5	5	31
Minot	2	6	3	4	9	24
Whiteman	2	12	2	5	8	29
F. E. Warren	2	8	5	6	4	25
Grand Forks	1	5	5	6	5	22
Total	12	68	29	68	73	250

Kruskal-Wallis Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 23.2825
- d. Significance: $p = .0030$

Table E-18

Rank Order of Wings Based on MCCM Attitudes Toward
the Physical Working Environment

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Ellsworth	97.258	31
2	F. E. Warren	103.080	25
3	Whiteman	110.017	29
4	Grand Forks	120.227	22
5	McConnell	124.113	31
6	Malmstrom	124.370	27
7	Minot	128.208	24
8	Little Rock	150.833	24
9	Davis-Monthan	163.378	37

Hypothesis 10

MCOM attitudes toward adequacy of salary are not the same at all nine missile wings.

26. Are you paid a reasonable salary?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table E-19

Salary

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	15	11	4	4	3	37
Little Rock	3	16	3	2	0	24
McConnell	9	15	1	4	2	31
Malmstrom	10	12	1	4	0	27
Ellsworth	10	16	0	5	0	31
Minot	10	8	3	2	1	24
Whiteman	10	13	3	2	1	29
F. E. Warren	8	14	3	0	0	25
Grand Forks	7	8	4	3	0	22
Total	82	113	22	26	7	250

Kruskal-Wallis Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 3.2201
- d. Significance: $p = .9198$

Table E-20

Rank Order of Wings Based on MCCM Attitudes Toward
Adequacy of Their Salary

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	F. E. Warren	115.900	25
2	Minot	118.938	24
3	Malmstrom	118.944	27
4	Ellsworth	122.306	31
5	Whiteman	122.397	29
6	Davis-Monthan	125.419	37
7	McConnell	131.645	31
8	Grand Forks	132.727	22
9	Little Rock	142.875	24

Hypothesis 11

MCCM attitudes toward the effects of their job on their personal life are not the same at all nine missile wings.

37. Does your job have a favorable effect on your personal life?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table E-21

Job Effect on Personal Life

Wing	Response					Z*	Total
	A	B	C	D	E		
Davis-Monthan	2	6	3	10	15	1	37
Little Rock	3	7	3	8	3	0	24
McConnell	2	8	7	6	8	0	31
Malmstrom	1	7	5	8	6	0	27
Ellsworth	0	8	9	9	5	0	31
Minot	1	2	6	7	7	1	24
Whiteman	1	7	8	10	3	0	29
F. E. Warren	0	6	5	6	8	0	25
Grand Forks	2	3	5	6	6	0	22
Total	12	54	51	70	61	2	250

* Missing or no response.

Kruskal-Wallis Test Results

- a. Total number of valid responses: 248
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 10.3395
- d. Significance: $p = .2420$

Table E-22

Rank Order of Wings Based on MCCM Attitudes Toward
Their Job on Their Personal Life

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Little Rock	101.917	24
2	Whiteman	110.276	29
3	Ellsworth	116.339	31
4	McConnell	117.161	31
5	Malmstrom	121.148	27
6	Grand Forks	127.932	22
7	F. E. Warren	134.240	25
8	Minot	140.478	23
9	Davis-Monthan	147.806	36

Hypothesis 12

MCCM attitudes toward the opportunity for advancement provided by the missile operations career field are not the same at all nine missile wings.

50. Do you think the opportunity for advancement in the missile operations career field is at least as good as other Air Force career fields?

- a. A definite yes
- b. A qualified yes
- c. Neutral
- d. A qualified no
- e. A definite no

Table E-23

Advancement

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	3	16	9	5	4	0	37
Little Rock	5	11	1	6	1	0	24
McConnell	4	10	6	3	7	1	31
Malmstrom	3	10	4	4	6	0	27
Ellsworth	3	6	3	9	10	0	31
Minot	6	6	5	5	2	0	24
Whiteman	3	13	4	6	3	0	29
F. E. Warren	2	8	8	4	3	0	25
Grand Forks	4	8	2	5	3	0	22
Total	33	38	42	47	39	1	250

* Missing or no response.

Kruskal-Wallis Test Results

- a. Total number of valid responses: 249
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 12.0291
- d. Significance: $p = .1499$

Table E-24

Rank Order of Wings Based on MCCM Attitudes Toward
the Opportunity for Advancement Provided by
the Missile Operations Career Field

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Little Rock	101.333	24
2	Minot	111.438	24
3	Grand Forks	118.091	22
4	Whiteman	118.638	29
5	Davis-Monthan	119.689	37
6	McConnell	128.967	30
7	F. E. Warren	129.280	25
8	Malmstrom	130.519	27
9	Ellsworth	158.919	31

Hypothesis 13

MCCM attitudes toward the missile operations career field are not the same at all nine missile wings.

21. Which of the following best describes your feelings about the missile operations career field?

- a. It's a dead end
- b. It's a career field with some future
- c. It's a career field with a very promising future

Table E-25

Career Future

Wing	Response			Z*	Total
	A	B	C		
Davis-Monthan	10	21	6	0	37
Little Rock	1	19	4	0	24
McConnell	10	15	6	0	31
Malmstrom	8	15	4	0	27
Ellsworth	11	18	2	0	31
Minot	5	16	3	0	24
Whiteman	6	20	2	1	29
F. E. Warren	6	16	3	0	25
Grand Forks	4	16	2	0	22
Total	61	156	32	1	250

* Missing or no response.

Kruskal-Wallis Test Results

- a. Total number of valid responses: 249
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 7.0547
- d. Significance: $p = .5307$

Table E-26

Rank Order of Wings Based on MCCM Attitudes Toward
the Missile Operations Career Field

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Little Rock	99.354	24
2	Minot	121.354	24
3	Grand Forks	121.682	22
4	Davis-Monthan	124.581	37
5	F. E. Warren	125.260	25
6	Whiteman	127.036	28
7	McConnell	127.306	31
8	Malmstrom	128.722	27
9	Ellsworth	142.935	31

Hypothesis 14

MCCM attitudes toward crew duty improvement efforts are not the same at all nine missile wings.

69. Do you feel that adequate efforts have been made to resolve problems generally encountered by missile crew members and to improve missile crew duty?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

Table E-27

Improve Duty

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	1	4	2	10	20	37
Little Rock	1	10	5	4	4	24
McConnell	0	12	6	4	9	31
Malmstrom	0	10	5	9	3	27
Ellsworth	0	9	5	12	5	31
Minot	2	9	3	4	6	24
Whiteman	1	11	0	12	5	29
F. E. Warren	1	7	6	4	7	25
Grand Forks	0	6	2	7	7	22
Total	6	78	34	66	66	250

Kruskal-Wallis Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 21.1818
- d. Significance: $p = .0067$

Table E-28

Rank Order of Wings Based on MCCM Attitudes Toward
Crew Duty Improvement Efforts

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Little Rock	101.750	24
2	Minot	109.667	24
3	Malmstrom	110.315	27
4	Whiteman	117.569	29
5	McConnell	119.952	31
6	F. E. Warren	122.380	25
7	Ellsworth	123.306	31
8	Grand Forks	139.045	22
9	Davis-Monthan	169.014	37

Hypothesis 15

MCCM attitudes toward higher headquarters personnel's understanding of missile crew duty are not the same at all nine missile wings.

61. Do you feel that command and staff personnel at higher headquarters fully understand and appreciate missile crew duty?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

Table E-29

HHQ Understanding

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	2	2	5	14	14	0	37
Little Rock	0	4	2	12	16	0	24
McConnell	1	5	6	12	7	0	31
Malmstrom	0	6	4	10	6	1	27
Ellsworth	1	0	6	15	9	0	31
Minot	2	2	2	9	8	1	24
Whiteman	0	5	2	17	5	0	29
F. E. Warren	0	5	5	8	7	0	25
Grand Forks	0	1	3	11	7	0	22
Total	6	30	35	108	69	2	250

* Missing or no response.

Kruskal-Wallis Test Results

- a. Total number of valid responses: 248
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 6.0672
- d. Significance: $p = .6397$

Table E-30

Rank Order of Wings Based on MCOM Attitudes Toward
Higher Headquarters Personnel's Understanding
of Missile Crew Duty

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Malmstrom	110.923	26
2	McConnell	110.935	31
3	F. E. Warren	115.180	25
4	Whiteman	117.897	29
5	Little Rock	124.333	24
6	Minot	130.413	23
7	Ellsworth	133.419	31
8	Davis-Monthan	137.108	37
9	Grand Forks	139.182	22

Hypothesis 16

MCCM attitudes toward the understanding of missile crew duty by unit command and staff personnel are not the same at all nine missile wings.

60. Do you feel that the senior command and staff personnel in your unit fully understand and appreciate missile crew duty?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

Table E-31

Unit Understanding

Wing	Response						Total
	A	B	C	D	E	Z*	
Davis-Monthan	1	8	4	10	14	0	37
Little Rock	5	7	3	6	5	0	24
McConnell	3	12	4	8	4	0	31
Malmstrom	3	6	5	8	4	1	27
Ellsworth	6	6	4	13	2	0	31
Minot	4	7	3	5	4	1	24
Whiteman	4	12	1	10	1	1	29
F. E. Warren	2	9	2	7	5	0	25
Grand Forks	0	5	3	11	3	0	22
Total	26	72	29	78	42	3	250

* Missing or no response.

Kruskal-Wallis Test Results

- a. Total number of valid responses: 217
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 15.7297
- d. Significance: $p = .0464$

Table E-32

Rank Order of Wings Based on MCCM Attitudes Toward
the Understanding of Missile Crew Duty by Unit
Command and Staff Personnel

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>	<u>No. in Sample</u>
1	Whiteman	100.304	28
2	Minot	111.696	23
3	McConnell	112.274	31
4	Ellsworth	113.726	31
5	Little Rock	122.854	24
6	Malmstrom	123.788	26
7	F. E. Warren	124.540	25
8	Grand Forks	143.750	22
9	Davis-Monthan	156.797	23

APPENDIX F

RANK ORDER DATA APPLICABLE TO SURVEYED NON-RATED,
COMPANY GRADE, LINE MCCMs

Table F-1

Summary of Wing Rank Order by Attitude Questions
Which Were Significant at $\alpha = .05$

Attitude Question	<u>Wing</u>						
	Davis- Monthan	Little Rock	McConnell	Malmstrom	Ellsworth	Minot	Whiteman Warren Forks
Hypo 6 Ques 17 p = .0063	4	2	3	8	7	6	1 5 9
Hypo 7 Ques 41 p = .0144	9	4	8	5	1	6	3 7 2
Hypo 8 Ques 30 p = .0042	9	3	7	5	1	6	2 8 4
Hypo 9 Ques 33 p = .0030	9	8	5	6	1	7	3 2 4
Hypo 14 Ques 69 p = .0067	9	1	5	3	7	2	4 6 8
Hypo 16 Ques 60 p = .0464	9	5	3	6	4	2	1 7 8

Table P-2

Summary of Wing Rank Order by Attitude Questions
Which Were Not Significant at $\alpha = .05$

Attitude Question	Wing										F.E. Grand Warren Forks
	Davis- Monthan	Little Rock	McConnell	Malmstrom	Ellsworth	Minot	Whiteman				
Hypo 1 Ques 36 p = .2998	7	1	3	4	6	8	2	9	5		
Hypo 2 Ques 10 p = .3069	9	2	3	6	8	4	7	5	1		
Hypo 3 Ques 27 p = .3814	5	1	3	4	6	9	2	8	7		
Hypo 4 Ques 48 p = .4438	7	3	9	4	6	1	2	8	5		
Hypo 5 Ques 13 p = .3169	4	1	3	6	5	9	2	8	7		
Hypo 10 Ques 26 p = .9198	6	9	7	3	4	2	5	1	8		
Hypo 11 Ques 37 p = .2420	9	1	4	5	3	8	2	7	6		
Hypo 12 Ques 50 p = .1499	5	1	6	8	9	2	4	7	3		
Hypo 13 Ques 21 p = .5307	4	1	7	8	9	2	6	5	3		
Hypo 15 Ques 61 p = .6397	8	5	2	1	7	6	4	3	9		

Kendall Coefficient of Concordance Test Results

Number of valid cases used: 6

Critical $\chi^2_{.05}$ (df = 8): 15.51

Calculated χ^2 : 17.9556

Significance: p = .0216

Table F-3

Rank Order of Wings Based on the Six Attitudinal
Variables Found Significant by the
Kruskal-Wallis Tests

<u>Rank Order</u>	<u>Wing</u>	<u>Mean</u>
1	Whiteman	2.333
2	Ellsworth	3.500
3	Little Rock	3.833
4	Minot	4.833
5	McConnell	5.167
6	Malmstrom	5.500
7 (tie)	F. E. Warren	5.833
	Grand Forks	
9	Davis-Monthan	8.167

APPENDIX G

**DEMOGRAPHIC DATA APPLICABLE TO SURVEYED NON-RATED,
COMPANY GRADE, LINE MCCMs**

1. What is your base of assignment?

- | | |
|------------------|-----------------|
| a. Davis-Monthan | f. Minot |
| b. Little Rock | g. Whiteman |
| c. McConnell | h. F. E. Warren |
| d. Malmstrom | i. Grand Forks |
| e. Ellsworth | |

Table G-1

Number of Respondents By Base

<u>Base</u>	<u>Respondents</u>
Davis-Monthan	37
Little Rock	24
McConnell	31
Malmstrom	27
Ellsworth	31
Minot	24
Whiteman	29
F. E. Warren	25
Grand Forks	22
Total	250

Hypothesis 18

Source of commission of MCCMs differs among the nine missile wings.

6. What is your source of commission?

- a. Air Force Academy
- b. ROTC
- c. OTS (SMSO)
- d. AECP
- e. Other

Table G-2

Source of Commission

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	4	20	10	2	1	37
Little Rock	0	18	6	0	0	24
McConnell	0	24	6	1	0	31
Malmstrom	2	15	7	3	0	27
Ellsworth	1	17	11	2	0	31
Minot	0	10	10	3	1	24
Whiteman	1	18	8	2	0	29
F. E. Warren	2	15	6	2	0	25
Grand Forks	0	14	6	2	0	22
Total	10	151	70	17	2	250

χ^2 Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 9.61146
- d. Significance: $p = .2934$

Table G-3

Source of Commission (Collapsed)

Wing	Response		Total
	A + B	C + D + E	
Davis-Monthan	24	13	37
Little Rock	18	6	24
McConnell	24	7	31
Malmstrom	17	10	27
Ellsworth	18	13	31
Minot	10	14	24
Whiteman	19	10	29
F. E. Warren	17	8	25
Grand Forks	14	8	22
Total	161	89	250

Hypothesis 19

The type of commission (regular or reserve) of the MCCMs differs among the nine missile wings.

7. Are you a regular officer?

- a. Yes
- b. No

Table G-4

Type of Commission

Wing	Response			Total
	A	B	Z*	
Davis-Monthan	9	28	0	37
Little Rock	5	19	0	24
McConnell	4	27	0	31
Malmstrom	6	21	0	27
Ellsworth	6	24	1	31
Minot	2	22	0	24
Whiteman	6	23	0	29
F. E. Warren	5	20	0	25
Grand Forks	2	20	0	22
Total	45	204	1	250

* Missing or no response.

χ^2 Test Results

- a. Total number of valid responses: 249
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 4.98205
- d. Significance: $p = .7595$

Hypothesis 20

The grade status of the MCCMs differs among the nine missile wings.

5. What is your grade?

- a. Second Lieutenant
- b. First Lieutenant
- c. Captain
- d. Major
- e. Lieutenant Colonel

Table G-5

Rank

Wing	Response			Total
	A	B	C	
Davis-Monthan	10	9	18	37
Little Rock	6	8	10	24
McConnell	8	9	14	31
Malmstrom	7	9	11	27
Ellsworth	13	4	14	31
Minot	9	4	11	24
Whiteman	9	9	11	29
F. E. Warren	3	12	10	25
Grand Forks	13	3	6	22
Total	78	67	105	250

χ^2 Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 16): 26.30
- c. Calculated χ^2 : 22.74464
- d. Significance: $p = .1207$

Hypothesis 22

Combat ready time of the MCOMs differs among the nine missile wings.

4. How many months of missile combat ready experience do you have?

- | | |
|-----------------|------------------------|
| a. 0-6 months | e. 25-30 months |
| b. 7-12 months | f. 31-36 months |
| c. 13-18 months | g. More than 36 months |
| d. 19-24 months | |

Table G-6
Time on Crew

Wing	Response							Total
	A	B	C	D	E	F	G	
Davis-Monthan	6	7	3	1	3	3	14	37
Little Rock	4	4	2	2	1	4	7	24
McConnell	5	7	4	1	3	1	10	31
Malmstrom	3	6	3	2	2	3	8	27
Ellsworth	6	9	3	7	0	2	4	31
Minot	2	3	6	2	3	3	5	24
Whiteman	3	6	6	3	5	2	4	29
F. E. Warren	1	6	2	3	4	4	5	25
Grand Forks	3	8	3	3	2	0	3	22
Total	33	56	32	24	23	22	60	250

χ^2 Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 24): 36.42
- c. Calculated χ^2 : 28.52629
- d. Significance: $p = .2385$

Table G-7
Time on Crew (Collapsed)

Wing	Response				Total
	A + B	C + D	E + F	G	
Davis-Monthan	13	4	6	14	37
Little Rock	8	4	5	7	24
McConnell	12	5	4	10	31
Malmstrom	9	5	5	8	27
Ellsworth	15	10	2	4	31
Minot	5	8	6	5	24
Whiteman	9	9	7	4	29
F. E. Warren	7	5	8	5	25
Grand Forks	11	6	2	3	22
Total	89	56	45	60	250

Hypothesis 23

Crew position (commander or deputy) of the MCCMs differs among the nine missile wings.

3. What is your crew position?

- a. MCCC
- b. DMCCC

Table G-8
Crew Position

Wing	Response		Total
	A	C	
Davis-Monthan	18	19	37
Little Rock	14	10	24
McConnell	17	14	31
Malmstrom	16	11	27
Ellsworth	15	16	31
Minot	15	9	24
Whiteman	18	11	29
F. E. Warren	11	14	25
Grand Forks	8	14	22
Total	132	118	250

χ^2 Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 8): 15.51
- c. Calculated χ^2 : 6.36418
- d. Significance: $p = .6065$

Hypothesis 24

Missile volunteer status of the MCCMs differs among the nine missile wings.

16. Were you a volunteer for missile crew duty?

- a. Yes, first choice
- b. Yes, second choice
- c. Yes, third choice
- d. No

Table G-9
Volunteer Status

Wing	Response				Total
	A	B	C	D	
Davis-Monthan	20	3	7	7	37
Little Rock	16	0	4	4	24
McConnell	7	9	4	11	31
Malmstrom	16	4	2	5	27
Ellsworth	17	0	1	13	31
Minot	11	0	3	10	24
Whiteman	20	2	4	3	29
F. E. Warren	22	2	1	0	25
Grand Forks	5	0	2	15	22
Total	134	20	28	68	250

χ^2 Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 16): 26.30
- c. Calculated χ^2 : 64.95237
- d. Significance: $p = .0000$

Table G-10
Volunteer Status (Collapsed).

Wing	Response			Total
	A	B + C	D	
Davis-Monthan	20	10	7	37
Little Rock	16	4	4	24
McConnell	7	13	11	31
Malmstrom	16	6	5	27
Ellsworth	17	1	13	31
Minot	11	3	10	24
Whiteman	20	6	3	29
F. E. Warren	22	3	0	25
Grand Forks	5	2	15	22
Total	134	48	68	250

Hypothesis 25

Career intent of the MCCMs differs among the nine missile wings.

9. Do you intend to make the Air Force a career?

- a. A definite yes
- b. A qualified yes
- c. Undecided
- d. A qualified no
- e. A definite no

Table G-11

Air Force Career Intent

Wing	Response					Total
	A	B	C	D	E	
Davis-Monthan	17	10	3	3	4	37
Little Rock	10	7	0	4	3	24
McConnell	16	4	7	1	3	31
Malmstrom	17	7	1	1	1	27
Ellsworth	11	7	8	3	2	31
Minot	10	9	4	1	0	24
Whiteman	17	7	2	2	1	29
F. E. Warren	12	5	4	1	3	25
Grand Forks	10	6	3	2	1	22
Total	120	62	32	18	18	250

χ^2 Test Results

- a. Total number of valid responses: 250
- b. Critical $\chi^2_{.05}$ (df = 16): 26.30
- c. Calculated χ^2 : 14.94343
- d. Significance: p = .5288

Table G-12

Air Force Career Intent (Collapsed)

Wing	Response			Total
	A	B	C + D + E	
Davis-Monthan	17	10	10	37
Little Rock	10	7	7	24
McConnell	16	4	11	31
Malmstrom	17	7	3	27
Ellsworth	11	7	13	31
Minot	10	9	5	24
Whiteman	17	7	5	29
F. E. Warren	12	5	8	25
Grand Forks	10	6	6	22
Total	120	62	68	250

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BIOGRAPHICAL SKETCHES

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Captain Robert Cancellieri was commissioned in 1968 after graduating with a Bachelor of Arts degree from Southampton College. He has served in SAC as a Minuteman Missile Combat Crew Member and as an Operational Readiness Training instructor. He came to AFIT following a career broadening assignment as a Space Surveillance Officer at Thule AB, Greenland. His next assignment after graduation is to Grand Forks AFB, North Dakota as a Minuteman maintenance officer.

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