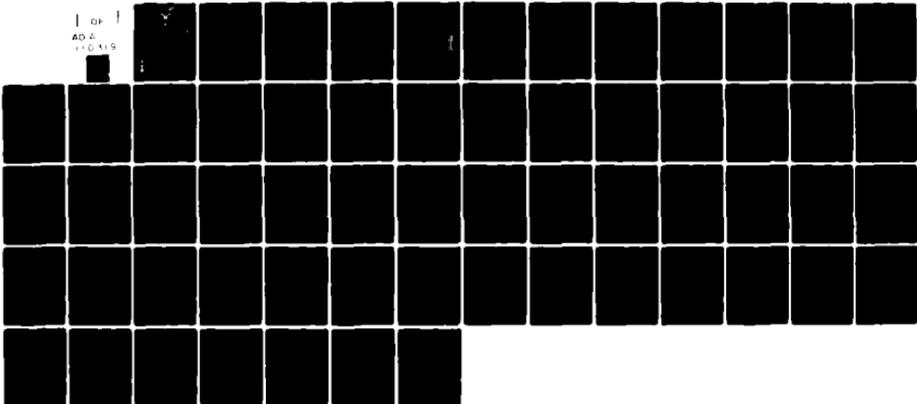
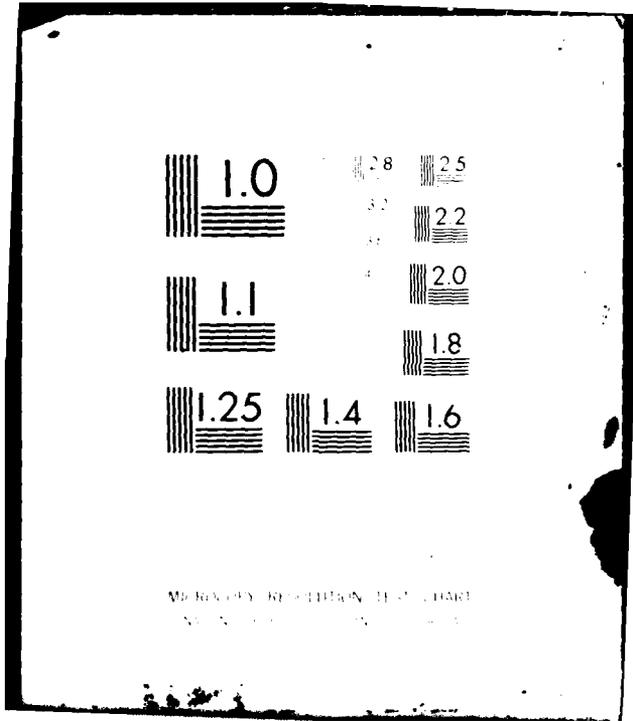


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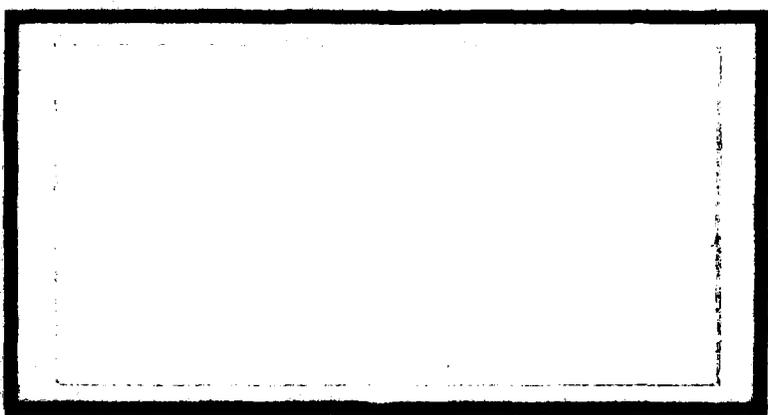
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A REVIEW OF THE AIR FORCE BONUS PAY
SYSTEM AND AN INVESTIGATION OF A
PROPOSED SCIENTIST/ENGINEER
BONUS PAY SYSTEM

James E. Fucillo, Captain, USAF

LSSR 51-81

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This thesis is a review of the Air Force bonus pay system and a study of a proposed \$15,000 retention bonus for Air Force officer scientists and engineers. The literature has shown that bonuses given to medical and certain enlisted personnel have significantly increased retention rates. With this knowledge the researcher surveyed Air Force officer scientists and engineers (S&E's) to determine the effect of a \$15,000 bonus. The respondents (on an average) would be willing to incur an additional three year commitment to receive this bonus. Those respondents who were undecided or answered probably no to a career intent question averaged 3.5 years additional commitment. Those officers who answered definitely no to the career intent question were not as effected by the bonus (average commitment willing to incur was only 1.4 years).

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A REVIEW OF THE AIR FORCE BONUS PAY SYSTEM
AND AN INVESTIGATION OF A PROPOSED
SCIENTIST/ENGINEER BONUS PAY SYSTEM

A Thesis

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

Air University

In Partial Fulfillment of the Requirement for the
Degree of Master of Science in Systems Management

By

James E. Fucillo, BS
Captain, USAF

September 1981

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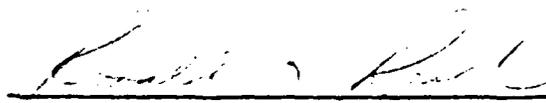
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School of Systems and Logistics in partial fulfillment of the require-
ments for the degree of

MASTER OF SCIENCE IN SYSTEMS MANAGEMENT

DATE: 30 September 1981



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CHAPTER I

INTRODUCTION

The Retention Problem

In the 1980's, the armed forces are facing their most significant manpower problem: their inability to retain skilled workers (Binkin, 1981:4). Admiral Thomas B. Hayward says that "if we are concerned about the readiness of our forces worldwide today - and we surely are - nothing is more essential than to stem the exodus of our trained professionals (Hayward, 1980:3)." General Lew Allen, Jr., Chief of Staff, USAF, discusses his service's difficulties by saying there are "serious problems in attracting and, more important, in keeping, adequate numbers of qualified and experienced people in the 1980's (Allen, 1980:7)." The leaders of all the military services simply say the exodus of experienced personnel "has done more to weaken the military readiness of the United States than shortages of guns or gasoline (Binkin, 1981:5)."

Personnel losses have a much deeper effect on force readiness than just the visible loss of that individual. Admiral Hayward in a memorandum to Secretary of Defense Brown wrote, "low retention begets falling manning levels which generate increased accessions and training requirements which in turn increase personnel requirements . . . overworked, undersupervised crews represent poor retention prospects, and this brings us back to the start of the cycle (Binkin, 1981:5)." Low retention rates also have a very adverse effect on the quality of the work force. Since the military does not recruit trained workers, (after entering the military most people attend some sort of formal training,

i.e., tech school, pilot training, etc.) retaining skilled people is essentially the only way the uniformed services can preserve a pool of skilled workers and supervisors (Binkin, 1981:5). This philosophy of training their own people is a very costly endeavor; "about \$3 billion a year, or about 10 percent of the military personnel appropriation, is expended just to maintain the enlisted training pipeline (Binkin, 1981:54)." It follows for the services to fully realize returns on such an outlay, workers must be retained long enough to acquire an expertise and use it (Binkin, 1981:6). Retention rates therefore determine the level of experience of the military and consequently their ability to perform the many different tasks that military service involves (Binkin, 1981:6). The exceedingly complex nature of many military tasks makes retention rates so significant and the consequences of their decline so very worrisome (Binkin, 1981:6).

The aforementioned shift away from duties requiring simple military skills to those demanding special highly trained skills is evident in the growth in the percentage of people trained in white collar occupations (Binkin, 1981:6). The change has primarily occurred in the technical fields; computers, electronics, and medicine, a growth that has paralleled the civilian sector.

The increased use of technicians in the military has so industrialized many military organizations that a large segment resembles civilian firms (Binkin, 1981:7). The military has many jobs in common with civilian industry and a greater proportion of technical people. In other words, on a percentage basis, the military has more people who could be classified as technicians versus the civilian sector (Binkin, 1981:7). Due to the increased complexity of the military's mission the

need for trained, experienced personnel is greater than ever before and by necessity the length of service consistent with the military's training investment in people much longer (Binkin, 1981:7). A look at the age profile of enlisted personnel shows a lack of experience. In 1977 there were 1.8 million enlisted people, 60 percent were under twenty five years of age and almost 90 percent were under thirty five (Binkin, 1981:7). This age profile is incompatible with the large number of highly technical jobs that exist in the military. Information supplied by Office of the Assistant Secretary of Defense for Manpower, Reserve Affairs and Logistics show that the civilian sector relies on a much more experienced work force when compared to the military. The armed forces have over 40 percent of their enlisted work force in the 20-24 year old category while civilian firms have a majority in the 25-44 year group (Binkin, 1981:8). The military's lack of mature workers greatly impacts its level of effectiveness. With increasing frequency, military leaders are commenting on the difficulty of manning forces with people lacking the experience needed to perform today's complex military tasks (Binkin, 1981:8). Air Force Secretary (under the Carter Administration) Hans Mark commented that "airplanes don't fly because we don't have experienced maintenance people (Binkin, 1981:10)."

A 1957 study by the Defense Advisor Committee on Professional and Technical Compensation described the relationship between experience and military effectiveness.

Greater number of men do not satisfy this need (of handling complex weapons). Only marked increases in the level of competence and experience of the men in the force can provide for the effective, economical operation required by the changing times and national needs . . . without the control of the skilled individual the weapon is only an inert, complicated and expensive device (Binkin, 1981:10).

The words carry even greater weight today. A report requested by President Carter entitled: Defense Resource Management Study, commented that

a more experienced force . . . would be better able to absorb and train new personnel required to reconstitute and sustain the combat forces . . . in most NATO/Warsaw Pact scenarios . . . increasing the experience level in a pool of flight-line maintenance technicians could dramatically increase a squadron's rapid turn-around capability (Binkin, 1981:10).

The retention problem is having a profound effect on the nation's armed forces. This study notes the existence of a general retention problem but is more concerned with the difficulty of retaining scientists and engineers in the Air Force.

Scientists and Engineers

Civilian industry, as well as the Air Force, has scientific and engineering manning problems. This section will look at the personnel problem nationwide and then focus on the Air Force's difficulties.

Total demand for engineers in 1980 was over 100,000 according to an official at the University of Southern California (Graham, 1981:2). A study by a large aerospace firm estimates future annual shortages as high as 25,000 to 75,000 for aerospace engineers (Graham, 1981:2). That study also points out that aerospace engineer production has declined 50% over the last ten years, with declining industrial engineer production, stable mechanical engineer production, and electrical engineer production growing 2% annually (Graham, 1981:2). Even with the attractive salaries offered to graduates (1980 average of over \$20,000 a year) academic expansion would be slow (News in Engineering, 1980:22). The American Society of Electrical Engineers estimates engineering schools are short about 10% (2000 positions) of the required faculty (Graham,

1981:2).

This demand for engineers far exceeds the supply. In 1980, 58,000 people were awarded undergraduate degrees in engineering (Graham, 1981:2). This difference in engineering supply and demand has elevated the salaries in this profession. It is these high salaries that have attracted Air Force scientists and engineers to civilian companies.

Results of the AFMPC Officer Exit Survey (May 79 - Dec 80) indicate that 43 percent of the 28XX (engineering) officers thought Air Force pay was too low and 52 percent felt the civilian community would offer higher pay over the long term. Pay is one of the reasons the Air Force is short some 1300 scientists and engineers (Engineer Shortage Worsens, 1981:109). The Air Force is only 86 percent manned in 26XX (scientist) and 28XX (engineer) AFSC's (Air Force Speciality Codes) (Engineer Shortage Worsens, 1981:109). The greater problem is not in the number of people short but their level of experience. Air Force scientists are 178% manned at the lieutenant level but only 60% manned at the grade of captain (Briefing Team, 1981). In the engineering AFSC's manning is at 195 percent for lieutenants and 60 percent for captains (Briefing Team, 1981). The retention rate for all scientists and engineers at the 11 year point is 34 percent (Air Force Manpower, 1980:9). Air Force Systems Command, which has the highest number of scientists and engineers of any command in the Air Force, has seen its experience base drop 20 percent in the last two years (Engineer Shortage Worsens, 1981:109). Manning in Systems Command is currently 52% for captains and 228% for lieutenants. These manning rates simply mean that lieutenants are occupying captain's slots. In a position paper for Air Force Systems Command, Captain Hetzel of AFSC/MPC said "our problem

is not in accessing new officers . . . retaining qualified and experienced scientists and engineers is the issue (Hetzl, 1981:1)."

Statement of the Problem

The Air Force is having difficulty retaining experienced (beyond the initial four year point) scientists and engineers. Figures reported by the Military Personnel Center at Randolph AFB, show over 180 percent manning in the lieutenant's grades and only 60 percent manning at the captain's level. The low retention rates are responsible for an inexperienced and perhaps ineffective work force. Lt Gen Skantze, Commander of Aeronautical Systems Division, says "so far the declining levels of experience have not had an ill effect on ASD's mission accomplishment. However, long term ramifications of this situation, if not addressed, will have a significant impact for our nation's security (Skantze, 1980: 38)."

The problem of low scientist and engineer retention rates provides the impetus for this research effort.

Objectives of the Research

The purpose of this thesis is to investigate the effects on retention of a \$15,000 bonus awarded to Air Force officer scientists and engineers to continue in the Air Force. The researcher will attempt to determine if the proposed \$15,000 bonus is a viable solution to the scientist and engineering retention problem.

Scope and Assumptions

The scope of this research will be limited to the Air Force retention bonus pay system. Currently only members of the medical corp

and certain enlisted personnel receive bonuses to stay in the Air Force. This thesis effort will investigate the above mentioned bonus pay systems and the proposed plan of a \$15,000 bonus to help solve the scientist and engineer retention problem.

The researcher will survey Air Force officer scientists and engineers at Wright-Patterson AFB. Wright-Patterson AFB was selected because the researcher is located there and the base has a high number of scientists and engineers. Specific organizations to be surveyed are the Foreign Technology Division, the Air Force Wright Aeronautical Laboratories, and the Aeronautical Systems Division. These organizations were chosen because of their abnormally high concentration of scientists and engineers (S&E's) (their missions dictate large numbers of S&E personnel).

The large number and dispersion of subjects, along with time constraints preclude the structured interview technique of gathering data, therefore, a mailed survey will be used. The drawbacks to the method include: 1) a lack of closely controlled survey distribution and administration and 2) the inability to insure that the survey content is interpreted as the researcher intends. To minimize these problems surveys will be dropped off and picked up at central points in the organizations and extensive pre-testing will be employed.

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CHAPTER II

AIR FORCE BONUS SYSTEM

Introduction

The loss of seasoned specialists and trained technicians, added to the recruitment shortfalls with the all-volunteer force, has taken a toll on the readiness of the U.S. armed forces (Binkin, 1981:78). Leaders are faced with choosing between returning to the draft or changing the military compensation system.

Most military leaders attribute retention problems to military pay, the overall decline of monetary compensation when compared with civilian sector salaries (Binkin, 1981:10). This problem is highlighted by the low recruitment and retention rates that continue to exist even with unemployment averaging 7 percent. The climate that presently exists is as favorable for a volunteer armed forces as this nation is likely to see. "The fact that so few are attracted into service, in a non-threatening peacetime environment in which jobs are scarce, is a significant omen of what things will be like when employment is high and the risk of war rises (Fain, 1981:11)." One proposed monetary solution advocates across the board pay increases. The problem with this plan is equal percentage increases in pay may not be sufficient to correct retention problems; a flat raise does not guarantee sufficient pay levels to those individuals the military needs to keep while it unnecessarily raises the pay in those occupations where shortages do not exist (Binkin, 1981:11). The 1978 President's Commission of Military Compensation said

that "across the board pay increases do little to make military wage rates more competitive (Zwick, 1978:2)." It further stated that this automatic annual adjustment of the compensation levels of all personnel without regard to manning problems does little to introduce efficiency into the system (Zwick, 1978:2). This policy of equal percentage across-the-board annual pay raises precludes the use of these raises to adjust the pay schedule to meet manning shortages or overages (Zwick, 1978:2).

Selective bonus pay is an alternate solution. Bonuses are more psychologically attractive because the amounts are much larger while regular increases in monthly pay soon lose their impact (Zwick, 1978:131). Bonus programs are used in the Department of Defense as a flexible form of compensation to stimulate enlistment and retention of personnel in particular specialities (Munch, 1977:10). Bonuses are used to introduce occupational pay differentials into the military compensation system (Binkin, 1981:42). The normal military pay structure views all tasks as equally important and those who perform them as equally productive (Binkin, 1981:28). Rates of pay are set to correspond to 23 pay grades that vary with years in the service but not by job (Binkin, 1981:27). The military recognizes that occupational pay differentials (bonuses) are necessary for job skills that are less attractive, more difficult or in recent years, highly valued by the civilian sector. The armed forces must seek qualified volunteers in the civilian sector and they must compete with that sector to retain those whom they have already trained (Binkin, 1981:26).

The use of pay bonuses won support in "Report of the Presidents Commission on Military Compensation." The panel recommended more extensive use of occupational pay differentials to fill gaps in force levels

(Binkin, 1981:43). House Report 96-1230 commented that in the 1980's it may very well be that the only way to retain adequate manning in some skills is to increase retention. The high quality personnel needed to fill vacancies, should retention fall below the levels needed to maintain manning, will simply not be available to recruit in the numbers required. In the approaching years of declining numbers of young people it is essential to maintain retention at the highest possible levels. Additional bonus pay is crucial to maintaining retention in critical skills at levels adequate to sustain the all-volunteer force (United States House of Representatives, 1980:21).

Bonuses have been used in two areas: 1) certain enlisted skills and 2) the medical profession. This study does not consider flight pay, sea duty pay, hazardous duty pay, etc., as bonus pay. An explanation of the retention problems, the bonus systems used and in use, and their success, follows.

Enlisted Retention Problem

The loss of seasoned specialists and trained enlisted technicians in the nations armed forces, added to the recruitment shortfalls since the transition to an all volunteer force in the 1970's, has taken a noticeable toll on the readiness of U.S. military forces (Binkin, 1981: 78). In raw numbers the Air Force lost 83,000 enlisted people in 1979. The following percentages highlight the Air Force's enlisted retention problem. In FY80 the Air Force retained 62.5 percent of its eligible second termers, (6-10 year group) versus a 65 percent goal. In the 11-19 year group 91.6 percent remained versus a goal of 93 percent. The retention trend over the past few fiscal years (FY77-FY79) show that this

is not a recent problem. The reenlistment trend is generally downward. For first termers in FY77 39 percent reenlisted, FY78 - 41 percent, FY79 - 38 percent. For second termers FY77 - 69 percent, FY78 - 65 percent, FY79 - 60 percent. For the career group FY77 - 95 percent, FY78 - 93 percent and for FY79 - 91 percent reenlisted (Mace, 1981:12).

Bonuses have been used and will continue to be used to help solve retention problems. Bonus pay has proven to be extremely effective for recruiting and retaining members in skills that are difficult to fill (United States House of Representatives, 1980:5). The bonus system provides a means of increasing the compensation for certain categories of service members whose duties are extraordinary arduous or whose skills are readily transferable to highly paid civilian jobs (United States House of Representatives, 1980:5). A description of the enlisted bonus pay system follows.

Enlisted Bonuses: Introduction

Throughout military history it has been necessary to offer some monetary incentives to motivate personnel to reenlist (Military Retention Incentives, 1974:1). Additional compensation is needed, at times, to bring military pay in line with the nature of the occupation, the job setting, the cost of investment in manpower training, alternative employment opportunities outside the military, and the growth potential inherent in each occupation (Binkin 1981:42). Over the past 25 years four enlisted retention incentives were enacted---the shortage specialty proficiency pay (SSPP), the regular reenlistment bonus, the variable reenlistment bonus (VRB) and the current selective reenlistment bonus (SRB) (Military Retention Incentives, 1974:1).

Enlisted Bonuses - 1949-1966

Section 207 of the Career Compensation Act of 1949 first named the career reenlistment incentive a reenlistment bonus. Under this act, personnel reenlisting could receive, depending on the length of their reenlistments, bonuses for each of their first four reenlistments (Military Retention Incentives, 1974:1).

However, first term reenlistments continued to decline in the early 1950's and the DoD requested modifications to section 207. On July 16, 1954 Congress raised the scale for computing bonuses and based the computation on the number of years for which the individual reenlisted and the grade he/she held at the time of reenlistment (Military Retention Incentives, 1974:1). This bonus, known as the regular reenlistment bonus was paid to all skills, regardless of their retention or manning situation (Military Retention Incentives, 1974:1). By 1958 reenlistments in certain skills still had not risen to an acceptable level. On May 20, 1958, Congress authorized proficiency pay for individuals designated as possessing special proficiency in military skills. The amount of pay depended on the degree of criticality of the skill (Military Retention Incentives, 1974:1).

In 1965 the DoD told Congress that additional reenlistments were needed, in skills accounting for about 40 percent of the total enlisted force strength, to achieve all the services manning objectives (Military Retention Incentives, 1974:2). In the most critically undermanned skills losses of \$10,000 (1965 dollars) or more occurred when a first term failed to reenlist (Military Retention Incentives, 1974:2). In the mid 1960's the major enlisted retention problem was retaining first term personnel in specific critical skills. To alleviate these manning

shortages Congress enacted 37 U.S.C. 308g effective 1 September 1965, which authorized the variable reenlistment bonus (Military Retention Incentives, 1974:2).

Variable Reenlistment Bonus

Prior to 1966, the combination of regular reenlistment bonuses and proficiency pay was regarded as inadequate for dealing effectively with selected retention problems (Enns, 1975:2). In 1966 Congress approved a new pay incentive, the variable reenlistment bonus (VRB) which combined the selectivity of proficiency pay and the visibility of the regular reenlistment bonus (Enns, 1975:2). The VRB was paid only in designated specialties troubled by retention problems. The size of the bonuses could be adjusted to meet retention problems of different severities. The specialties designated eligible for VRB awards were assigned multiples from one to four; the total VRB award has then calculated as the product of the multiple and the regular reenlistment bonus, and could have been as large as \$8,000 (Enns, 1975:2).

The VRB ended in June 1974 and was replaced by the selective reenlistment bonus (SRB) (Enns, 1977:1). The SES introduced some additional flexibility into the bonus pay system (Enns, 1977:1). Regular reenlistment bonuses were eliminated and pay multiples five and six were introduced (Enns, 1977:1).

Selective Reenlistment Bonus

The Selective Reenlistment Bonus started in 1974 (FY 1975). The Armed Forces Enlisted Personnel Bonus Revision Act of 1974 (Public Law 93-277) authorized the SRB system (Leonhardt, 1981:1). Briefly SRB's are used by management to achieve several manpower goals:

1. To stimulate reenlistments for the purpose of filling current shortages of career personnel.

2. They may be applied where shortages are projected to occur, even though current manning is adequate.

3. In skills with high first term training costs, SRB's can provide a useful tool for obtaining additional man-years of service, thus capturing a larger return on prior investments in human capital (Enns, 1977:2).

SRB's are payable to personnel who reenlist in skills where the Air Force projects insufficient reenlistments to meet career force requirements. SRB's are also paid to enlisted personnel who retrain into SRB designated skills in conjunction with their reenlistment (Leonhardt, 1981:1). Three zones of eligibility exist: Zone A (covers two to six years of service---first reenlistment), Zone B (covers six to ten years of service) and the recently created (FY81) Zone C (covers ten to fourteen years of service). SRB payments are computed by multiplying the monthly base pay of the individual times the number of years additional obligated service times the SRB multiple. The maximum bonus cannot exceed \$16,000. The SRB multiple is an integer value that varies from one to five. A multiple is determined for each job skill dependent upon the manning problem present in that skill. The Air Force makes SRB payments in a lump sum (Leonhardt, 1981:7).

For FY81 95 skills in Zone A; 70 skills in Zone B; and 60 skills in Zone C receive SRB's (Leonhardt, 1981:1). This represents an increase when compared to FY80 and FY79. Reference Table 1.

Table 1
Number of the Skills

<u>FY</u>	<u>ZONE A</u>	<u>ZONE B</u>	<u>ZONE C</u>	<u>BUDGET (\$MILLION)</u>
79	56	28	-	30.5
80	65	32	-	41.0
81	95	70	60	84.9

SOURCE (Leonhardt, 1981:1)

Effectiveness of Enlisted Bonuses

Bonuses have proven to be extremely effective tools for recruiting and retaining members in skills that are difficult to fill (United States House of Representatives, 1980:5). The bonus system provides a means of increasing the compensation for certain categories of service members whose skills are easily transferable to highly paid jobs in civilian industry (United States House of Representatives, 1980:5). This section will now address the results of studies concerning the specific effectiveness of the VRB and SRB.

A 1971 study by the Department of Defense said "VRB was the most effective retention incentive and offered the greatest retention return for the funds invested (Military Retention Incentives, 1974:3)." A Rand study authored by John Enns concluded that "the effectiveness of the VRB on first term reenlistment rates during FY71 seems clearly established by the statistical results (Enns, 1975:35)." "The estimated coefficient measuring the marginal response of the reenlistment rate to bonus awards proved positive, substantial, and statistically significant (Enns, 1975:35)."

The SRB was enacted in 1974 and has also proven to be an effective tool in reducing manpower shortages and stabilizing the active

forces by obtaining higher quality personnel which reduces turnover and saves training costs for replacement personnel (West, 1980:2). A 1977 Rand study by John Enns said that "the impact of SRB's seems clearly established by the regression results. The regression coefficients--- which measure the change in reenlistment rates with respect to the bonus---are always positive and generally of high statistical significance (Enns, 1977:46)." A chart prepared by Maj Leonhardt of AF/MPPPN shows that Zone A skills which receive bonuses have (over the last four fiscal years, FY77-FY80) averaged fifty percent retention while non bonus skills averaged 37 percent (Leonhardt, 1981:5). W. Graham Clayton in House Report No. 96-1230 concluded that "at the first term reenlistment point we are currently [1980] experiencing very favorable trends... I attribute these improvements primarily to the Selective Reenlistment Bonus program (United States House of Representatives, 1980:16)."

Medical Retention

The Retention Problem

According to Lt Gen Paul Myers, Surgeon General of the Air Force, the primary mission of U.S. Air Force health care professional is to maintain a healthy, combat ready force. The personnel required to meet this need in peacetime allows support of mission duality whereby health care is provided to active duty, retired personnel and their dependents (Myers, 1979:1). The physician is the hub of the health care system. The recruiting and especially the retention of physicians is of major concern (Myers, 1979:1).

During the past 10 years (1969-1979) there has been approximately a 21 percent decrease in the number of active duty Air Force physicians,

while the number of eligible beneficiaries (active duty, retired, dependents) has increased 1.6 percent. This exodus of health care people greatly increased when the All Volunteer Force (AVF) started (ending of the draft) in 1973 (Myers, 1979:2). Looking to the future, physician shortfalls are projected to continue to exist. From FY81-FY85 shortages from 4 to 6 percent are predicted between the number authorized and the number assigned, while the number of physicians required exceeds the number assigned by over 30 percent during those same five years (Myers, 1979:2). The number of physicians authorized does not equate to the number required. Active duty peacetime physician requirements represent that number of physicians needed on active duty during peacetime to meet early war mobilization requirements. "The portion over and above current authorizations could be effectively used in peacetime to recapture CHAMPUS workload (Myers, 1979:2)." Myers says "with an assigned physician strength of 3316 (FY80) we are nowhere near our authorized strength (of 3542) much less our required strength (of 4775) (Myers, 1979:3)." "This is of great concern to us because it reflects on our readiness capability and limits significantly the amount of care which can be provided to Air Force families (Myers, 1979:3)."

Every year approximately 40 percent of the Air Force physicians are eligible to leave the service (Myers, 1979:3). Many depart and the usual reason cited is inadequate pay. After ten years of practice the average civilian doctor is earning \$20,000 more per year than his military counterpart (Burke, 1979:1). Physician shortages are increasing and will become more serious unless improvements, particularly in pay, are forthcoming (Gates, 1978:103). Special bonus pay plans have been developed to deal with this problem.

Special Pay for Health Professionals

Public Law 96-284, 28 June 1980, revises special pay provisions for medical officers. The purpose of this law is to increase the effectiveness of the Department of Defense health care system through more efficient application of special pays (United States Public Law 96-284, 1980:2). There are four types of special pay authorized for medical officers. They are: 1) Variable Special Pay, which is payable monthly and is dependent upon years of service; 2) Additional Special Pay, which is payable annually and is given to medical corp officers who are not undergoing intern or residency training; 3) Board Certified Pay, payable monthly; and 4) Medical Incentive Pay, which is payable annually and is authorized for officers who are not undergoing internship or initial residency training. These four pay plans, when combined, cannot exceed \$29,500 per year. Appendix B gives a detailed breakdown of these plans.

History of the Medical Bonus System

When the draft ended in 1973 a critical need arose to provide additional incentive to recruit adequate numbers of doctors and dentists. In 1974 Congress established the variable incentive pay program which provided lump sum bonuses to physicians in critical specialties who had served an initial obligation (United States Senate Report No. 95-400, 1977:1). Public Law 93-274 enacted in 1977 established the following bonus pay plan: 1) \$100 extra a month for less than two years of service, \$350 for over two years; 2) a continuation pay of four months basic pay for each additional year the medical person agrees to serve; and 3) a variable incentive pay that may not exceed \$13,500 per year (United States Senate Report No. 95-400, 1977:2). In FY81 a new system

was established. Congress passed the Primary Special Pay System (PSP) that gave all medical officers below the general/flag rank from \$1200 to \$11,000 annually, based on length of medical service. The PSP could increase by \$5000 per year if the officer is not in internship and by \$2000/year if he/she is board certified. In addition, specialists in short supply could receive an additional \$4000-\$8000 per year (Gates, 1978:103). (The current status of these bonus plans are in Air Force Regulations 36-4, 36-8, and the DoD Pay Manual).

Success of Medical Retention Bonuses

Historically, physicians have been the most difficult group of officers to retain (United States Senate Report No. 95-400, 1977:6). A 1976 report to the Senate Armed Services Committee on variable incentive pay stated that though the bonus plan in Public Law 93-274 significantly increased retention the DoD was still 7 percent short of authorized medical personnel in the past decade (United States Senate Report No. 95-400, 1977:6). Due to the existing shortage of medical personnel manning deficiencies will continue to exist even as retention rates increase.

Proposed Scientist and Engineering Bonuses

Headquarters Air Force has submitted proposals to the DoD and Congress on a S&E bonus plan. A \$15,000 accession bonus and a \$3000 a year continuation bonus are presently being studied. The accession bonus would be awarded to those individuals who have a degree in science or engineering and would fill a critical skill vacancy. They would incur a four to six year initial commitment for a bonus award of up to \$15,000. The current requirements for the proposed continuation bonus

are even more nebulous. The only firm information is that up to \$3000 per year could be awarded to individuals with degrees in science or engineering. Undecided issues for the continuation bonus are: 1) which grades would receive it and 2) does the person have to be serving in an S&E AFSC (26XX, 28XX)? A major issue concerning the accession bonus is whether Air Force Academy and ROTC scholarship graduates would receive it.

CHAPTER III

METHODOLOGY

Overview

The overall structure of this chapter is developed in five major sections. The first section discusses the sample population. The second section provides information on the survey instrument. Limitations and assumptions are listed in the third section. The fourth section lists the items that will be analyzed and the fifth section discusses the actual statistical analysis.

Sample Population

The population of interest is Air Force officer (grades 0-1 to 0-5) scientists and engineers (26XX and 28XX AFSC's respectively). The sample population consists of the previously mentioned types of officers at the Foreign Technology Division, the Air Force Wright Aeronautical Laboratories, and the Aeronautical Systems Division located at Wright-Patterson AFB. Five hundred officers from these organizations (180, 140, 180 respectively) were randomly picked (using a random number table) from the organizations alpha rosters.

The Survey

The survey was developed by the researcher with the main purpose to determine the number of years an Air Force officer (26XX, 28XX AFSC) would be willing to commit to receive a \$15,000 bonus. Refer to App. A. In addition one career intent (question 6) and seven demographic questions

were included in this ten question survey. The seven demographic questions were analyzed to determine the basic characteristics of the sample population and to aid in the process of personnel category analysis. The specific demographic items addressed were grade, length of service, source of commissioning, education level (scientific and non scientific), AFSC and present active duty service commitment (ADSC). Additionally, it is of interest to determine whether the individual desires their bonus spread over the commitment time or in a lump sum.

Factors to be Analyzed

Based on survey results, the researcher will attempt to determine: 1) the demographic breakdown of the surveyed population, 2) the career intent of the surveyed population broken down by the seven demographic factors, 3) what percent of Air Force officers have ADSCs, 4) what percent of the S&E work force actually have scientific or engineering degrees, 5) how each demographic group would accept the bonus (lump sum versus annuity), 6) how an individuals career intent is changed by the possibility of a bonus, and most importantly 7) the additional service commitment (in years) an individual would accept to receive the bonus (broken down by demographic factors).

Statistical Analysis

This section is broken into two parts: 1) data management and 2) the statistical analysis tools used.

Data Management

All completed questionnaires returned had their responses transferred to computer punch cards to obtain the data deck. The researcher

recoded the data by changing the survey alpha responses to numeric responses. These steps were necessary to prepare the data for the Statistical Package for the Social Sciences (SPSS) (Nie, et al, 1975).

Statistical Analysis

This section presents the specific statistical techniques used in the accomplishment of the research objectives. The first step consisted of employing the SPSS subprogram FREQUENCIES to generate frequency tables for each of the following variables (using the entire sample): 1) GRADE (rank), 2) LOS (length of service), 3) COMSOURC (commissioning source), 4) SCIED (scientific education level), 5) NONSCIED (non-scientific education level), 6) AFSC (Air Force Specialty Code), and 7) ADSC (active duty service commitment). The results of this frequencies analysis were used to provide general sample characteristics.

In the second step, subprogram STATISTICS was used to generate means, standard deviations, variances, and frequency tables by demographic factor for the career intent and bonus commitment time questions. In addition FREQUENCIES would be used to determine what percent of Air Force officers surveyed have ADSCs, what percent actually have scientific or engineering degrees and how each demographic group would accept the bonus.

SPSS subprogram CROSSTABS will be employed by the researcher to determine the joint frequency distributions of the following questions: grade, commissioning source, education levels, and active duty service commitment versus career intent and bonus acceptability. For example, crosstabs will tell the user how many lieutenants, captains, majors plan to make the Air Force a career or resign at the earliest possible

date. In addition by calculating the joint frequencies between career intent and bonus acceptability the researcher will determine how an individual's career intent is changed by the possibility of a bonus.

CHAPTER IV

FINDINGS AND DATA ANALYSIS

Introduction

This chapter presents the results of the analysis of the data collected in the research effort. The chapter begins with a presentation of the data, followed by brief discussions of the research findings.

Data Presentation

Questionnaire Response Rate

There were 500 surveys mailed to Air Force officer scientists and engineers. These people were located at the Foreign Technology Division, Air Force Wright Aeronautical Laboratories, and Air Force Systems Command at Wright-Patterson AFB. The response rate was 79.6 percent with the return of 398 surveys. Twenty-two surveys could not be used in the analysis because they were improperly filled out. This left 376 surveys to be used as the data base.

Demographic Data

Grade of Respondents. Table 2 illustrates the grade of the respondents.

Table 2

Grade of Respondents

<u>23%</u>	<u>17%</u>	<u>40%</u>	<u>14%</u>	<u>6%</u>
2Lt	1Lt	Capt	Maj	Lt Col

Table 2 shows that 80 percent of the officers are captains or less. This is the officer population the researcher wants to closely examine; those scientists and engineers who are undecided about a career.

Length of Service. Table 3 shows the length of time (in years) the person has spent in the military.

Table 3
Length of Service

<u>17%</u>	<u>16%</u>	<u>8%</u>	<u>19%</u>	<u>40%</u>
0-2	2-4	4-6	6-10	greater than 10

Table 3 also shows that the researcher has surveyed a fairly young population. Over 60 percent of the respondents have less than 10 years of service.

Commissioning Source. Table 4 shows the source of commissioning of the survey respondents. The Other category includes West Point, Annapolis, and the Aviation Cadet program.

Table 4
Commissioning Source

<u>55%</u>	<u>11%</u>	<u>32%</u>	<u>2%</u>
ROTC	A.F. Academy	Officer Training School	Other

Scientific Education Level. Table 5 shows the highest level of scientific education achieved by the officers. Over 67 percent of the officers have done work beyond their initial undergraduate degree. In terms of the total population over 97 percent of the officers have a formal scientific degree.

Table 5
Scientific Education Level

<u><1%</u>	<u>32%</u>	<u>25%</u>	<u>30%</u>	<u>8%</u>	<u>4%</u>
No degree	B.S.	B.S. plus graduate work	M.S.	M.S. plus postgrad work	Ph.d

Non-scientific Education Level. Table 6 shows the highest education level achieved in a non-scientific/engineering discipline. MBA's and Master of Arts degrees would be in this category. The results show (when compared with Table 5) that most officers have concentrated their education efforts in the scientific fields.

Table 6
Non-Scientific Education Level

<u>78%</u>	<u>3%</u>	<u>8%</u>	<u>10%</u>	<u>0%</u>	<u>1%</u>
No degree	B.A.	B.A. plus graduate work	MBA/MA	MBA/MA plus postgraduate work	Ph.d

Air Force Specialty Code (AFSC). Table 7 shows the jobs of the respondents. The highest concentrations are in the electrical and aeronautical engineering fields.

Table 7
AFSC

<u>11%</u>	<u>27%</u>	<u>10%</u>	<u>3%</u>	<u>23%</u>	<u>11%</u>
Staff Dev Eng	Elec Eng	Mech Eng	Astro Eng	Aero Eng	Proj Eng

Table 7 (continued)

AFSC

<u>1%</u>	<u>7%</u>	<u>1%</u>	<u>5%</u>	<u>5%</u>	<u>4%</u>
Scientific Mgr	Physicist	Chemist	Nuclear Research Officer	Behavioral Scientist	Analyst

Active Duty Service Commitment. Table 8 shows the Active Duty Service Commitment of the respondents. The results show that 95% of the officers can leave the service in the next four years and that 31 percent can resign immediately.

Table 8

Active Duty Service Commitment

<u>31%</u>	<u>31%</u>	<u>33%</u>	<u>5%</u>
None	Less than 2 years	2 to 4 years	Greater than 4 years

The previous seven tables have provided a demographic breakdown of the respondents. The results have shown these scientists and engineers are in the early phases of their careers (60 percent have less than 4 years of service), well educated, and with some present commitment.

Career Intent. Concerning career intent, Table 9 shows how the respondents answered question six of the survey; do you intend to make the Air Force a career?

Table 9

Career Intent of Respondents

24%	26%	27%	14%	9%
Positively Yes	Probably Yes	Undecided	Probably No	Definitely No

Corollary Findings

The previous tables have discussed demographic characteristics of the surveyed population. More information can be derived from the returned questionnaires when answers to questions are compared on a one to one basis.

Grade vs. Career Intent. Table 10 shows how each grade level answered the career intent question. Second and First Lieutenants are for the most part undecided or show a negative attitude to an Air Force career. The higher ranking officers have already spent 20 years in the military or have very close to 20 years.

Table 10

Grade vs. Career Intent

	Positively Yes	Probably Yes	Undecided	Probably No	Definitely No
2Lt	4.7%	11.8%	38.8%	25.9%	18.8%
1Lt	3.2%	23.8%	36.5%	25.4%	11.1%
Capt	22%	37.3%	26.7%	9.3%	4.7%
Maj	58.2%	29.1%	7.3%	1.8%	3.6%
Lt Col	78.3%	8.7%	4.3%	4.3%	4.3%

Years of Service vs. Career Intent. Perhaps a more meaningful comparison is years of service versus career intent. This comparison eliminates the possibility of assuming a lieutenant is new to the service (prior enlisted service). The highlight of Table 11 is that only 16 percent of those officers with less than 10 years of service said they would positively or probably make the Air Force a career.

Table 11
Years of Service vs. Career Intent

	<u>Positively Yes</u>	<u>Probably Yes</u>	<u>Undecided</u>	<u>Probably No</u>	<u>Definitely No</u>
0-2 years	6.2%	7.7%	40%	21.5%	24.5%
2-4 years	3.4%	23.7%	39%	22%	11.9%
4-6 years	3.2%	25.8%	38.7%	22.6%	9.7%
5-10 years	10%	27.1%	38.6%	21.4%	2.9%
greater than 10 years	49.7%	35.1%	8.6%	3.3%	3.3%

Air Force Specialty Code vs. Career Intent. The researcher attempted to determine if any particular group of scientists or engineers were more career motivated than others. Only the six leading (highest number of officers in these jobs) jobs are shown. These six AFSC's included over 87 percent of the respondents (328 out of 376). Aeronautical engineers were the most career motivated (Staff Development Engineers are usually Lt. Col's who have already made the service a career).

Table 12

AFSC vs. Career Intent

	Positively Yes	Probably Yes	Undecided	Probably No	Definitely No
Staff Dev Engr	65%	19.5%	7.3%	2.4%	4.9%
Elec Engr	19.8%	21.8%	31.7%	14.9%	11.9%
Mech Engr	11.1%	22.2%	41.7%	16.7%	8.3%
Aero Engr	14.1%	43.5%	29.4%	10.6%	2.4%
Proj Engr	27.5%	17.5%	25.0%	15.0%	15.0%
Physicist	20.0%	20.0%	36.0%	16.0%	8.0%

Commissioning Source vs. Career Intent. Table 13 shows how Reserve Officer Training Corp (ROTC), Air Force Academy (AFA) and Officer Training School (OTS) graduates responded to the career intent question. ROTC graduates are the most career motivated.

Table 13

Commissioning Source vs. Career Intent

	Positively Yes	Probably Yes	Undecided	Probably No	Definitely No
ROTC	23.7%	28.5%	24.6%	13.5%	9.7%
AFA	10%	25%	30%	20%	15%
OTS	24.8%	24%	31.4%	14%	5.8%

Results from the Bonus Questions

The primary objective of this thesis is to determine if the

proposed \$15,000 bonus is a viable solution to the scientist and engineering retention problem. To this end the researcher will present information concerning the demographic factors and years willing to commit for the bonus and how an individual's career intent is changed by the possibility of a bonus.

For the entire survey population the average (mean) years to commit was 3.15 with a standard deviation of 1.65 years.

Grade vs. Additional Commitment. Table 14 shows how many years each grade level is willing to commit to receive the \$15,000 bonus. Lieutenants and captains averaged about 3 years while majors averaged 3.35. Lt. Colonels (many who have already reached the 20 year point) would be willing to commit for less time.

Table 14

Grade vs. Additional Commitment

<u>3.1 years</u>	<u>2.9 years</u>	<u>3.0 years</u>	<u>3.4 years</u>	<u>2.1 years</u>
2Lt	1Lt	Capt	Maj	Lt Col

Years in Service vs. Additional Commitment. Table 15 shows how long an individual is willing to commit for the bonus based on the number of years already in the military. Officers with under 10 years of service averaged 3.02 years additional commitment. Those officers with over 10 years of service averaged 3.4 years.

Table 15

Time in Service vs. Additional Commitment

	<u>2.7 yrs</u>	<u>3.0 yrs</u>	<u>3.4 yrs</u>	<u>3.2 yrs</u>	<u>3.4 yrs</u>
Time in service	0-2 yrs	2-4 yrs	4-6 yrs	6-10 yrs	greater than 10 yrs

Active Duty Service Commitment (ADSC) vs. Additional Commitment. Table 16 shows the present ADSC of the respondents versus the average number of years they would additionally commit to receive the bonus.

Table 16

ADSC vs. Additional Commitment

	<u>2.94 yrs</u>	<u>3.35 yrs</u>	<u>3.13 yrs</u>	<u>3.00 yrs</u>
ADSC	None	0-2 yrs	2-4 yrs	greater than 4 yrs

Career Intent vs. Additional Commitment. Table 17 compares the career intent of the respondents with the average number of years they would commit to receive the bonus. The bonus would have no effect on the positively yes group; they have already decided on a career. It is in the last three categories where the bonus will have its greatest impact.

Table 17

Career Intent vs. Additional Commitment

<u>N/A</u>	<u>3.78 yrs</u>	<u>3.27 yrs</u>	<u>3.16 yrs</u>	<u>1.4 yrs</u>
Positively Yes	Probably Yes	Undecided	Probably No	Definitely No

Chapter V will discuss the results of this data analysis and draw some conclusions concerning the proposed \$15,000 bonus pay plan. What follows are some comments by the survey respondents.

Comments by the Survey Respondents

The comments received by the researcher can be broken into two general areas. Some officers felt that the bonus would not address the real reasons for low retention while other officers said that extra money would make a difference but the format of payment should be changed. Samples of the comments follow: A Lt Col staff engineer said "a bonus is not the way to solve the retention problem . . . money is not the only factor." A lieutenant who is a physicist commented that "money can never be a strong enough positive bonus . . . try to increase job satisfaction." An aeronautical engineer (first lieutenant) said "the major problem is working conditions, no salary." A passed over major (physicist) complained that "promotion opportunities to lieutenant colonels are too low . . . I would rather be promoted than receive a bonus."

Three captains who agreed that pay is the major issue commented that salary increases should be set-up like flight pay, not lump sum bonuses. A captain who is just resigning said the "\$15,000 bonus is an excellent idea but its too late for me." An electrical engineer (captain) summed up for many of his/her colleagues by saying "this \$15,000 bonus is needed . . . I believe that the Air Force could have kept some of its engineers had this existed earlier."

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents the conclusions and recommendations of this research effort. A discussion of significant findings will be related to the objectives and relevant conclusions drawn. This final chapter, as well as the thesis, will be completed with recommendations for further research on the scientist/engineering retention issue.

Review of the Air Force Bonus Pay System

The Air Force Bonus Pay System (medical corp and enlisted) has been proven to be an effective tool in retaining personnel. The reason shortages still exist in some specialities is that some people would leave the service no matter what their salary while others feel that the present bonuses are not enough. Even with the bonus money, medical and certain enlisted people still have an economic incentive to leave the Air Force. The conclusion from studying the bonus system is that bonuses are effective in increasing retention, however, more money is needed.

Objectives and Findings

Introduction

The objective of this thesis was to investigate the effects in retention of a \$15,000 bonus awarded to Air Force officer scientists and engineers to continue in the Air Force. To accomplish this research

objective a survey of Air Force officer scientists and engineers was conducted to determine their feelings on this subject.

The survey population consisted of mostly young, undecided (concerning a career), well educated officers. Many of the officers in the 4-10 year group (4 to 10 years of active duty service) do not have a commitment, and since they have less than ten years of service they have not "forced" themselves into a career.

Conclusions from the Bonus Questions

The survey population averaged 3 years for the additional commitment. This means that when an individuals present commitment is completed he/she would be willing to sign up for an additional three years of service to receive the \$15,000 bonus. In addition, 70 percent of the respondents desired a lump sum payment versus spreading the money out over the commitment.

Effect of the Bonus on Retention

The possibility of a bonus did have a positive effect on the respondents. Those individuals who were undecided concerning a career or who expressed a negative attitude (probably no or definitely no to the career intent question) were positively influenced by the bonus. The average number of years willing to commit for these three groups were 3.27, 3.16, and 1.4 years respectively. The bonus therefore has a significant effect on the retention of officers in the "undecided" and "probably no" career intent categories. These two categories comprised 41 percent of the survey respondents. The effect of a bonus does not seem to change the mind of those officers who answered "definitely no" to the career intent question. This group (9 percent of all

respondents) would be willing to only commit for an additional 1.4 years.

Conclusion

The conclusion of the researcher is that a \$15,000 bonus given to Air Force officer scientists and engineers is a viable way to increase the retention rate of scientists and engineers. The bonus would increase the number of years a person is willing to stay in the military. Whether this plan would totally eliminate shortages in these career fields is unknown. Many officers leave the military when the prime reason is not pay. This bonus would still not place Air Force scientists and engineers as economic equals with their certain counterparts; however, it would go a long way to eliminating manning shortages.

Recommendations for Further Research

1. A study of the economic efficiency of the bonus. In other words if a 3 year commitment was given with the bonus would this be less costly than training a replacement (assuming one could be found).
2. Extend the survey to let the respondents choose the amount of the bonus given a fixed commitment.
3. Extend the survey to determine if pay is the primary reason for low scientist and engineers retention rates.

APPENDIX A
SURVEY COVER LETTER AND QUESTIONNAIRE



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

REPLY TO
ATTN OF LSY (LSSR 51-81)/1Lt J. Fucillo/AUTOVON 785-4845

SUBJECT Air Force Scientist and Engineer Bonus Questionnaire

TO

1. The attached questionnaire was prepared by a researcher at the Air Force Institute of Technology, Wright-Patterson AFB, OH. The purpose of the questionnaire is to acquire data concerning a \$15,000 scientist and engineering bonus and its effect on retention.
2. You are requested to provide an answer or comment for each question. Headquarters USAF Survey Control Number 81-67 has been assigned to this questionnaire. Your participation in this research is voluntary.
3. Your responses to the questions will be held confidential. Please remove this cover sheet before returning the completed questionnaire. Your cooperation in providing this data will be appreciated and will be very beneficial. Please return the completed questionnaire in the attached envelope within one week after receipt.

CHARLES R. MARGENTHALER, Col, USAF
Dean
School of Systems and Logistics

2 Atch
1. Questionnaire
2. Return Envelope

PLEASE CIRCLE THE APPROPRIATE RESPONSE.

1. What is your current grade level?
 - a. 2Lt
 - b. 1Lt
 - c. Captain
 - d. Major
 - e. Lt Col or above
 - f. Other

2. How long have you been in the military?
 - a. 0-2 years
 - b. 2-4 years
 - c. 4-6 years
 - d. 6-10 years
 - e. 10 and above

3. What is your source of commissioning?
 - a. Reserve Officer Training Corp
 - b. Air Force Academy
 - c. Officer Training School
 - d. Other

4. What is your highest level of formal education in scientific/
engineering disciplines?
 - a. I do not have a scientific or engineering degree
 - b. Bachelor's degree
 - c. Graduate work beyond the bachelor's degree
 - d. Master's degree
 - e. Postgraduate work beyond the master's degree
 - f. Doctor of Philosophy

5. What is your highest level of formal education in non-scientific/
engineering disciplines (ie. Bachelor of Arts in Music, Masters
of Business Administration)?
 - a. I do not have a non-scientific/engineering degree
 - b. Bachelor's degree
 - c. Graduate work beyond the bachelor's degree
 - d. Master's degree
 - e. Postgraduate work beyond the Master's degree
 - f. Doctor of Philosophy

6. Under the conditions that exist today (this assumes no retention
bonus) do you intend to make the Air Force your career?
 - a. Positively yes
 - b. Probably yes
 - c. Undecided, maybe
 - d. Probably no
 - e. Definitely no

7. What is your current primary AFSC (Air Force Specialty Code)?

- a. 2816 Staff Developmental Engineer
- b. 282X Electrical Engineer
- c. 283X Mechanical Engineer
- d. 284X Astronautical Engineer
- e. 285X Aeronautical Engineer
- f. 286X Experimental Test Pilot
- g. 289X Project Engineer
- h. 2616 Scientific Manager
- i. 263X Physicist
- j. 264X Chemical Research Officer
- k. 265X Metallurgist
- l. 266X Nuclear Research Officer
- m. 267X Behavioral Scientist
- n. 268X Scientific Analyst
- o. Other

8. Do you presently have an Active Duty Service Commitment?

- a. No
- b. Yes, it is under 2 years
- c. Yes, it is between 2 and 4 years
- d. Yes, it is greater than 4 years

9. If, after the end of your current Active Duty Service Commitment you were given a \$15,000 bonus to continue in the Air Force, what is the maximum commitment (in years) you would accept to receive this bonus?

- a. 0 years, I would not be willing to incur an additional service commitment.
- b. 1 year
- c. 2 years
- d. 3 years
- e. 4 years
- f. 5 years
- g. 6 years
- h. 7-10 years
- i. I am making the Air Force my career.
- j. I do not have an active duty service commitment.

10. If you decided to accept this bonus would you prefer payment in a lump sum or spread out over the commitment time?

- a. Lump sum
- b. Spread over commitment
- c. I would not accept this bonus.

APPENDIX B

SPECIAL PAY FOR HEALTH PROFESSIONALS

SPECIAL PAY FOR HEALTH PROFESSIONALS

1. Public Law 96-284, 28 June 1980 revises special pay provisions for medical officers in the uniformed services and makes permanent existing special pay provisions for other health professionals in the uniformed services. The purpose of this law is to increase the effectiveness of the Department of Defense health care system through more efficient application of health professionals special pays.

2. The provisions of this new law are as follows -

a. Four types of special pay are authorized for Medical Corps officers. They are:

(1) Variable Special Pay (Payable Monthly)

a. Medical Corps officers who are undergoing internship training are entitled to variable special pay of \$1,200 per year.

b. Medical Corps Officers who are serving in pay grade 07 or above are entitled to variable special pay of \$1,000 per year.

c. All other Medical Corps officers are entitled to variable special pay in the amounts displayed in the following table:

Variable Special Pay

<u>Years of Creditable Service</u>	<u>Annual Rate of Variable Special Pay</u>
Less than 6	\$ 5,000
6 but less than 8	10,000
8 but less than 10	9,500
10 but less than 12	9,000
12 but less than 14	8,000
14 but less than 18	7,000
18 but less than 22	6,000
22 or more	5,000

(2) Additional Special Pay (Payable annually)

A Medical Corps officer who is not undergoing internship or initial residency training is entitled to additional special pay in the amount of \$9,000 per year if the officer has less than ten years of creditable service, or \$10,000 per year for ten or more years service.

(3) Board Certified Pay (Payable monthly)

Medical Corps officers are entitled to board certified pay as follows:

<u>Years of Creditable Service</u>	<u>Annual Payment for Board Certification</u>
Less than 10	\$ 2,000
10 but less than 12	2,500
12 but less than 14	3,000
14 but less than 18	4,000
18 or more	5,000

(4) Medical Incentive Pay (Payable annually)

In addition to all other special pays, a Medical Corps officer who is not undergoing internship or initial residency training may be authorized medical incentive pay in an amount not to exceed \$8,000 per year. There is a spending limit for this type of pay of 6% of the total amount spent on other Medical Corps officer special pays.

3. Under the previous special pay system for Medical Corps officers the amount of pay an individual could receive ranged from \$1,200 to \$17,700 each year. P.L. 96-284 provides for a range of special pay from \$1,200 to \$29,500 annually. The table below includes representative amounts that a physician can receive under P.L. 96-284.

Special Pay (\$000)

<u>Years of Creditable Service</u>	<u>Variable Special Pay</u>	<u>Additional Special Pay</u>	<u>Board Certified Pay</u>	<u>Medical Incentive Pay</u>	<u>Maximum Possible</u>
Less than 6	5	9	2	8	24
6 but less than 8	10	9	2	8	29
8 but less than 10	9.5	9	2	8	28.5
10 but less than 12	9	10	2.5	8	29.5
12 but less than 14	8	10	3	8	29
14 but less than 18	7	10	4	8	29
18 but less than 22	6	10	5	8	29
22 or more	5	10	5	8	28

4. P.L. 96-284 provides that Medical Corps officers will not receive less special pay than that amount of special pay the individual was eligible to receive or would have been eligible to receive had the current special pay system remained in effect.

SELECTED BIBLIOGRAPHY

REFERENCES CITED

1. "Air Force Manpower," 1980. Air Force Policy Letter for Commanders, Office of the Secretary of the Air Force, Washington DC, May 1980.
2. Allen, Lew Jr. 1980. Presentation to the Committee on Armed Services, United States Senate: Statement of General Lew Allen Jr., Department of the Air Force. February 1980.
3. Binkin, Martin and Irene Kryiahopoulos. 1981. Paying the Modern Military. Washington DC: The Brookings Institute.
4. Briefing Team, USAF Military Personnel Center. 1981. Briefing to AFIT students, Air Force Institute of Technology (AV), Wright-Patterson AFB OH, 26 February 1981.
5. Burke, Lt Col, USAF. 1979. "Paper on Civilian/Military Physician Earnings." Unpublished Research Report, unnumbered, AF/SGHA, Pentagon, Washington DC.
6. "Engineer Shortage Worsens," 1981. Air Force Magazine, February 1981.
7. Enns, John H. 1975. Effect of the Variable Reenlistment Bonus on Reenlistment Rates: Empirical Results for FY 1971. Rand Report, R-1502-ARPA. January 1975.
8. Enns, John H. 1977. Reenlistment Bonuses and First-Term Retention. Rand Report, R-1935-ARPA, September 1977.
9. Fain, James. "Reagan Right About the Draft," Dayton Daily News, March 18, 1981, Section 2, p. 11.
10. Gates, Edward. 1978. "Military Medicine: Can the Shortage of Physicians Be Remedied?" Air Force Magazine, October 1978.
11. Graham, Major James, USAF. 1981. "Fact Sheet: Professional Engineers." Unpublished Research Report, unnumbered, AF/MPXXX, Headquarters Air Force, Washington DC.
12. Hayward, Thomas B. 1980. "A Matter of Priority," Navy Policy Briefs, U.S. Department of Navy Office of Information, February 1980.
13. Hetzel, Captain, USAF. 1981. "Talking Paper on Air Force Engineering Bonus." Unpublished Research Report, unnumbered, AFSC/MPXX, Andrews AFB, Washington DC.
14. Leonhardt, Major, USAF. 1981. "A Background Paper on the Selective Reenlistment Bonus (SRB)." Unpublished Research Report, unnumbered, AF/MPPPN, Washington DC, 6 January 1981.
15. Mace, Don. 1981. "Career Force Entry Goal Falls 412 Short." Air Force Times, 9 March 1981.

16. "Military Retention Incentives: Effectiveness and Administration," 1974. GAO Report No. B-160096. 5 July 1974.
17. Munch P. 1977. A Dynamic Model for Optimum Bonus Management. Rand Report, R-1940-ARPA, January 1977.
18. Myers, Lt. General Paul W., USAF, Surgeon General USAF. Address to Senate Armed Services Committee. Subject: Special Pays for Health Care Professionals, December 5, 1979.
19. Nie, Norman H., C. Hadlai Hull, Jean G. Jenkins, Karin Steinbrenner, and Dale H. Bent, 1975. SPSS: Statistical Package for the Social Sciences. New York: McGraw Hill Book Company, 1975.
20. Skantzze, Lawrence A. 1980. "How ASD is Meeting the Needs of the Nineties." Air Force Magazine, October 1980.
21. Staff Writer. 1980. News in Engineering. September 1980.
22. United States Public Law 96-284. 1980. Uniformed Services Health Professionals Special Pay Act of 1980. 28 June 1980.
23. United States House of Representatives. 1980. Military Pay and Allowance Benefits Act of 1980. Report No. 96-1230. Washington DC: U.S. Government Printing Office, 19 August 1980.
24. United States Senate. 1977. Extending the Special Pay Provisions for Physicians and Dentists in the Uniformed Services and Reinstating the Special Pay Provisions for Optometrists and Veterinarians. Report No. 95-400. Washington, DC: U.S. Government Printing Office, 4 August 1977.
25. West, Togo D., 1980. General Counsel of the Department of Defense. Letter, subject: Reenlistment and Enlistment Bonuses, DOD 96-114, to House of Representatives, Washington DC, 28 March 1980.
26. Zwick, Charles J., et al., 1978. Report of the President's Commission on Military Compensation. U.S. Government Printing Office, Washington, DC 20402.