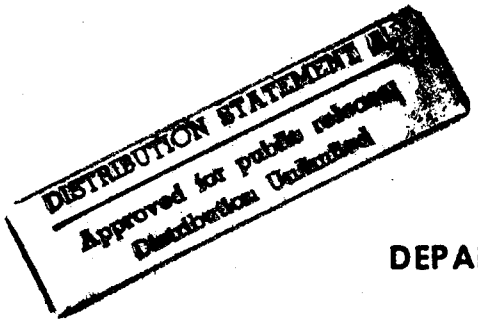
THE ROLE OF THE GSO PROGRAM IN THE SPACE OPERATIONS CAREER FIELD

THESIS

Gregory J. Beloyne

AFIT/GSO/ENS/94D-03



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

Wright-Patterson Air Force Base, Ohio

AFIT/GSO/ENS/94D-03

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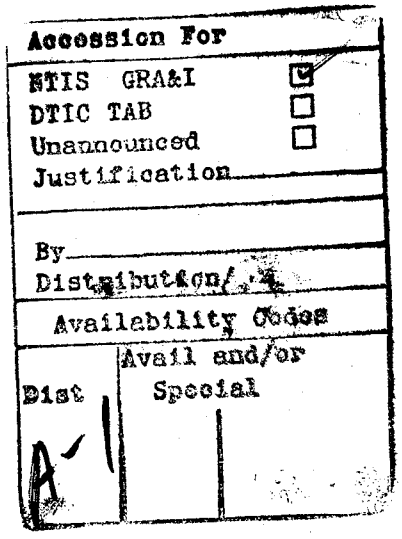

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IN THE
SPACE OPERATIONS CAREER FIELD

THESIS

Presented to the Faculty of the Graduate School of Space Operations

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the

Requirements for the Degree of

Master of Science in Space Operations

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Captain, USAF

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Thesis Approval

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Gregory J. Beloyne

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ABSTRACT

The number of Air Force officers graduating from the Air Force Institute of Technology's Graduate of Space Operations master's degree program is declining. Furthermore, the number of advance degree jobs these officers fill within the Space Operations career field has been reduced. These events question the role the GSO program has in the Space Operations career field.

This research surveys the GSO population to determine how useful their master's degrees have been in providing the skills and knowledge needed to fill the advanced degree positions. This research also addresses how many GSOs should enter the GSO program each year.

The survey method of measuring the usefulness of the GSO curriculum was selected as an effective way of gathering data on the 12 previous GSO classes. The primary advantage of this method was that it presented a group consensus on the value of an AFIT graduate education in the Space Operations career field.

THE ROLE OF THE GSO PROGRAM IN THE SPACE OPERATIONS CAREER FIELD

I. Introduction

General Issue

The merger of Missile Operations with Space Operations significantly enlarged the Space Operations career field. However, despite the new growth in the career field, fewer Air Force officers are selected to attend the Air Force School of Technology (AFIT) Graduate of Space Operations (GSO) program each year. Figure 1 shows that there has been a steady decline in the number of officers entering the GSO program since 1985.

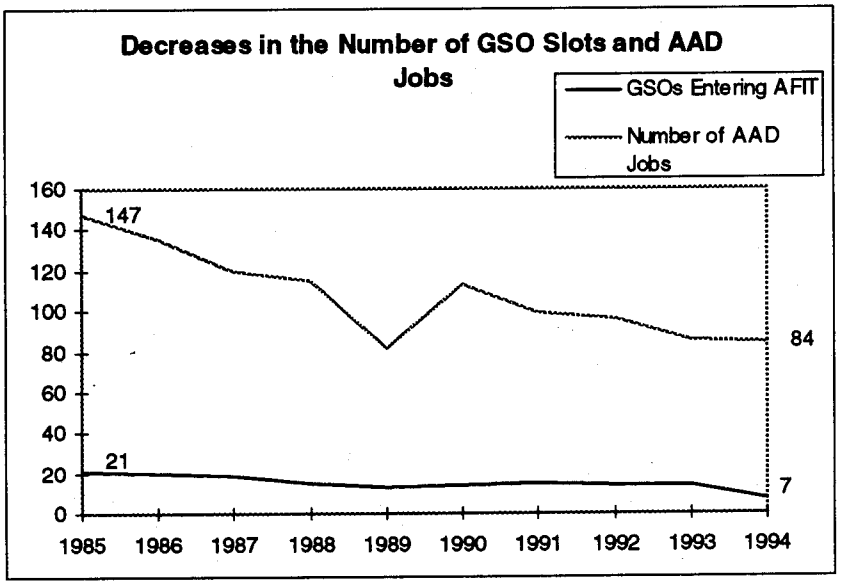

Figure 1.1 The Number of Officers Entering the GSO Program and the Number of AAD Positions

The figure also shows the GSO Advanced Academic Degree (AAD) jobs, which graduates must enter within two assignments out of AFIT, have been reduced by 43 percent over the last decade.

Several problems exists concerning the AAD positions. For example, some of the AAD jobs are occupied by individuals who do not have advanced degrees (Santoni, 1994). In addition, some of the AAD jobs are identical to non-AAD jobs (Houchen, 1994). The reduction in the number of AAD jobs, the decline of officers entering the GSO program and the problems associated with personnel in AAD positions warrant some research. Col Gregory Parnell, Head of the Department of Operational Sciences, AFIT, at Wright-Patterson Air Force Base (WPAFB, OH), Ohio, has urged that a thorough analysis be performed on the role of the GSO program in the [1]Space Operations (Space Ops) career field. He suggests surveying the entire GSO population to determine how well their graduate education has served their career needs. He also recommends creating a model to show how officers flow through the Space Ops career field, with some entering the GSO program and re-entering the career field to serve in AAD positions.

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[1] The Space Operations career field and the Missile Operations career field merged in 1993 to create the Space and Missile Operations career field. For consistency in terms throughout this thesis, the Space and Missile career field will be referred to as the Space Ops career field.

Problem Statement

Research was needed to focus on how useful the GSO program has been to the officers who earned Master's degrees in Space Ops through AFIT. In addition, a model is needed to determine the appropriate class size for the GSO program to meet the future AAD needs within the Space Ops career field.

Background

Prior to June 1994, the average GSO class size was 18. In contrast, the GSO class entering AFIT to graduate in December 1995 (GSO 95D) totaled 10. Seven of the 10 officers selected to the GSO program were Air Force officers. This drop in the number of GSOs entering AFIT signaled a shift in policy for selecting Air Force officers to receive advanced degrees in space operations at AFIT. In the past, the Assignments Branch of Headquarters Air Force Military Personnel Center (HQ AFMPC) requested as many annual GSO quota to HQ Air Force (HQ AF) as requested by HQ Air Force Space Command (HQ AFSPC) (Houchen, 1994). These quotas requests averaged approximately 12 to 14 annually. There appeared to be little or no justification given to support the quota size. Consequently, when the officer graduated from AFIT, an AAD billet would have to be found, usually within Space Command, to fulfill his AAD

requirement. In some cases, graduates would have to wait until a second assignment to enter an AAD position. Due to the high number of officers completing the program and needing AAD jobs, Space Command became backlogged with officers having advanced degrees but no AAD position. Some students worked with Space Ops units to have AAD positions created for them in anticipation of graduation. If the unit could justify the position, HQ AFSPC authorized it (Jordan, 1994). This action eased the shortage of AAD position in the short term. After the member fulfilled his or her AAD requirement with the unit, the unit now had a vacant AAD position to fill. Some units chose to fill the positions with non-AAD personnel and some chose to delete the position or have it stand vacant (Houchen, 1994). Challenges to the legitimacy of several of the AAD positions in Space Command began to surface. Also, it was discovered that some of the AAD positions were identical to non-AAD positions (Houchen, 1994). By the end of 1993, the total number of AAD positions was reduced by 11 percent.

After the reduction in the numbers of AAD positions, the Assignments Branch of HQ AFMPC began to compare the number of future AAD jobs available in Space Ops career field to the number of GSO candidates recommended to attend AFIT by HQ AFSPC (Houchen, 1994). The number of candidates for the GSO 95D class totaled 14. However, the number of forecasted AAD jobs totaled five. With Air Staff

concurrence, the Assignments Branch reduced the list of candidates from 14 to seven. This process marked a charge in policy for the Assignments Branch. The number of GSO candidates selected to attend AFIT would be determined by the number of AAD positions projected to be available upon graduation from AFIT (Houchen, 1994).

Research Objective

The following research objectives were developed to determine the value of the GSO program in developing officers to re-enter the Space Operations career field with an advanced degree in Space Operations.

1. Determine how useful the degree has been to the careers of its graduates.

2. Determine how many Air Force Officers should be selected to attend the AFIT GSO program each year.

Research Questions

The following investigative questions were employed to achieve the objective of this research.

1. How useful has the GSO curriculum been to the graduates since graduating from AFIT?

2. How many Air Force officers should enter the GSO program each year?

Scope and Limitations

The scope of this research was limited to United States Air Force officers who received a Master's of Science degree in Space Operations from AFIT. This population included individuals in the grades of Captain to Colonel who graduated from AFIT from December 1982 through December 1993.

The sample used to represent this population should contain at least 41 percent rate of graduates from the above 12 classes. Out of the population surveyed only the graduates who returned completed surveys were included in the analysis of this research. Some of the graduates were crossflows into the GSO program from other career fields and may not be in the Space Operations career field today.

Definitions

The following key terms are defined.

1. GSO: Students in the AFIT Graduate Space Operations Program typically senior lieutenants through majors. Students are typically in the Space Operations (20xx

or 13Sx) career field, but academically qualified officers from any career field may apply (GSO Handbook, 1993).

2. AAD: An advanced academic degree received from an institution of higher learning, such as AFIT, where an officer has earned a master's or doctor's degree (AFR 36-19, 1990).

3. AAD Billet: A job or position requiring an officer with an advanced degree to serve in for a minimum of 3 years and not later than the second assignment after graduation from AFIT (AFR 36-19).

4. OYRY: A code identifying a job or position which requires an advanced degree in Space Operations (Santoni, 1994).

Potential Contributions

The results of this research should be valuable to the AFIT Department of Operational Sciences, HQ AFMPC Assignments Branch, and HQ AFSPC, all of whom are interested in the value of the GSO program at AFIT. Another contribution of this research is the impartial measured assessment of the program's effectiveness in meeting the AAD requirements of the Space Operations career field.

Summary

This chapter described the need for a thorough analysis of the role the GSO program plays in the Space Operations career field. The current research objectives and questions were introduced and potential contributions were suggested.

The remaining chapters describe the research conducted on the graduates of the GSO program. A review of the literature is presented in Chapter II. The methodology used in this research is presented in Chapter III. The results of this study are described and analyzed in Chapter IV. The conclusions of the research are drawn and recommendations for future research are given in Chapter V.

II. Literature Review

Introduction

This chapter surveys completed research relevant to both the GSO program and the creation and testing of a model for career growth analysis. No research has been performed which analyzes the GSO program. However, three theses written by graduate students in the AFIT School of Logistics program paralleled the research objectives of this thesis. They provided a reference from which the structured of this thesis and solicited ideas to build a model. These were the theses of Block, Beals, and West. Each are listed below with a brief description of their theses.

Block

Major David Block's 1991 thesis researched the utilization of graduate students of the AFIT Information Resource Management (IRM) resident master's degree program. The objective of his thesis was to forecast the roles the IRM graduates assigned to base-level positions would need to fill in 1996. His goal was to determine what changes were needed to bridge the gap between the current and forecasted roles of the graduates. Maj Block used the Delphi survey method of forecasting to discover what role the graduates will need to fill five years in the future (Block, 1991). The uniqueness of this method is that it asked the experts

in the career field to develop a consensus on the future role their graduates should play in the career field.

Beals

Captain John Beals wrote his 1987 thesis on "The Next Generation Senior Military Logistician".(Beals, 1987). His research addressed issues concerning the qualification of senior military logisticians and their ability not to be perceived as specialists in the present day Air Force logistics system. Beals's thesis presented suggestions on how to investigate the career progression of the senior military officers. His research and discussion on the issue concerning whether an officer should be a specialist or a generalist mirrors a concern expressed by some in the space operations community (Kelso, 1994). Some officers believe the current system, in which GSO students take specialty tracks and perform thesis research in preparation for the assignment after graduation, compounded with the GSO remaining in the AAD billet for an extended period of time, come too close to creating a narrow specialist. Beals's solution was to require that at least 20% of the officers in the logistics specialty serve in at least two logistics fields before attaining the rank of colonel.

West

Captain David West's 1989 thesis researched background, characteristics, and qualities of senior Air Force logisticians. His objective was to determine the developmental needs of these logisticians.

Summary

This literature review searched all documents related to the role of the GSO program in the Space Operations career field and found none. Further research uncovered three theses written by graduate students in the AFIT School of Logistics which addressed similar issues. This review focused on those three theses. In summary, Maj Block's 1991 thesis researched the utilization of graduate students of the AFIT Information Resource Management (IRM) resident master's degree program. Capt Beals's research and discussion on the issue concerning whether an officer should be a specialist or a generalist mirrors a concern expressed by some in the space operations community. Lastly, Capt West's thesis researched background, characteristics, and qualities of senior Air Force logisticians.

The next chapter describes the methodology used in this thesis effort. A brief introduction outlines its objectives and approach.

III. Methodology

Introduction

The purpose of this chapter is to describe how the research was conducted to meet research goals. It provides a formal and detailed record of the methods and procedures used throughout this research effort. The methodology used has a two-phased approach. Phase one investigates the first research question: How useful has the GSO curriculum been to its graduates since graduating from AFIT? Phase two investigates the second research question: How many Air Force officers should be selected to enter the GSO program each year? This chapter begins with a brief description of the specific types of research methodology used.

Description of Research Methodology

Research for phase one employed a survey approach for the research. This basic method of research, as defined in "A Handbook in Research and Evaluation" (Isaac and Michael, 1981), is also referred to as survey studies. It describes the facts and characteristics of a given population. Research for Phase 2 employed Developmental research method. It explores trend data to establish patterns of change in the past to predict future conditions (Isaac and Michael, 1981).

Phase One: Descriptive Approach.

The procedure used to collect the necessary field data was developed during phase one. It was organized into three steps, each designed to gather data on the usefulness of the GSO program from the prospective of the graduates. The steps were as follows:

1. Locate as many Air Force GSO graduates as possible.

2. Survey the Air Force GSO population.

3. Create a database to store and manipulate survey data.

Each step is described in detail below.

Step One: Locate as many Air Force GSO graduates as possible. This step involved locating all Air Force Officers who had graduated from the GSO program from the year 1982 through 1993. Since no computerized data bank existed to retrieve the required information on all previous GSO students, a manual search of old GSO class rosters retained by the Department of Operational Sciences was performed. These rosters were inconsistent in format and incomplete in some cases. A second search was performed through the files of the AFIT Registrar's office. This information provided a means to correct the class rosters.

Although a thorough review was performed on the class rosters and the information stored at the registrar's office, approximately four percent of the GSO survey population was missed.

With the assistance of HQ AFMPC Worldwide Locator, 200 U.S. Air Force GSO graduates were located (Appendix A). Their current ranks ranged from captain to colonel. The Locator personnel cautioned that some of the addresses may no longer be correct due to recent PCSs, separations, and retirements. Unfortunately, there was no way to tell which addresses were valid. Therefore, all 200 addresses were used. Of the 200 addresses received, there were 125 responses, 60 non-responses, and 15 were returned as undeliverable.

Step Two: Survey GSO Graduate Population. The survey was created to gather data on the GSO graduates and to determine the usefulness of the program to its graduates. An example survey is included in Appendix B. The survey was designed in four parts: [1]Air Force Specialty Code (AFSC) Composition of the GSO Population; Advanced Academic Degree (AAD) Requirements; Commander Status; Usefulness of program.

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[1] The Air Force Specialty Code (AFSC) is a unique four digit code which defines a specific job or career field in the Air Force.

Table 3.1 shows how the survey was sectioned into parts and the objective of each part.

TABLE 3.1

Sectioned Survey Questions

Sections	Questions	Objectives
Part 1	1 thru 5	AFSC Composition
Part 2	6 and 7	AAD Requirements
Part 3	8	Commander Status
Part 4	9 thru 14	Usefulness Program
Comments	15	General Comments

Part One: AFSC Composition of GSO Population. The questions in this part of the survey addressed the AFSC make-up of the survey population. It provided comparative information on the different careers fields entering the Space Ops career through the AFIT GSO program. The questions asked about the graduate's AFSC before and after AFIT, and their AFSC today. The primary purpose of the information gathered in this part of the survey was to provide insight on the composition of the GSO population and some history behind it diversity. It also provided an understanding of how the GSO program was able to attract and retain officers into the Space Ops career field.

Part Two: Advanced Academic Degree Requirements. Questions in this section were designed to determine how many GSO graduates enter AAD jobs after graduating from AFIT. It also determined how many GSOs have fulfilled their

AAD requirements. Research in this area highlights some of the unique problems presented to the GSO graduate in job placement and job options after graduating from AFIT.

Part Three: Commander Status. The objective of this part of the survey was to determine what percent of GSO graduates held the position of commander at the unit level or higher. The purpose of this question was to analyze facts and attributes of the commanders, and make conclusions about this group as a subset of the GSO population.

Part Four: Usefulness of the GSO Program to its Graduates. Direct questions asked the graduates to comment on how useful a master's degree in space operations has been to his career since graduating from AFIT. These questions were used to complete the first research objective of this thesis and to answer research question number one.

Question 12 asked the graduate to rate the usefulness of seven subject areas of the GSO curriculum on a scale of one to five. The seven course areas rated were: statistics/math, operations research/management science, system/project management, physics, spacecraft design/engineering, thesis work, and professional seminars/speakers

In addition, the questions in part four provided insight for curriculum changes and recommendations.

The final question on the survey was not used in a specific part listed above but was used as an avenue for the graduate to make any comment desired. These comments are listed in Appendix C.

The uncertainty in the number of correct addresses prompted concern about the required number of completed surveys needed to have an adequate sample size. The required sample size was calculated using the following equation:

$$n = \frac{N (z^2) p (1-p)}{(N-1)(d^2) + (z^2) p(1-p)} \quad (1)$$

where,

n = sample size
N = population size (200)
p = max sample size factor (.9)
d = desired tolerance (0.05)
z = confidence factor (1.96 for 95 +/- 5%)

The result of the equation was a calculated sample size of n = 82. Therefore, at least a 41 percent response rate on the surveys was desired. The actual number of respondents was 125. Thus, a 63 percent response rate was achieved.

In according with AFR 30-23, all surveys created to solicit information from active duty Air Force members must be reviewed and approved by Air Force Manpower Personnel Center DPMYMS, Survey Branch. The GSO survey was approved on 1 May 1994 and assigned survey control number 94-0014.

Step Three: Create a Database to Store Survey Data. The final step in phase one was the creation of a database to store and manipulate the survey data. The Microsoft Excel program was chosen due to its spreadsheet capabilities.

In summary, phase one used the descriptive approach to analyze the usefulness of the GSO program to the graduate's career after leaving AFIT. It was accomplished in three steps. Step one was to locate as many Air Force GSO graduates as possible. Step two was to survey the Air Force GSO population to determine the usefulness of the program. Lastly, step three was to create a database to store and manipulate survey data. The next phase address the methodology used to model the Space Ops career field and answer the second research question.

Phase Two: Developmental Approach.

The goal of phase two is to describe the methods used to investigate how many Air Force officers should be selected to enter the GSO program each year. To achieve this goal a Developmental approach was used. The Developmental approach uses trend studies to establish patterns of change in the past in order to predict future patterns (Isaac and Michael, 1981). To utilize this approach, data were gathered in the form of interviews and

statistics on the survey population. The interviews are discussed below. The statistics are discussed in the GSO Entrance Model section.

Interviews.

A series of taped interviews were conducted to characterize the present-day status of the GSO program. Each person interviewed was an Air Force officer who was directly involved with an aspect of the GSO selection process. Collectively, their responsibilities encompasses the "birth to death" process of the GSO's career. The names and responsibilities of these officers can be found in Appendix D.

A list of prepared questions was asked of each interviewed officer (Appendix E). The interviewee was invited to expound beyond the point addressed in the questions, which they did in each interview. Their responses provided insight in the construction of the GSO Entrance Models used in this research effort.

GSO Entrance Model.

The answer to the second research question is dependent upon successfully modeling the Space and Missile Operations career field (Space Ops). The methodology for the model is presented in five steps which are listed below.

1. Create a Model.

2. Describe the Model Process.

3. Derive a Formula for the Model.

4. Find the Distribution of the Variables.

5. Find the Current Ratio of GSOs to AAD Billets.

Each step is described in following sections. The first step in answering the question was to build a model of the Space Ops career field.

Step One. Create a Model.

A model was needed to illustrate the flow of officers in the Space Ops career field. It must show how officers enter the career field through Undergraduate Space and Missile Training (USMT) and exit the career field by virtue of retirement, separation, cross-training, or other reasons. The model must also show how some officers in the Space Ops career field enter AFIT's GSO program and than re-enter the Space Ops career field upon graduation. Particular emphasizes will be placed on the process where officers enter AFIT. Figure 3.1 illustrates this process and is called the GSO Entrance Model.

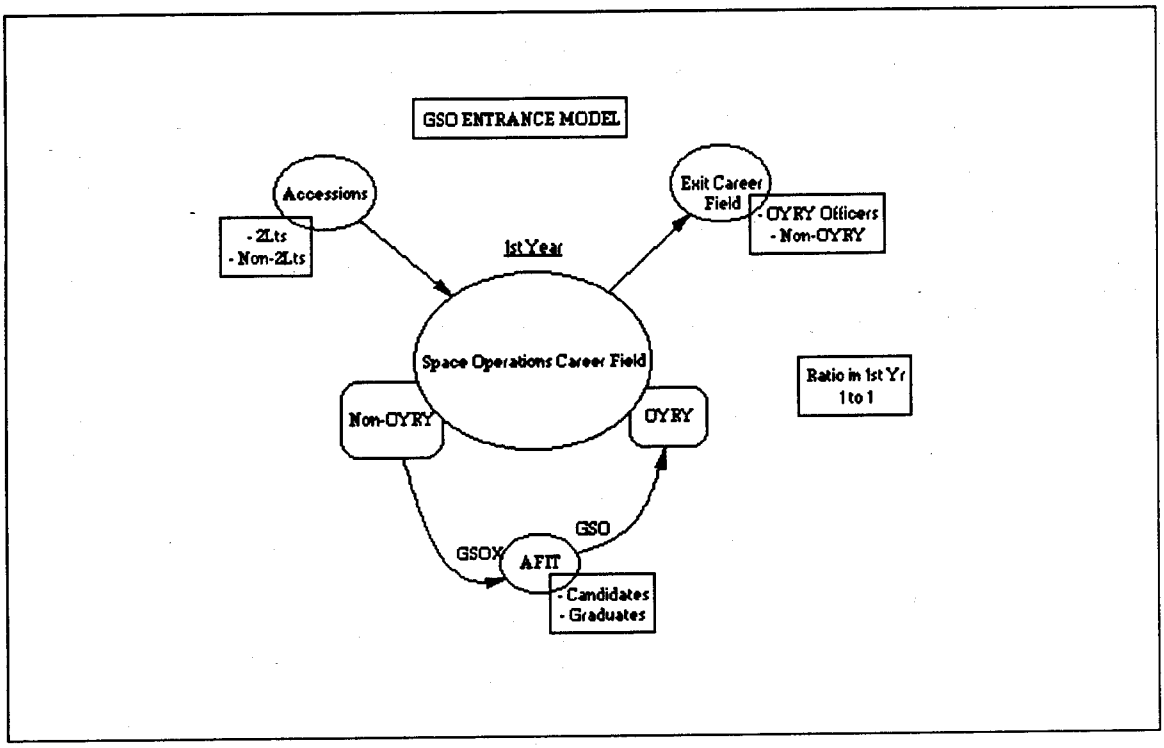

Figure 3.1 The GSO Entrance Model.

Step Two. Analyze the Model.

The structure of the Space Operations career field for this thesis will be an open-ended system at a steady state. That is, people will enter the system from one end and will leave the system through the other end. The number entering is assumed to equal the number exiting. Figure 3.1 shows the officers enter the Space Ops career field after graduating from the USMT school. No other means of entering the career field is assumed. Once in the career field, they are part of a system which has two kind of officers; OYRY and non-OYRY. An OYRY officer is one who has a master's

degree in Space Operations and is coded as such by HQ AFMPC. The non-OYRY officer does not have a master's degree in Space Operations and is not coded OYRY by HQ AFMPC. Each year, a percentage of non-OYRY officers are selected to enter the AFIT Graduate of Space Operations (GSO) program. They are represented in the figure by the symbol GSOX. Also, each year officers graduate from the AFIT GSO program and are now coded as OYRY. They are shown on the Figure 3.1 as GSO.

Within the Space Operations (Space Ops) career field section of the model the following assumptions apply:

1. The number of officers sent to AFIT each year is dependent upon the overall ratio of [2]OYRY (referred to as GSOs from this point on) to Advance Academic Degree (AAD) billets within the career field.

2. Only GSOs are assigned to fill AAD billets.

3. The number of AAD billets is a constant.

4. The number of officers entering the GSO program each year equals the number graduating each year.

5. Only non-OYRY officers enter the GSO program to fill AAD slots in the career field.

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[2] There are Air Force officers who are coded as OYRY, but did not attend AFIT. They will not be represented in this model.

5. Only non-OYRY officers enter the GSO program to fill AAD slots in the career field.

These assumptions were made to aid in deriving a formula to address the research objective.

Step Three. Derive a Formula of the Model.

Data for the model were provided by HQ AFMPC DPMYAF, Analysis Branch (Appendix E) and by the AFIT Registrar's office (Appendix F). The data set spanned a 10 year period, 1985 to 1994. It provided information on the number of officers who entered the GSO program (GSOX) per year and the number of empty AAD billets (EAAD) per year. In addition, the data included the number of GSOs in the Space Ops career field and the total number of authorized AAD billets in the career field. From this data an equation can be formed to express the ratio of GSOs in the Space Ops career field to the total number of AAD billets in the career field. This ratio is shown in equation 2.

$$\text{Ratio} = \frac{\text{GSO}}{\text{AAD}} \qquad (2)$$

Where,

GSO = the total number of GSOs in Space Ops

AAD = the total number of AAD billets in Space Ops

Two asumptions were made to aid in analyzing the model:

1. The current total number of GSOs in the Space Ops career field equals the total number of AAD billets in the career field.

2. The expected number of empty AAD billets in the career field each year is seven.

The assertion here is, by increasing the number of people who enter the GSO program each year while keeping the same number of empty AAD billets, the overall ratio of GSOs to AADs will increase. Equation 3 shows the new ratio.

$$\text{Ratio} = \frac{GSO}{AAD} = \frac{GSOX}{EAAD} \qquad (3)$$

Step Four. Find Distribution of GSOX and EAAD.

Data on the annual number of officers to enter the AFIT GSO program and the annual number of empty AAD billets were run through the BestFit statistical program to determine their probability distributions. The program gave a ranking of the 18 possible distributions. A normal distribution was selected for EAAD and GSOX despite the ranking of third and eighth, respectively. This adjustment was due to a limitation in the Excel program package used to run the Monte Carlo simulation in step five.

The Monte Carlo simulation was limited to the following seven distributions: bernoulli; binomial; discrete; patterned; poisson; normal; and uniform. Of the seven, BestFit ranked the normal distribution highest.

Step Five. Find the Current Ratio of GSOs to AAD Billets.

The distribution GSOX and EAAD were each run 100 times using a Monte Carlo simulation. Equation 3 was then employed to find the value of the ratio. Statistical analysis was performed on the results of the ratio's distribution. Its mean value was used to represent the current ratio of GSOs to AAD billets.

Summary

This chapter outlined how the research design was developed to address both research objectives. The methodology included a data collection plan and the appropriate data analyses needed to resolve the research problems. It was presented in two phases. The first phase addressed the first research question: How useful has the GSO curriculum been to its graduates since graduating from AFIT? The second phase modeled the second research question: How many Air Force officers should be selected to enter the GSO program each year? The results of the research methodologies used in this chapter were analyzed and documented in the next chapter.

IV. Findings and Analysis

Introduction

This chapter is divided into two sections. The first section explains the findings and analysis of the Graduate of Space Operations (GSO) Survey which was created to answer the first research question: How useful has the GSO curriculum been to its graduates since graduating from AFIT? The second section of this chapter discusses the findings and analysis of the GSO Entrance Model which was built to address the second research question: How many Air Force officers should be selected to enter the GSO program each year? The chapter begins with a brief description of the survey and some facts about the survey population.

Section One: The GSO Survey.

The 15-question GSO survey was divided into four parts for analysis. Each part will be addressed separately in this chapter. Although the first three parts of the survey did not directly address the first research question, they added depth to the overall research effort and illuminated several interesting statistics about the GSO program, its curriculum, and its graduates. The questions in part four of this section directly addressed the usefulness of the program to its graduates. The final question in the survey was not analyzed. It was provided for the graduate to make

any general comment he or she wished to make. These comments are listed in Appendix G.

GSO Population. Of the 200 surveyed Graduates of Space Operations (GSO) officers, there were 125 respondents, 60 did not reply, and 15 surveys were returned for having the wrong address. The minimum acceptable number of respondents was 82. The number of respondents exceeded the minimum by 43 responses. This equates to 63 percent of the surveyed population responding to the survey. Table 4.1 shows the demographics of the respondents.

Table 4.1

GSO Survey Respondent Status

Status	Number
Lieutenants	0
Captains	47
Majors	32
Lt Colonels	36
Colonels	1
Retired/Separated	9
Total	125

Fifty percent of the respondents returned their survey within two weeks after being mailed out. Each GSO class was represented with at least a 35 percent response rate. This response rate assures that the number of respondents per class represents a valid statistical sample from which analysis will be drawn about the class as a whole.

The lowest survey response rate, 38 percent, was from the first GSO class (GSO 82D). This low rate reflects the fact that 50 percent did not respond to the survey and 12 percent were no longer at the address provided. Overall, the survey served as a useful tool in gathering data and analyzing the responses of the GSO population. The following analysis shows the survey in four parts: AFSC Composition of the GSO Population; Advanced Academic Degree Requirements; Commander Status; and Usefulness of the GSO Program to its Graduates. The AFSC composition of the GSO populations discussed first.

Part One. AFSC Composition of the GSO Population.

Part one of the survey addressed three questions concerning the Air Force Specialty Code (AFSC) composition of the GSO population:

1. What was your AFSC before entering AFIT?
2. What was your AFSC after graduating from AFIT?
3. What is your AFSC now?

These questions were designed to analyze the crossflow of career fields into the Space Operations (Space Ops) career field and to determine how many of these GSOs are in the Space Ops career today. The term AFSC will be used to mean career field throughout the text.

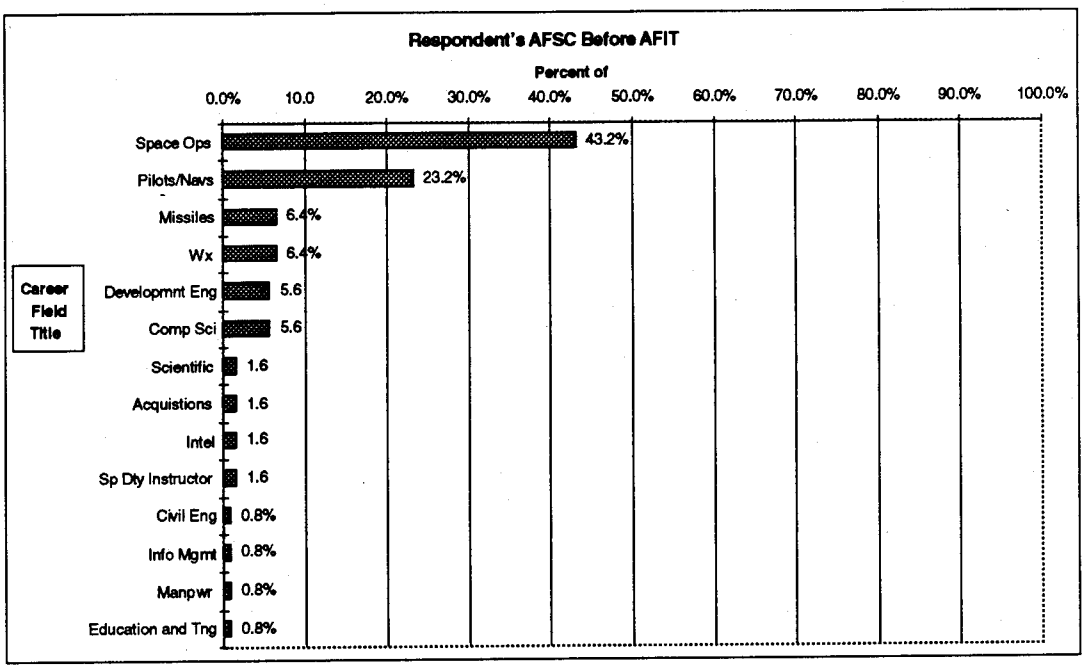

FIGURE 4.1 Career Field Percentages of Officers Entering the GSO Program

In response to question one, Figure 4.1 shows the career field (AFSC) composition of the GSO population before they entered AFIT. Fifty-four of the respondents (43%) entered the GSO program from the Space Ops career field. Although this number dominates the total number of career fields entering AFIT, the ratio of officers entering AFIT from Space Ops did not exceed the number of non-Space Ops personnel until 1988. The earlier classes (82D to 88D) were predominately composed of pilots, navigators, missiliers, and weather officers. According to HQ AFMPC Assignments Branch, the strategy then was to inject an initial cadre of officers into the Space Ops career field who had operational experience (Houchen, 1994). As the number of officers entering AFIT from the Space Ops career field grew, the

number of officers from other career fields was greatly reduced. Overall, 14 different career fields make up the composition of the GSO population. It is important to note that not all officers who entered the GSO program crossflowed into the Space Ops career field, as discussed in the second research question of section one. However, all 14 AFSCs are represented in the GSO population today.

The second question addressed on the survey analyzed how many officers actually entered the Space Ops career field after graduating from AFIT. Figure 4.2 shows that the number of officers entering the Space Ops career field after graduating from AFIT rose by 44 percent when compared to the number who entered AFIT from Space Ops (Figure 4.1).

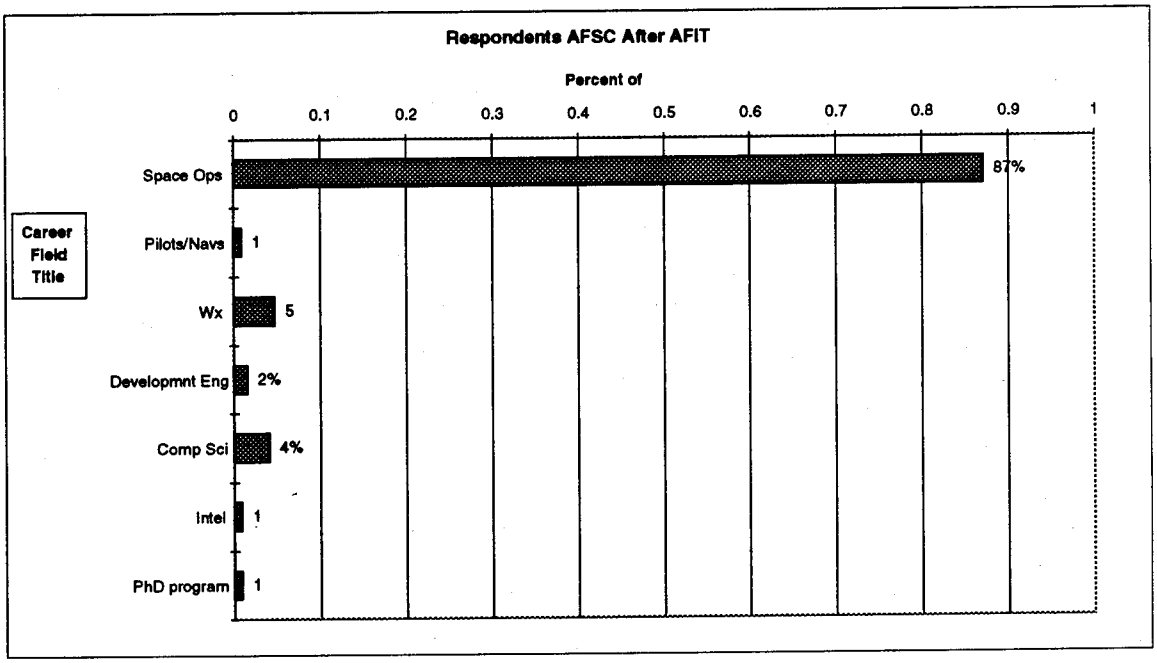

FIGURE 4.2 Career Field Percentages of Officers After Graduating from the GSO Program

This indicates that AFIT was a successful accessions tool for the Space Ops career field. It also shows success in getting officers with operational experience into the career field.

Two AFSCs were the exceptions to the successful crossflow of personnel. Seventy-five percent of the weather officer and 63 percent of the computer science officers returned to their original career fields after graduating from the GSO program. These GSOs were selected to attend the GSO program as a career broading measure (McConnell, 1994).

The objective of the third question in part one of the GSO survey was to determine how many of the survey population are still in the Space Ops career field today. Figure 4.3 shows that 69 percent (86) of the GSO population are still in the Space Operations career field today. The figure also shows that 116 out of 125 respondents are still on active duty.

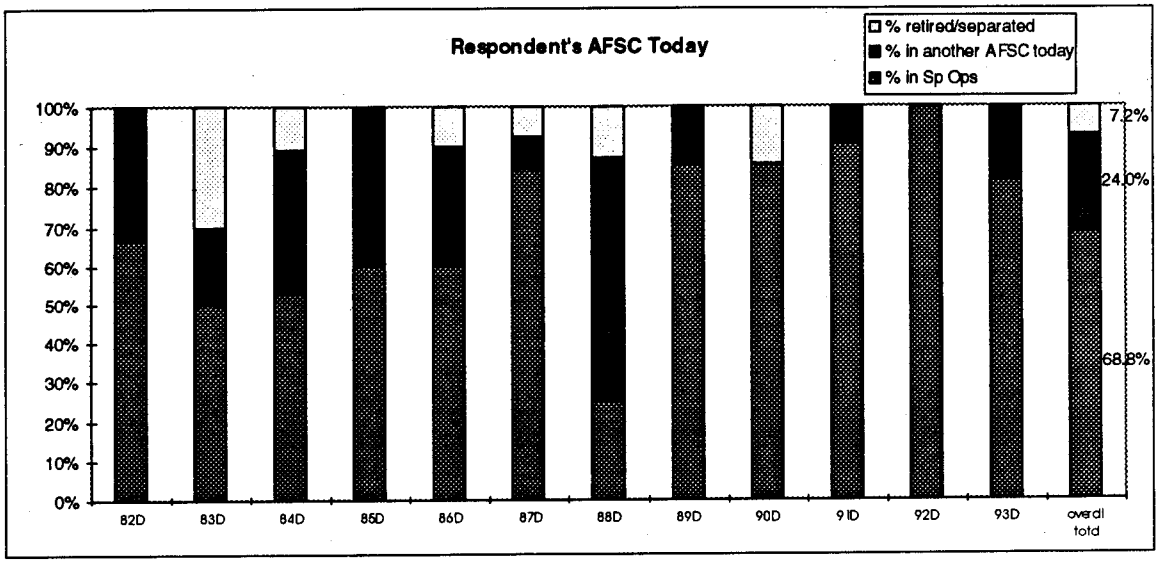

FIGURE 4.3 GSO Population Career Field Percentages and Status

The highest rate of officers no longer in the Space Ops career fields occurred in the classes prior to 89D. A high attrition rate for GSOs in classes from 82D through 85D was expected. Analysis of the group show that 98 percent of the respondents in those classes had obtained the rank of Major or Lieutenant Colonel. This is significant because 78 percent of those officers left the Space Ops career field to participate in career broadening assignments or returned to their original career fields. Figure 4.3 also shows that the class of 88D stands out as an outlier with the highest attrition rate of any GSO class, 50 percent. Analysis of the group revealed 86 percent of the respondents in that class crossflowed into the Space Ops career field. Thirty-eight percent of those returned to their original career fields after two assignments in the Space Ops career field.

Twelve percent of the class retired or separated from the Air Force.

In summary, part one of the GSO survey revealed that the program was effective in creating a diverse group of officers with operational experience to initialize the GSO program and enter the Space Ops career field. Once the career field became self-sustaining, the number of officers crowflowing into the career field decreased. Additionally, part one showed that 69 percent of all GSOs on active duty are in the Space Ops career field today. Part two of the survey will examine the Advance Academic Degree Requirements of the GSO graduate.

Part Two. Advanced Academic Degree Requirements.

The second part of the GSO survey focused on the Advanced Academic Degree (AAD) utilization obligation an officer acquires after graduating from AFIT. All AFIT graduates must complete their AAD requirement within two assignments after graduating AFIT (AFR 36-19, June 1990). Tracking graduates to insure they fulfill their AAD requirement within two assignments after graduation, proved to be a challenge to HQ AFMPC (Houchen, 1994). They also recognized there was a problem with ensuring graduates remained in an AAD job for the required three years. To combat these problems, the Assignments Branch has initiated a tracking system which will reduce the number of AFIT graduates who do not adhere to the regulation on AAD

requirements. Since the tracking system has a recent inception, the assumption made for this thesis effort is that if the GSO entered a job coded as an AAD billet, he is given credit on the survey for completing the requirement.

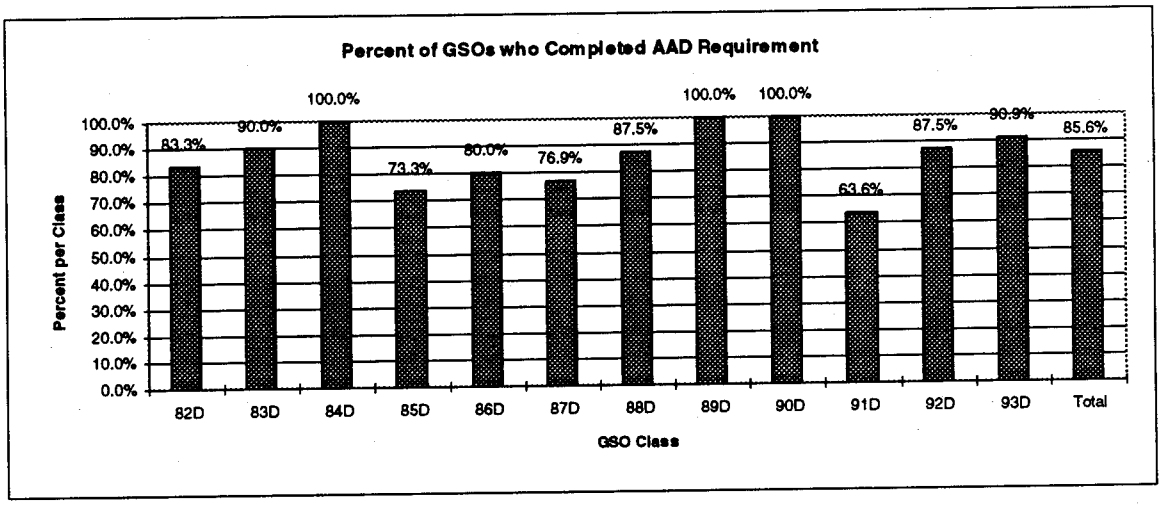

FIGURE 4.4 Percent of GSOs who have met AAD Requirement

Figure 4.4 shows 86 percent of the GSO population has met their AAD requirement. Although another two percent completed the AAD requirement after the second assignment, twelve percent have never held an AAD job. Table 4.1 shows the GSO respondents who have not held an AAD position.

Table 4.2

GSOs Who Never Completed AAD Requirement

GSO Class	Rank	Number of Years Since AFIT	Number of Assignments Since AFIT	Duty Status
82D	Lt Col	12	5	Active
83D	Maj	11	4	Active
85D	Lt Col	9	4	Active
85D	Maj	9	5	Active
85D	Lt Col	9	4	Active
86D	Maj	8	5	Active
86D	Maj	8	5	Active
87D	Maj	7	5	Active
87D	Capt	7	4	Active
88D	Capt	6	1	Separated
91D	Capt	3	4	Active
91D	Capt	3	4	Active
91D	Capt	3	1	Active
91D	Capt	3	1	Active
93D	Capt	1	1	Ph.D Student

The class of GSO 91D has the highest number of graduates who have not held an AAD job, four. Analysis of this class shows that each graduate has had at least two jobs in the Space Operations career field. However, none of the jobs were considered to be AAD positions. Although the GSO graduates program has a successful utilization rate (88%), the new assignment policy of assigning the GSO candidate into an AAD assignment upon entering AFIT, should increase the GSO utilization rate in the future.

Part Three. Commander Status.

Part three of the GSO survey asked the respondents if they have held the position of commander at the unit level or higher. Figure 4.5 shows that, on average, one out of five GSO graduates from 82D to 89D served as a commander after graduating from AFIT.

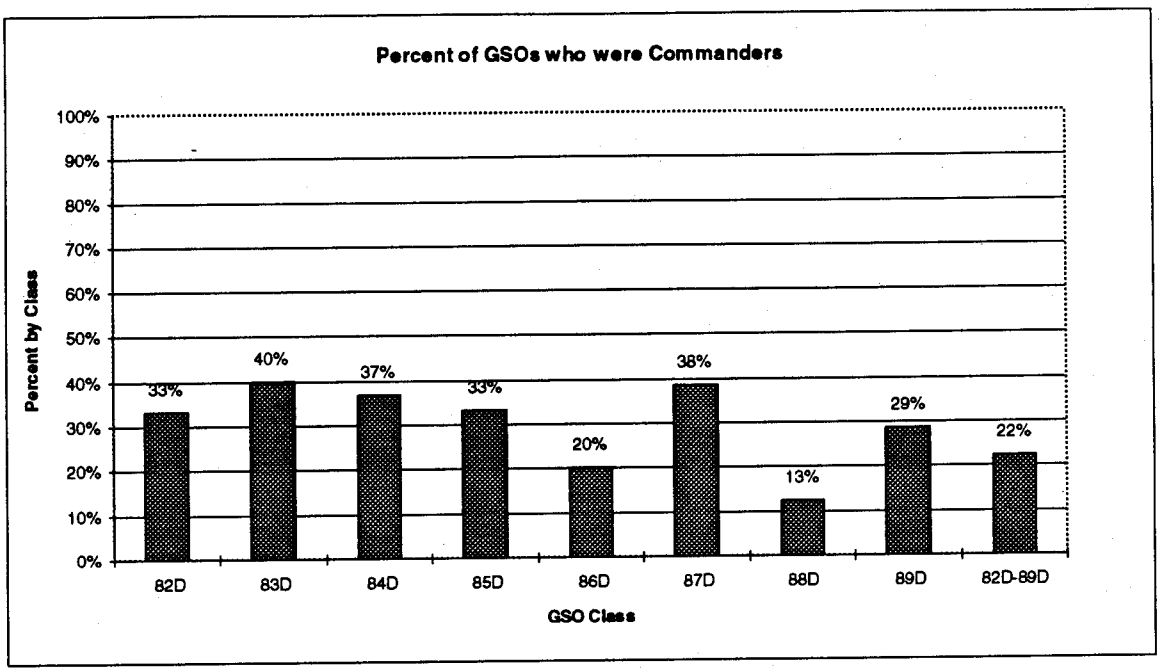

FIGURE 4.5 Percent of GSOs who Commanded at Unit Level or Higher

No one from GSO classes 90D to 93D has received a command job and they are not shown on the Figure 4.5. The figure also shows, with the exception of the 88D class, the percent of GSOs in a position of command remained relatively constant between 82D class and 89D class. Further analysis of the 88D class did not reveal why its commander rate was significantly lower than the others. No one attribute distinguished this class from the other classes. Table 4.3 lists some facts and attributes of the commanders.

TABLE 4.3

Lists of Facts and Attributes on Commanders

CATEGORY	VALUE
Percent of Lt Col	67%
Percent of Major	30%
Percent of Capt	3%
	100%
Percent who Commanded in Space Ops	78%
Percent of Commanders in Space Ops Today	67%
Average Number of Year out of AFIT before commanding	5
Average Number of Commanders per class	3

The table shows the rank GSOs were, by percentage, when they commanded, the percentage of GSOs who were commanders of a Space Ops units, and the percentage of commanders still in the career field today. The table also shows that the average number of GSOs to receive a command position is three and the average number of years between graduation and receiving a command position is five. Using a BestFit statistical package, the probability distribution of the percent of GSOs per class to become commanders was determined to be a normal distribution with a mean of .3 and a standard deviation of 0.00941. Therefore, for the class of 90D, one could expect the number of graduates who receive command positions in 1995 to increase from zero to three.

Part Four. Usefulness of the GSO Program to its Graduates.

Part four of the GSO survey directly addresses the first research question: How useful has the GSO curriculum been to its graduates since graduating from AFIT? Six questions were posed to the graduates to create an overall measured response. However, question 12 provided the best measure of effectiveness to perform statistical analyses and to draw conclusions. It asked the graduates to rank the usefulness of seven subject areas in the GSO curriculum on a scale of one to five. A one represents the lowest ranking and a five represents the highest ranking. The list of significance in the ranking is as follows:

One - very little use

Two - [moderately useful]

Three - useful

Four - [notably useful]

Five - very useful

The Box and Whisker Plot was employed as a visual aid to help in the analysis of the data. Analysis of each category follows a brief explanation of the box and whisker plot.

Explanation of Analytical Tool

Box and Whisker Plots. The box and whisker plot is an effective tool from which analysis can be performed. It is

a graphic method for displaying the 10th, 25th, 50th, 75th, and 90th percentiles of a variable and is commonly used to compare variable distributions (McClave and Benson, 1994). The percentiles are explained below. Graduates rated the usefulness of seven subject areas taught in the GSO curriculum. Their combined responses for each subject area are displayed in duplex box plots, which shows how useful graduates think a given subject has been to their career. The box plot depicts the degree of consensus among the participants concerning the usefulness of a subject. The boxed region, called the interquartile range (IQR) represents the majority opinion, no less than the middle 50 percent of the survey population ratings. In many cases the IQR represents a greater percentage of the total rating. The top of the box indicates the 75th percentile and the bottom indicates the 25th percentile.

The end of the vertical lines, or whiskers, extending above and below the box represent the 90th and 10th percentiles, respectively. They define the boundaries of the middle 80 percent of all responses. A star, above or below the plot, represents extreme ratings that fall in the top and bottom 10 percentiles of all ratings. The horizontal line inside the IQR represents the 50th percentile, or the median rating.

If no whisker appears either above or below the IQR, then rating in those percentiles have been absorbed by the

IQR. If no star appears either above or below the whiskers, then those rating are included inside the whiskers and their 10 percentiles are added to the whisker. As more graduates closely agree about a subject area, fewer stars and /or whiskers will appear outside the IQR.

The stronger the majority consensus in an area, the smaller IQR range. Conversely, the more diverse the consensus, the larger the IQR range. Increased whiskers and stars outside the IQR indicate strong divergence of the opinion among all respondents. Likewise, fewer rating outside the IQR indicate a greater consensus among the graduates as a whole.

Findings and Analysis of the GSO Curriculum's Usefulness

The following box and whisker plots depict the opinions of the GSO population concerning the usefulness of the GSO curriculum. The seven subject area of the GSO curriculum are listed below:

- Statistics/Math
- Operations Research/Mgmt Science
- Systems/Program Mgmt
- Physics
- Spacecraft Design/Engineering
- Thesis Work
- Professional Seminars/Speakers

The analysis of each plot opens with the median rating (Xm), the 50th percentile, of the subject area. It is the best indicator of the group's consensus. Figure 4.6 shows the box and whisker plots for all categories surveyed. An analysis of each category is provided after the figure. In addition, a series of charts accompany the analysis to aid in explaining the results of the box and whisker plots.

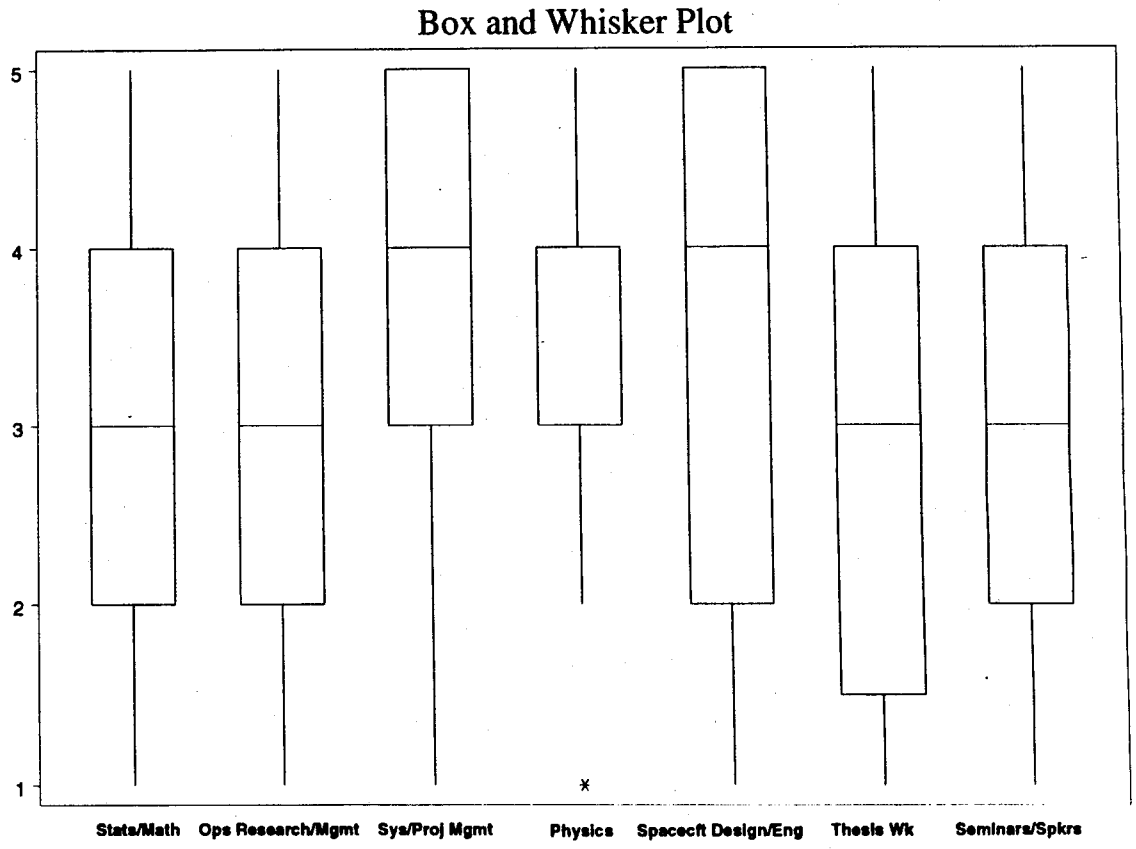

FIGURE 4.6 An Array of Box and Whisker Plots Analyzing the GSO Curriculum's Usefulness

Statistics/Math. (Xm=3.0) Figure 4.6 plot shows 55 percent of the respondents in this area fall within the IQR. This indicates that 88 of 124 graduates believed courses in statistics and math rated from moderately useful to notably useful in their career. In addition, Figure 4.6.1 shows that 23 of 124 responses (19%) rated the category to have little use and 12 responses (10%) rated it very useful.

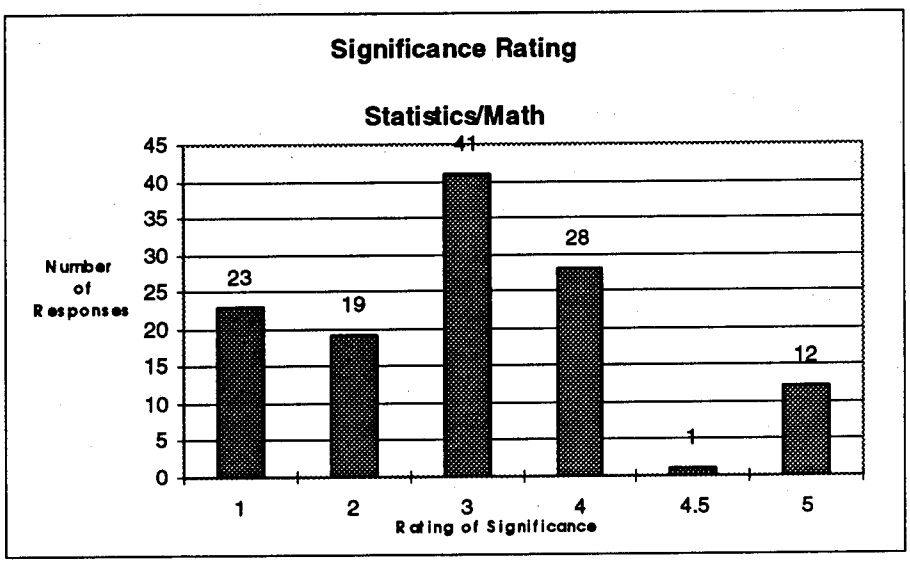

Figure 4.6.1 Number of Responses per Rating - Statistics/Math

The variation in the responses can be explained if we assume job titles are reflective of work performed in that job. Analysis of the respondents current job titles reveal that 29 percent of the respondents are currently in jobs that require some statistical work. Of the 10 percent who rated this category to be very useful in their career, all work in jobs in which they perform statistical analysis. Their jobs

include weather officers, vulnerability assessment team members, Ph.D. candidate, and AFIT professor.

Operational Research/Management Sciences. (Xm=3.0) Figure 4.6 shows that 71 percent of all responses (87 of 123) fall within the IQR. The range of the IQR shows the overall consensus of the respondents rate this category as useful to their career. Figure 4.6.2 shows the number of responses in each rating.

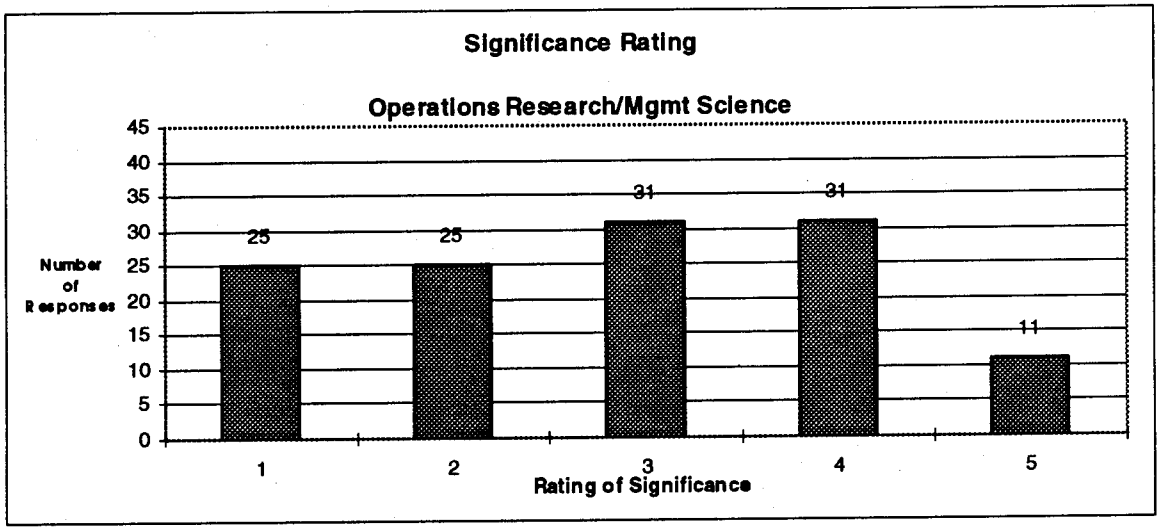

Figure 4.6.2 Number of Responses per Rating - Ops Research/Mgmt Science

The most significant findings show that only 11 people rated the Operational Research/Management Sciences category to be very useful (a 5 rating) to their career. The number of responses of 5's were not outliers but did warrant some investigation. Analysis of these respondents found that two

of the respondents received doctoral degrees in Operations Research (OR) and another seven selected OR as their specialty sequence during AFIT and used these skills in at least one job upon graduation. The last two people gave no explanation for their response.

Systems/Program Management. (Xm=4.0) The plot for this category has no upper whiskers indicating the IQR has absorbed the upper 25 percent of the rating. This accounts for the overwhelming 82 percent of the respondents forming the majority opinion in this plot. The length of IQR region indicates varying opinions. However, the opinions are skewed in the upper direction. Twenty-eight percent of the people rated this category as 5 and 28 percent gave it a 4. Twenty-five percent gave it a 3. This suggest that 102 of the 124 respondents rated this category as useful to very useful on the survey scale. Figure 4.6.3 shows 11 responses rated the Systems/Program Management category a 2 and 11 rated its a 1.

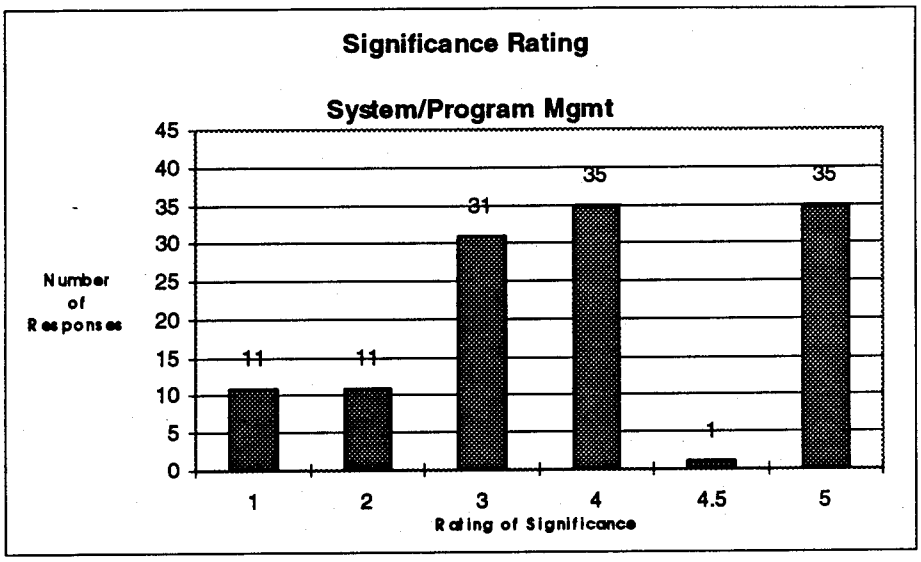

Figure 4.6.3 Number of Responses per Rating - Systems/Project Mgmt

Analysis of the responses in the IQR region revealed jobs in the Space Operations community requires the mid-level manager to possess skills in project management upon graduating AFIT. The consensus among the graduates suggests that more focus should be placed on Systems and Program Management courses because these skills are needed in most jobs in the Air Force.

Physics. (Xm=4.0) For this category Figure 4.6 shows that the median has been absorbed into the 75th percentile of the IQR. This created a smaller range of the IQR region which suggests a tighter consensus among the majority opinion. The survey group gave this category the second highest rating available, notably useful. As indicated on Figure

4.6.4, 30 of 123 respondents (24%)rated Physics as very useful or a 5 on the survey.

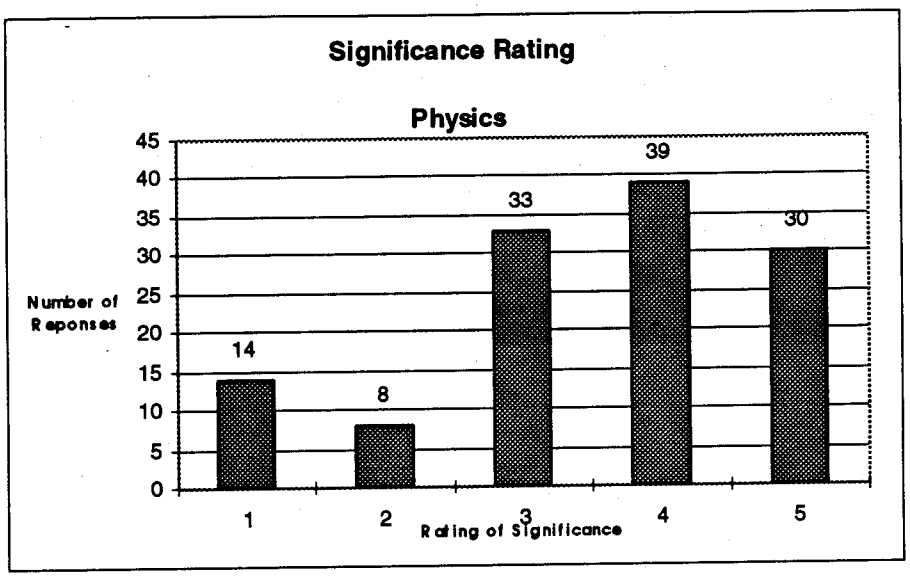

Figure 4.6.4 Number of Responses per Rating - Physics

The majority opinion (58%) was formed by the respondents who gave a rating of 3 or 4 on this category. Eight people rated physics a 2, and 14 gave it a 1. The overwhelming consensus in support of the physics category can suggest some bias on the part of the general GSO population. Analysis of the respondents who rated this category as a 3 or higher revealed that 60 percent selected physics as a specialty track while at AFIT. In fact, 49 percent of the entire GSO population chose physics as a specialty track during their masters program at AFIT. The star at the bottom of the plot means that 14 responses fell outside the 10th percentile. This suggests that the people who rated this category a 1 are possible outliers. Investigation of

the responses revealed this to be the case for two of the 14 people. These officers directly attribute their Air Force career termination to receiving a masters degree in space operation at AFIT, and they rated all categories as a 1. The other 12 had not worked in a job that required a physics background.

Spacecraft Design/Engineering. (Xm=4.0) The skewed elongated IQR in Figure 4.6 indicates a wide range of opinions among the majority. One hundred four of 122 responses (85%) form the majority opinion or IQR for the significance of this category in the careers of GSOs. This indicates that there was some latitude of opinion among respondents as to the usefulness of this category. Figure 4.6.5 shows the number of responses each rating received.

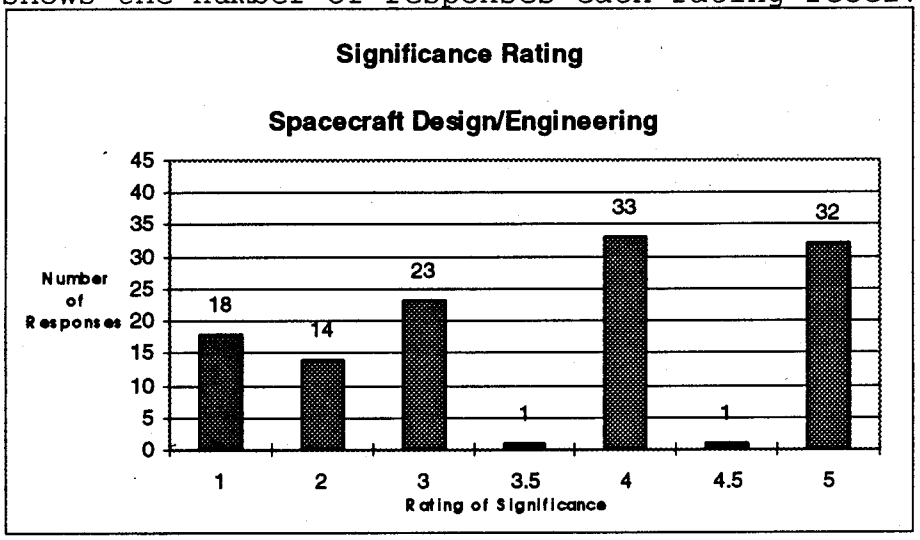

Figure 4.6.5 Number of Responses per Rating - Spacecraft Design/Engineering

Overall, Spacecraft Design and Engineering rated notably useful to the graduates career. An analysis of the responses that fell within the IQR did not reveal any conclusive evidence for the spread of opinions. Analysis of the 10th percentile, or lower whisker, revealed 15 percent (18 of 122) of the respondents rated this category as having very little use in their careers but offered no explanation for the ratings.

Thesis Work. (Xm=3.0) The plot shown for thesis work is skewed in the lower ratings. This indicates that although the rating varies, the general group consensus rated this category as moderately useful to their career. The IQR range indicates that 77 percent (96 of 124) of the respondents formed the majority opinion. Figure 4.6.6 shows that the highest number of responses rated this category a 3 or less.

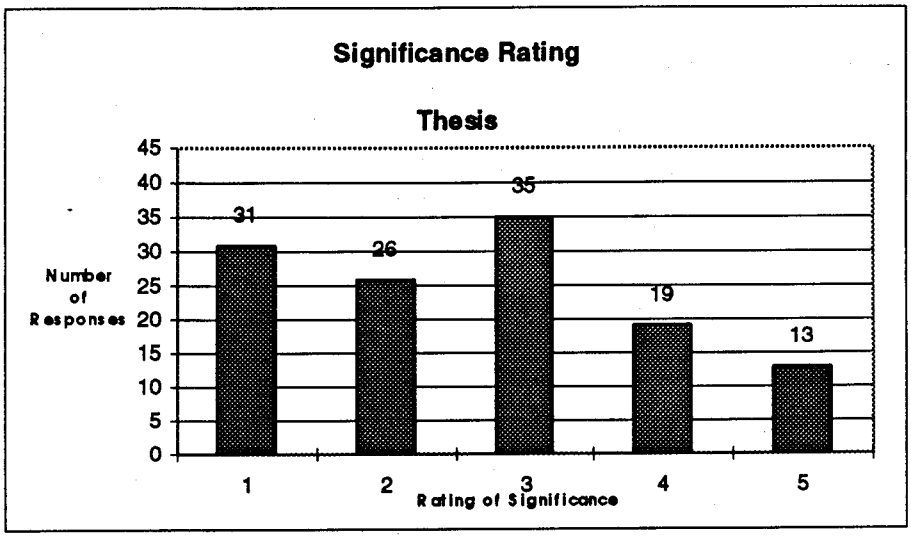

Figure 4.6.6 Number of Responses per Rating - Thesis Work

Analysis of the responses support the low rating. Twenty-six percent (32 of 124) of the total GSO population has had a job relating to the graduates thesis. Only 11 of the 92 respondents who rated the Thesis category as a 3 or less have worked a job in their research area. Of the 32 responses that fell in the 75th percentile or higher, eleven of 13 respondents who gave the category a 5 and 10 of 19 who rated it a 4 had worked on a job that utilized their thesis research. Two people stated that their ability to work through complex job tasks and then present their findings successfully can be directly attributed to their thesis effort.

Professional Seminars/Speakers. (Xm=3.0) This plot appears symmetric along its median. The IQR indicates that 72 percent of the responses rated Professional Seminars and

Speakers as moderately to notably useful in their career growth. Figure 4.6.7 reflects the IQR rating and points out that only 4 respondents find this category to be very useful.

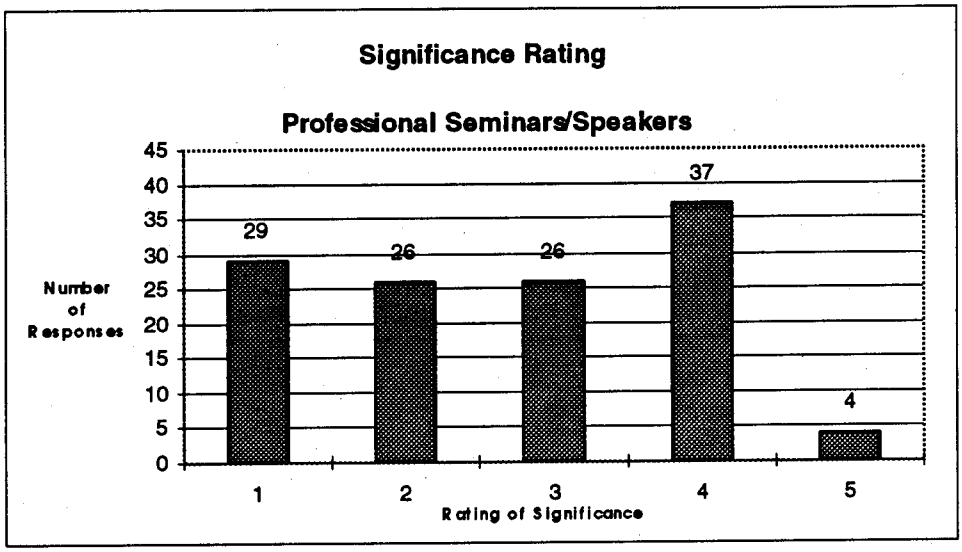

Figure 4.6.7 Number of Responses per Rating - Professional Seminars/Speakers

Analysis of the respondents who rated Professional Seminars and Speakers inside the range of the IQR revealed no correlation to explain the difference in scores. However, the four respondents who rated this category a 5 rated all categories of the GSO curriculum high. Therefore, due to their extremely small consensus group, their responses could be classified as outliers in this category.

Order of Significance of GSO Curriculum Survey Data

Table 4.4 lists all categories in their descending order of rated usefulness as an initial, consolidated view of the group's opinions. For example, the categories Statistics/Math and Operational Research/Management Sciences both have a 3.0 median rating and IQR of 2, but Operational Research/Management Sciences IQR has a 71 percent majority verses 55 percent. Therefore, Operational Research/ Management Sciences is rated more useful than Statistics/Math to the GSO graduate's career.

TABLE 4.4

Rated Significance of the GSO Course Curriculum

Category	Xm	IQR	IQR %	Mean	S.D.
Physics	4	1	0.58	3.48	1.28
Systems/Program Management	4	2	0.82	3.59	1.24
Spacecraft Design/Engineering	4	4	0.85	3.4	1.38
Professional Seminars/Speakers	3	2	0.72	2.68	1.23
Operational Research/Management Sciences	3	2	0.71	2.82	1.27
Statistics/Math	3	2	0.55	2.91	1.24
Thesis Work	3	2.5	0.77	2.65	1.29

LEGEND: "Xm" is the median rating. "IQR" is the range of the majority opinion.
"IQR %" is the fraction of participants who form the majority.

Hence, the ranking of the ratings shown on the table imply the most useful of the categories, according to the respondents, is Physics and the least useful is Thesis work.

Although the Operational Research/Management Sciences ranked fifth among the seven categories and higher than

Thesis work, Operational Research was repeatedly recommended for reduction from the curriculum by the surveyed population. Sixteen of the nineteen comments about Ops Research recommended this category be reduced. The dichotomy here is that there has been a 20 percent increase, between 1982 and 1993, in the number of GSO selecting Operational Research as a specialty sequence track.

The median ratings and the mean scores rate each of the categories as useful or higher to the graduate's career. Figure 4.7 responds to the research question, how useful has the GSO curriculum been to its graduates since graduating from AFIT?

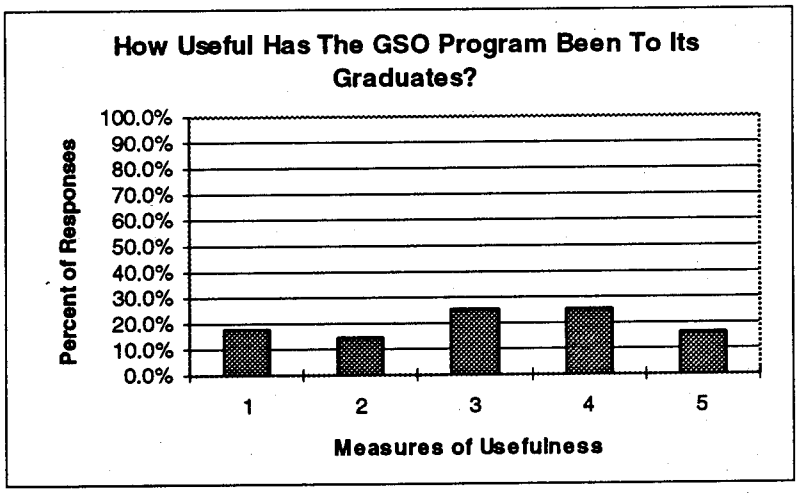

Figure 4.7 Overall Percentage of Measured Usefulness

It shows the overall percentage of each measure of usefulness. It indicates the overall rating of the GSO curriculum by it graduates to be useful or higher.

Other Survey Observations. A few other observations on the GSO survey deserve mentioning before the section summary. One of the questions in section four of the survey asked the respondents, what their specialty track was as a GSO? Topping the list of decline is the Physics track. It has fallen by 20 percent, from 58% to 38%. The reason for the decline could possible be related to the decline in military interest for Space-based weaponry (i.e. StarWars) research, at least at a high political level. While on the other end of the spectrum, Operations Research is at the top of the list of specialty tracks which has the highest increase, from 0% to 20%, over the past 12 years.

It is also worthy to note that although the categories discussed above have remained the same over the past 12 years, the courses within the categories have evolved. To measure how this evolution would effect the survey analysis, Figure 4.7.1 shows the GSO classes in four groups.

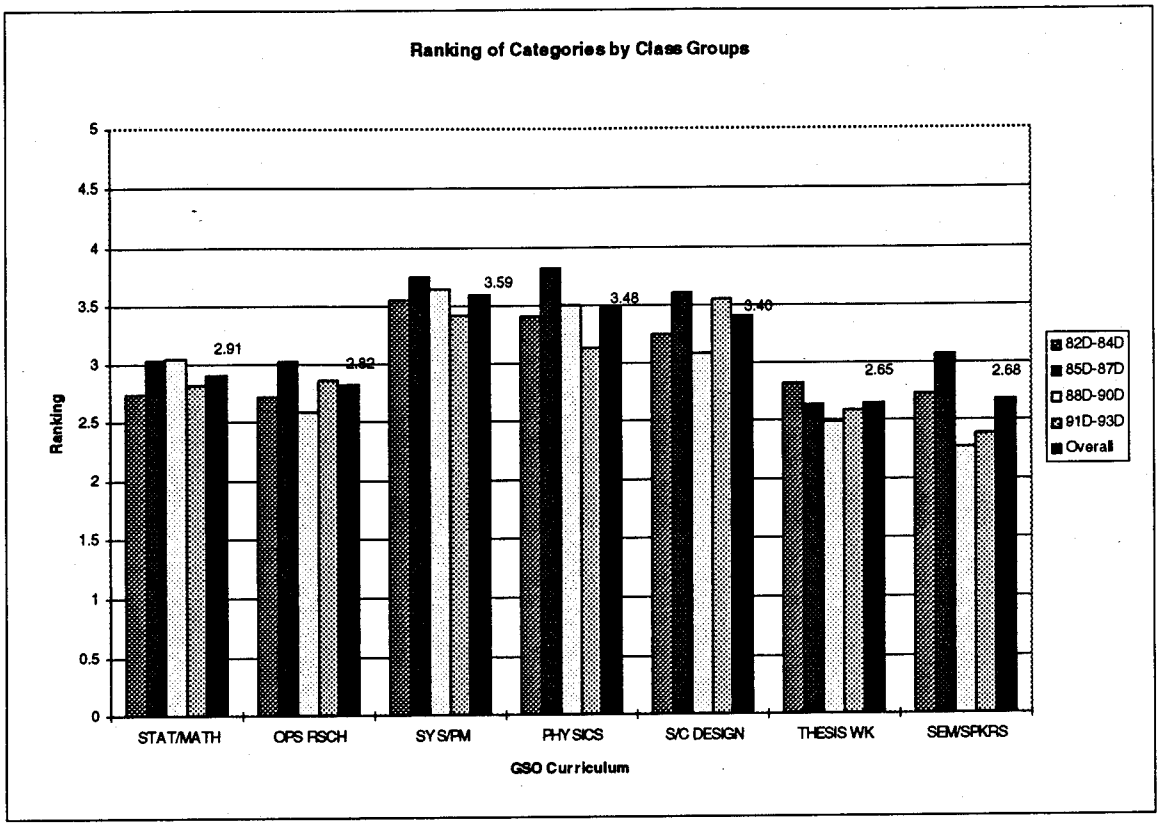

Figure 4.7.1 Ranking of Curriculum Categories by Class Group

Each group represents a specific period in the GSO program and are listed below:

Group I - 1982D - 1984D

Group II - 1985D - 1987D

Group III - 1988D - 1990D

Group IV - 1991D - 1993D

Figure 4.7.1 shows that although the courses have changed over the years, the mean rating of the curriculum categories remained relatively the same for all four groups. The exceptions are in the categories of Physics and Professional Seminars/Speakers. The larger variance in the Physics

category parallels the decline in the number of GSOs selecting the Physics specialty sequence track. The larger variance in the Professional Seminars/Speakers category could not be explained by survey data.

Section Summary. This chapter explained the findings and analysis of the GSO Survey. The objective of the survey was the answer the first research question: How useful has the GSO curriculum been to its graduates since graduating from AFIT? The survey was broken into four parts for analysis. The first three parts presented facts and points of interest about the GSO population. Part Four answered the first research question. It found graduates ranked the usefulness of the GSO program between useful and notably useful or between 3 and 4 on a scale of one (very little use) to five (very useful). The second section of this chapter presents findings and analysis to answer the second research question: How many Air Force officers should be selected to enter the GSO program each year?

Section Two: The GSO Entrance Model.

Introduction

This section of the chapter addresses the second research question: How many Air Force officers should be selected to attend the AFIT GSO program each year? The answer to this question could not be determined in this

thesis. However, to aid in future efforts which address this research question, some finding are presented and a model diagram is suggested.

Findings.

Statistical analysis of data on the number of officers to enter the GSO program (GSOX) each year from the Space Ops career field and the number of empty AAD (EAAD) billets each year. The results show that the data for GSOX was normally distributed with a mean of 18.4 and a standard deviation of 5.21. The data for EAAD was also normally distributed with a mean to 18.0 and a standard deviation of 4.62. A Monte Carlo simulation was run 100 times on the two distributions. A ratio of the simulation results was created to represent the number of GSOX to EAAD billets.

$$\text{Ratio} = \frac{\text{GSOX}}{\text{EAAD}} \qquad (2)$$

The results of equation 2 determined the ratio of GSOX to EAAD was approximately one to one. From these finding a series of diagrams were created using the following assumptions.

Assumptions.

1. The current total number of GSOs in the Space Ops career field equals the total number of AAD billets in the career field.

2. The expected number of empty AAD billets each year is seven.

Although both assumptions are not true, they help explain the following diagrams. According to historical data, the current ratio of GSOs to authorized AAD billets is 2.6 to 1 (Santoni, 1994). The expected number of empty AAD billets is the mean of its distribution, 18 per year. A recent change in policy at HQ AFMPC requires the number of officers entering the GSO program to equal the number of AAD billets projected to become available when the officers graduate. Furthermore, the total number of authorized AAD billets in the Space Ops career field will be reduced in the future. The following model diagrams represent the change in policy, an approximation of the total number of AAD billets, and the above assumptions.

Model Diagram.

Figure 4.8 shows the first year of the modeled system.

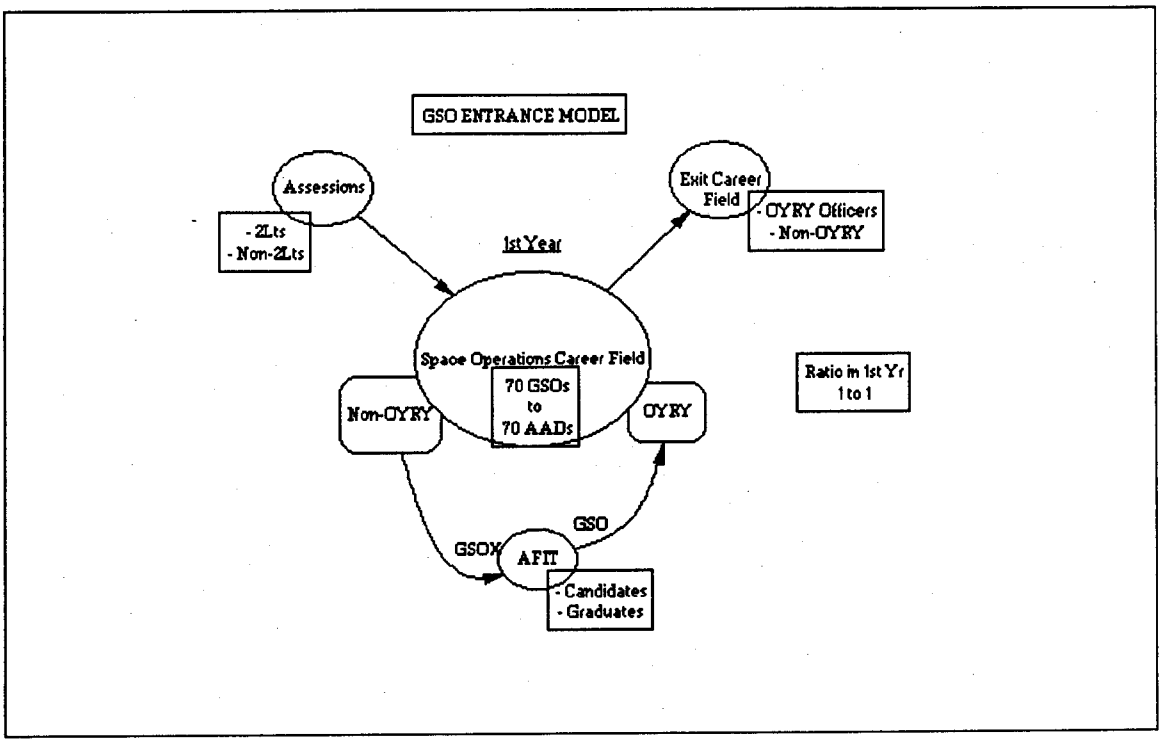

FIGURE 4.8 GSO Entrance Model Initial State - The First Year

The ratio of GSOs to authorized AAD positions is one to one, 70/70. Each year, GSOX enter AFIT and GSO graduate from AFIT and re-enter the Space Ops career field. Figure 4.9 shows the next iteration of the model

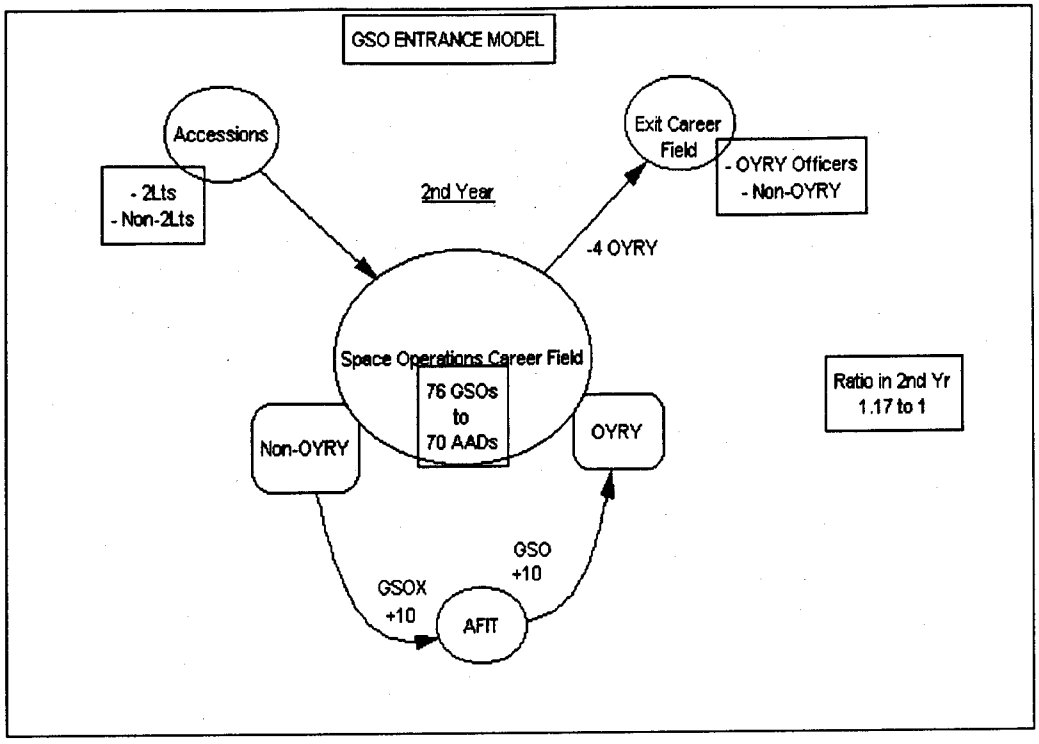

FIGURE 4.9 GSO Entrance Model - The Second Year

This figure also shows that if four GSOs leave the career field per year and if 10 officers become GSO and entered the Space Ops OYRY pool, the total number of GSOs increases to 76. Figure 4.9 also shows that 10 officers entered the GSO program to graduate the next year. With this cycle of events, the ratio of GSOs to AADs is now 1.17 to 1. The process is continued until the desired ratio is met. Figure 4.10 shows that the desired ratio is 1.5 to 1 and will be achieved within seven years.

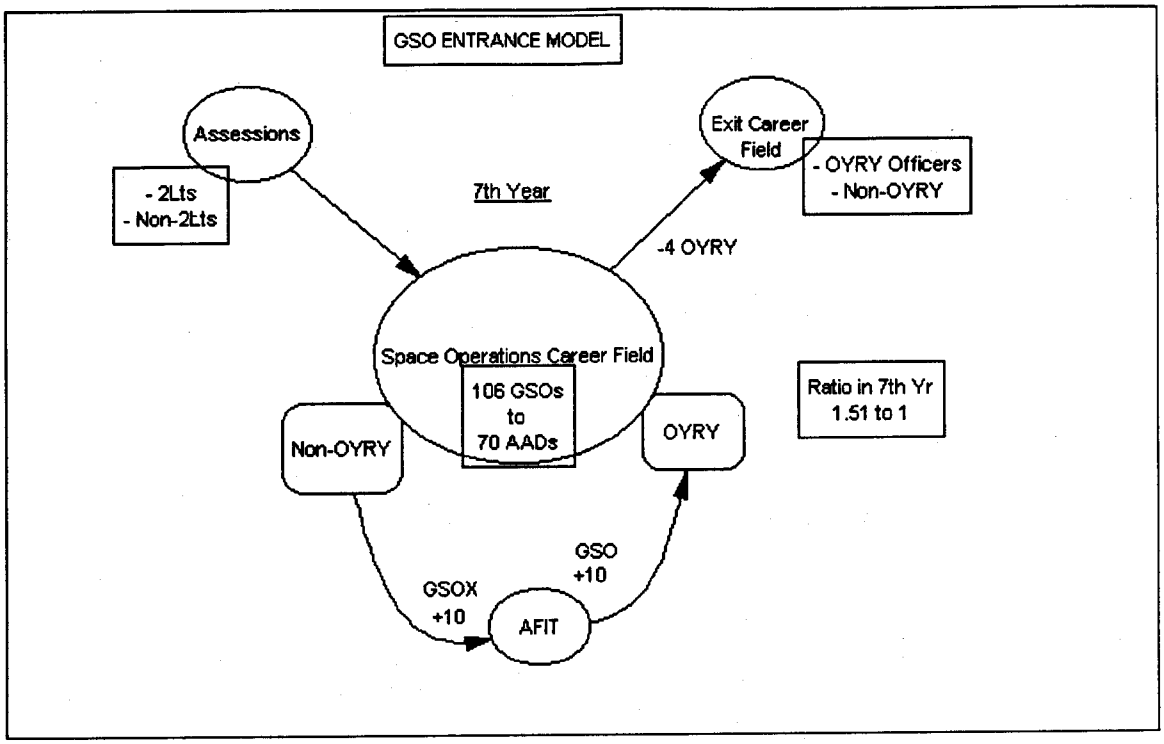

FIGURE 4.10 GSO Entrance Model Final State - The Seventh Year

Table 4.5 shows a matrix of responses which can be applied to determine the desired class size of the AFIT GSO program, given that the assumptions are met.

TABLE 4.5

Tabulation: How Many Officers Should Enter AFIT to Obtain a GSO to AAD Billet Ratio of 1.5 to 1.

	Expected Number of GSO Grads per Year					
	10	**9**	**8**	**7**	**6**	**5**
GSO to AAD ratio						
1st Yr	1	1	1	1	1	1
2nd Yr	1.09	1.07	1.06	1.04	1.03	1.01
3rd Yr	1.17	1.14	1.11	1.09	1.06	1.03
4th Yr	1.26	1.21	1.17	1.13	1.09	1.04
5th Yr	1.34	1.29	1.23	1.17	1.11	1.06
6th Yr	1.43	1.36	1.29	1.21	1.14	1.07
7th Yr	***1.51***	1.43	1.34	1.26	1.17	1.09
8th Yr	1.60	**1.50**	1.40	1.30	1.20	1.10
9th Yr	1.69	1.57	1.46	1.34	1.23	1.11
10th Yr	1.77	1.64	**1.51**	1.39	1.26	1.13
11th Yr	1.86	1.71	1.57	1.43	1.29	1.14
12th Yr	1.94	1.79	1.63	1.47	1.31	1.16
13th Yr	2.03	1.86	1.69	**1.51**	1.34	1.17
14th Yr	2.11	1.93	1.74	1.56	1.37	1.19
15th Yr	2.20	2.00	1.80	1.60	1.40	1.20
16th Yr	2.29	2.07	1.86	1.64	1.43	1.21
17th Yr	2.37	2.14	1.91	1.69	1.46	1.23
18th Yr	2.46	2.21	1.97	1.73	1.49	1.24
19th Yr	2.54	2.29	2.03	1.77	**1.51**	1.26
20th Yr	2.63	2.36	2.09	1.81	1.54	1.27

It gives a matrix of; expected number of GSOXs to enter AFIT and the number of years to achieve a desired ratio, given that the expected number of empty AAD billets is seven. For example, the table shows that if 10 officers are sent to the GSO program per year and seven AAD billets are projected available for the graduates per year then it will take 7 years to obtain the desired ratio. The assumption is that the current ratio of GSOs to AAD billets is one to one.

Section Summary. This section of the chapter addresses the second research question: How many Air Force officers should be selected to attend the AFIT GSO program each year? The answer to this question could not be determined in this thesis. However, some finding are presented and a model diagram is suggested to aid in future efforts which address this research question. The finding show that the current ratio of officers entering the GSO program to the number of AAD billets projected to be empty is one to one. The finding also show that the current ratio of GSO in the Space Ops career to the total number of authorized billets is 2.6 to one. A model diagram was presented and two assumptions were made to explain the diagram. The diagram and subsequent table show that a desired ratio of GSOs to AAD billets can be achieved, provided the assumptions are applied.

The last chapter gives some conclusions concerning the GSO program and makes some recommendations. Several of the recommendations became apparent during the research and some were presented by the GSO population through the survey.

V. Conclusions and Recommendations

Conclusions

The research problem was to focus on how useful the GSO program has been to the officers who earned master's degrees in Space Ops through AFIT. The research also sought to determine the appropriate class size for the GSO program to meet the future needs within the Space Ops career. A survey study was selected as an effective method of collecting data on the GSO population. It was also used to determine how useful graduate education from AFIT has serviced the needs of its graduates. The primary rationale for this methodology was to measure the consensus of the group in regards to the usefulness of the GSO curriculum. In addition, this method presented interesting facts about the GSO population as a whole and offered ideas for recommended curriculum charges. Final conclusions to the two research questions are presented below.

Research Question One. The answer to the question "How useful has the GSO curriculum been to the graduates since graduating from AFIT?" left little doubt that the majority of graduates believe the GSO program is or was an asset to their career. This conclusion is clearly indicated in Figure 4.7, where the majority of the graduates rated the usefulness of the curriculum as a 3.0 or higher, on a scale of one to five. The majority consensus reports; the most

useful parts of the GSO curriculum were the physics courses, the systems and program management courses, and the spacecraft design and engineering courses. The thesis area of the GSO curriculum received the lowest ranking of all categories. Operations research and management sciences ranked higher than thesis. However, sixteen of the 19 written comments on operations research recommended a reduction in this course area.

Research Question Two. The question was, "How many Air Force officers should enter the GSO program each year?" The answer to the question could not be determined within the time frame of this thesis effort. However, Table 4.5 suggested that if the long term goal of the career field is to obtain a specific GSO to AAD billet ratio, the number of officers to enter the GSO program each year can be estimated, (given a projected number of empty AAD billet per year).

The current ratio of officers entering AFIT's GSO program to empty AAD billets is about one to one. This ratio agrees with the current policy of HQ AFMPC. They currently request that HQ AF Air Staff award the same number of quotas or slots for the GSO program as projected empty AAD billets within Space Command. However, the total number of AAD billets will be reduced in the future. The consequences of this reduction will be fewer empty AAD

billets and fewer officers entering the AFIT GSO program. By considering a future ratio of GSOs to AAD billets, jobs now occupied by previous GSO graduates who graduated in larger numbers, can be manned in the future.

Recommendations

The findings of this research indicate that there are a few subject areas in the GSO course curriculum that can be either added or reduced to enhance the usefulness of the program to its graduates. Some of these recommendation are offered below.

For the AFIT GSO Curriculum. The Space Operations career field advanced academic jobs are diverse. The general job categories are: Space Launch; Space Surveillance; Early Warning; and Operations Support. There are representatives of the GSO graduate population in each of these areas. Therefore, recommendations from the survey population tend to be more job related and thus limited to one of the four areas above. However, the following recommendations were made simultaneously by graduates in more than one area of Space Command.

A recurring request was to add more classes in program/systems management. Twenty-two of 23 comments on program/systems management courses requested additional courses in this area. These graduates stated that, as mid-level managers, they used management skills more than the

engineering or operational research skills. Another recommendation was to add courses which presented real-world Space Command problems as case studies. The case studies could be in any one of the subject area of the GSO curriculum. These courses would be an attempt to keep the AFIT world connected to the Space Operations career field world on major issues faces the command and the Air Force. An additional subject area which received comments from more than one area of the career field was Operational Research (OR). Sixteen of the graduates requested a reduction in the number of OR courses, citing little use of the skills acquired. However, this recommendation is challenged by a 20 percent increase, between 1982 and 1993, in the number of GSO selecting OR as a specialty sequence track.

For Future Research. Research which examines how useful the AFIT GSO graduates have been to the workplace, from the supervisor's point of view should be addressed in future research. This effort could provide a more effective measurement of the usefulness of the GSO program to its user, primarily Space Command.

In addition, the issue of the optimal GSO class size should be studied further. Input from senior level officers and experts in the career field should be consulted for recommendations. This level of involvement could provide a consensus on the future role the AFIT GSO program is to play in the Space Operations career field.

A recommended methodology for determining the optimal size of future GSO classes is, the Delphi Forecasting Method. This method lends itself to reasoned group consensus on issues related to future requirements or needs (Helmer, 1968).

Appendix A: Correspondence with HQ AFMPC Worldwide Locator

Note: Social Security numbers have been removed from this letter - privacy act requirement.

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

FROM: AFIT/ENA Box 4291 (Capt Greg Beloyne) 22 Feb 94

SUBJECT: Locate AFIT Graduates

TO: AFMPC RMIQL (Worldwide Locater)

HQ AFMPC/RMIQL
550 C STREET WEST STE 50
RANDOLPH AFB TX 78150-4752

1. The Air Force Institute of Technology (AFIT) Engineering School at Wright Patterson AFB, is conducting research on graduates of the Space Operations Program. We are trying to locate as many graduates as possible. Please provide information on the current duty location and phone number for the names listed below. If an individual is no longer active duty, please provide any information possible to help us locate him/her. For ease of locating the approximately 200 names, we will organize our requests by the year the class graduated from AFIT.

CLASS OF 1982D	SS#
Andrusyszyn, John G.	
Baer, Leon R., Jr	
Boren, Robert I.	
Dieffenbach, Brian E.	
Holley, Robert C.	
Hunter, Michael L.	
Johnson, Robert A.	
Kelso, Thomas S.	
Lowery, Craig Z.	
MacDonald, Murray R.	
Millburn, Brian G.	
Puz, Craig A	
Rask, John D.	
Salmon, Richard T.	
Teigeler, Edward F., III	
Wagner, Lynn A., Jr	
Wysocki, Joseph	

2. If you have any questions, I will be your point of contact. I can be reached at DSN 785-3636, ext 1029. Thank you in advance for your help on this project.

Gregory J Beloyne

GREGORY J. BELOYNE, Capt, USAF
GSO/94D

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

25 MAY 1994

FROM: AFIT/ENS

SUBJECT: Survey of Previous Space Ops Graduates

TO:

1. The Air Force Institute of Technology, School of Engineering is conducting research on the role a graduate education in Space Operations plays in the Space Ops career field. We are surveying all past Graduates of Space Operations (GSOs) as a part of the research. The focus of the survey is to analyze how the careers of GSOs have developed and how well their graduate education has served the needs of Air Force Space Command and the Air Force.

2. Please take a few minutes to complete this survey and return it to us. If you have any questions are comments concerning our survey, my point of contact is Capt Greg Beloyne. He can be reached at DSN 785-3636 ext 1029 or commercially at (513) 255-3636 ext 1029. Please return the survey to us no later than 1 July 1994. Thank you.

GREGORY S. PARNELL, Colonel, USAF
Head, Operational Sciences Department

2 Atch
1. Survey
2. Envelope

AFIT Graduates of Space Operations (GSO) SURVEY June 1994

Rank Name **200**

Please use the back side of this form if you need more room.

1. What was your **AFSC** before entering AFIT?

2. What was your **job title** before entering AFIT?

3. What was your **AFSC** after graduating from AFIT?

4. What was your **job title** after graduating from AFIT?

5. What is your AFSC **now**?

6. Please provide a list of your jobs since graduating from AFIT (use back page if needed). Identify the Advanced Academic Degree (AAD) job(s).

Job Title	Unit/Command	Location	Month/Yr	AAD (Y/N)

7. Was the AAD slot created for you? When?
YES / NO / N/A

8. Which job(s) did you serve as commander?

9. Describe the job(s) that enabled you to use the knowledge acquired in the AFIT GSO program?

10. Which specialty sequence did you take as an AFIT GSO?

11. Have you worked in the subject area to which you wrote your thesis? If yes, describe the job(s).

YES/NO

12. From the categories provided, which courses proved useful in your career since graduating from the AFIT GSO program?

(On a scale on 1 to 5)

	very little		some		very useful
Statistics/Math	1	2	3	4	5
Operations Research/Mgmt Science	1	2	3	4	5
Systems/Program Mgmt	1	2	3	4	5
Physics	1	2	3	4	5
Spacecraft Design/Engineering	1	2	3	4	5
Thesis Work	1	2	3	4	5
Professional Seminars/Speakers	1	2	3	4	5

13. What courses would you like to see added to the AFIT curriculum that would enable future GSO graduates to be better prepared for future Space Command assignments?

14. In your opinion, how has your AFIT Space Operations degree helped your career?

15. **ADDITIONAL COMMENTS:**

Appendix C: GSO Survey Question 15 - Additional Comments

Class	Response
82D	Stress technical leadership not management; stress multi-computer literacy vice programming in multi-language; stress that space ops leaders must speak in non-geek language to war fighters; we must get this stuff out of hands of PhDs onto battlefields!
82D	Make sure they get a dose of the POM process in systems/program mgmt. It's getting harder to get selected for PME--some may miss that exposure.
83D	I'd strengthen the technical/engineering aspects of the course and de-emphasize Ops Research and PPBS.
83D	I was disappointed at the lack of program reviews especially including GSO grads. I was very upset with the two training reports given while there. I was also very displeased with the unprofessional treatment of students. It seemed to me that all too often the faculty and staff forget about the "AF" in AFIT. There was academic rank and academic arrogance that overshadowed the fact that students are career military professionals.
83D	I am currently in the TX ANG because I could not find a reserve slot in Space Operations. My AFIT experience is still pertinent to my current job.

84D The Acquisition course we took was too high-level. It talked about SONs, budget cycles, etc.
Captains really don't get involved with this aspect of system management.
They are more likely to become involved with various system engineering aspects of a specific program. Therefore, I think it would be better to teach the project cycle and its phases.
Time also needs to be spent learning about the organization and responsibilities of US and AF Space Command and the other players in the US space efforts.

84D Give me a call at DSN _____.

84D I loved the program, but [am] glad I don't have to do it again.

84D Recommend Comm Officers not attend the GSO program. Had I to do it again, I would have asked to attend an EE program.
In early 83, when I was applying for the GSO program, I was told I would be changing to the 20XX career field; the decision to keep me and _____ in Comm was made after we accepted (or maybe after we began school).

84D I can provide a lot of background on AAD billets from my MPC time. It was one of my bigger concerns. DSN _____.

84D I believe the AFIT course was one of the best things I've done while in the AF.

84D I entered the program as a 2Lt (18 mos active duty).
That might have been too young, as I wasn't able to apply the many diverse subjects until later in my career, when my memory on how best to apply the knowledge is beginning to fade (e.g., OR /analysis techniques).
Please provide feedback on the results of your survey.

84D Emphasize physics, spacecraft design/engineering, stat/math, astrodynamics and system/program management. De-emphasize ops research.

84D I moved from WPAFB to Houston and worked (in Houston) for 4 years. I separated from the AF in Dec 88 to take a job with General Electric.
I have continued my AF involvement as a logistics officer with the Air National Guard and now as a Comm/Computer officer.
I hate to admit that the physics work has not been very useful but that the OR has helped many times both on active duty and now in the Guard.

85D Space Ops was my 3rd choice when I applied to AFIT fresh out of the Academy.
I think space is an interesting field, but it didn't do much for me in my AFSC in the AF.

85D One of the biggest benefits from AFIT is the relationships I established with my fellow classmates. I have continued to work with them as we all moved on to new jobs/assignments. That "networking" is invaluable.

85D Keep up the good work Greg!!!!!!

85D Degree helped to get jobs but the knowledge from that education was not utilized in the job.

85D I thought the AFIT space ops degree was great.
It was a "real world" degree that combined "hard" engineering and science with "fuzzy" program management classes.
I was given the freedom to pursue areas of special interest, and the course schedule allowed me enough time to devote extra study to difficult and/or interesting classes.

85D I struggled like hell to make it through, but I'm sure glad I went--and graduated.

85D Part of the problem with looking for an AAD job is that there seems to be no published list of where those jobs are. If grads had access to this, pairing of talent and slots would occur more readily.
Good survey! I would like to see a summary of your results/conclusions. Feel free to call.

86D Continue to get rated people into GSO [program]. 1) We have rated guys in space who don't have a clue! 2) Some space ops people I've seen go GSO will definitely not make it to AF leadership positions. Tracking GSOs is a good idea!
I'd be interested to know if there are any general officer alumni. Also, promotion rates and retention vs. population of officers would be interesting.

86D I value my experience at AFIT very much. I feel I learned a great deal of useful information in spite of the fact I haven't applied as much as I would have liked.

86D The AF needs to do a better job of assigning GSO grads to jobs in which they will use the education received.
The GSO program provides a great education in space operations, but if you do not utilize that knowledge within the first assignment after graduation you lose it.

86D I'd do it all over again.

86D As you can see from #12 above, the thesis did little for me except chew up hundreds of hours.
I would have preferred the opportunity to learn something of value such as satellite comms, satellite design, launch ops (follow-up to Propulsion course).

86D Because of this 2025 AFSC, I was assigned to CM AFB as an orbital analyst and had no background or training in it, but HQ AFSPC thought I did because of my AFSC.

86D I believe that the GSO curriculum is the type of program we should be offering to our people. As Air Force officers we are responsible for leading and managing efforts, not "engineering" them.

87D Great program. Do not reduce engineering emphasis. The technical background is required to interact with the many contractors supporting AF Space Operations.

87D Retain and enhance the program. Develop and offer a course in space warfare with field trips or guest lectures.
Both with DSP during Desert Storm and with Milstar I have been called upon to be innovative in system integration, optimization, tuning, etc. GSOs should lead in the integration of space systems with operational, combat units.

87D The GSO degree gives you the foundations to perform within HQ AFSPACECOM. However, young captains, as I was at the time, need to be warned about the extreme political situations that arise at HQ levels.
It requires one to use more than education and more or less "keep his hear to the ground" to find out what is really going on. I spent at least 50% of the time dealing with political situations.
My education allowed me to develop adequate defenses in these situations.

87D Some very important parts of the program included the "space policy" course, contracting course & thesis effort.
The latter certainly provides a meaningful graduate education experience; the "OR", Astro, Comm, Propulsion & Physics courses required as part of the core GSO curriculum should all be maintained; it was an excellent program which I hope will continue.

87D *Lots of the math wasn't needed.
*Beef up the acquisition course--dealt with it all the time.
*Maybe have just 2 main tracks: one more technical for those going to labs or technical site jobs, and one more for field graders going to staff and mgmt positions.

87D I've been lucky, the GSO program has allowed me to get the jobs (and thus promotions) which have been critical for my career. I've been able to directly apply much of the GSO physics track information to all my jobs.

87D There seemed to be a staff "attitude" that student were not "humble" enough. After all, the AF was paying for the most wonderful opportunity of my life.
The other staff attitude was, "Students never seem to be taking enough credit hours."
I think there were too many credit hours for a master's degree.
I had a math professor say he wouldn't help me because "I was a grad student now."

87D It might have helped after retirement if space industry wasn't taking such a financial hit.

87D In my experience, the Air Force "buys" its technical expertise by contracting out for it.
While in theory qualified scientific officers are required to keep an eye on the contractors, in practice this too is "hired-out." In the space business this latter requirement is taken care of by the "Aerospace Corporation."
The Aerospace Corporation is in effect civilian consultants in the space business.
Additionally, at Onizuka, the actual work is done by contractors, which puts the officers in the position of being little more than contract monitors in their day-to-day activities.
This resembles an AFPRO position more than anything else in the Air Force. Of course, the situation is different at Falcon AFB.

88D At HQ AFSPC, I occupied an AAD billet as a missile warning systems staff officer (mostly using my experience at Shemya).
I did essentially the same work as other non-GSO captains and majors around me. There was a brief time where I was involved with a contractor's effort to simulate the US launch infrastructure. My previous civilian job experience using GPSS V and the AFIT simulation course helped some.
At HQ US Space Command, my job as an operations plans officer calls for the GSO degree, although I have no idea why.

88D My thesis has disappeared. Got back to the AFIT library a year ago. There's no record of it. I tried to track down former Capt Jim Targove, my advisor, without success. Any ideas? Thanks.

88D I greatly enjoyed AFIT.

88D I personally enjoyed the GSO Program. From an educational perspective the [AFIT] MS [program] is orders of magnitude better than the paper mills that currently churn out master's degrees for the Air Force.
From a career perspective, however, I do not see how the master's degree helped more than an MBA from Troy State. That's a problem with the system, not AFIT.

88D Waste of taxpayers' money. Program is useless. Not one of my classmates has anything good to say about it.

89D My DSN is _____. Call me if you need any further information.

89D Recommend the GSO program be realigned to fall within the physics (or astro) departments. It fits better in those depts rather than the Ops Research it's under.

89D Separating from Air Force service on 1 Oct 94. Expect my space operations masters to be of real benefit in my chosen civilian career. There was a great deal of emphasis on operations research & decision science in my GSO program.
Good for studies and analysis types, but I don't think it's very useful to an AFSPACECOM operator.

90D My job as a civilian at JPL crosses all disciplines. My GSO degree has been invaluable. I could have used a planetary science class.

90D Your thesis should look at whether Space Com AAD people are placed in jobs [where] they can use them. My experience [is] they do not.
The command should introduce GSO[s] to a process[--]surveillance, control or launch ops[--]and then let them be free to do what they believe would be productive.
Too many times they are put in structured jobs and are not free to use their ability to improve a process. They get put in structured jobs [with] no latitude. Why did Space Com start a GSO program if they don't use the product well?

91D I signed up for a active duty service commitment of 3 years served concurrently. My records show that a commitment of greater that 3 yrs served from graduation has been levied against me.
Additionally, there [is] a dearth of AAD slots available. When I transferred to the command post, I had forgotten about the AAD slot and lost it. It has since been eliminated. MPC has said (in effect) "we can't help you find one, look for yourself."
Given these problems, I can't recommend AFIT to anyone, because, if they don't get an AAD slot ASAP, it limits their career choices.

91D As the enlisted conversion continues in satellite operations, I see less and less need for the GSO program

91D 1) Perhaps a computer course (especially on how to use the Sun) if not already in place would be helpful. Along with a "classified" computer.
2) May want to ensure that the program covers the basic elements that are needed in accomplishing the command's 5 mission areas and HQ staff work. And with the emergence of trying to incorporate space into other systems/services, how this should/could be accomplished may also need to be addressed.

91D Need to know assignment before going to AFIT. Can then tailor specialty sequence and thesis to next job. AFSPC needs to do a better job of defining AAD slots that really require master's degree.

91D I think a number of potential thesis topics are available to be worked through the Space Warfare Center. We deal with national, DOD, and commercial space systems and could be a source for some very interesting thesis projects.
The Naval Postgraduate School is coming out and I think AFIT should also visit.

91D Has increased my overall knowledge of space, space law and space policy and prepared me for increased responsibility in the AF, ideally as a future commander. My degree gave me invaluable experience in an AF environment.
I wouldn't trade it for anything.

91D How about incorporating simulator work in some courses--sort of hands-on? Space docking, maneuvers, planning launches to efficiently put together/maintain a space station (like the "Space Max" software program)
a) the robotics guys have an arm b) weightlessness testers have "The Chair" c) computer support/programs/graphics phenomenal

91D AFIT, MPC, Space Command, and other commands should work together to ensure there are good available billets for GSO graduates,
re-evaluate present AAD billets and establish new ones,
or make the process of getting an AFIT requirement waiver or billet created easier.

92D There should be less emphasis on OR in the GSO program even though the GSO program is in the OR dept.
Specialty tracks should be created which are in line with the various space career paths (e.g. surveillance, missile ops, satellite operations, launch, etc.). Instead of an OR and specialty track, I suggest a selection of two specialty tracks!

92D I thoroughly enjoyed my time at AFIT. The instructors were outstanding, the coursework was challenging, and my fellow students were highly motivated. The completion of my thesis research and degree were very gratifying!
I think the GSO program produces an officer with an excellent mix of engineering and ops research/management skills.

92D Remove the operational sciences flavor from the curriculum and give it a strong space focus. The curriculum is just too diluted and lacks the capability to provide space-related thesis topics.
There should be no specialty sequences rooted in other departments. Without a stronger Space flavor it is hard to recommend the program to up and coming young company grade officers.
Yes, I would be willing to come there and sit on a panel to restructure the program.

92D I feel that it is an excellent program that needs to continue. The benefits of the education make it a worthwhile program even if it doesn't directly relate to on-the-job actions--very few educational programs do.
It would be useful to educate commanders in Space Command what skills an AFIT grad is being taught.

92D In my opinion, based on conversations with many recently and not-so-recently graduated students of the GSO program, there are no firm requirements, by position, for GSO graduates. The GSO graduate is a generalist, like most all officers in AFSPC.
If AFSPC requires a 13SXX with a special education, require the specific education (i.e. Astro Engineering, Ops Research, etc.).
If, however, AFSPC wants a general core, or cadre, of its officers to have a more extensive, but general, education in space-related topics, then the GSO program is the correct method of getting those officers. I believe that AFSPC should have both. Send 13SXXs to AFIT for whichever degree is really needed (i.e. Astro, GST, Business, etc.) for a particular job, but also develop a group of officers with the GSO degree.

93D It is too early to have applied much of my AFIT education. However, I can confidently predict that in my current assignment and my next assignment and maybe even in the assignment after that I will not apply the vast majority of my AFIT education.
Unfortunately, I was caught in the officer overage caused by mandated personnel and position cuts and reorganization. I do not feel this has hurt my career, just that the majority of my education may be largely wasted in the meteorology field.

93D I feel that the program should emphasize the OR and Program Management and reduce (or eliminate) the technical specialty tracks. If a job requires an Aero Engineer or an Elect Engineer then a grad of one of those programs can fill the slot.
I think the GSOs can best help the Air Force by taking programmatic, management, and OR positions at the Wing or Command level. The degree does not help (as much) a person on a crew working ops.
I feel that my education is helping me a great deal as a project officer (and would help even more if I had a better Program Management background).

93D #1 Drawback of the program: too much Ops Research never to be used again.
#2 Drawback: not enough sat comm, remote sensing, and other fundamentals on systems. OPER 592 (or whatever it was) was much too general--should be expanded into several courses.
#1 Addition to be made: add FSST/STC courses/add anything else related to ops or systems

93D I turned over directly into the Eng. Phys. AFIT PhD program; switched AFSC to physicist. I will be here at AFIT for 3 more years.

93D Many may complain of the GSO program's lack of specific focus, but I find the diversity of subjects to be of high value in my current job. As I told Lt Col Kelso before I left, I wouldn't want to take on a job like this without my GSO education.

Appendix D: Names and Job Titles of Interviewed Officers

Note: * indicates the officer is no longer working in that position.

Headquarters Air Force

Rank	Name	Duty Title	Officer Symbol
Lt Colonel	Esther McConnell	*13SX Career Field Functional Manager	XOFS
Major	Thomas Bouthiller	13SX Career Field Functional Manager	XOFS

Headquarters Air Force Manpower Personnel Center

Rank	Name	Duty Title	Officer Symbol
Major	Bonnie Houchen	Chief, EUCOM Jt Dty Assignments Branch	DPMRJF
Major	Pam McCollum	Chief, Military Education Branch	DPMRJE
Major	Debbie Vuncannon	*Assignments Officer, Sp and Missile Ops	DPMROOM
Captain	Matt Santoni	Manpower Analyst Officer	DPMYAF

Headquarters Air Force Space Command

Rank	Name	Duty Title	Officer Symbol
Capt	Dan Jordan	Chief, 13SX Functional Mgmt Section	DOTT

Air Force Institute of Technology

Rank	Name	Duty Title	Officer Symbol
Lt Colonel	Thomas Kelso	*Associate Professor, Space Operations	ENS

Appendix E: Data for GSO Entrance Model from HQ AFMPC DPMYAF, Analysis Branch

Note: Data presented as given and may appear out of alignment with headers.

AUTH AND ASSIGN THE SPACE OPERATIONS CAREER FIELD 09:13 Friday, August 26, 1994 174

OLD AFSCS: 18XX & 20XX, NEW AFASCS: 13SX
PERMANENT PARTY ONLY

FY	AUTH	ASGN
85	4089	3995
86	4201	4281
87	4029	4187
88	4064	4034
89	3966	3849
90	3894	3676
91	3731	3662
92	3556	3467
93	3398	3265
94	3126	3181

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
ANALYSIS OF HELD AADS FOR ALL OFFICERS WITH A SPACE OPS DUTY AFSC 175
OLD AFSCS: 18XX & 20XX, NEW AFSCS: 13SX 09:13 Friday, August 26, 1994
PERMANENT PARTY ONLY

ASGN ONLY	85	86	87	88	89	90	91	92	93	94
OTHER 0C**	11	26	28	26	28	31	29	25	26	24
0G**	3	3	3	3	2	3	5	8	4	3
0I**	0	2	4	3	5	3	7	6	8	8
0S**	0	0	0	0	0	3	5	6	8	5
0Y**	96	96	95	100	103	100	96	100	88	98
0YRY	0	0	0	2	1	1	0	2	18	25
1A**	645	728	707	724	705	710	658	625	594	620
1C**	0	0	0	9	11	13	20	32	34	45
2B**	91	93	90	84	60	63	64	54	61	55
2C**	2	1	2	2	2	2	2	2	2	2
2E**	1	1	2	1	2	2	2	1	1	0
2F**	17	17	19	17	20	16	17	9	6	7
2H**	0	1	2	1	1	0	1	0	0	0
3A**	7	6	7	7	7	6	6	3	0	1
3B**	4	5	5	5	3	1	1	0	1	1
4A**	0	0	0	0	0	1	1	0	0	0
4B**	0	1	4	5	5	3	6	7	12	15
4E**	0	0	0	0	0	0	0	1	1	2
4G**	1	0	1	1	0	0	0	0	0	0
4H**	1	0	0	0	1	1	0	0	1	0
4I**	0	1	1	2	2	3	2	5	5	9
4J**	0	0	0	0	1	1	1	2	3	2
4L**	1	1	1	1	1	2	4	2	2	2
4M**	1	2	3	2	3	4	3	4	3	4
4Q**	0	0	0	0	0	0	0	0	0	1
4R**	2	2	1	1	0	1	1	0	2	2
4S**	1	1	1	0	1	1	1	2	1	1
4T**	0	0	0	0	0	0	0	0	0	1
4V**	3	4	6	12	12	16	21	22	32	46
4Y**	0	0	0	0	0	3	2	2	1	4
6B**	2	2	4	4	2	2	2	2	1	2

(CONTINUED)

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
ANALYSIS OF HELD AADS FOR ALL OFFICERS WITH A SPACE OPS DUTY AFSC 176
OLD AFSCS: 18XX & 20XX, NEW AFSCS: 13SX 09:13 Friday, August 26, 1994
PERMANENT PARTY ONLY

ASGN ONLY	85	86	87	88	89	90	91	92	93	94
OTHER 6E**	0	0	1	2	1	1	2	2	2	1
6I**	0	0	0	0	0	0	0	0	0	2
6Y**	2	3	2	0	1	0	0	1	3	3
7A**	1	1	1	1	0	0	0	0	0	0
7C**	2	2	2	2	2	3	2	4	2	2
7D**	0	0	1	1	0	0	0	0	0	0
7F**	0	0	1	0	0	0	0	0	0	0
7G**	14	20	17	13	7	8	8	7	8	10
8A**	1	0	0	0	0	0	0	0	0	0
8C**	4	4	3	2	2	2	1	0	0	1
8D**	1	2	2	1	1	1	2	2	1	0
8F**	0	0	1	0	0	0	0	0	0	0
8H**	4	3	2	1	2	0	2	2	2	3
8Y**	1	3	5	6	6	6	6	5	7	5
9B**	11	11	5	5	5	2	1	2	1	1
9C**	2	3	3	3	3	3	4	3	3	1
9D**	12	11	9	5	2	2	1	7	6	4
9E**	24	31	35	37	32	29	28	29	29	29
9F**	99	93	73	73	72	63	54	45	37	30
9G**	145	150	157	151	144	139	131	118	105	91
9H**	11	9	11	9	6	8	8	9	8	6
9I**	2	3	2	6	6	5	6	5	1	1
9Y**	1	1	2	1	0	0	0	0	0	0
NO AAD	2671	2818	2737	2574	2442	2279	2313	2149	1961	1810
* TOTAL *	3897	4161	4058	3905	3712	3543	3526	3312	3091	2985
AFIT 0C**	3	4	3	5	4	5	5	5	2	4
0I**	0	0	0	0	0	0	0	0	0	1
0Y**	18	21	24	21	22	18	20	31	33	37
0YRY	43	56	58	67	70	72	79	87	99	105
1A**	17	18	18	19	22	19	14	12	10	13
2B**	1	1	1	0	0	0	1	1	1	1

(CONTINUED)

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
ANALYSIS OF HELD AADS FOR ALL OFFICERS WITH A SPACE OPS DUTY AFSC 177
OLD AFSCS: 18XX & 20XX, NEW AFSCS: 13SX 09:13 Friday,
August 26, 1994

PERMANENT PARTY ONLY

ASGN ONLY	85	86	87	88	89	90	91	92	93	94	
AFIT 2D**	1	1	0	0	0	0	0	0	0		
2F**	1	1	1	1	2	2	1	1	1	2	
4A**	1	0	0	1	1	1	1	1	2	3	
4B**	1	2	3	2	1	0	0	0	0	0	
4E**	1	2	6	3	3	3	4	6	7	6	
4I**	1	0	1	1	2	3	3	4	7	10	
4L**	1	1	1	1	1	1	1	0	0	0	
4M**	1	1	1	1	1	1	1	0	0	0	
4S**	0	1	1	1	1	1	0	0	0	0	
4T**	0	1	0	0	0	0	0	0	0	0	
4V**	1	1	0	0	0	0	0	0	0	0	
6B**	1	1	1	0	0	0	0	0	0	0	
6I**	0	1	1	0	0	0	0	0	0	0	
6Y**	0	0	0	0	0	0	0	0	1	0	
8A**	0	0	0	1	1	1	0	0	0	0	
8D**	0	0	0	0	0	0	0	0	1	1	
8F**	3	2	1	1	1	1	1	1	1	2	
8G**	0	0	0	0	0	0	0	0	1	1	
8H**	1	2	4	3	4	4	3	4	3	4	
8Y**	0	0	0	0	0	0	0	0	0	1	
9D**	1	1	1	0	0	0	0	0	0	1	
9E**	1	1	2	0	0	0	1	1	4	4	
9G**	0	1	1	1	1	1	1	1	1	0	
* TOTAL *	98	120	129	129	137	133	136	155	174	196	
* TOTAL *	3995	4281	4187	4034	3849	3676	3662	3467	3265	3181	

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
ANALYSIS OF 0YRY BILLET INCUMBENTS 09:13 Friday, August 26, 1994 178
PERMANENT PARTY ONLY

DUTY AFSC	85	86	87	88	89	90	91	92	93	94
00XX	15	19	20	22	16	0	0	0	0	0
12XX	0	0	0	0	0	0	0	0	0	1
13XX	0	0	0	0	0	0	0	0	0	60
14XX	0	0	0	0	0	1	1	1	0	4
15XX	0	0	0	0	0	0	0	0	0	2
16XX	0	0	0	1	0	0	0	0	0	0
20XX	112	99	75	65	48	83	69	61	60	0
25XX	2	3	4	4	4	4	2	3	2	0
26XX	2	2	3	1	0	3	3	4	3	0
27XX	0	1	0	0	0	2	4	5	5	0
28XX	8	7	7	10	7	10	12	12	8	0
33XX	0	0	0	0	0	0	0	0	0	4
49XX	6	4	9	9	5	9	5	5	5	0
55XX	0	0	0	0	0	0	1	1	0	0
61XX	0	0	0	0	0	0	0	0	0	1
62XX	0	0	0	0	0	0	0	0	0	7
63XX	0	0	0	0	0	0	0	0	0	5
65XX	0	0	1	1	0	0	0	0	0	0
66XX	0	0	0	0	0	0	0	1	0	0
67XX	0	0	0	0	0	0	0	1	0	0
80XX	1	0	1	2	1	1	2	2	2	0
81XX	1	0	0	0	0	0	0	0	0	0
* TOTAL *	147	135	120	115	81	113	99	96	85	84

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
ANALYSIS OF SPACE OPS BILLET INCUMBENTS 09:13 Friday, August 26, 1994 179
AFSC REQUIRED: 20XX OR 18XX FOR PRE-FY94, 13SX POST FY94
PERMANENT PARTY ONLY

DUTY AFSC	85	86	87	88	89	90	91	92	93	94	
00XX	693	671	619	672	646	18	14	18	15	0	
02XX	0	0	0	0	0	1	0	0	0		
12XX	0	0	0	0	0	0	0	0	1		
13XX	0	0	0	0	0	0	0	0	3119		
14XX	1	0	0	1	2	0	0	1	0		
16XX	0	0	0	0	0	0	0	0	1		
17XX	1	2	0	0	0	0	0	1	0		
18XX	2446	2456	2349	2266	2149	2379	2206	1969	1862	0	
19XX	0	0	0	0	1	0	0	0	0		
20XX	934	1058	1057	1117	1153	1492	1502	1560	1509	0	
26XX	3	1	0	2	1	1	0	1	0		
27XX	1	3	1	2	1	1	3	1	1		
28XX	4	6	2	2	6	1	4	5	6		
31XX	1	1	1	0	0	0	0	0	0		
33XX	0	0	0	0	0	0	0	0	1		
37XX	0	0	0	0	0	0	0	0	1		
49XX	2	1	0	2	3	0	0	1	0		
62XX	0	0	0	0	0	0	0	0	1		
63XX	0	0	0	0	0	0	0	0	1		
70XX	2	0	0	0	2	0	0	1	1		
73XX	0	0	0	0	1	0	0	0	0		
75XX	0	0	0	0	0	0	1	0	0		
80XX	0	2	0	0	1	1	1	0	1		
82XX	1	0	0	0	0	0	0	0	0		
90XX	0	0	0	0	0	0	0	0	1		
* TOTAL *	4089	4201	4029	4064	3966	3894	3731	3556	3398	3126	

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
NUMBER OF EMPTY 0YRY AAD REQUIRED POSITIONS 09:13 Friday, August 26, 1994 180

	TOTAL	
	POSITIONS	EMPTY
85	147	15
86	135	19
87	120	20
88	115	22
89	81	16
90	113	23
91	99	18
92	96	24
93	85	14
94	84	9

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
NUMBER OF EMPTY SPACE OPS POSITIONS 09:13 Friday, August 26, 1994 181
OLD AFSCS: 18XX & 20XX, NEW AFASCS: 13SX

	TOTAL	
	POSITIONS	EMPTY
85	4089	673
86	4201	654
87	4029	599
88	4064	651
89	3966	625
90	3894	698
91	3731	637
92	3556	749
93	3398	825
94	3126	600

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
AUTH AND ASSIGN SPACE OPERATIONS AADS - 0YRY 09:13 Friday, August 26, 1994 182
PERMANENT PARTY ONLY

TOTAL	AUTH	ASGN
85	147	54
86	135	81
87	120	98
88	115	124
89	81	134
90	113	135
91	99	153
92	96	160
93	85	205
94	84	219

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
AUTH AND ASSIGN SPACE OPERATIONS AADS - 0YRY 09:13 Friday, August 26, 1994 183
PERMANENT PARTY ONLY

AFIT BREAKOUT		ASGN		
		AFIT DEGREE		
	AUTH	NO	YES	* TOTAL *
85	147	1	53	54
86	135	1	80	81
87	120	5	93	98
88	115	13	111	124
89	81	13	121	134
90	113	13	122	135
91	99	16	137	153
92	96	23	137	160
93	85	59	146	205
94	84	71	148	219

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
AUTH AND ASSIGN SPACE OPERATIONS AADS - 0YRY 09:13 Friday, August 26, 1994 184
PERMANENT PARTY ONLY

RATED BREAKOUT	AUTH			ASGN		
	RATED REQD			RATED ASSIGNED		
	NO	YES	* TOTAL *	NO	YES	* TOTAL *
85	147	0	147	36	18	54
86	135	0	135	54	27	81
87	120	0	120	64	34	98
88	115	0	115	82	42	124
89	81	0	81	87	47	134
90	112	1	113	87	48	135
91	98	1	99	100	53	153
92	95	1	96	106	54	160
93	85	0	85	152	53	205
94	84	0	84	165	54	219

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
FILL RATES FOR AUTHORIZED 0YRY AAD BILLETS BASED ON OCCUPANT'S 185
MATCH WITH 4-DIGIT ACADEMIC SPECIALTY CODE AND/OR DEGREE LEVEL 09:13
Friday, August 26, 1994

FY		HOW BILLETS ARE FILLED					
	AAD						
	BILLETS	4-DIGIT FILL		LEVEL ONLY FILL		NO FILL	
	SUM		%		%		%
85	147	34	23	36	24	77	52
86	135	30	22	35	26	70	52
87	120	21	18	32	27	67	56
88	115	27	23	32	28	56	49
89	81	22	27	19	23	40	49
90	113	31	27	31	27	51	45
91	99	28	28	34	34	37	37
92	96	17	18	34	35	45	47
93	85	13	15	41	48	31	36
94	84	21	25	38	45	25	30
* TOTAL *	1075	244	23	332	31	499	46

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
UTILIZATION RATES FOR PERSONNEL POSSESSING AN 0YRY AAD 09:13 Friday, August 26, 1994 186
BASED ON MATCHES BETWEEN INDIVIDUAL'S 4-DIGIT ACADEMIC SPECIALTY AND CURRENT DUTY POSITION'S AAD REQUIREMENT

85

DUTY DEGREE	TOTAL PERSONNEL	4-DIGIT MATCH		LEVEL ONLY MATCH		NO MATCH	
	SUM		%		%		%
OTHER RATED	1	0	0	0	0	1	100
AFIT NON-RATED	36	22	61	4	11	10	28
RATED	17	15	88	0	0	2	12
* TOTAL *	54	37	69	4	7	13	24

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
UTILIZATION RATES FOR PERSONNEL POSSESSING AN 0YRY AAD 09:13 Friday, August 26, 1994 187
BASED ON MATCHES BETWEEN INDIVIDUAL'S 4-DIGIT ACADEMIC SPECIALTY AND CURRENT DUTY POSITION'S AAD REQUIREMENT

86

DUTY DEGREE	TOTAL PERSONNEL	4-DIGIT MATCH		LEVEL ONLY MATCH		NO MATCH	
	SUM		%		%		%
OTHER NON-RATED	1	0	0	1	100	0	0
AFIT NON-RATED	53	22	42	6	11	25	47
RATED	27	12	44	0	0	15	56
* TOTAL *	81	34	42	7	9	40	49

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
UTILIZATION RATES FOR PERSONNEL POSSESSING AN 0YRY AAD 09:13 Friday, August 26, 1994 188
BASED ON MATCHES BETWEEN INDIVIDUAL'S 4-DIGIT ACADEMIC SPECIALTY AND CURRENT DUTY POSITION'S AAD REQUIREMENT

87

DUTY DEGREE	TOTAL PERSONNEL	4-DIGIT MATCH		LEVEL ONLY MATCH		NO MATCH	
	SUM		%		%		%
OTHER NON-RATED	2	1	50	1	50	0	0
RATED	3	0	0	0	0	3	100
AFIT NON-RATED	62	23	37	5	8	34	55
RATED	31	6	19	0	0	25	81
* TOTAL *	98	30	31	6	6	62	63

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
UTILIZATION RATES FOR PERSONNEL POSSESSING AN 0YRY AAD 09:13 Friday, August 26, 1994 189
BASED ON MATCHES BETWEEN INDIVIDUAL'S 4-DIGIT ACADEMIC SPECIALTY AND CURRENT DUTY POSITION'S AAD REQUIREMENT

88

DUTY DEGREE	TOTAL PERSONNEL	4-DIGIT MATCH		LEVEL ONLY MATCH		NO MATCH	
	SUM		%		%		%
OTHER NON-RATED	7	1	14	1	14	5	71
RATED	6	0	0	0	0	6	100
AFIT NON-RATED	75	24	32	9	12	42	56
RATED	36	8	22	0	0	28	78
* TOTAL *	124	33	27	10	8	81	65

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
UTILIZATION RATES FOR PERSONNEL POSSESSING AN 0YRY AAD 09:13 Friday, August 26, 1994 190
BASED ON MATCHES BETWEEN INDIVIDUAL'S 4-DIGIT ACADEMIC SPECIALTY AND CURRENT DUTY POSITION'S AAD REQUIREMENT

89

DUTY DEGREE	TOTAL PERSONNEL	4-DIGIT MATCH		LEVEL ONLY MATCH		NO MATCH	
	SUM		%		%		%
OTHER NON-RATED	9	1	11	1	11	7	78
RATED	4	0	0	0	0	4	100
AFIT NON-RATED	78	16	21	8	10	54	69
RATED	43	6	14	2	5	35	81
* TOTAL *	134	23	17	11	8	100	75

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
UTILIZATION RATES FOR PERSONNEL POSSESSING AN 0YRY AAD 09:13 Friday, August 26, 1994 191
BASED ON MATCHES BETWEEN INDIVIDUAL'S 4-DIGIT ACADEMIC SPECIALTY AND CURRENT DUTY POSITION'S AAD REQUIREMENT

90

DUTY DEGREE	TOTAL PERSONNEL	4-DIGIT MATCH		LEVEL ONLY MATCH		NO MATCH	
	SUM		%		%		%
OTHER NON-RATED	10	1	10	3	30	6	60
RATED	3	0	0	0	0	3	100
AFIT NON-RATED	77	25	32	7	9	45	58
RATED	45	8	18	1	2	36	80
* TOTAL *	135	34	25	11	8	90	67

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
UTILIZATION RATES FOR PERSONNEL POSSESSING AN 0YRY AAD 09:13 Friday, August 26, 1994 192
BASED ON MATCHES BETWEEN INDIVIDUAL'S 4-DIGIT ACADEMIC SPECIALTY AND CURRENT DUTY POSITION'S AAD REQUIREMENT

91

DUTY DEGREE	TOTAL PERSONNEL	4-DIGIT MATCH		LEVEL ONLY MATCH		NO MATCH	
		SUM	%	SUM	%	SUM	%
OTHER NON-RATED	11	0	0	2	18	9	82
RATED	5	0	0	0	0	5	100
AFIT NON-RATED	89	21	24	8	9	60	67
RATED	48	8	17	0	0	40	83
* TOTAL *	153	29	19	10	7	114	75

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
UTILIZATION RATES FOR PERSONNEL POSSESSING AN 0YRY AAD 09:13 Friday, August 26, 1994 193
BASED ON MATCHES BETWEEN INDIVIDUAL'S 4-DIGIT ACADEMIC SPECIALTY AND CURRENT DUTY POSITION'S AAD REQUIREMENT

92

DUTY DEGREE	TOTAL PERSONNEL	4-DIGIT MATCH		LEVEL ONLY MATCH		NO MATCH	
		SUM	%	SUM	%	SUM	%
OTHER NON-RATED	15	0	0	4	27	11	73
RATED	8	0	0	0	0	8	100
AFIT NON-RATED	91	12	13	9	10	70	77
RATED	46	3	7	1	2	42	91
* TOTAL *	160	15	9	14	9	131	82

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
UTILIZATION RATES FOR PERSONNEL POSSESSING AN 0YRY AAD 09:13 Friday, August 26, 1994 194
BASED ON MATCHES BETWEEN INDIVIDUAL'S 4-DIGIT ACADEMIC SPECIALTY AND CURRENT DUTY POSITION'S AAD REQUIREMENT

93

DUTY DEGREE	TOTAL PERSONNEL	4-DIGIT MATCH		LEVEL ONLY MATCH		NO MATCH	
		SUM	%		%		%
OTHER NON-RATED	49	0	0	8	16	41	84
RATED	10	0	0	2	20	8	80
AFIT NON-RATED	103	16	16	9	9	78	76
RATED	43	0	0	1	2	42	98
* TOTAL *	205	16	8	20	10	169	82

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
UTILIZATION RATES FOR PERSONNEL POSSESSING AN 0YRY AAD 09:13 Friday, August 26, 1994 195
BASED ON MATCHES BETWEEN INDIVIDUAL'S 4-DIGIT ACADEMIC SPECIALTY AND CURRENT DUTY POSITION'S AAD REQUIREMENT

94

DUTY DEGREE	TOTAL PERSONNEL	4-DIGIT MATCH		LEVEL ONLY MATCH		NO MATCH	
		SUM	%		%		%
OTHER NON-RATED	57	0	0	11	19	46	81
RATED	14	0	0	2	14	12	86
AFIT NON-RATED	108	20	19	10	9	78	72
RATED	40	1	3	4	10	35	88
* TOTAL *	219	21	10	27	12	171	78

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
UTILIZATION RATES FOR PERSONNEL POSSESSING AN 0YRY AAD 09:13 Friday, August 26, 1994 196
BASED ON MATCHES BETWEEN INDIVIDUAL'S 4-DIGIT ACADEMIC SPECIALTY AND CURRENT DUTY POSITION'S AAD REQUIREMENT

* TOTAL *

DUTY DEGREE	TOTAL PERSONNEL	4-DIGIT MATCH		LEVEL ONLY MATCH		NO MATCH	
	SUM		%		%		%
OTHER NON-RATED	161	4	2	32	20	125	78
RATED	54	0	0	4	7	50	93
AFIT NON-RATED	772	201	26	75	10	496	64
RATED	376	67	18	9	2	300	80
* TOTAL *	1363	272	20	120	9	971	71

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS
LIST OF ALL OFFICERS POSSESSING ON 0YRY AAD - BY MAJCOM 09:13 Friday, August 26, 1994 197
CURRENT FY94 ONLY - PERMANENT PARTY

MAJCOM	TOTAL		AFIT		RATED	
	SUM	OTHER	AFIT	NON-RATED	RATED	
AF Element, US Pacific Command	2	1	1	0	2	
AF Element, US Space Command	9	1	8	7	2	
AF Element, US Special Operations C	1	1	0	1	0	
AF Elements (OTHER)	22	2	20	15	7	
AF Elements, Europe	1	0	1	0	1	
AF Materiel Command	23	14	9	18	5	
AF Office of Special Investigations	1	1	0	1	0	
AF Operational Test & Evaluation Ce	6	0	6	5	1	
AF Operations Command (AFSOC)	1	0	1	1	0	
AF Space Command	84	21	63	74	10	
AF Studies and Analyses Agency	4	2	2	3	1	
AF Technical Applications Center	2	0	2	2	0	
Air Combat Command	11	5	6	2	9	
Air Education and Training Command	20	10	10	14	6	
Air Force District of Washington	1	1	0	1	0	
Air Mobility Command	4	0	4	0	4	
Air Weather Service	3	0	3	3	0	
HQ AF Intelligence Command	4	2	2	4	0	
HQ AF Logistic Management Agency	1	1	0	1	0	
HQ United States Air Force	6	0	6	5	1	
HQ United States European Command	1	0	1	1	0	
Pacific Air Forces	4	2	2	1	3	
US Air Force Academy	2	1	1	1	1	
US Air Forces, Europe	3	3	0	2	1	
US Strategic Command	3	3	0	3	0	
* TOTAL *	219	71	148	165	54	

POC CAPT. MATT SANTONI HQ AFMPC/DPMYAF DSN 487-2231
FOR OFFICIAL USE ONLY - DATA SOURCES: FY85-CURRENT FY94 BWA
WINSAS PROGRAM: SPACE.SAS

Appendix F: Data for GSO Entrance Model from AFIT Registrar's Office

Note: Social Security numbers have been removed from this letter - privacy act requirement.

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (ATC)
Wright-Patterson Air Force Base, Ohio 45433

Enrolled Roster
Space Operations - Graduate
18 Month Program

Beginning: 8 Jun 81
Ending: 17 Dec 82

GSO-82D

Name	Rank	SS AN	Losing Command	Aero Rating	Input AFSC	Education Code
Andrusyszyn, John G.	Capt		SAC	None	2035A	POYRY
Baer, Leon R., Jr.	Capt		SAC	None	2021A	"
x Boren, Robert I.	Capt		SAC	None	2021A	"
Dieffenbach, Brian E.	Capt		SAC	None	2021A	"
Holley, Robert C.	Capt		SAC	None	2021A	"
Hunter, Michael L.	Capt		ADC	None	2011	"
Johnson, Robert A.	1st Lt		ADC	None	2025A	"
Kelso, Thomas S.	Capt		SAC	None	2021A	"
Lowery, Craig Z.	1st Lt		MAC	None	2021A	"
MacDonald, Murray R.	Capt		CANADA			
Millburn, Brian G.	Capt		SAC	None	2021A	"
Puz, Craig A.	Capt		SAC	None	2021A	"
Rask, John D.	Capt		ADC	None	2025B	"
Salmon, Richard T.	1st Lt		ADZ	None	2021A	"
Teigeler, Edward F. III	Capt		SAC	None	2021A	"
Wagner, Lynn A., Jr.	Capt		AFSC	None	2021A	"
Wysocki, Joseph	Capt		SAC	None	2021A	"

Total: 17

x Section Leader

Faculty Advisor: Maj Joseph W. Coleman/ENS

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (ATC)
Wright-Patterson Air Force Base, Ohio 45433

Enrolled Roster
Space Operations - Graduate
18 Month Program

Beginning: 7 Jun 82
Ending: 16 Dec 83

GSO-83D

Name	Rank	SS AN	Losing Command	Aero Rating	Input AFSC	Education Code
Argabright, William C.	1st Lt		ATC	None	1025A	POYRY
Barclay, Richard C.	Capt		AFSC	Pilot	2011	"
Cole, Lawrence M.	Capt		SAC	Pilot	2031	"
Gast, Stephen R.	Capt		MPC	None	2031A	"
Huddleson, Scott A.	Capt		SAC	None	2021A	"
Hunter, Roger C.	1st Lt		SAC	None	2053A	"
Jones, Richard K.	Capt		SAC	Pilot	2021	"
Kohlhepp, Douglas E.	Capt		SAC	Nav	2021	"
Krajci, Gary S.	Capt		AFSC	None	2021	"
Kunkel, David P.	Capt		SAC	None	2031A	"
Maddox, Lee W.	Capt		SAC	Nav	2021	"
X Marlow, Stephen W.	Maj		TAC	Nav	2011	"
Michel, Norman E.	Capt		MAC	Pilot	2031	"
Miklasevich, James	Capt		TAC	Pilot	2021	"
Olsen, David E.	Capt		TAC	Pilot	2031	"
Penny, Robert E., Jr.	Capt		SAC	None	2011	"
Smith, Warren L.	Capt		OSI	None	2021B	"
Thomas, Mark A.	1st Lt		MAC	None	2021	"
Walker, David W.	Capt		SAC	None	2021A	"
Waiss, Steven F.	Capt		AFSC	None	2021	"

Total: 20

X Class Leader

Faculty Advisor: Lt Col Ivy Cook/ENS

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (ATC)
Wright-Patterson Air Force Base, Ohio 45433

Enrolled Roster
Space Operations - Graduate
18 Month Program

Beginning: 6 Jun 83
Ending: 14 Dec 84

GSO-84D

Name	Rank	SSAN	Losing Command	Aero Rating	Input AFSC	Education Code
Aderhold, David J.	Capt		MAC	Nav	2021	POYRY
Agee, David A.	Capt		MAC	Nav	2011	"
Barnett, Deanne M.	1st Lt		SAC	None	2025	"
Boyarski, David P.	Capt		MAC	Pilot	2021	"
Chapman, Daniel W.	Capt		ATC	Pilot	2021	"
Chapman, Randall W.	Capt		ESC	Pilot	2021	"
Deems, Carl W.	Capt		TAC	Nav	2021	"
Didriksen, Scott N.	1st Lt		AFCC	None	3021	"
Douglas, Don R.	Capt		AFELM	Pilot	2021	"
Hasegawa, Glenn K.	1st Lt		ADZ	None	2021	"
Hayward, Jonathan K.	2d Lt		MAC	None	2546	"
Horne, Jeffery G.	Capt		ADZ	None	2055	"
Kinney, Daniel C.	Capt		IGC	None	3055	"
Mahoney, Stephen P.	Capt		MAC	Pilot	2021	"
Martorano, Matthew F.	Capt		MAC	Pilot	2021	"
McCormick Douglas I.	Capt		ADZ	None	2025	"
Miller, Jeffrey A.	Capt		MAC	Pilot	2021	"
Nostrand, Philip M.	2d Lt		MAC	None	2546	"
Ober, William E.	Capt		AAC	None	2025A	"
Phillips, Charles D.	Capt		SAC	None	2031A	"
xRensema, Peter H.	Capt		AAC	None	2011	"
Rodgers, James L.	1st Lt		SAC	None	2021	"
White, Greg R.	Civ		BOEING AEROSPACE COMPANY			
Wozniakowski, Chester M.	Capt		SAC	None	2035A	"
Wright, Michael A.	Capt		ESC	None	2821	"

Total: 25

x Section Leader

Faculty Advisor: Lt Col Mark Mekaru/ENS

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
Wright-Patterson Air Force Base, Ohio 45433

Enrolled Roster
Space Operations - Graduate
18 Month Program

Beginning: 4 Jun 84
Ending: 13 Dec 85

GSO-85D

Name	Rank	SS AN	Losing Command	Aero Rating	Input AFSC	Education Code
Allen, Linda M.	Capt		SPC	None	2021	POYRY
Barland, Karen S.	1st Lt		USAFE	None	5135D	"
Baugh, Thomas	Capt		MAC	Pilot	2021	"
Bigelow, Brad S.	1st Lt		AFSC	None	3024	"
xBrock, John T.	Maj		ELM	None	2016	"
Brodzik, Stella R.	1st Lt		TAC	None	2021	"
Burgie, Thomas J.	Capt		MAC	Pilot	2021	"
Burk, Roger C.	Capt		AFSC	None	2011	"
Burns, James M.	1st Lt		SPC	None	2025	"
Busch, Steven D.	Capt		ATC	Pilot	2021	"
Charek, Dennis J.	Capt		AFSC	None	2011	"
Danielson, Dennis L.	Capt		ATC	Pilot	2011	"
Fallstead, Coral C.	Capt		SPC	None	2011	"
Faudree, Edward F., Jr.	Capt		ATC	None	2025	"
Foos, Russell K.	Capt		SAC	None	2021	"
Halsell, James D., Jr.	Capt		TAC	Pilot	2021	"
Hunsucker, Micheal S.	Capt		MAC	None	2541	"
Jarvis, Norman R.	Capt		SPC	None	2035A	"
Keller, William C.	1st Lt		MAC	None	2541	"
Leinbach, Kevin E.	Capt		TAC	None	2021	"
Leitch, James R.	Maj		CANADA			
Mancusi, Michael D.	Capt		SAC	None	2021	"
Martin, James R.	Capt		SAC	Nav	2021	"
Ocasio, Frank	Capt		ATC	None	6424	"
Porter, James E., III	Capt		MPC	None	2011	"
Puffenbarger, John E.	Capt		MAC	Pilot	2021	"
Searle, Richard H., Jr.	Capt		MAC	Pilot	2021	"
Somers, Phillip W.	Maj		CANADA			
Sours, John O.	Capt		AFSC	None	2025	"
Thompson, Norman F. III	Capt		MAC	Pilot	2021	"
Uyeda, Charles T., Jr.	1st Lt		MAC	None	2055	"

Total: 31

xSection Leader

Faculty Advisor: Maj Joseph W. Coleman/ENS

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
Wright-Patterson Air Force Base, Ohio 45433

Enrolled Roster
Space Operations - Graduate
18 Month Program

Beginning: 3 Jun 85
Ending: 19 Dec 86

GSO-86D

Name	Rank	SSAN	Losing Command	Aero Rating	Input AFSC	Education Code
Bilex, Vicki J.	1st Lt		AFSC	None	2021	POYRY
Buckley, William J.	Capt		MAC	Pil	2021	POYRY
Buechter, Mark J.	Capt		TAC	Nav	2021	POYRY
Cavallaro, Joseph H.	Capt		SAC	None	2021	POYRY
Childs, Robert C.	Capt		ELC	"	2025	POYRY
Clarke, Peter P.	1st Lt		AFSC	"	2021	POYRY
Freer, Harrison C.	Capt		MAC	Pil	2021	POYRY
Getzelman, Harold D.	Capt		TAC	Pil	2021	POYRY
Gvazdauskas, Peter J. Jr.	Capt		SAC	None	2021	POYRY
*Halpin, Michael P.	Capt		TAC	Pil	2021	POYRY
Jeanes, Dennis P.	Capt		SAC	Nav	2021	POYRY
Kelly, Brian K.	1st Lt		SPC	None	8565	POYRY
Koch, Fred H.	Capt		AFSC	Nav	2021	POYRY
Koehler, Charles A.	1st Lt		AFSC	None	2021	POYRY
Looney, Harry G. Jr.	Capt		ARMY			
Muhs, Steven C.	1st Lt		AFCC	"	5135D	POYRY
Murphy, William K.	Capt		USAFA	"	2021	POYRY
Pabich, Paul J.	Capt		SPC	"	2025	POYRY
Power, John W.	Capt		SAC	"	2021	POYRY
Vance, Jeffrey J.	1st Lt		AFSC	"	2021	POYRY
Williams, Stuart D.	Capt		USAFE	Pil	2021	POYRY
Zehner, Edwin A.	Capt		SAC	None	2021	POYRY

Total: 22

*Section Leader: Halpin, Michael P.

Faculty Advisor: Maj Ken Feldman (ENS)

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
Wright-Patterson Air Force Base, Ohio 45433

Enrolled Roster
Space Operations - Graduate
18 Month Program

Beginning: 9 Jun 86
Ending: 18 Dec 87

GSO-87D

Name	Rank	SSAN	Losing Command	Aero Rating	Input AFSC	Education Code
Bouthiller, Thomas J.	1st Lt		TAC	None	2021	POYRY
Brigantic, Robert T.	1st Lt		AFLC	None	2021	POYRY
Brown, Ralph W.	Capt		USAFE	Pilot	2021	POYRY
Brown, Tommy C.	Capt		TAC	Pilot	2021	POYRY
Donelson, Tery L.	1st Lt		AFW	None	4924	POYRY
Edmonds, Richard L.	Capt		AFSC	None	2021	POYRY
Foister, James W. III	Capt		TAC	None	2021	POYRY
Garman, Ralph W.	Capt		SPC	None	2021	POYRY
Heier, Jeffrey E.	1st Lt		SPC	None	2021	POYRY
Lawder, Timothy John	Flt Lt		AUSTRALIA			
Murdock, William P., Jr.	1st Lt		AFSC	None	2021	POYRY
Raines, Paul S.	Capt		SAC	None	2021	POYRY
Rampino, Michael A.	1st Lt		ELC	None	8035	POYRY
Reilander, R. T.	Capt		CANADA			
*Reily, David K.	Maj		TAC	Pilot	2021	POYRY
Selinka, Thomas	Capt		AFSC	None	2021	POYRY
Sheridan, Joseph G.	Capt		MAC	Pilot	2011	POYRY
Thibodeaux, Dwight	1st Lt		ATC	None	2051	POYRY
Velez, Carlos	Capt		ARMY			
Wagner, Frederick E.	Capt		SPC	None	4924	POYRY
Wheeler, Lonnie B.	Maj		MAC	Pilot	2011	POYRY
Williams, John E.	1st Lt		SAC	None	4924	POYRY
Zilberstein, Gil	Capt		SAC	None	2021	POYRY

Total: 23

*Class Leader

Faculty Advisor: Maj Parnell/ENS

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
Wright-Patterson Air Force Base, Ohio 45433

Tentative Roster
Space Operations - Graduate
18 Month Program

Beginning: 8 Jun 87
Ending: 16 Dec 88

GSO-88D

Name	Rank	SSAN	Losing Command	Aero Rating	Input AFSC	Education Code
Bishop, Bruce S.	1st Lt		ELM	None	2021	POYRY
*Budelier, John A.	Capt		EUR	Pilot	2021	POYRY
Chee, Wesley W.	1st Lt		SPC	None	2021	POYRY
Cordner, Tim G.	Capt		AFSC	Pilot	2021	POYRY
*Delpinto, Michael A.	Capt		MAC	None	2021	POYRY
Gale, Wayne	Flt Lt		AUSTRALIA			
Grover, Gary P.	1st Lt		SPC	None	2025	POYRY
Hildenbrandt, Stephen R.	Capt		AFSC	Navig	2021	POYRY
Holland, Donald E.	1st Lt		MAC	None	2541	POYRY
Hollenga, Dane	Capt		AFSC	None	2021	POYRY
Jacobs, Michael G.	Capt		ELC	None	4934	POYRY
Morales, Rogelio, Jr.	Capt		AFSC	None	2010	POYRY
Pierson, James R.	Capt		ARMY			
*Rooney, James J., Jr.	Capt		MAC	Pilot	2021	POYRY
Schoon, Neil F.	Capt		AFSC	None	2021	POYRY
Simmons, Scott P.	Capt		SAC	Navig	2021	POYRY
Sterns, Alan R.	1st Lt		ESP	None	2025	POYRY
Teets, Robert B.	Capt		AFSC	None	2021	POYRY
Whetstone, Wayne T.	2d Lt		SAC	None	2665	POYRY
Williams, Thomas E.	1st Lt		AFSC	None	2021	POYRY
Wilson, Gary L.	1st Lt		AFSC	None	2021	POYRY

Total: 21

Faculty Advisor: Maj Bruce Morlan
*Class leader (6-2-80 - 3 same date)

GRADUATING CLASSES OF 1990

NAME	RANK	SSAN	RATING	CODE	BRANCH	START	END	LENGTH
** GSO-90D								
* GSO-90D								
AHMED ZAINAB N	1ST LT			0YRY	AF	05/30/89	12/14/90	18
ALLISON KENNETH	1ST LT			0YRY	AF	05/30/89	12/14/90	18
ANDERSON WILLIAM F	CAPT			0YRY	ARMY	05/30/89	12/14/90	18
BANDUCCI TODD M	1ST LT			0YRY	AF	05/30/89	12/14/90	18
BARRY JOHN C	CAPT			0YRY	AF	05/30/89	12/14/90	18
CHUN CARY C	1ST LT			0YRY	AF	05/30/89	12/14/90	18
DRIES RALPH W	FLT LT			0YRY	INTNL	05/30/89	12/14/90	18
GAUGHT WILLIAM L	1ST LT			0YRY	AF	05/30/89	12/14/90	18
LEWIS JAMES C	CAPT			0YRY	AF	05/30/89	12/14/90	18
MEHLBERG JERRY L	CAPT			0YRY	AF	05/30/89	12/14/90	18
NORTON KENNETH R JR	CAPT			0YRY	AF	05/30/89	12/14/90	18
PAYNE JAY H	CAPT			0YRY	AF	05/30/89	12/14/90	18
REMILLARD STEPHEN K	1ST LT			0YRY	AF	05/30/89	12/14/90	18
SEVERANCE JOHN D	CAPT			0YRY	AF	05/30/89	12/14/90	18
SHAFFER BRAD L	CAPT			0YRY	ARMY	05/30/89	12/14/90	18
WILSON STEVEN T	1ST LT			0YRY	AF	05/30/89	12/14/90	18

GRADUATING CLASSES OF 1991

NAME	RANK	SSAN	RATING CODE	BRANCH	START	END	LENGTH
** GSO-91D							
* GSO-91D							
ANTON JOHN P	CAPT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
BABINE ALICE A	CAPT		ØYRY	ARMY	Ø5/24/9Ø	12/13/91	18
CAMERON DAVID M	CAPT		ØYRY	INTNL	Ø6/11/9Ø	12/13/91	18
COLLINS DOUGLAS E	1ST LT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
COOPER LAWRENCE A	1ST LT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
COZADD DUANE R	CAPT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
FRAGALA ALFIO F	CAPT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
GOODELL MARK R	1ST LT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
HOWARD KRIS R	CAPT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
JANSEN LEONARD J	CAPT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
LEFEBVRE SUSANNE V	1ST LT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
MARTIN CHARLES J JR	CAPT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
MCGEE DONALD W	CAPT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
OBRIEN DANIEL L	CAPT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
REED THOMAS G	1ST LT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18
SNODGRASS JOSEPH W	CAPT		ØYRY	ARMY	Ø5/25/9Ø	12/13/91	18
VOGEN GEORGE S	1ST LT		ØYRY	AF	Ø5/29/9Ø	12/13/91	18

GRADUATING CLASSES OF 1992

NAME	RANK	SSAN	RATING	CODE	BRANCH	START	END	LENGTH
** GSO-92D								
* GSO-92D								
AMRINE JOHN M	CAPT			0YRY	AF	05/28/91	12/17/92	18
BERGER JEFF M	CAPT			0YRY	AF	05/28/91	12/17/92	18
BLAUFUSS DAVID J	CAPT			0YRY	AF	05/28/91	12/17/92	18
BOLTZ RICHARD W	1ST LT			0YRY	AF	05/28/91	12/17/92	18
DUNN MICHAEL T	1ST LT			0YRY	AF	05/28/91	12/17/92	18
GRUNER JEFFREY S	CAPT			0YRY	AF	05/28/91	12/17/92	18
HUFF BENJAMIN C	CAPT			0YRY	AF	05/28/91	12/17/92	18
KATHER GEORGE R	CAPT			0YRY	ARMY	05/24/91	12/17/92	18
KOSTER DAVID N	CAPT			0YRY	AF	05/28/91	12/17/92	18
KOUBA ERIC T	1ST LT			0YRY	AF	05/28/91	12/17/92	18
MOLES JOSEPH B	CAPT			0YRY	ARMY	05/24/91	12/17/92	18
ROBLYER DWIGHT A	CAPT			0YRY	AF	05/28/91	12/17/92	18
SCHICK WILLIAM	CAPT			0YRY	INTNL	06/10/91	12/17/92	18
STECKLER BENJAMIN T	1ST LT			0YRY	AF	05/28/91	12/17/92	18
SWANSON DAVID E	CAPT			0YRY	AF	05/28/91	12/17/92	18
WASSON MICHAEL S	1ST LT			0YRY	AF	05/28/91	12/17/92	18
WENZEL RICHARD A	CAPT			0YRY	AF	05/28/91	12/17/92	18
WILSEY DAVID G	CAPT			0YRY	AF	05/28/91	12/17/92	18

AIR FORCE INSTITUTE OF TECHNOLOGY GRADUATE ROSTER

NAME	RANK	SSAN	GAININGCMD	DEGREE	TITLE	START	END	LENGTH
** CLASS GSO-92D								
* GSO-92D								
AMRINE JOHN M	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
BERGER JEFF M	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
BLAUFUSS DAVID J	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
BOLTZ RICHARD W	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
DUNN MICHAEL T	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
GRUNER JEFFREY S	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
HUFF BENJAMIN C	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
KATHER GEORGE R	MAJ			P	SPACE OPS	05/24/91	12/17/92	18
KOSTER DAVID N	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
KOUBA ERIC T	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
MOLES JOSEPH B	CAPT			P	SPACE OPS	05/24/91	12/17/92	18
ROBLYER DWIGHT A	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
SCHICK WILLIAM	CAPT			P	SPACE OPS	06/10/91	12/17/92	18
? STECKLER BENJAMIN T	1ST LT				SPACE OPS	05/28/91	12/17/92	18
SWANSON DAVID E	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
WASSON MICHAEL S	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
WENZEL RICHARD A	CAPT			P	SPACE OPS	05/28/91	12/17/92	18
WILSEY DAVID G	CAPT			P	SPACE OPS	05/28/91	12/17/92	18

1993

Mr. Gary A. Smith
Capt Brian K. Standley
Capt Tami L. Volk
Capt Linda Bilewski Wildes

MASTER OF SCIENCE (SPACE OPERATIONS) 1993

Capt William M. Cheman
Capt Bradley K. J. Fournier (Canada)
Capt Stephen R. Hall
Capt Timothy David Hogan
Capt Daniel Hrovat
Capt Marianne Idzi
Maj Richard J. R. Ladouceur (Canada)
Capt David J. Lee
Maj Brian C. Page
Capt Catherine A. Poston
Capt Cynthia A. Provost
Capt Charles V. Rothermich
Capt S. Michael Schalck
Capt Stephen F. Sovaiko
Capt Charles B. Warrender

MASTER OF SCIENCE (APPLIED MATHEMATICS)

1st Lt Brian A. Smith

MASTER OF SCIENCE (APPLIED PHYSICS)

Capt Roy Sotierie Calfas
Capt Robert E. Franklin
2d Lt Michael R. Hawks
Capt Robert L. Johnson
Capt Gregory S. Kenyon
Capt Gregory J. Vansuch
Capt Gregory Scott Williams

DOCTOR OF PHILOSOPHY

Capt David E. Bell
Capt Thomas Joseph Burns
Capt Michele L. D. Gaudreault
Capt Courtney D. Holmberg
Capt Bryan M. Minor
Capt David D. Robertson
Capt Brian P. Sanders

2. The following students will not be graduating due to incomplete theses:

Capt John R. Bystroff
Capt Mark E. Ennis
Capt Garry L. Hall
Mr. Michael P. Hanke
Capt Daniel P. King
Capt William C. Reigelsperger
Capt Keith L. Meissner

3. The following students will not be graduating due to separation from the Air Force:

Capt Leo C. Adams
Capt Bruce G. Klappauf

4. Ranks of graduates have been checked for accuracy so far as is possible. However, we have limited ability to certify ranks and recommend an administrative records check be made prior to generating a final list of graduates.

Paul King

PAUL I. KING
Chairman
Academic Standards Committee

GRADUATING CLASSES OF 1994

** CLASS GSO-94D

* GSO-94D

NAME	RANK	SSAN	RATING CODE	BRANCH	START	END	LENGTH
ANDERSON DWIGHT E	1ST LT		0YRY	AF	05/27/93	12/13/94	18
BANKS DARWYN O	CAPT		0YRY	AF	05/27/93	12/13/94	18
BELOYNE GREGORY J	CAPT		0YRY	AF	05/27/93	12/13/94	18
BISHOP GREGORY A	CAPT		0YRY	AF	05/27/93	12/13/94	18
DAVIS DEREK K	1ST LT		0YRY	AF	05/27/93	12/13/94	18
DEIVERT ROBERT A	CAPT		0YRY	AF	05/27/93	12/13/94	18
DOUGLASS DEBORAH A	CAPT		0YRY	INTNL	06/24/93	12/13/94	18
GILL DAVID L	CAPT		0YRY	AF	05/27/93	12/13/94	18
HAUBOLDT BRADY P	2ND LT		0YRY	AF	06/28/93	12/13/94	18
HELT PAUL J	CAPT		0YRY	AF	05/27/93	12/13/94	18
KELEMEN LORETTA A	CAPT		0YRY	AF	05/27/93	12/14/94	18
KOCUR CATHERINE M	1ST LT		0YRY	AF	05/27/93	12/13/94	18
PETRICK BETH L	1ST LT		0YSY	AF	05/27/93	12/13/94	18
RAYNO BRUCE	CAPT		0YRY	AF	05/27/93	12/13/94	18
STAATS RAYMOND W	CAPT		0YRY	AF	05/27/93	12/13/94	18

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Vita

Captain Gregory J. Beloyne was born on 31 August 1959 in Lafayette, Louisiana. He graduated from Westbury High School (Houston, Texas) in 1977 and enlisted in the United State Air Force. In 1986, Captain Beloyne entered undergraduate studies at Southwest Texas State University in San Marco, Texas. He graduated with a Bachelor of Science degree in Mathematics in May 1988. He received his commission on 13 May 1988 and was a distinguished graduate of the Air Force Reserved Officers Training Program. His first assignment was at Falcon AFB as a Satellite Operations Officer. In June 1993, he entered the Graduate of Space Operations program in the School of Engineering, Air Force Institute of Technology.

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13. ABSTRACT *(Maximum 200 words)*

The number of Air Force officers graduating from the Air Force Institute of Technology's Graduate of Space Operations master's degree program is declining. Futhermore, the number of advance academic degree jobs these officers fill within the Space Operations career field has been reduced. These events question the role the GSO program has in the Space Operations career field.

This research surveys the GSO population to determine how useful their master's degrees have been in providing the skills and knowledge needed to fill the advanced degree positions. This research also addresses how many GSOs should enter the GSO program each year.

The survey method of measuring the usefulness of the GSO curriculum was selected as an effective way of gathering data on the 12 previous GSO classes. The primary advantage of this method was that it presented a group consensus on the value of an AFIT graduate education in the Space Operations career field.

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