ORGANIZATIONAL DESIGN OF MOST EFFICIENT ORGANIZATION AIR FORCE CIVIL ENGINEER OPERATIONS FLIGHTS

THESIS

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Abstract

Air Force outsourcing and privatization (competitive sourcing program) is based on the Office of Management and Budget Circular A-76. This program replaces traditional military / civilian organizations with either a government developed Most Efficient Organization (MEO) or a contractor operated organization to obtain the most economical method of performing an activity. As more Air Force Civil Engineer Operations Flights enter into these competitions with contractors, there is a greater need to understand how to structure an MEO to be competitive and successful.

This research explored how two MEO Operations Flights were structured and what type of operations management practices they were using. The research involved performing site visits at the 17th Civil Engineer Squadron at Goodfellow AFB, and the 14th Civil Engineer Squadron at Columbus AFB. Data was collected through the use of the case study methodology in the form of interviews and organizational records, and was analyzed to describe the two MEO's structures and management practices as well as compare the organizations to the Objective Operations Flight, the traditional Air Force Operations Flight.

The data showed that each MEO took a different approach to organizing, but the analysis provides valuable insight into how these organizations are structured and conducting business. The research also provides a glimpse into how difficult it is to conduct a performance analysis on these organizations. Although this was not the main focus of the research, discrepancies in flights' work database were discovered that should be addressed in the future.

ORGANIZATIONAL DESIGN OF MOST EFFICIENT ORGANIZATION AIR FORCE CIVIL ENGINEER OPERATIONS FLIGHTS

I. Introduction

Periods in which the United States' defense budget levels are declining are characterized by attempts to trim programs and manpower. The funds saved by trimming the budget are transferred to mission critical functions such as operations and weapon systems modernization.

One method the military and all federal agencies use to free up much-needed funds is the competitive sourcing program. Competitive sourcing is authorized by the Office of Management and Budget (OMB) Circular A-76. Circular A-76 states commercial services that are available through the private sector will not be performed by the federal government unless there is a compelling reason to keep the service providers in-house, such as military readiness or national security (OMB, 1983:1). In practical terms, competitive sourcing is characterized by cost competitions between government agencies and contractors, which result in the most cost-effective method of performing a service.

In order to fund massive weapons systems modernization programs in the post cold war era, the United States Air Force has adopted an aggressive competitive sourcing program. Between the years of 1996 and 2003, the Air Force plans to study over sixty thousand military and civilian positions under A-76 guidelines (Armesto and Buschur, 1998:7,27). The majority of these positions are located in base support functions such as

transportation, supply, and civil engineering. In past Civil Engineering A-76 studies, the focus has been the Operations Flight.

Once an A-76 study is announced, there are two possible outcomes. The first consists of the Most Efficient Organization (MEO), a government-developed civil service organization, winning the cost comparison. Once the MEO wins, the newly formed organization replaces the traditional military / civil service Operations Flight. In the second, a contractor wins the cost comparison. In this scenario, the contractor will replace the traditional Operations Flight and begin providing the services previously provided by military and civil service personnel.

Both entities, MEO's and contractors, are not bound to Air Force mandated organizational structures and operating procedures. The new organizations are free to implement new work processes, organizational structures, and staffing procedures during development and when transitioning into place. Limited knowledge exists on the organizational and operating procedures of MEO Operations Flights as much of their design is dependent on their creator's breadth of experience and creativity.

Research Question

This thesis will explore how existing MEO Air Force Civil Engineer Operations Flights are organized and what management practices these organizations use. Have they phased out traditional Air Force mandated structures and practices? Does there appear to be a common pattern of organizational structure and practice throughout the MEO flights that can be utilized to assist Operations Flights that are entering the A-76 process in the formulation of an efficient structure? Are there any initial indicators of their

performance? Finally, are there any lessons learned or techniques that can be taken from these new organizations and applied to the remaining traditional Operations Flights?

Research Objectives

The following objectives were established to guide this thesis effort in answering the research questions.

- Using the case study methodology, explore how existing MEO Operations Flights are organized and work practices they are using
- Compare and contrast the existing MEO's using the case study methodology
- Identify performance measures and apply to the MEO's
- Develop and provide recommendations and lessons learned for Operations Flights that will be studied and applied to traditional Operations Flights

Research Methodology

The research was accomplished using a case study approach. A rigorous case study protocol was developed to guide the evidence collection and analysis stages of this research. Evidence for the case study was collected during visits to MEO Operations Flights. Evidence was gathered from organizational documentation, organizational archival records, interviews of pertinent personnel, and direct observation. Much of the evidence needed for this research was available from the documents created and personal experiences gained during the A-76 studies. Another source of organizational performance data was the Air Force Civil Engineer Work Information and Management System (WIMS). This electronic information database holds large amounts of pertinent data such as work orders completed, labor utilization, and type of work accomplished.

Once the data was collected, it was analyzed in order to highlight and construct comparisons of the organizations studied, and outline potential lessons learned and practices to be used by future A-76 studies and traditional Operations Flights.

Scope of Research

Organizations studied in this research are located at two different bases. These bases are Goodfellow Air Force Base and Columbus Air Force Base. These bases were chosen as the research subjects because they are the Air Force's oldest Civil Engineer Operations Flight MEO's. The Operations Flight MEO at Goodfellow AFB was implemented in 1994, while Columbus' was implemented in 1998. The maturity of these organizations enabled investigation of the changes, successes, and problem areas that may not be present in newer organizations.

The case study methodology requires time-consuming investigations and evidence collection, therefore this thesis is limited to the study of two bases due to time and funding limitations placed on this research effort.

Relevance

This research explores the different organizational structures and work practices of MEO Civil Engineer Operations Flights at two separate bases within the continental United States. As more A-76 studies are announced, more Civil Engineer Operations Flights and other Air Force organizations will find themselves competing with contractors. Ultimately, the exploration of these MEO's may assist these Operations Flights in developing a more efficient structure by basing recommendations for organizing on the experiences of existing MEO's. The results of this study are also applicable to traditional Operations Flights in that some of the techniques being utilized

by the MEO's might be applied to Operations Flights to increase the efficiency of the traditional organizations.

Summary

This chapter provided background information on the OMB Circular A-76 process, and the implications of A-76 on Air Force Civil Engineering Operations Flights, and outlined the research objectives and the process used to achieve the objectives. Chapter 2, Literature Review, provides detailed information on Operations Flight, the A-76 process and organizational design from current literature. Chapter 3, Methodology, discusses the processes and protocol used in the case study method as well as specifics to this research such as interview questions. Finally, Chapter 4, Results and Analysis, documents the case study results and provides the within-case analyses as well as the cross-case analysis between the two MEO flights and the Objective Flight structure. Chapter 5, Conclusions and Recommendations, provides the conclusions that were gleaned from the results of the case study as well as recommendations to future MEO development teams, traditional Operations Flights, and the Air Force Civil Engineer community.

II. Literature Review

This chapter will provide background and frame the problem area studied by this research effort. It explores current literature on the subject of civil engineering organizational structure, competitive sourcing, organizational design, and background on the case study methodology. First, the traditional Objective Operations Flight, to include structure and functional definitions is outlined. Second, the Office of Management and Budget Circular A-76 to include the definition and history of the program is summarized. Third, the specifics of the Air Force Commercial Activities Program, which includes Most Efficient Organization development are discussed. Fourth, Most Efficient Organization (MEO) and contractor implementation and performance review is covered. Fifth, an introduction to performance metrics is provided. Sixth, common organizational structures are discussed to provide some framework for analysis of the MEO structures. Finally, a summary of the case study methodology is provided along with brief descriptions of the study bases to establish the background for the research design.

Traditional Civil Engineer Operations Flight

In order to evaluate the differences in organizational design between the Most Efficient Organization and the traditional Operations Flight, a baseline case of the traditional structure must be established. The following sections outline and discuss traditional structure. The overall definition and structure of the Objective Flight is discussed, and second, the specific elements of the flight are summarized to include the

type of work each is responsible for. Finally, several manpower assistance techniques that can be utilized by the Objective Flights are presented and discussed.

All Air Force Civil Engineer Operations Flights have the objective of ensuring base facilities can support the mission, maintaining base facilities and property, and improving the overall quality of the base community (DAF, 1998a:1). In order to ensure that all Civil Engineer units, and more specifically Operations Flights, across the Air Force have standardized peacetime and contingency capabilities, Air Force Instruction 38-101, Air Force Organization, defines the Civil Engineer Objective Squadron and model Operations Flight. Under the model Operations Flight, there are five distinct elements, which are described in further detail below.

Operations Flights receive their work through a work request process. This process can take on unique characteristics at individual bases, but it usually consists of a point of contact the customers submits a work request with, an initial separation of the work based on complexity and man hours required, an approval / disapproval meeting, finally a choice of execution methods. The two types of work Operations Flights accomplish fall under the Direct Schedule Work (DSW) and In-House Work Program (IWP) classifications. DSW orders are more routine type work that usually requires less than 40 man hours and only one or two crafts to complete. DSW orders are divided into three prioritization categories—Emergency, Urgent, and Routine. Each of these categories has completion timelines the work must be accomplished within. Emergency DSW orders must be completed within 24 hours of opening. Urgent must be completed within 5 days, and Routine must be completed in 30 days from issuance. IWP work

orders are the larger, more complex work orders that are larger than 40 hour breakpoint and usually involve more than two crafts to complete.

Another type of work that is accomplished by the Operations Flight, but does not require a customer work request is the Recurring Work Program (RWP). This program is the preventative maintenance program for the flight. Craftsmen address issues such as HVAC unit cleaning and pump maintenance in work under this category.

The Objective Squadron and model flight concept was implemented as an attempt to meet all mission requirements in an environment of limited resources. The stated objectives of the Objective Squadron concept are to eliminate unnecessary supervisory positions, utilize multi-skilled manpower, and implement better business-like procedures (DAF, 1998b: 12). However, traditional Operations Flights are still staffed to meet wartime and contingency requirements, which inevitably required less efficient structures than what are ultimately possible.

The traditional Operations Flight is composed of five elements, which are responsible for accomplishing unique requirements and responsibilities—Maintenance Engineering, Material Acquisition, Heavy Repair, Facility Maintenance, and Infrastructure Support. These five elements fall under the direct responsibility of the Operations Flight Chief. Figure 1 outlines the basic organizational structure of the traditional flight.

Maintenance Engineering Element

The Maintenance Engineering Element is responsible for providing a multitude of services to the Operations Flight. Foremost of these is to provide engineering expertise to the other elements and flight chief. This element also performs maintainability

reviews of engineering projects to ensure new construction is reviewed with maintainability concerns in mind. For example, during the maintainability reviews, maintenance engineers will examine compatibility issues of new equipment with spare parts on hand, quality of equipment being and installed, and ease of maintenance on the new facility for the craftsmen. The Maintenance Engineering personnel also work closely with the Operations Flight craftsmen to support project planning and problem solving. A vital function of the element is to provide long range infrastructure planning, which details conditions of infrastructure elements and prioritizes infrastructure projects to assist in fiscal year programming. Maintenance engineers also review the Flight's Recurring Work Program (RWP), which ensures the proper amount and type of preventative maintenance is being performed throughout the base. Finally, the element manages the squadron's base wide service contracts for such as janitorial, grounds maintenance and refuse, and ensures the contractors are meeting the requirements set forth in their respective contracts.

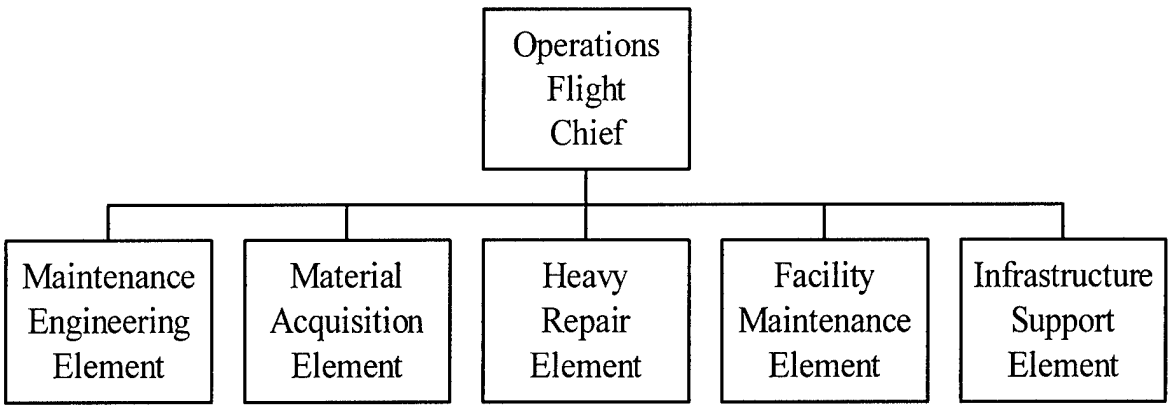

Figure 1. Objective Flight Structure

Material Acquisition Element

The Material Acquisition Element provides the materials the Operations Flight must have to perform real property maintenance and other services for the base. The element is charged with providing logistics support, which includes processing material requests, acquisition of materials, and warehousing operations. As well as providing materials to Civil Engineer craftsmen, the Material Acquisition Element also operates a Self-Help Store, which provides materials to housing residents and base tenants for minor maintenance projects they can perform themselves, such as painting, landscaping, and minor office upgrades. It is also responsible for the management of the squadron vehicle fleet, which can be quite diverse, ranging from light duty trucks to bulldozers. Included in managing the vehicle fleet is processing vehicle requests, monitoring vehicle status, and oversight of the vehicle-training program.

Heavy Repair Element

The name Heavy Repair Element is self-defining. The element is responsible for performing large work orders that involve multiple crafts. Common types of work orders performed by the Heavy Repair Element include facility renovations and alterations, pavement construction and repair, and heavy equipment operations such as earthmoving and trenching. Typically, the Heavy Repair element is divided into two sections, horizontal and vertical. The horizontal section is responsible for paving operations and heavy equipment operations. The vertical section employs crafts that are responsible for constructing and maintaining structures. In addition to these activities, the element is also responsible for pest control (entomology) operations on the base.

Facility Maintenance Element

The Facility Maintenance Element provides the primary interface between the Operations Flight and the base customers. This element sets up a single point of customer service, which customers may contact for maintenance needs on their facilities. This element can either perform facility surveys or allow the facility users to report problems. If facility surveys are utilized, crews from the Operations Flight visit facilities on a recurring schedule and document what type of maintenance needs to be performed, and ensure the work is done. If no surveys are conducted the element relies on the facility tenants to report maintenance problems, which are handled through Direct Schedule Work (DSW). This element is also responsible for the Operation Flight's recurring work program (RWP). RWP is a method of managing necessary preventative maintenance on equipment and real property in order to extend the useable life of the items. For example, a major component of the RWP program is preventative maintenance on heating, ventilation, and air conditioning (HVAC) equipment. This program includes changing air filters, checking cooling tower water, and diagnostic testing of chiller units.

Infrastructure Support Element

The Infrastructure Support Element is similar in function to the Facility Maintenance Element. This element, however, performs work on the base utility systems, such as water distribution, natural gas, sanitary sewer, and liquid fuels. This element is responsible for all maintenance and modifications on these systems as well as operating the RWP program for utilities.

Manpower Assistance Techniques

Air Force Manpower standards for the Objective Operations Flight are based on a list of core requirements for each element. These core requirements are defined as the mission essential tasks each element must accomplish in order to ensure there is no mission degradation. However, there are other tasks, such as base special projects and distinguished visitor visit preparation, that the Operations Flight is responsible for accomplishing in addition to the core requirements. These additional tasks receive no additional manpower allocations from the Air Force standard. In order to meet the core requirements and additional tasks, the Operations Flight Chief and the Base Civil Engineer (BCE), the ranking officer in the Civil Engineer Squadron, may choose to implement several manpower multiplier techniques.

The first of these options is a Simplified Acquisition of Base Engineer Resources (SABER) section. SABER is a simplified contracting mechanism that can be used to help alleviate some of the workload on the in-house Operations Flight personnel through contractor accomplishment of some work orders.

Another initiative within the Objective Flight is the use of zonal maintenance techniques. Zonal maintenance is a program in which the base is divided up conceptually into maintenance zones, which are based on geographical layout, facility number, or some other locally generated method. Each zone has a facility maintenance team made up of different crafts that are responsible for the functions of the Facility Maintenance Element in their particular zone. Zonal organization differs from traditional facility maintenance approaches. Traditional approaches allow individual shops, such as carpentry, plumbing, and HVAC, to handle facility maintenance demands. For example,

a requirement to install a new water heater, including a small wall repair, and new wiring would require craftsmen from the plumbing, carpentry, and electric shops to individually work on the job, which would result in unproductive time while the shops handed off the work to each other. Under zonal maintenance, a team consisting of personnel who are qualified to perform such work would be able to enter the facility and accomplish the work. Multi-skilling is another technique available to Operations Flights. Limited multi-crafting / skilling is a technique in which a journeyman in a particular craft develops limited skills in other crafts so that he / she can complete a minor job without assistance of another shop. Extensive multi-skilling is a technique in which a craftsman is a journeyman in more than one craft. These two techniques are extremely useful in increasing the efficiency of limited manpower.

Finally, the Operations Flight Chief can utilize contract support or overhires. Contract support can assist the Operations Flight on non-core requirements in the recurring work program, such as HVAC equipment maintenance. Overhires are civilian employees that are hired on an as needed basis. These employees, for example, may be hired during winter months to assist the Heavy Repair Element in snow removal operations.

This section provided background on the traditional Operations Flight Structure. The Objective Flight is composed of five elements, including Maintenance Engineering, Material Acquisition, Heavy Repair, Facility Maintenance, and Infrastructure Support. This section also covered several manpower multiplying techniques such as SABER, multi-skilling, and contract support. The following sections will introduce the Office of Management and Budget Circular A-76, and provide some history to the program.

Office of Management and Budget Circular A-76

In the following sections, the general definition and purpose of OMB Circular A-76 are presented. A brief history of the program, including its impetus, is highlighted, and the stage is set for the Air Force cost comparison process. This provides the background and allows the reader to understand from where the Air Force MEO's originate.

Circular A-76 Defined

> In the process of governing, the Government should not compete with its citizens. The competitive enterprise system, characterized by individual freedom and initiative, is the primary source of national economic strength. In recognition of this principle, it has been and continues to be the general policy of the Government to rely on commercial sources to supply the products and services the Government needs (OMB, 1983:1).

In today's dynamic and highly competitive business environment, many United States corporations are utilizing outsourcing as a way to concentrate on their core competencies and skills, and shrink their operating expenses. Outsourcing is a process in which an organization transfers the performance of an activity previously in-house or, in other words, performed by organizational employees, to a contractor (Allen and Chandrashekar, 2000:25). Over ninety percent of major U.S. corporations have utilized outsourcing to trim excesses from their operating budgets (Allen and Chandrashekar, 2000:25). The OMB's Circular A-76 charters a program that is similar to these outsourcing programs. However, in order to ensure fairness to the parties involved, there are some major differences.

Circular A-76 defines the U.S. government's policy on performance of commercial activities within federal agencies. Commercial activities are functions performed within a federal agency that provide a service or product that is also available

from commercial sources (OMB, 1983:2). In the broad sense, Circular A-76 states that the federal government will not be in the business of performing commercial activities. However, exceptions are made for activities classified as inherently governmental. Inherently governmental activities are functions that are "so intimately related to the public interest as to mandate performance by government employees" (OMB, 1983:2). Activities can be classified inherently governmental if they involve the direct and discretionary use of government authority, such as a military command function. Activities that involve the obligation and handling of government funds are also classified as inherently governmental.

With these constraints, the A-76 program still resembles any common outsourcing program that identifies activities being performed inside the corporation and then contracts with an outside contractor to take over those functions. The A-76 program does allow a function to be outsourced to a contractor. However, there is a distinguishing factor between pure outsourcing and the A-76 policy. Instead of providing an overarching outsourcing policy for the federal government, Circular A-76 mandates a rigorous cost comparison process be used in determining whether it makes economic sense to outsource these commercial activities.

There are three stated objectives of the A-76 program. First, the A-76 processes balance the parties' interests (government agency and commercial sector) through a make or buy cost comparison. Second, A-76 ensures that the two interested parties compete on level terms. Finally, it encourages competition which provides a choice in how a commercial activity is managed and performed (OMB, 1999:iii).

History of A-76

The United States House of Representatives published a special report in 1932 with the principle that the federal government should not compete with its private citizens. The report detailed the Representatives' concerns over the increasing size of the federal government and, more specifically, the number of activities the government was undertaking that were available from the commercial sector. A 1940's Hoover Commission also published similar reports on the increasing amount of government / private industry competition present in the United States (Thomas, 1989:4).

The Executive Branch chose not to act on Congress' report. In 1955, however, under threat of legislation from Congress the Bureau of the Budget (BOB) issued Bulletin 55-4. BOB Bulletin 55-4 stated that the federal government would not start or continue to provide any service or product that is available through commercial channels. Bulletin 55-4 did not call for any cost comparison or competition between private and public organizations (Martin, 1998:51).

The Bureau of the Budget updated Bulletin 55-4 in 1966 in the form of Circular A-76. This update brought the federal government policy on commercial activities closer in line with the current Circular A-76 guidance by adding a lower cost provision to the wording of BOB Bulletin 55-4. The 1966 Circular A-76 required all federal agencies that are performing commercial activities to transfer those functions to a contractor who could perform the function at a lower cost than the government (Martin, 1998:52). This lower cost provision was not accompanied by any further direction. Therefore, even though there was a hint of cost comparison in this version of the circular, the 1966 version was still far from the current policy of a rigorous cost comparison.

The Bureau of the Budget was renamed the Office of Management and Budget in 1970. It has continued to make changes to A-76 guidance in the form of Circular Revisions in 1979, 1983, 1996, and 1999 (OMB, 1983:1). Of these revisions, the 1983 Reagan administration revision changed the circular the most drastically. The 1983 revision added the rigorous cost comparison methodology used in comparing the operating costs between federal agencies and contractors competing to provide a service or product. The 1996 and 1999 revisions added more guidance on the type of cost comparison methods used in the A-76 process.

During the past decade, many new A-76 studies have been announced. Much of the increase in studies can be attributed to the drastic changes in the world political environment. The United States is no longer in a cold war with the Soviet Union. The military, and specifically the Air Force, is trying to cope with these environmental and political changes, which are not only characterized by changing missions, but also smaller budgets, which have declined 38 percent over the past decade (Air Force Magazine. 1998:46). The Air Force is faced with the daunting challenge of a high operations tempo and a need to upgrade aging weapon systems; all within the constraints of budget levels not seen since the post-Vietnam War era. A way to reallocate funds to these mission critical activities is to rely on the A-76 program. If support functions can be trimmed, more funds can be transferred to activities such as flight operations and the Air Force's next generation fighter F-22 program. Historically, A-76 cost comparisons are able to exceed twenty five percent cost savings once the Most Efficient Organization (MEO) or contractor takes over the commercial activity (Armesto and Buschur, 1998:7). The Air Force intends to study over 66,000 support function manpower positions by

2003. Of these 66,000 military and civilian positions, approximately 10,000 are located in the Air Force Civil Engineer community (Armesto and Buschur, 1998:7).

The Department of Defense (DoD) and the Air Force are currently involved in studying thousands of positions. Historical trends for DoD A-76 studies conducted from 1966 through 1994 suggest that the DoD can expect fifty percent of the cost comparisons to be won by government MEOs, which means contractors will take over fifty percent of the commercial activities currently being performed in-house (Martin, 1998:53). The Air Force historical cost comparison trends lean more in favor of the commercial sector. According to Air Force A-76 study historical results, contractors win 60 percent of the competitions (Armesto and Buschur, 1998:7).

This section briefly outlined the history of Circular A-76, including the thought process for issuing the directive. The number of future A-76 studies by the Air Force was briefly discussed. Finally, the historical patterns of cost comparison winning percentages were detailed. The following section will expand on the Air Force A-76 cost comparison process and possible outcomes of the cost comparison.

Air Force Cost Comparison Process

Every federal agency has its own standards on how it implements OMB's Circular A-76. The following sections will outline the basic cost comparison process for the United States Air Force. The process discussion is divided into five sections, which are public announcement, process time limits, performance work statement, solicitation actions, and management plan. The discussion of the management plan is further divided in to four subsections: 1) most efficient organization structure, 2) performance measurement plan, 3) government cost estimate, and 4) transition plan. The process is

implemented through the Air Force Commercial Activities Program Instruction, which is issued through the Manpower, Organization, and Quality division of the U.S. Air Force Deputy Chief of Staff, Plans and Programs' office (DAF, 1998a:1).

Public Announcement

Once a candidate for the A-76 process is nominated and approved by Headquarters, U.S. Air Force, the first step is congressional notification. However, congress will be notified of the impending competitive sourcing action only if there are more than 20 civilian employees in the function to be studied (DAF, 1998a:33). The headquarters approval date starts the Office of Management and Budget mandated timelines on the cost comparison process.

After the headquarters approval and congressional notification, all affected parties and supporting units are notified of the A-76 action through a public announcement made through the base commander's office. This public announcement is usually made within days of headquarters approval, but is required within three months of the headquarters approval date (DAF, 1998a:35).

Process Time Limits

The annual Department of Defense Appropriations Act establishes timelines that regulate the duration of all A-76 cost comparison studies. Headquarters Air Force has defined two dates that are used to calculate the running time of a cost comparison. The first, known as the start date, is the date Headquarters Air Force issues the official approval for a function to be studied. The second is referred to as the end date. This is the date when the actual costs between the government formed organization and outside bidders are physically compared (DAF, 1998a:47).

The time limit for the cost comparison process is broken into two categories. The first category encompasses single function cost comparisons. Congress will not fund cost comparisons that exceed 24 months for those involving only one function. The second category involves multi-function cost comparisons. Multi-function cost comparisons involve more than one commercial activity. For example, if a Civil Engineer function and a Transportation function were studied under the same package, it would be considered a multi-function comparison. The time limit for these comparisons is 48 months (DAF, 1998a:47).

Performance Work Statement

Perhaps the most critical part of the cost comparison process is the Performance Work Statement (PWS). A government team headed by a representative from the function being studied develops this document. For example, when a Civil Engineer organization is being studied, a representative from the Civil Engineer unit would head the PWS development team. The PWS sets forth the requirements of the function being studied and is written in a performance-oriented manner that defines the desired results, not how an organization should achieve those results. The PWS provides the workload estimates that the Most Efficient Organization (MEO) and any bidders will use to structure their proposed new organizations and estimate operating costs.

The PWS not only defines the functional requirements of the new organization, but also sets forth the performance standards, performance measures, and timeframes. An important part of the PWS package is the Service Delivery Summary (SDS). The SDS defines performance requirements and thresholds that will be used to ensure a MEO or contractor operated organization are meeting the minimum requirements of the PWS.

Solicitation Actions

Once the government team has completed the Performance Work Statement, a portion of the process becomes the responsibility of the contracting organization on base. This portion involves the solicitation documents and procedures that will be used to attract bids from contractors to compete against the MEO. The contracting organization will develop and release the solicitation announcement, manage the different bidders' packages, and ultimately organize the cost comparison process.

Under OMB Circular A-76 and the Federal Acquisition Regulation (FAR) any competitive Federal procurement method is acceptable. Methods include, but are not limited to sealed bid, two step, and source selection. In the most basic procurement process, sealed bid, the contracting office will issue an Invitation for Bid (IFB), which includes the PWS. The IFB details to contractors the requirements of the bidding process to include required documents, performance requirements, and timelines. All contractors interested in bidding must return bid packages in accordance with the IFB. These bid packages detail the contractors' proposed organization and costs. Once all the bid packages are received the contractors' proposals are compared against the government's proposal based on cost to perform the activity. In the simplest case, lowest cost and past performance are the only competitive factors that decides the winner of the cost comparison. In order for a contractor to be considered the lowest cost bidder, their estimate must beat the governments bid by 10 percent. However, during other types of selection options, there are other factors that are used to judge the competition. These are predetermined scoring criteria such as contractor experience, volume of federal contracts, and other technical criteria. There are a multitude of combinations of scoring criteria that

can be utilized depending on the type of procurement method used. The winner of the cost comparison portion will be transitioned into place and start performing the studied function. Contracts are written so that they have a one-year basic term with options that allow the government to extend additional years with the contractor. The total term of a contract, including basic and option periods, must be greater than three years, but cannot exceed five (DAF, 1998a:66).

Management Plan

The Management Plan is a collection of documents that describe and document the effort of developing a Most Efficient Organization (MEO) by the incumbent organization performing the activity in-house. The Management Plan, at a minimum, includes a description of the MEO structure, Performance Measurement Plan, Government cost estimate, and Transition Plan (DAF, 1998a:74). Each of these documents is described in the following sections.

In general, the Management Plan is the charter document of the newly formed MEO. It describes organizational structures, staffing considerations, equipment use, and operating procedures, which enable the government to perform the commercial activity in the most cost-effective manner.

The development of the Management Plan is a team effort of different functions such as the Civil Engineer unit, manpower office, and contracting office. The team developing the Management Plan must use the Performance Work Statement as the foundation for determining the proper MEO structure. Using the PWS as the basis for the MEO and contractor organization ensures the government formed organization and the contract bidders are organizing around the same requirements.

Most Efficient Organization Structure

The Most Efficient Organization is the Air Force's newly formed organization that will compete against contractors to perform a commercial activity. This section of the Management Plan describes the overall organization that is designed to meet the requirements set forth in the PWS and includes organizational structure, personnel requirements, and performance factors.

In the MEO development process, developers are not required to follow Air Force mandated organizational structures, such as the Civil Engineer Objective Squadron, which is discussed in earlier sections. Headquarters U.S. Air Force has granted all MEO's a blanket waiver that allows them to vary their structures from the AFI mandated organizations (DAF, 1998a:76). The MEO developers are free to utilize any restructuring scheme in the creation of the MEO structure and organization.

The most apparent change with a MEO structure is the make up of its personnel. All MEO's are required to staff only with civilian employees. There are, however, some exceptions to this rule. If military are currently employed by the function, and the cost of the MEO with these military members included is cheaper than an all civilian MEO, then the MEO may include military members. Another exception is authorized if the military members are in a position to compensate for a shortage of specific skills in the labor market. In this case, the MEO may employ the military members until suitable civilian labor can be hired. It is extremely uncommon, however, to see military members as part of a Civil Engineer Operations Flight MEO.

Regardless of the personnel make up of the MEO, the manpower numbers and classifications are based on the workloads estimated in the PWS. It may be tempting for

the MEO development team to base their organizations on past requirements and processes while ignoring the PWS. However, contractors will be basing their organization on the requirements set forth in the PWS, and it may put the government at a disadvantage if preconceived notions about organizational structures and requirements are used and there is not a focus on the requirements and workload estimates in the PWS.

In order to procure the most efficient organization to perform a commercial activity, the Air Force has great interest in allowing contractors and MEO's alike to use creative methods in meeting the performance requirements of the PWS. Not only is the PWS written in such a manner as to provide the utmost flexibility to a MEO and contractor, the MEO may also obtain waivers to deviate from Air Force Instructions regarding organizational management processes or other performance mandates that are not specifically required in the PWS (DAF, 1998a:80). This deviation allows the MEO's to take advantage of potentially more efficient and cost effective commercial practices available.

Service Delivery Summary

The Service Delivery Summary (SDS) is a mandatory part of the Management Plan package. As discussed earlier, a SDS is developed and included with the Performance Work Statement. The SDS simply defines the performance measurements and performance thresholds that will be used to ensure the MEO or contractor are meeting the requirements of the PWS.

Government Cost Estimate

The Government cost estimate is the estimate of costs that will be incurred to operate the newly formed Most Efficient Organization while performing the commercial

activity. This cost estimate will be used in the final cost comparison between the government and outside bidders.

Transition Plan

The Transition Plan is designed to facilitate the smooth implementation of the MEO should it be declared the winner of the cost comparison process. The Air Force Commercial Activities Program Instruction states that the Transition Plan should be written to minimize base disruption, adverse impacts to affected parties, capitalization requirements, and general start-up difficulty (DAF, 1998a:75). The plan details personnel requirements, such as moves, training, and acquisitions. It also identifies non-personnel requirements such as equipment needs, contracting actions, and other needs that are required to implement the MEO.

During the transition period, there is protection for incumbent civil service employees working in the studied function. All competitive sourcing contracts are required to include a "Right of First Refusal of Employment" (DAF, 1998a:66). This mandatory contract clause states that the newly selected contractor shall first try to hire qualified civil service employees adversely affected by the A-76 action before the contractor can hire from other sources.

Once the Management Plan, organizational structure, and cost estimate for the MEO have been completed, the package is given to the contracting office on base. The contracting officer keeps the bids from the government and contractors sealed until the final cost comparison phase of the process. The contracting officer compares the costs of the bids to the cost of the government MEO along with any other competition criteria. The organization with the lowest cost, or highest score on best value evaluation criteria,

is declared winner of the process, and will be transitioned into place to begin performing the commercial activity. Contractors, however, must be 10 percent lower than the government cost to be considered the low cost bidder.

This section focused on the United States Air Force's commercial activity cost comparison process. This process is implemented through the Air Force Commercial Activities Program Instruction, and ensures a fair and thorough competition is held between the government organizations and bidders. The section began with a description of the public announcement, process time limits, Performance Work Statement (PWS), and contract solicitation actions. The PWS sets the stage for the cost comparison because it details the contractual requirements of the commercial activity. The Management Plan was discussed. The Management Plan is the charter document of the Most Efficient Organization, which is the government's attempt to develop a low cost organization that can win the cost comparison against other bidders. The next section focuses on the step following the cost comparison—implementation.

Most Efficient Organization or Contractor Implementation

Once the cost comparison has taken place, there are two possible outcomes. Either the government formed MEO will perform the commercial activity or a contractor will be awarded the contract. Whatever the outcome, there will be an implementation period in which the traditional organization is phased out and the new organization is transitioned into place. This section covers the specifics of both MEO and contractor implementations.

The implementation of the MEO follows the guidelines set forth in the Transition Plan discussed in the previous section. The first step in the transition plan must be started within thirty days of the official cost comparison.

During the common, day-to-day, operations the MEO is provided autonomy over its management of its resources, such as equipment, overtime, and personnel grade changes. However, these changes are kept in check by the fact that the MEO may not increase the amount of resources needed over the amount used in the original cost comparison. Resource levels may be changed from the original numbers, however, if there are approved mission or workload changes to the PWS.

If a contractor is awarded a contract to perform the commercial activity, the contracting office will negotiate a timely contract start date. The start date is when the contractor-operated organization is phased into existence. A major difference between the MEO and a contractor-operated organization is the presence of Quality Assurance (QA) personnel. QA's are government personnel who ensure the contractor is meeting the requirements of the PWS and the standards set forth in the Performance Measurement Plan. While not assigned QA's, MEO's are subject to reviews by the Air Force Audit Agency as well as the base manpower office.

In addition to the fact that both MEO's and contractors must meet the requirements mandated in the PWS, it is also the responsibility of the MEO or contractor to ensure operations costs do not increase after implementation, which is accomplished through manpower and Air Force Audit Agency reviews. A final similarity between the two entities is the fact that neither is sheltered from Air Force mandated budget

reductions or cutbacks. If a substantial budget reduction is realized, the PWS will be altered to reduce workload or eliminate requirements.

There are very few differences between the MEO and a contractor-operated organization. Other than the fact that MEO's are still made up of civil service employees, the major difference is that contractor-operated organizations require government personnel, known as QA's to monitor their performance. However, the differences stop there, and for the most part contractors and MEO's are held to the same standards of performance and accountability.

MEO Performance Reviews and Measurement

There is a periodic review process that begins one year following MEO implementation designed to ensure MEO's are performing as their management plans stated and they are adhering to the PWS. This one-year performance review is accomplished by the Air Force Audit agency.

A MEO is considered valid for five years following implementation. At the five year point, the MEO organization must enter the cost comparison process again to ensure the MEO is truly the most economic alternative to perform the commercial activity. The five years may be extended to ten years in certain cases. These cases involve the contracting officer performing a cost analysis using market surveys. If these market surveys indicate that the MEO is still more cost effective than a contractor, the MEO can be granted a five-year extension. The MEO cannot be extended past ten years, and must be re-competed in a cost comparison process to determine the provider of the commercial activity.

Performance Metrics

Many organizations utilize performance metrics to monitor trends in organizational work and highlight both successes and problem areas. In general, performance metrics provide a numerical measure of the productivity, efficiency, or quality of the type of work being measured (DAF, 1998c:62).

Performance metrics must consist of three characteristics. The first of these is a defined unit of measure. For example, this could include number of Emergency DSW orders per month, or operations and maintenance costs per quarter. The second characteristic of all performance metrics is a sensor. A sensor is the function that gathers the raw data utilized in the metric. This can be a computer database, clerk, or any other means of obtaining the data. The final characteristic is the frequency in which the data is collected and analyzed. This frequency is dependent on a number of factors including cost to obtain the data, importance of the work being measured, and availability of the data (Buchheim, 2000:311).

Operation Flights throughout the Air Force utilize performance metrics to track and analyze their work practices and effectiveness. Performance metrics have little value alone, but when utilized to provide a trend of performance, these can be of great use to a flight chief. Air Combat Command has established a standard set of metrics all Operations Flights in the command are required to use. These metrics include, but are not limited to number of vehicles in commission per month, scheduling productivity rates per month, and emergency work response rates per month (Air Combat Command, 2001). Regardless of the metric, all require some effort to collect the data on the required reporting interval. This data collection effort is open to errors and difficulties in

obtaining the required data. Personnel charged with reporting the raw data may feel compelled to "make the numbers work," so that there is no negative reflection on their area of responsibility. Another potential problem area deals with the reliability of the data. Depending on the collection sensor, some data may be incomplete, unavailable, or inaccurate. These problem areas can decrease the effectiveness of a performance measure system. However, performance metrics serve a valuable role in allowing the Operations Flight Chief to monitor the progress of his work centers.

Organizational Redesign

Many organizations face the need to restructure. This need can result from competitive pressures, environmental changes, or just a feeling of needing to change. This section will outline some of the conventional literature on how organizations choose an appropriate structure. It will also cover many of the basic types of organizational structures, which will be used in the analysis of the MEO structures. Finally, some common characteristics of organizations that have undergone reorganizations will be presented.

There are many reasons why organizations are faced with the need to reorganize. Reasons can range from competitive pressures to new leadership wanting to make a change in the organization. No matter what the reasoning behind the reorganization effort, the organization is faced with the task of deciding what structure will work for its purposes. There are a multitude of management theories that purport to be the "one best way" to design an organization. Another approach to organizational design is called contingency theory. This approach attempts to separate itself from the one best way viewpoint by stating that organizations should configure themselves depending on the

situation they are in. Situational factors can include age, size, competitive pressures, and regulatory constraints. A third, but related, approach to organizational design is referred to as the configuration approach. This viewpoint accepts the fact that the situation of an organization plays a large role, but states that the different aspects of organizational design, such as span of control and decentralization efforts are not chosen independently of each other. For example, an organizational reorganization effort will not choose to establish self-sufficient work teams and limit span of control to 25 people as independent decisions. These types of decisions will be made as a result of logical needs within the organization (Mintzberg, 1996:331). In layman's terms, organizational redesign efforts are characterized by groupings within the organization that compliment each other and the organizational environment in a logical manner.

In the organizing process, developers need to establish a structure that will best meet customer requirements, such as quality, speed, and convenience. In addition to customer requirements, the redesign effort must limit the amount of conflict between functions and positions that have little or no purpose. Understanding the organization's core process and competencies as well as trying to establish decision-making capability as low in the organization as possible can meet these requirements. Of course, the redesign effort must take into account the employees' capabilities to handle their new roles in the organization (McDermott, 1996:53).

Parameters of organizational design should be considered before common organizational structures can be addressed. The first of these parameters is referred to as job specialization. This parameter is defined as the number of tasks and control over these tasks in a specific job (Mintzberg, 1996:335). Specific jobs can be analyzed by

determining the extent of their horizontal and vertical specialization. A job has a high degree of horizontal specialization if it encompasses a few narrowly defined tasks. Vertical specialization relates to the lack of control workers have over the tasks that are performed (Mintzberg, 1996:335). For example, a highly skilled job is specialized horizontally, but not vertically, meaning that the worker focuses on a few narrow tasks, but has a large amount of say on which tasks are focused upon. Unskilled jobs are usually specialized in both dimensions. If an organization utilizes highly specialized jobs, the organization can expect its workers to become very good at a small set of tasks, and specialized equipment may be developed to assist the workers. However, a large amount of highly specialized jobs can increase the work-in-process time while different specialists trade off to work on a task. Specialization can also lead to lower morale and productivity (Griffin, 1999:326).

A second organizational design parameter is the grouping, or departmentalization that takes place within an organization. As the number of employees and types of work in an organization grows, a single manager cannot oversee all operations. Therefore, organizations tend to departmentalize or group units adding different supervisory levels. These departments, or groups, are what is usually listed on typical organizational charts. Employees are not placed in groups in a random fashion. Instead, the departmentalization occurs based on some logic and a plan within the organization (Griffin, 1999:330). Unit grouping encourages coordination between different jobs by establishing common supervision. It also allows sharing of resources and establishment of common performance measurement to take place. Departmentalization is based on either the type of function performed or the customers served by the organization

(Mintzberg, 1996:335). Functional grouping encourages specialization and enables economies of scales to be utilized. For example, interior and exterior plumbers do essentially the same work, so they could be grouped to share a common set of materials and tools. Functional departmentalization also can encourage a narrow perspective on the organization. Functional departments tend to focus on how to do the work instead of what the work is accomplished for (Mintzberg, 1996:336). Customer, or market, grouping enables an organization to perform a variety of tasks and serve customer requests. It allows workflow coordination to improve, because the group is focused on the customer. However, market departmentalization decreases economies of scale and the function is not able to perform repetitive tasks (Mintzberg, 1996:336).

A third design parameter to consider is span of control. This is the number of people that work in a function and report to a single manager. If the type of work performed by a function is highly specialized, the number of people in a function tends to be smaller, because these experts will cooperate extensively in small groups. On the other hand, if the work is standardized, the number of employees under a manager will be larger (Mintzberg, 1996:338). The span of control of an organization has a profound effect on whether the organizational structure is tall or flat. Tall organizations involve extensive use of intermediate supervisors and managers and hence have a tall organizational chart. Flat organizations utilize less mid-level management and therefore have flatter organizational charts. Figure 2 represents an organization that utilizes smaller spans of control, which leads to a taller organization.

If the span of control is widened, which means a manager is responsible for more employees, the organization can be made flatter. Figure 3 represents this type of organization (Griffin, 1999:336).

Tall structures tend to be more expensive to operate, because they require more intermediate managers and supervisors. It has also been shown that taller organizations tend to foster lower employee morale and communication problems due to the fact that information has to pass through so many more people. Flatter organizations, are obviously cheaper to operate than tall, but managers in flat organizations have more administrative and personnel duties since they have more people under their control (Griffin, 1999:336).

These organizational design parameters lead to many different types of organizational structures. It would be almost impossible to discuss every type of

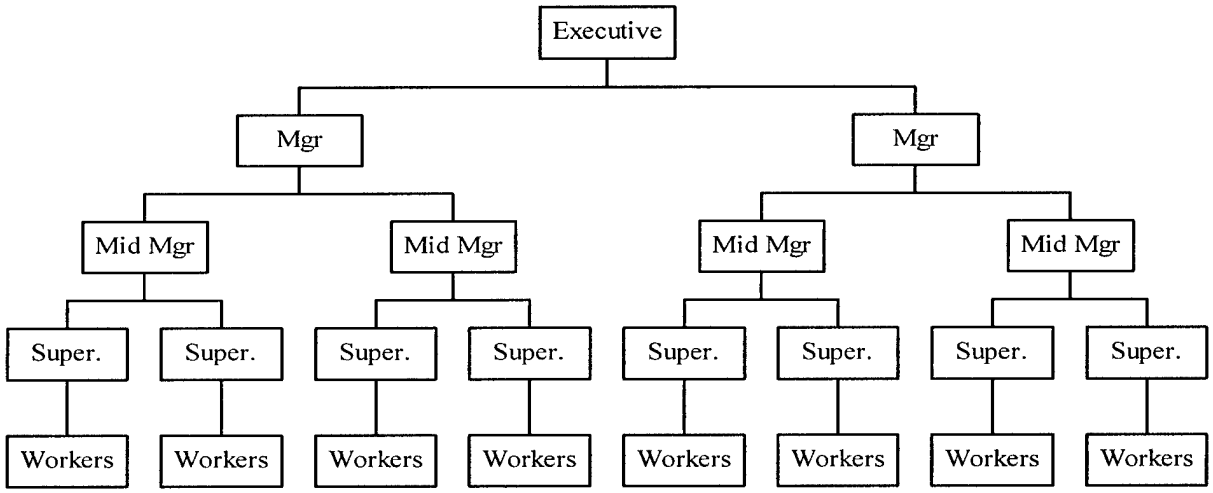

Figure 2. Tall Organization (Narrow Span of Control)

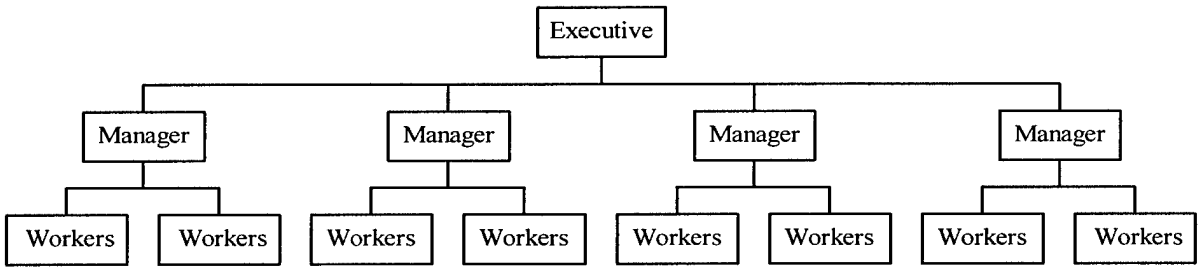

Figure 3. Flat Organization (Wide Span of Control)

organizational structure because organizational developers utilize design parameters that lead them to a unique structure that works for their organization. However, it is possible to discuss the very basic forms that will serve as the foundation to multiple variations.

The first of these basic structures is the functional design. This design is essentially based on the functional grouping discussed earlier. Figure 4 represents the functional organization in terms of a hypothetical maintenance organization that would perform tasks similar to an Air Force Civil Engineer Operations Flight. This type of design requires extensive coordination between functions, because each function's tasks

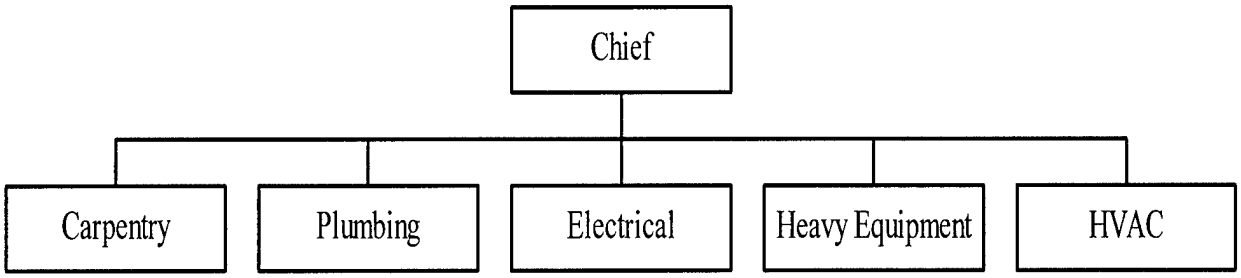

Figure 4. Functional Organizational Design

will affect other functions. The main advantage with this structure is that the organization can staff each function with experts who are able to specialize in their field of work. The largest disadvantage is that these experts tend to focus their efforts and

viewpoints functionally instead of keeping the organizational perspective in mind (Griffin, 1999:366).

Another type of structure is the conglomerate design. This design is similar to the functional set-up except that the different functions are all unrelated. An example of this type of structure would be a large financial holding company that manages a set of unrelated companies (Griffin, 1999:367). This type of organizational design should not appear with any of the Operations Flight MEO's, considering that the types of tasks an Operations Flight is responsible for are all related.

The final basic design is referred to as the matrix organization. This type of organization is characterized by functional groups with overlapping teams or product groups in which employees from the functional divisions are assigned simultaneously (Griffin, 1999:369). Figure 5 shows the basic layout of a matrix organization with respect to the same hypothetical maintenance organization. In this example, the functional departments maintain their specialized fields, such as plumbers or carpenters, but the facility maintenance zones are assigned people from these functional divisions so they can accomplish their tasks. The main problem with this type of organization is that employees may be confused as to which manager they report. The employees assigned to the teams from their functional divisions may feel some divided loyalty, and may not perform to their potential. However, this organization enables teams to be quickly formed and resources can easily be shared for different tasks (Griffin, 1999:370).

Regardless of the final structure, many organizations that have redesigned themselves to increase efficiency or gain some sort of competitive advantage in its environment have common characteristics after their reorganizations. The first of these

characteristics is that new organizational structures are flatter and managers have broader spans of control when compared to the previous structures. Second, the new organizations focus their process towards their customers instead of focusing on the means, or how the work is accomplished. Third, these new organizations are characterized by the heavy use of teams. Finally, the managers within these organizations utilize participatory groups to make policy and long range decisions (McDermott, 1996:52).

This section focused on how reorganizations are accomplished to include the design parameters utilized when developing an organization. The different types of basic organizational forms were discussed, including the functional, conglomerate, and matrix organizational designs. Finally, characteristics of organizations that have gone through recent reorganization efforts were presented. The next section will outline the case study methodology, which will be utilized to explore the MEO structures.

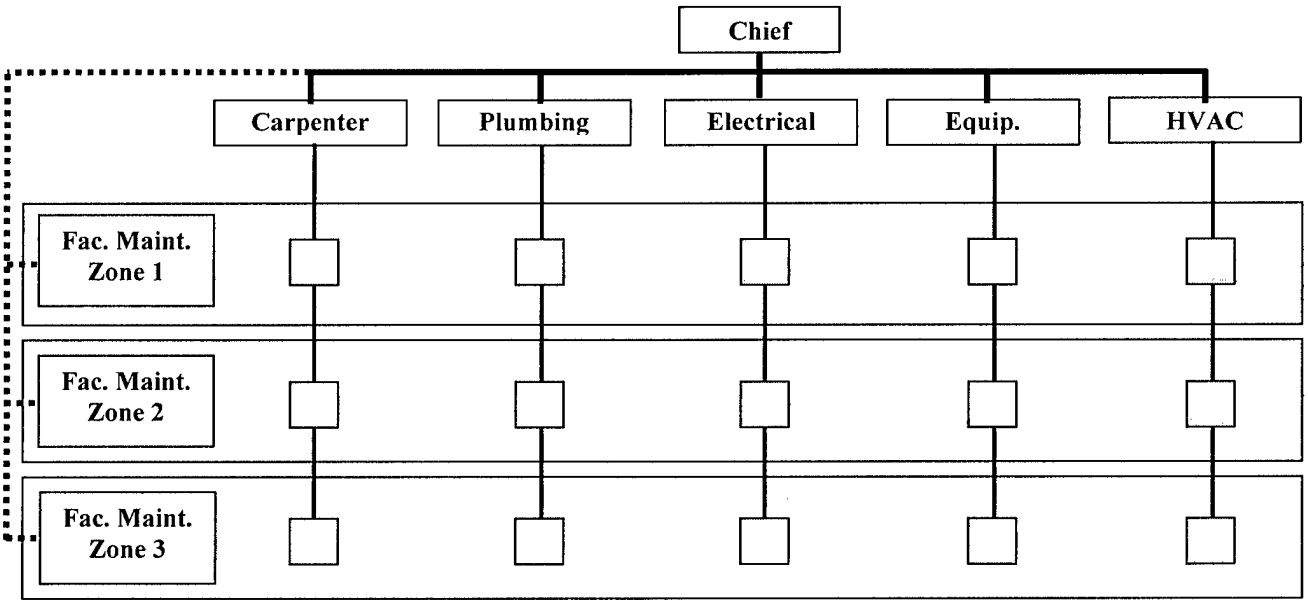

Figure 5. Matrix Organizational Design

Case Study Methodology

This section provides a brief introduction to the case study methodology, and is followed by a more detailed discussion in Chapter 3. It begins with a general summary and definition of the methodology, and the types of data that can be used as evidence within a case study. Data collection efforts are then described, along with the type of analysis approached that can be used to analyze case study evidence.

The case study has been defined as an encompassing research strategy that is designed to focus on identifying and understanding dynamics within single settings (Eisendhardt, 1989:534). This type of strategy is best utilized when the research effort has "how" or "why" research questions and when the research is exploring an entity within a real-life context (Yin, 1994:1). Case studies can include quantitative data, qualitative data, or a mixture of both (Eisenhardt, 1989:534). This data can be found in the form of documentation, archival records, interviews, direct observations, participant observation, and physical artifacts (Yin, 1994:80). Whatever type of data is utilized, the case study is a useful strategy for gaining a unique perspective on organizational phenomena. Case studies can have different purposes including providing descriptions, testing theories, and generating theories. Figure 6 provides an overview of the case study research process.

It is imperative that a rigorous case study protocol be developed. The case study protocol is essentially a guide for the researcher. It lays out the data that will be collected and how that data will be analyzed before the researcher conducts the data collection. Having a substantial case study protocol will increase the reliability of the research design by ensuring both individual cases are treated the same and the same type of data is

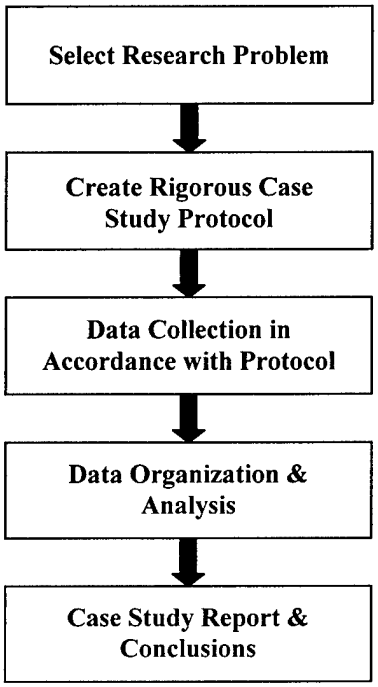

Figure 6. Case Study Research Process

collected and analyzed (Yin, 1994:63). Another method to ensure reliability in case study research is the use of a case study database. This database serves as a central repository of data collected from different sources and helps to establish the research chain of evidence (Yin, 1994:95).

Once the data has been collected, the case study researcher is faced with the daunting task of analyzing the information. There are many different methods that can be utilized, and many of these depend on the type of data that is collected and the purpose of the case study. In most cases, the first analysis step is referred to as a within case analysis. This entails detailed write-ups for each individual case. These write-ups can be pure descriptions, but they serve the purpose of allowing the researcher to become intimately familiar with the large amounts of evidence collected during the data collection phase (Eisenhardt, 1989:540). Following the within case analysis comes cross-

case pattern matching. The overall purpose of cross-case pattern matching is to force the data analysis phase to go beyond initial impressions that are formed during data collection and within case analysis (Eisenhardt, 1989:541). One method of performing cross-case pattern matching is to select categories of the individual case studies and look for similarities and differences between the individual cases (Eisenhardt, 1989:540). Another method, similar to the cross-case pattern matching, is to select pairs of individual cases and list the similarities and differences between the cases (Eisenhardt, 1989:540). This method tends to focus more on the whole picture of the cases versus individual categories within the case.

The next sections provide background on the two study bases chosen for this research effort. These introductions provide information that will be necessary during the cases study analysis.

Goodfellow Air Force Base

Goodfellow Air Force Base is located near the west Texas town of San Angelo. The base is a subordinate to Air Education and Training Command, which is responsible for training Air Force members in their respective career fields, and is home to the 17th Training Wing. The primary mission at Goodfellow is providing cryptologic and general intelligence training for all Department of Defense services and some allied countries. In addition to the intelligence training, the base also provides fire protection training for all armed services and special instruments training, which supports the United States Atomic Energy Detection System (17CS/SCBIW, 2000).

Goodfellow AFB encompasses 1,132 acres and employs approximately 3200 military personnel and 1300 civilian. The base has no active runway, however the

Operations Flight is responsible for maintaining 213 facilities including 21 dormitories, 10 Sensitive Compartmentalized Information Facilities (SCIF) for intelligence training, and propane fed fire training burn pits. (17CS/SCBIW, 2000).

Columbus Air Force Base

Columbus Air Force Base is located near the northeast Mississippi town of Columbus. The base is also a subordinate to Air Education and Training Command and is home to the 14th Flying Training Wing. The primary mission of the base is to provide Specialized Undergraduate Pilot Training (SUPT) to Air Force pilot candidates, and is home to T-37, T-38, AT-38, and T-1 aircraft (Office of the Secretary of Defense, 2000).

Columbus AFB encompasses 6027 acres and employs approximately 1400 military personnel and 1300 civilians. The Operations Flight is responsible for maintaining an active runway, and 171 facilities, of which 9 are dormitories, as well as approximately 820 military family housing units (Blair, 2001).

Summary

This chapter summarized the current literature relating to this research area. First, the traditional Air Force Civil Engineer Operations Flight structure was discussed. This discussion provided the baseline that the Most Efficient Organization Operations Flights' structures and practices will be compared against.

The next thrust of this chapter was directed at summarizing the Office of Management and Budget's Circular A-76 program, and the specifics of the Air Force cost comparison process. This provided background to the problem area of the research and established why MEO's are being utilized by the Air Force. An introduction to organizational performance metrics was also provided.

Common organizational designs were discussed to add to the analysis framework that will be utilized to explore the MEO organizational structures. This led to a discussion over the case study methodology, which is the research design utilized to examine the MEO Operations Flights. Finally, the missions and make-ups of the study bases were discussed to set the stage for the research effort. The next chapter will outline the specifics of the research methodology to include data collection efforts and analysis methods.

III. Methodology

This chapter describes the methodology used to explore the organizational structures and operations management practices of the MEO Operations Flights located at Goodfellow and Columbus Air Force Bases. This research utilized data collected during site visits at the two installations and consisted of archival records, organizational documentation, personal observations, and results from open-ended structured interviews of pertinent Operations Flight personnel.

The discussion begins with a presentation of the case study methodology to include the steps a case study researcher must take to utilize the research methodology. The data sources and how these sources were obtained are then presented. The specifics of the data collection effort are then detailed including how the research areas were developed and the specific questions that were used to address these areas. Finally, the data analysis techniques are presented detailing how the data was analyzed and conclusions drawn.

Case Study Methodology

This section provides a brief background on the case study methodology to include uses and types of case studies. The steps of a case study research effort are then described and how the current research followed these steps is demonstrated.

Case Study research is best used to answer "how" or "why" research questions and when the research is exploring a situation, organization, or decision in a real-life context (Yin, 1994:1). Case studies are used extensively not only in traditional academic fields such as political science, history, and economics, but also in practice oriented fields

such as management science, public administration, and urban planning (Yin, 1994:xiii). Case studies can utilize quantitative, qualitative or a mixture of both types of data (Eisendhardt, 1989:534). This methodology can be utilized to serve three different purposes. First, case studies can be utilized to explore the research topic. Second, researchers can utilize case studies to describe the research area in question. Finally, the case study methodology can be used to explain certain phenomena (Yin, 1994:4). This research effort utilized the case study methodology to explore and describe the organizational practices utilized by the MEO Operations Flights.

The first and most important step in performing case study research is the development of a case study protocol. The protocol is a guide for the researcher that spells out what data needs to be collected and how the data will be analyzed. This research effort is classified as a multiple case study, which means that the study is composed of more than one individual case study. The case study protocol is especially important when the research is a multiple case study. A rigorous protocol is essential for increasing the reliability of the research effort, because it ensures that all individual cases are treated equally. The case study protocol developed for this research is located in Appendix 1 and was rigorously followed in both site visits.

Once the case study protocol was completed, and the researcher was prepared for data collection, the data collection step began. Case study research can utilize many different types of data including interviews, archival records, organizational documentation, and personal observation. This research relied heavily on interviews, personal observation, and organizational documentation and was accomplished by single site visits at the research bases. All case study research does not require site-visits but,

for the purposes of this research, it was the most efficient way to collect the necessary data. The data collection effort for this thesis is discussed in following sections.

Concurrently with the data collection phase, the case study researcher must establish a research database. This database serves as a central repository for all the data collected during the research effort. Having a substantial research database dramatically improves the reliability of the research as it establishes an evidence trail that can be traced to identify how the conclusions were reached. This research utilized multiple methods to ensure a quality database. First, since the majority of the data was collected through the use of interviews, all interviews were tape-recorded and interview transcripts were developed to provide electronic and paper records of the interview results. Additionally, all organizational documentation received at the site visits was placed into six part folders and organized by type of data. Any information the researcher could obtain in electronic format was taken so that both paper copies and electronic forms could be entered into the database.

Once the data collection phase is completed the case study researcher must organize and analyze the data collected. This can prove to be a challenging task due to the large amount of information that is normally collected during case study research. The first step in the data analysis phase is to construct detailed write-ups about the individual cases. This enables the researcher to become intimately familiar with the data and also sets the stage for the cross-case analyses. One method of cross-case analysis, cross-case pattern matching, compares the cases on the basis of categories within the individual cases. Similarities and differences are highlighted in these comparisons. Another method to perform cross-case analysis is to focus on pairs of individual cases

instead of specific categories. This allows the researcher to focus on the broad picture of the cases rather than categories. This research utilized within-case analysis, and both types of cross pattern matching. The analysis is discussed in further detail in following sections.

Data Sources

This section presents the type of data collected for this research and the specifics on how it was collected. It also sets the stage for the discussion on the specific data collection effort located in following sections.

The data sources for this research were open-ended and structured interviews of pertinent operations flight personnel, archival records, such as work order histories, organizational documentation, such as organizational charts, and notes from the researcher's personnel observations. The data was collected during site visits at the two study installations. These site visits took place during the week of 16 to 20 October 2000. During the site visits, the researcher met with the Operations Flight Chiefs, and any other Operations Flight personnel that were necessary to obtain the required data. The researcher stringently followed the case study protocol located in Appendix 1 in order to collect the necessary information required to address the research questions presented in Chapter 1.

Data Collection

This section details the data collection phase of this research effort. A brief summary of the research questions is presented, followed by a discussion on how the data collection effort was broken into research areas will be summarized. Finally, each

research area will be detailed to include relative interview questions and a description of any other data that was collected.

This research's general focus was to explore how Air Force Civil Engineer MEO Operations Flights are organized and what operations management practices they are utilizing. More specifically, the research questions this thesis addressed, as presented in Chapter 1, are as follows:

- How are the newly formed Operations Flights organized and have they phased out traditional Air Force mandated structures and practices?
- Does there appear to be a common pattern of organizational structures and practices throughout the MEO flights that can be compiled for and used by Operations Flights that are entering the A-76 process in order to assist in the formulation of their most efficient structure?
- Are there any initial indicators of their performance?
- Finally, are there any lessons learned or techniques that can be taken from these new organizations and applied to the remaining traditional Operations Flights?

These questions not only provide purpose for this research effort, but also provide the framework for the data collection effort. In order to ensure the data collected during the site visits was consistent with the purpose of this research, it was arranged into three research areas. These research areas were organized in an attempt to meet all dimensions of the research questions.

The first research area strictly focused on the organizational structures of the MEO's. The second research area was designed to answer the questions about

organizational practices within the MEO's. This area is referred to as Operations Management Practices. The third research area dealt with answering questions about initial indicators of performance. Within each research area, the data collection effort was also designed to obtain information on motivations, personal opinions, and lessons learned from pertinent Operations Flight personnel. Also added were questions regarding if the MEO's knew how their customers felt about their organization. This additional information was added to provide more information than structure and practices alone to future Operations Flights that may utilize this research to help guide their MEO development. All of these research areas are discussed in detail in the following sections.

Most Efficient Organizational Structures

The first research area focused on obtaining or constructing an organizational chart on the flight level as well as organizational charts below flight level through the use of interviews, organizational documentation, and personal observation. In addition to organizational structure, an effort was made to identify the goals and objectives that were used by the MEO's in their organizational development, changes they had made in the structures, problem and success areas they had, and if their customers were happy with the new organization. The interview questions used to guide this research area are:

1. Would you please explain how the flight is organized?
2. Would you explain the communication flow within the structure (how does information have to flow in order to accomplish tasks)? Is there a lot of lateral communication across subgroups? Are problems able to be solved by autonomous groups?
3. Would you explain the span of control each of your managers/section leaders have (i.e., how many people do they supervise, how many different functions)?
4. Would you explain how the subsets of the flight are organized?

5. Would you please identify and expand on any specific goals or objectives you had in mind when you were developing the MEO structure?
6. Where there any problem areas that made MEO development difficult?
7. Have you made any changes to the MEO structure since implementation? Why? Have any requirements changed? Where changes due to these changes in requirements?
8. What was the most important factor that led you to your organizational structure?
9. How difficult a change was it transforming from the Objective Flight structure to the MEO?
10. Did you request an waivers to AFI's?
11. What area has been the most successful after the change?
12. What area has been the least successful after the change?
13. Do you have an idea of how your customers, internal and external, feel about the new organization (i.e., are they happy)?

In addition to asking these interview questions, the researcher also searched organizational documentation to locate any organizational charts that had already been produced by the organizations. If obtained, they were added to the research database.

Operations Management Practices

The second research area was designed to highlight the operations management practices being utilized by the MEO Operations Flights. Due to the multi-trade nature of the Operations Flight, there are many types and variations of management practices utilized within the flight. To assist in providing a framework to conduct this portion of the research, the Objective Flight structure was relied heavily upon. The Objective Flight is divided into five elements; Maintenance Engineering, Heavy Repair, Facility Maintenance, Material Acquisition, and Infrastructure Support. Obviously, the Objective Flight was structured around these five elements because they are the five primary types of work commitments assigned to an Operations Flight. In order to explore how the

MEO Operations Flights have organized and what practices they use to meet these commitments, this research area followed the same 5-commitment breakdown. The two study bases were asked interview questions to determine how they manage maintenance engineering, facility maintenance, heavy repair, infrastructure support, and material acquisition type commitments. The interview questions used to explore these specific commitments are:

Maintenance Engineering Commitments:

1. Is there a Maintenance Engineering function within the MEO?
2. Please describe how Maintenance Engineering commitments are met within the flight.
3. Does the Maintenance Engineering function support the seven objectives listed for the Objective Maintenance Engineering Element?
4. Where are the service contract Quality Assurance Evaluators located in the organization?
5. How would you describe the relationship between the QAE's and the contractors?
6. Who performs maintainability reviews of projects?
7. Are there infrastructure management programs? Who is responsible for these?
8. Where is the energy management program located?
9. Is there any other inspection commitments, such as IDIQ's and utility contracts, within the flight?
10. Do you think your performance in meeting Maintenance Engineering Commitments has improved since MEO implementation?
11. Do you have an idea how your customers, internal or external, feel about the way you handle Maintenance Engineering commitments (i.e., are they happy)?

Facility Maintenance Commitments:

1. Please describe how your flight handles its facility maintenance demands.
2. Do you utilize a shop, zone, or hybrid approach to facility maintenance?
3. What kind of process do you utilize for conducting facility reviews? What is your review cycle time?
4. Do you think your performance in meeting facility maintenance commitments has improved since MEO implementation?

5. Do you have an idea how your customers, internal and external, feel about the way you handle facility maintenance commitments (i.e., are they happy)?

Material Acquisition Commitments:

1. Do you have a Government Operated Civil Engineer Supply Store (GOCESS) or a Contractor Operated Civil Engineer Supply Store (COCESS)?
2. Who has responsibility for the vehicle fleet?
3. Please describe how the self-help function has changed since implementation? How would you characterize the self-help store?
4. Is there anything you perceive as unique about how your flight meets its material control commitments?
5. Do you think your performance in meeting Material Control commitments has improved since MEO implementation?
6. Do you have an idea how your customers, internal and external, feel about the way you handle Material Control commitments (i.e., are they happy)?

Infrastructure Support Commitments:

1. Please describe how your flight handles its infrastructure support commitments.
2. Does the flight maintain any central plants?
3. Do craftsmen provide any support or handle any of the infrastructure plans?
4. Do you think your performance in meeting Infrastructure Support commitments has improved since MEO implementation?
5. Do you have an idea how your customers, internal and external, feel about the way you handle Infrastructure Support commitments (i.e., are they happy)?

Heavy Repair Commitments:

1. Please describe how your flight addresses its heavy repair type commitments.
2. Do you utilize the traditional horizontal and vertical sections?
3. Are there any specific tasks that your flight does not perform, in which you exclusively utilize contract support?
4. How much does your flight utilize Simplified Acquisition of Base Engineer Resources (SABER) to support work order accomplishment?
5. Is entomology located in-house or contract?
6. Is there anything you perceive as unique about how your flight meets heavy repair type commitments?

7. Do you think your performance in meeting Heavy Repair commitments has improved since MEO implementation?
8. Do you have an idea how your customers, internal and external, feel about the way you handle Heavy Repair commitments (i.e., are they happy)?

In addition to element-specific management practices, the research also focused on four additional operations management practices. The first of these is work request processing. Operations Flights receive their workloads in the form of work requests. This process determines how long a customer must wait before their work request is approved or disapproved, and when the work can begin. The approval / disapproval processes of the two study bases were examined through the use of interviews with the Operations Flight Chiefs. The interview questions utilized for this practice are as follows:

Work Order Processing:

1. Please describe how a work request is processed to include all parties who have a part in the process.
2. Did the process change any from how you did it before the MEO implementation?
3. Is there anything you would like to change about the process?
4. Is there anything you feel is unique about how your flight processes work requests?

The second operations management practice that was examined was work classifications. The Objective Flight is required by Air Force Instruction to classify their work orders into three categories. These categories are Emergency, Urgent, and Routine. Each of these work classifications state required time limits within which the work must be completed. Emergency work orders must be completed within 24 hours of receipt, Urgent 5 days, and Routine 30 days. The MEO's were asked interview questions

regarding this subject to determine how they classify their work. The interview questions are:

Work Classifications:

1. Please describe how your flight classifies Direct Schedule Work (DSW) work orders.
2. Please describe how your flight classifies its planned work orders.

Lower level management function was the third management practice that was explored. The purpose of this was to highlight how many managers the MEO's are utilizing, where they are located in the organizational structure, what they are responsible for, and the objectives behind the structure of their management positions. Data to explore this practice was collected through the use of interviews of the flight chiefs, and the analysis of organizational charts. Interview questions utilized for this practice are:

Lower Level Management Functions:

1. Please describe how your flight has set-up its lower level managerial/supervisor functions.
2. How many management positions do you have?
3. Where are these management positions located in the organizational structure?
4. What are these positions responsible for and what is their decision-making authority?
5. What were the goals and objectives you had when establishing this structure?
6. Have you made any changes to the management structure since implementation? Why?
7. What changes would you like to make or planning to make to the management structure? Why?

The final addition to the operations management research area was an exploration of the MEO's use of multi-skilling / crafting initiatives. These initiatives are an effective way to overcome the limitations of limited manpower. The basic premise behind these initiatives is to train personnel in more than one craft so they are able to become more

versatile in addressing maintenance requirements. The focus of these interview questions was to identify if the MEO's are utilizing multi-skilling / crafting and, if so, to what extent. The research also attempted to identify what the motivations were for using these initiatives. The research questions used to identify the extent of the use of multi-skilling / crafting are:

Multi-Skilling and Multi-Crafting Initiatives:

1. Please describe the use of multi-skilling / crafting in the flight?
2. In what positions do you utilize these techniques?
3. Did you utilize multi-skilling or multi-crafting before MEO implementation?
4. What were the objectives, goals, and motivations for using these techniques?
5. Do you have copies of the Position Descriptions utilizing these techniques I can take with me?
6. What are the problems and benefits you have experienced utilizing these techniques?
7. Has the use of these initiatives been successful?
8. Is there anything you would like to change or are planning to change regarding the use of multi-skilling/crafting?
9. How would you classify your manning situation? Have you been able to maintain little or no vacancies?
10. How many positions have you saved by utilizing these initiatives?

In addition to the interviews and personal observation, position descriptions that were representative of the positions in which multi-skilling or multi-crafting are utilized were obtained and added to the research database. The interview transcripts are presented in Appendix 2, Goodfellow AFB Interview Transcripts, and Appendix 3, Columbus AFB Interview Transcripts.

Performance Measurement

The third research area was designed to establish initial performance indications on how the MEO's were operating. It was beyond the scope of this research effort to

perform an extensive performance evaluation of the MEO's due to the difficulty in collecting and analyzing the extensive amounts of data that would be required to perform such an evaluation in the limited time frame of this research effort. However, it was possible to utilize existing Operations Flight performance measures to evaluate basic tasks of the Operations Flight. The purpose of this research is to develop some a notion of how the MEO's were performing. No effort was made to compare the MEO's current performance to pre-MEO implementation performance, because the researcher assumed that the data would be extremely difficult to obtain, if available at all, and would not be possible within the time constraints of this research effort.

The seven performance measures that were chosen were developed and compiled by personnel at the Air Force Civil Engineer Support Agency (AFCESA). AFCESA is responsible for supporting and providing assistance to Air Force Civil Engineer units worldwide. The Operations Support Directorate at AFCESA published the performance measures utilized in this research on their web page. Included with the performance measures are upper and lower performance lines, along with performance baselines. These performance limits were utilized to establish a picture of the MEO's performance. Data utilized by these performance measures was collected through the use of archival records and organizational documentation. Data was collected as far back as the archival documentation would allow, in order to establish as large a trend of performance as possible.

The first performance measure described how many Direct Schedule Work orders (DSW) the flights had open in each category—Emergency, Urgent, and Routine. This metric allowed the researcher to establish the flights' workload on a monthly basis.

There were no performance limits or baselines attached to this metric. The following represents the basic form of the performance measure.

Month i
Number of Emergency DSW:___
Number of Urgent DSW:___
Number of Routine DSW:___

In this metric "i" represents the month in which the data was reported, and the number of DSW is the actual count of DSW in each category for month i. Data for this metric was collected by obtaining reports from the Work Information and Management System (WIMS) that showed the work orders opened in each category.

The second metric chosen established how the flights were performing with respect to their DSW completion rates. Each work category holds some completion standard in terms of hours or days. This metric examined the percentage of DSW the flights were completing on time. The following represents the basic form of this metric.

$$\%DSW_{OT} = \frac{t_{DSW}}{t_{CAT}} \qquad \textbf{Equation 1}$$

where

$\%DSW_{OT}$ = *Percent of DSW orders completed on time (by category)*

t_{DSW} = *Total time to accomplish DSW orders (by category)*

t_{CAT} = *Total time allowed by category*

The upper performance limit for this metric was established at 110 percent, which means the flight is operating within the accepted performance range if it does not exceed the total time allowed for each category by 10 percent for the reporting month. Data for this metric was collected by utilizing WIMS reports that showed the creation and closing

dates of each work order by category per month. This allowed the researcher to establish the total time to accomplish the work orders by classification.

The next performance metric was designed to report much of the same information as the previous, except that it only identifies what percentage of total DSW the flights are completing on time. It does not break the metric out by categories. The following represents the basic form of the measurement.

$$\%DSW_{OT} = \frac{\sum DSW_{OT}}{\sum DSW} \qquad \textbf{Equation 2}$$

where

$\%DSW_{OT}$ = = *Total percentage of DSW orders completed on time*

DSW_{OT} = *DSW order completed on time*

DSW = *DSW orders*

The lower performance limit for this metric is 60 percent, meaning that the flights are operating with the accepted performance range if they are completing 60 percent of their DSW within the required time limits per month. The average baseline for this metric was 80 percent, which means that an 80 percent on-time rate is the goal. Data for this metric was collected in the same manner as the previous measurement.

The fourth metric was utilized to highlight the number of backlogged work orders the flight had in their system. These are In-House Work Program (IWP) work orders, which means they are larger multi-craft work orders that involve more man-hours than typical DSW orders. IWP work orders could include such things as room alterations or structure modifications. The basic form of this measurement is as follows.

$$BL = IWP_{Open} - IWP_{Close} \qquad \textbf{Equation 3}$$

where

BL = *Backlog per month*

IWP_{Open} = *Number of IWP work orders opened per month*

IWP_{Close} = *Number of IWP work orders closed per month*

There are no performance limits associated with this metric, but obviously, the higher the number of backlogs, the lower the rating. Backlog is measured per month and will obviously fluctuate depending on the number of work orders the flight opens versus the amount it can complete. Data for this metric was collected by obtaining WIMS reports that showed the creation and completion dates of all IWP work orders. These reports allowed the researcher to calculate the number of work orders opened versus the number completed.

The fifth AFCESA performance measurement also relates to the IWP work orders. This metric establishes how effective the flights are at planning the estimated number of man-hours required to complete IWP work orders by showing the percentage of estimated hours versus the actual hours expended on the work orders. The following shows the basic form of this metric.

$$PE = \frac{\sum t_{EST}}{\sum t_{ACT}} \quad \textbf{Equation 4}$$

where

PE = *Percentage of estimated hours versus actual hours per month*

t_{EST} = *Estimated hours for IWP work order*

t_{ACT} = *Actual hours for IWP work order*

The upper performance limit for this metric is 110 percent, which means that a flight is effectively planning their work orders if their estimated hours are less than 10 percent

over the actual hours or above the lower control limit. The lower performance limit is 90 percent, which means the flight is effectively planing their work orders if their estimated hours less than 10 percent less than actual hours expended, or less than the upper control limit. Data for this metric was collected by analyzing the weekly schedules and WIMS IWP reports, which detail the estimated hours along with the actual hours used per year.

The sixth performance measure chosen to establish a basic picture of performance deals with the flights' recurring work programs (RWP). This highlights the percentage of their RWP items they are completing versus the amount they had scheduled. The basic form of this measure is as follows:

$$RWP_{\%} = \frac{\sum RWP_C}{\sum RWP} \qquad \textbf{Equation 5}$$

where

$RWP_{\%} = Percent\ of\ RWP\ completed\ per\ month$

$RWP_C = RWP\ item\ completed$

$RWP = RWP\ item\ scheduled$

The lower performance limit for this metric is 90 percent, which translates to a flight operating with performance range if 90 percent of their RWP items are completed per period. Data for this metric was obtained by pulling WIMS reports on the RWP program that showed the percentage completed per month.

The seventh, and final performance measure chosen for this research effort examines the percentage of facility surveys the Operations Flights are accomplishing with respect to the number they have scheduled for the reporting period. The generic form of this performance measure is as follows.

$$FS_{\%} = \frac{\sum FS_C}{\sum FS} \qquad \textbf{Equation 6}$$

where

$FS_{\%}$ = *Percent of facility surveys completed per month*

FS_C = *Completed facility survey*

FS = *Scheduled facility survey*

The lower performance limit associated with this measure is 80 percent which translates to an Operations Flight performing in the acceptable range for facility surveys if they are accomplishing 80 percent of their schedule per reporting period. Data for this metric was received by obtaining copies of facility maintenance schedules and reports that showed surveys that were completed per month.

Data Analysis

The data collected for this research effort was analyzed utilizing the case study methodology, which is summarized in previous sections. This section describes the data analysis effort by listing the steps used to make sense of the massive amounts of data collected on the site visits. This analysis provided a thorough understanding of how the MEO Operations Flights are organized and what type of management practices are being utilized.

Before any of the data analysis techniques discussed in Chapter 2 and in previous sections in Chapter 3 could be utilized, the data collected during the site visits had to be organized into a useable form. The most challenging aspect of this task was to create paper transcripts of the interviews. These transcripts are an integral part of the research database, which is crucial in increasing reliability of case study research. This was

accomplished by tediously playing back the tape-recorded interviews and utilizing Microsoft Word to create the electronic and paper transcripts. In addition to the interview results, organizational documentation and archival records obtained required sorting and organizing. The organizational documentation was arranged by research area into folders that allowed the researcher to ensure all documentation remained organized and could be reproduced. The archival records that were collected were also placed into folders but, to facilitate the analysis, the raw data, such as work order histories, was entered into Microsoft Excel. Excel enabled the researcher to establish charts and analysis that could show performance trends.

The first step in the data analysis phase was to construct the within case analyses for each base. A detailed write-up was accomplished for both Goodfellow AFB and Columbus AFB, and to summarize the findings of each site visit. These within case analyses followed the framework established by the three research areas, MEO Organizational Structure, Operations Management Practices, and Performance Metrics. This effort ensured each individual case was described and explored before any cross case analysis began.

Following the within case analysis, the cross case methods discussed in previous sections in this chapter were utilized. First, the two MEO's were compared and contrasted against the Objective Flight which enabled the researcher to determine how much the MEO's appeared to have separated themselves from Objective Flight organizational practices. Second, the two MEO's were compared and contrasted against each other. These analyses followed the same framework as the within case analysis—organizational structure, management practices, and performance metrics. However, this

analysis was much more detailed and highlighted showing how the two flights did business alike and differently by identifying patterns of structures, practices, and performance indicators between the two organizations.

Summary

This chapter detailed the methodology used in the exploration of MEO Operations Flight organizational design. It began with a brief discussion of the case study methodology, and the steps involved in conducting case study research. Next, the types of data sources utilized in this thesis were highlighted. Third, the data collection phase of the research was detailed, which included discussion on the development of three research areas—MEO Organizational Structure, Operations Management Practices, and Performance Metrics. These research areas were developed to specifically address the research questions presented in Chapter 1. The data collection discussion also included interview questions, and generic forms of the performance metrics. Finally, the analysis of the data was presented, which included discussion on the within case analyses and the cross case analyses. The next chapter will detail the data analysis and results.

IV. Results and Analysis

This chapter presents the results and analyses from site visits at Goodfellow AFB and Columbus AFB. The chapter is divided into three sections. All three sections follow the framework provided by the three research areas presented in Chapter 3—organizational structure, operations management practices, and performance measurement. The first section is the within case analysis of the Goodfellow site visit. It discusses the results of the site visit in terms of the Goodfellow MEO's organizational structure, management practices, and performance data. In addition, the researcher discusses other data that was obtained that did not fit within the three-research area framework but had relevance to the research effort. The second section provides the within case analysis for the Columbus AFB site visit and follows the identical framework as the previous analysis. The final section provides cross case analysis between the MEO's and the Objective Flight, where applicable, by first comparing the organization structures of the three organizations, and then the operations management practices. Finally, the performance data obtained during the site visits is compared and discussed.

Goodfellow Air Force Base Results

This section will present the within case analysis results of the Goodfellow AFB site visit. It will first cover the current organizational structure of the MEO to include flight level structure, element structure, and discussions on changes to the structure and motivations behind the structure development. Next, it will cover the results from the operations management investigation, which includes a presentation on how the flight meets its typical commitments. Third, the analysis of the performance measurement data

is summarized. Finally, items the researcher perceived as unique or did not fit into the three-research area framework are discussed.

The Goodfellow AFB site visit was conducted on October 16 and 17, 2000. The researcher met with the Operations Flight Chief on the morning of the sixteenth and spent the majority of two days interviewing him. The Flight Chief was an integral part of Goodfellow's MEO development and is considered extremely knowledgeable in the field of MEO development and management. His professional reputation is demonstrated by numerous guest lecturer appearances in the Air Force Civil Engineer and Services School's competitive sourcing class offerings. The results presented in this within case analysis were derived from interviews, along with organizational documentation, archival records, and personal observation of the researcher.

Goodfellow MEO Organizational Structure

The Civil Engineer Operations Flight at Goodfellow AFB is best described as a matrix organization. Matrix organizations are characterized by functional groupings that include overlapping teams, product groups, or temporary projects, in which employees from the functional divisions are assigned simultaneously. Figure 7 shows the flight level organization chart for the MEO.

As the figure highlights, Goodfellow's MEO contains functional groupings and temporary project teams, which are the main characteristics of matrix organizations. The flight consists of three elements—Maintenance Engineering, Heavy Repair, and Facility Maintenance, and consists of 87 personnel slots. Maintenance Engineering does not appear on the same level of the organizational chart as the other two elements, because

personnel in Maintenance Engineering are not classified as MEO positions because they were not part of the A-76 study. However, the Operations Flight Chief serves as their

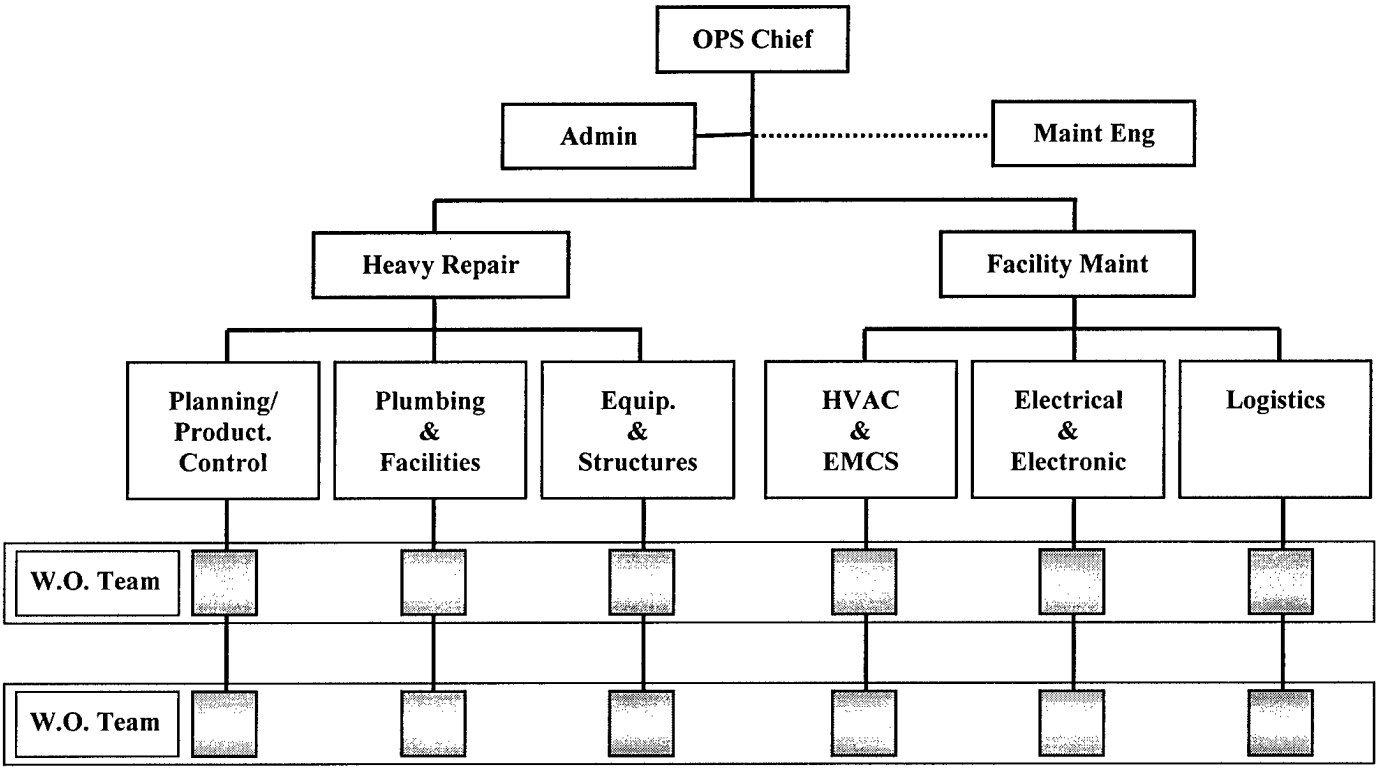

Figure 7. Goodfellow MEO Structure

supervisor. Because Maintenance Engineering primarily performs administrative type functions versus maintenance or light construction, the researcher placed the element in its current position on the organizational chart, even though Goodfellow has it as an integral element.

The other two elements have similar names to the Objective Flight element titles, but they are much broader in their responsibilities. The flight chief acknowledged during the case study interviews that these names do not describe the responsibilities of the elements and that they were only chosen because at the time of development he did not

know what else to call them. This may serve as a point of confusion for the observer, but the functions of the elements can best be described by exploring their shop components.

The Heavy Repair Element is headed by a single manager and consists of three separate shops employing 41 personnel. Figure 8 annotates the structure of the Heavy Repair Element and its shops. Single supervisors head the Plumbing and Facilities Shop and Equipment and Structures Shop. The Plumbing and Facilities Shop consists of seven plumbing personnel, one plumbing helper, and eight facility maintenance mechanics,

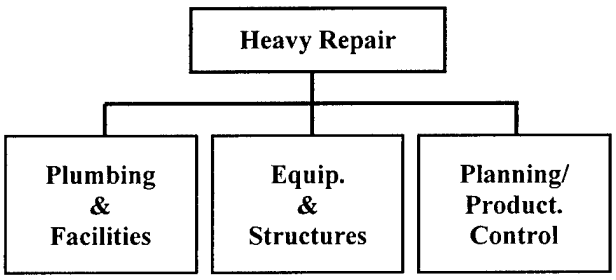

Figure 8. Goodfellow MEO Heavy Repair Element

for a total of 16 personnel. The Equipment and Structures shop also includes a work leader who is responsible for coordinating and setting the pace of work. This shop consists of one work leader, five equipment personnel, two equipment helpers, eight structures personnel, and one structures helper for a total of 17 personnel. The Planning and Production Control Shop is not headed by a supervisor and provides more administrative type functions to the manager. This shop consists of two work leaders who also serve as planners and play a pivotal role in the function of the matrix organization. The work leaders plan an In-House work Program (IWP) work order, order the materials, and then construct a crew from the functional shops of the organization to accomplish the work. During the period this work order is being accomplished, these work leaders carry the same organizational status as a supervisor. These are the

temporary project teams that give the flight its matrix structure. In addition to the two work leaders, there are also three production control personnel, and one administrative assistant position, for a total of six personnel slots.

The Facility Maintenance Element is also headed by a single manager, and consists of three shops employing 40 personnel. Figure 9 highlights the element's organizational structure. A supervisor heads each of the three shops within the element.

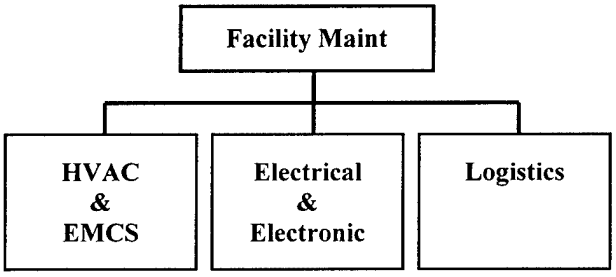

Figure 9. Goodfellow MEO Facility Maintenance Element

The first shop, HVAC and EMCS, which stands for Heating, Ventilation, and Air Conditioning and Energy Management and Control System, consists of 16 personnel billets. These 16 slots are comprised of one Work Leader, eight HVAC personnel, two HVAC helpers, and five EMCS personnel. The Electrical and Electronics Shop employees 13 personnel, which consist of two high voltage electrical personnel, four interior electrical personnel, two power production personnel, one electrical helper, and four electronics personnel. Logistics is the final shop and it consists of eight supply personnel.

The Operations Flight Chief described the communication flow of this structure as very open. In fact, he stated that was by design. It did not make sense to him to have personnel running requests and problems up and down a rigid chain of command when

they could go directly to the person in question. This is exactly how the flight handles communication. Questions and problems are directed to the person they involve and problems are solved at the lowest level. It was also pointed out that the physical location of the shops and managers is perceived to be an advantage in the flight. Supervisors for the Heavy Repair Element are in the same office as is the facility maintenance supervisors. The flight also operates from a single facility and large multi-craft shop. The flight chief perceives this as a facilitator of increased communication.

This structure is not the first organizational design the Goodfellow MEO utilized. Shortly after MEO implementation, the number of personnel in specific crafts began to change. The flight chief explained this phenomena with the following example. Based on estimated workloads the MEO was configured with four electricians and four carpenters. However, after a year, actual workloads showed that five electricians and three carpenters were needed. Therefore the MEO needed to gain another electrician and shed a carpenter. To make this type of transition easier, the Operations Flight Chief recommended that the MEO be first staffed with several temporary employees. Temporary employees are easier to terminate under the civilian personnel system should the need arise. Once an acceptable number of craftsmen is reached, these temporary positions can be converted over to permanent employees.

In addition to the number of craftsmen, the number of total personnel in the organization has changed dramatically since implementation. The initial MEO at Goodfellow consisted of 70 personnel. Currently, they have 87 slots. This increase was due to the Department of Defense Fire Fighter Training mission bed down and workload changes caused by security changes in the Intelligence Training Group. Additional

manpower was also transferred from base supply due to increased International Merchant Purchase Agreement Card (IMPAC) purchasing by the flight.

Perhaps the largest change experienced by the Goodfellow MEO was a complete reorganization from its original structure. This change was due to a number of factors. First, the flight chief and his managers felt that the original structure was not performing as well as it could. The original structure utilized two managers, two supervisors, and six work leaders. This arrangement put significant pressure on the two supervisors, because of requirements such as performance appraisals and disciplinary procedures required by the Air Force Civilian Personnel system. The span of control for a single supervisor was simply too great. Also, there was confusion as to the difference between a work leader and a supervisor. Work leaders are extremely limited in their supervisory type duties. They cannot write appraisals and cannot assign disciplinary actions. However, because of the confusion, many people were coming to the work leaders with supervisory type problems. In addition to specific problems, the flight chief also wanted the organization to be a dynamic one, which could reorganize to address these types of problems. Figure 10 details the original MEO structure.

As the organization chart demonstrates, the original structure consisted of a three-element design. The functions within these elements were dramatically different from the current structure, however. Instead of having multiple shops headed by supervisors underneath each element like the current structure utilizes, the old structure employed a single shop with up to three different crafts under a single supervisor. For the reasons discussed above the decision was made to transform this structure into the one shown in Figure 6. To make this reorganization successful, the flight chief stated that they utilized

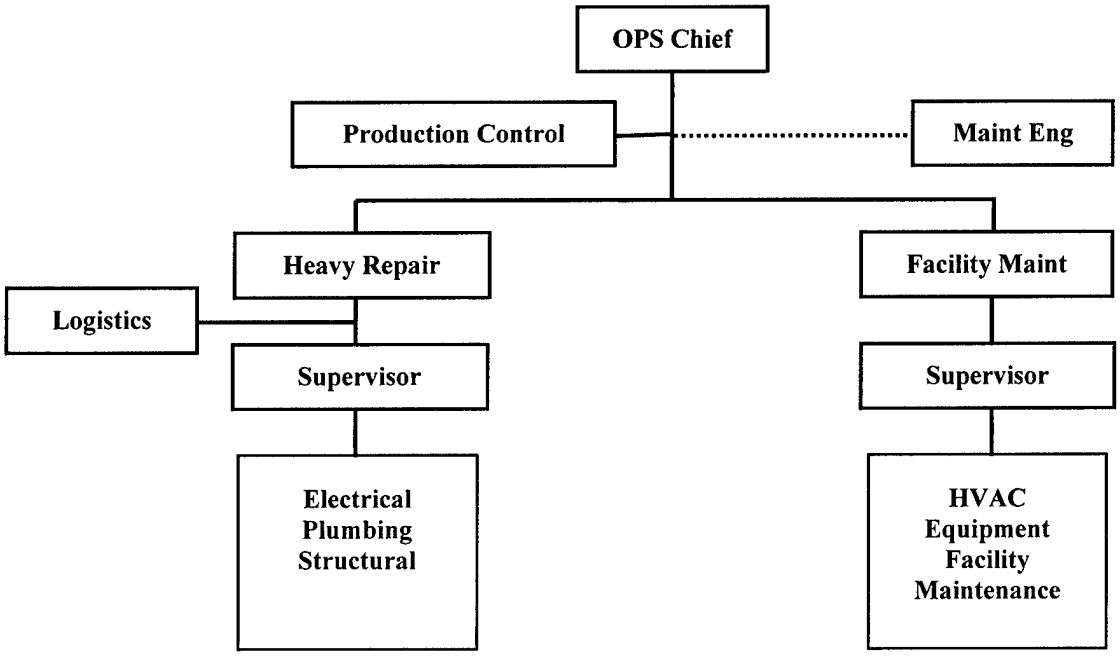

Figure 10. Old Goodfellow MEO Structure

a working group composed of him, the two managers, and five volunteers from the flight. This, he stated, helped them utilize a common sense approach to reorganization and functional groupings, such as including equipment within the same element as structures and plumbing, two crafts the equipment shop supports the most.

The flight has experienced three categories of changes including craft mix, manpower numbers, and organizational structure. All of the changes made to the Goodfellow MEO are summarized in Table 1.

Table 1. Changes to the Goodfellow MEO

Change	Reason
• Number of personnel per craft	• Adjust mix to accommodate actual workloads
• Manning increase from 70 to 87	• Mission changes, workload increases, and transfer of supply positions
• Organizational restructuring	• Not happy with original structure, supervisors' spans of control too large, confusion over work leaders

Regardless of the structure, or what changes were made to the organizations, the flight chief had specific goals and motivations that drove the development and organization of the MEO. The flight chief jokingly said one of the main goals was to win, but it is true that one of the main goals a MEO development team must have is to win the competition. A second goal was to create a non-restrictive organization that did not require things to be done a certain way. The flight chief did not want a traditional hierarchical organization in which everything must pass through an employee's supervisor, and then the next supervisor, just to be sent to another function. In addition to a less restrictive organization, another goal was to make it as flat as possible. The flight chief said the goal was to become as flat as possible without having a blowout. He also pointed out that the original was too flat—a blowout, and hence the additional supervisors were added. The main thrust of the development was to create a workable, non-restrictive organization. The goals and motivations relating to the development of the MEO structure are summarized in Table 2.

Table 2. Goodfellow MEO Development Goals

MEO Development Goals
• Win the cost competition
• Create a non-restrictive organization
• Create as flat an organization as possible

In addition to the establishment of goals, problem areas were encountered during the development of the MEO. The main problem area pointed out by the Operations Flight Chief was the civilian personnel system. The rules and regulations of this system made the hiring and position development very cumbersome. Problems arose with the use of multi-skilled positions. Civilian employee position descriptions can contain only three skill codes which determine what type of experience goes into the employee's

federal employment record. However, there may be more than three skills that are desired in a multi-skilled position, which creates problems for MEO's since they are all civilian. The flight chief pointed out that prior to the MEO implementation the flight was very heavy towards the number of military employees versus civilian. Once the MEO was implemented, however, there was a sharp increase in civilian discipline problems that had to be handled through the civilian personnel system, because of the increase in civilian personnel in the Flight. As the flight chief stated, there was a steep learning curve to understand the civilian personnel system. The problems associated with Goodfellow's MEO development are summarized in Table 3.

Table 3. Goodfellow MEO Development Problems

MEO Development Problem Areas
• Civilian Personnel system
➢ Steep learning curve for personnel not familiar with the system
➢ Limitations on multi-skilled position descriptions
➢ Cumbersome rules and regulations

Following MEO development, is the implementation and operation of the MEO structure. Goodfellow's implementation was described as smooth with not many problems regarding the organization. However, the flight chief indicated that personnel and personality problems caused some problems during the implementation. One example he discussed with the researcher described the limited core of civilian employees at Goodfellow before the MEO. During implementation, approximately 40 employees were brought into the flight to fill new positions. Goodfellow received 15 employees from one base which had a different work ethic than what the flight chief and his core of employees wanted for the organization. This took some energy away from the implementation process, because the management was dealing with discipline problems

and attitudes versus focusing on implementing the aspects of the MEO. The flight chief, however, made the point that it is the people that make the organization. He stressed that he has an outstanding collection of employees that make the MEO a success.

The flight chief stated that he perceived the most successful area of the MEO has been the quality of maintenance they have been able to provide to the base. In his opinion, having an all civilian workforce makes it a more mature focused workforce that takes pride and ownership in the base facilities. He also pointed out that the amount of time the flight can dedicate to base maintenance, or the availability rate, is much higher than prior to MEO implementation. This is a civilian workforce that can concentrate on base maintenance without having to juggle other traditional military civil engineer duties such as contingency training. It was also the Operations Flight Chief's perspective that the external customers of the organization were extremely happy with the performance of the MEO. He based his perception on comments he has received from other base commanders through the Base Civil Engineer, and through the customer satisfaction survey program.

Goodfellow Operations Management Practices

In addition to basic organizational structure, this research focused on the operations management practices the flights were utilizing. The first practices explored were the methods the flights used to meet the five basic types of Operations Flight commitments—maintenance engineering, facility maintenance, material acquisition, infrastructure support, and heavy repair. These five types of commitments were based on the five-element structure of the Objective Flight. The results were derived from interview transcripts and personal observation.

Goodfellow's MEO includes a Maintenance Engineering Element in its organizational structure, but the personnel within the element are not MEO positions. When the flight went through its A-76 study, the Maintenance Engineering Element was not included. However, they do provide support to the MEO and the flight chief is classified as their supervisor. The element tries to address most maintenance engineering type commitments. The element is staffed with five personnel, which includes an element chief, the only military position in the Operations Flight, a mechanical engineer, draftsman, engineering assistant, and one quality assurance employee. Maintenance Engineering lacks the engineering expertise found in other Maintenance Engineering Elements. Despite this constraint, the element was recently reviewed by an Air Education and Training Command (AETC) team that scored Goodfellow's maintenance engineering approach one half of one percent below the best Maintenance Engineering Element in the command.

Goodfellow's maintenance engineers do not manage the flight's RWP program, which is one of the basic responsibilities spelled out in the Air Force Instruction that defines Air Force Maintenance Engineering. The RWP program is reviewed and managed through the heavy repair and facility maintenance managers and the production control personnel on an as needed basis. The infrastructure management plans are maintained in Maintenance Engineering. The element developed an infrastructure management computer program to assist in tracking and storing the data required to maintain these plans, but there is no expertise in the element to perform the inspections required by these plans. Therefore, the shops with appropriate expertise handle the infrastructure inspections. Maintenance engineers are normally responsible for

conducting project maintainability reviews. However, due to lack of engineering expertise and manpower, the entire Operations Flight conducts these reviews. Project specifications and drawings are placed in a common area and the supervisors and craftsmen are required to make review comments on the projects. Goodfellow's Maintenance Engineering manages and inspects the flight's service contracts and ensures all employees of the element are quality assurance qualified in order to cover for the single quality assurance employee as needed. The flight chief believes that his flight's ability to meet maintenance engineering commitments has improved since MEO implementation, but this improvement was not due to the MEO structure or management. He thinks that the element has learned how to address all their responsibilities in a more efficient manner over time. He also believes that the customers of the element, mainly other Operations Flight personnel, are extremely happy with their performance, and consider them an important part of the Operations Flight. Table 4 summarizes how Goodfellow meets its maintenance engineering commitments.

Table 4. Goodfellow Maintenance Engineering Commitments

Maintenance Engineering (ME) Commitments
• ME positions not officially part of the MEO • Little manning—five personnel • RWP is not managed by ME • Inspections for infrastructure plans conducted by shops • ME does not exclusively conduct maintainability reviews • Service contracts are managed by ME—all personnel are QA qualified • Perceived improvement since implementation, but not due to MEO structure or practices

The second area of operations management that was explored was how the flight handled its facility maintenance commitments. The flight does not have a Facility

Maintenance Element, but it has a very active facility maintenance program. The facility maintenance technicians are members of the Plumbing and Facilities shop under the Heavy Repair Element. There are eight facility maintenance technicians in the shop. One of these personnel works the night shift, from 1600 to 0000. The remaining seven form three, two-man facility maintenance teams with the odd man out becoming a floater. These teams inspect every facility on base at least once annually, and many high-use facilities such as dormitories quarterly. The teams will inspect the scheduled facilities the first week and annotate any areas that need to be addressed. The second week, the teams will accomplish the work in the facilities inspected the week before as well as conducting inspections in the next set of facilities. The technicians divided up the facilities into three groups, which each team takes ownership over. This is similar to a zonal concept, because one team stays with the same facilities year after year, but there are no official zones and they operate out of a single shop. The flight chief stated that this gives the teams a sense of pride and ownership in each team's facilities, and he thinks this system provides the highest quality of facility maintenance he has seen.

In addition to performing work on problem areas the teams locate during inspections, the teams are responsible for approximately 20 percent of the flight's total RWP items. Their checklists for each facility will identify RWP items, such as HVAC filter changes and pump maintenance, that need to be completed. The Operations Flight Chief described this as a significant time saver for the flight. The flight chief definitely believes that the flight's performance in meeting facility maintenance demands has improved since MEO implementation. He states that the number of Emergency work orders has decreased from approximately six percent of total work orders prior to MEO

implementation to less than one percent. During this same timeframe the number of Routine work orders has increased, which shows that the quality of maintenance has improved to a point where emergency type work has almost disappeared due to increased preventative maintenance. The perception of customer satisfaction is also present regarding facility maintenance performance. The flight chief states that all customer indications show that they are doing extremely well. These indications come from customer feedback surveys and as well as the Plumbing and Facilities shop supervisor randomly interviewing customers to follow up on how their performance measured up to the customer's expectations. Table 5 summarizes Goodfellow's facility maintenance approach.

Table 5. Goodfellow Facility Maintenance Commitments

Facility Maintenance (FM) Commitments
• No separate FM element—operate out of Plumbing and FM shop
• 3, 2-man teams conduct inspections and perform work
• All facilities inspected at least once annually. High use facilities inspected quarterly
• Teams divided the facilities into 3 groups—teams take ownership of these facilities
• Accomplish approximately 20% of flight's RWP items during inspections
• Performance is perceived to have definitely improved since implementation
• Customer satisfaction is perceived to be very high

The next operations management practice explored was the material acquisition aspect of the flight. Goodfellow does not have a separate Material Acquisition Element. They have placed their material control personnel in a logistics shop under the Facility Maintenance Element. The logistics personnel do not manage the squadron's vehicle program. The Equipment and Structures shop supervisor accomplishes this duty.

The flight chief perceives the self-help aspect of the logistics shop to be too large. He thinks that the store carries too much stock, and he wants to scale it down to the minimum required material. The flight chief does consider how the flight buys material to be unique. He states that they try to do as much on-time buying as possible, which minimizes the amount of materials that need to be warehoused by purchasing them when needed instead of buying the materials and storing them until the job is started. There is one designated employee in logistics that purchases materials for bench stock, which are commonly used items by the shops. In addition to this buyer each shop supervisor is issued an IMPAC card, which is utilized to buy all the materials necessary to accomplish each shop's DSW orders. Each planner also has an IMPAC card, which is used to purchase materials for the IWP work orders they are work leaders on. This program has the advantages of on-time purchasing and reduced warehousing demands, but the flight chief has also had problems caused by the number of IMPAC cards issued. These problems mostly deal with over obligation of funds caused by poor record keeping. The Facility Maintenance Manager is currently considering returning all buying operations to the logistics element. This consideration is based on the problems they have had with the IMPAC card as well as a visit to Columbus AFB, where their material control function handles all buying. The flight chief said he was not going to stop his managers from trying something new. He also stated the customers utilizing logistics' services seem to be pleased with their performance. The flight chief also thinks that material acquisition has improved since implementation, but not because of the MEO structure. The IMPAC card brought upon this improvement. Table 6 summarizes the approach to material acquisition commitments.

Table 6. Goodfellow Material Acquisition Commitments

Material Acquisition (MA) Commitments
• No MA element—shop under the FM element • Self help store carries too much stock, flight chief wants to scale it back • On-time buying program is considered unique ➢ All supervisors utilized the IMPAC card to purchase DSW materials ➢ Planners also utilize card • MA performance has improved due to IMAPC card use not MEO implementation • Customers seem pleased with performance

The fourth type of commitment that was explored was infrastructure support. The Goodfellow MEO does not have an element specifically dedicated to the maintenance of infrastructure systems such as water and electrical distribution. They do not have any central plants such as water and wastewater treatment to operate and maintain. Plumbers and electricians from their respective shops perform maintenance and items from the RWP on an as needed basis, as well as provide inspection services for the infrastructure management plans. The flight chief has seen no major improvement due to the MEO on how infrastructure commitments are addressed. He also believes the customers don't care how they are performing in this arena as long as water, fuels, and electricity are available for consumption. Table 7 highlights the findings on how the MEO meets infrastructure support commitments.

The fifth and final type of commitment explored was the heavy repair category. The MEO does not have an element dedicated specifically to heavy repair type commitments. Instead they have a shop under the Heavy Repair element, which is a point of confusion due to terminology, that houses the structural and equipment craftsmen. This shop is headed by a single supervisor and is not physically arranged in

Table 7. Goodfellow Infrastructure Support Commitments

Infrastructure Support (IS) Commitments
• No IS element—craftsmen work on systems on an as needed basis • No central plants to maintain • Craftsmen provide inspection support for infrastructure management plans • No perceived improvement due to MEO implementation

the traditional horizontal and vertical breakouts, even though the structures and equipment crafts are in the shop. The flight does not perform major pavement repairs or overlays, and exclusively utilize contract support to perform this type of work. They do repair minor potholes, however. They also utilize SABER quite extensively. In fact, the flight chief believes that SABER is utilized at Goodfellow like it was originally designed for—assist in work order accomplishment. The MEO has a set amount of work it can take on, and anything requested that exceeds that threshold is accomplished by SABER. The MEO also utilizes other contract support through small contracts written by Maintenance Engineering and contractors acquired through the use of the IMPAC card. Entomology is an in-house operation, however it is not located in the Operations Flight. The entomology function has been transferred to the Environmental Flight. The flight chief could not say if anything they do to meet heavy repair type commitments is unique, because he has not seen enough Heavy Repair Elements. He does think their performance has improved since MEO implementation. He attributes this improvement to the fact that a MEO has a set workload. In the past they would work overtime constantly and allow work orders to back up. Now, the flight is more focused due to their workload definition in the PWS, and he perceives this as a big advantage. Table 8 summarizes Goodfellow's heavy repair type practices.

Table 8. Goodfellow Heavy Repair Commitments

Heavy Repair (HR) Commitments
• No HR element—shop with a single supervisor • Not organized into the traditional horizontal and vertical breakouts • Do not perform major pavement work • Utilize SABER, other contract support extensively • Entomology has been moved to Environmental Flight • MEO workload definition is a perceived improvement

As well as exploring how the MEO addressed typical Operations Flight commitments, four additional management practices were investigated. These were work request processing, work classifications, lower level management, and the use of multi-skilling.

The first of these additional practices dealt with how the flights process a work request. Figure 11 summarizes the work request approval process at Goodfellow AFB. It begins with an Air Force Form 332 generated either by a customer coming to the service desk, calling a request in, or generated internally. The customer service personnel will examine the work request and try to make a determination whether the work requested can be classified as a DSW order. Work is generally classified a DSW order if it is estimated to be less than 40 man hours and require less than two shops. If the customer service personnel can make the determination, then it is assigned immediately to the appropriate shop supervisor. The 332's that are in question are then sent to the flight chief for a final opinion. The flight chief can either classify the requests DSW work orders, send the work request to the Work Order Review Meeting (WORM), or have one of his managers assign someone to give the request a closer look. If a closer look is

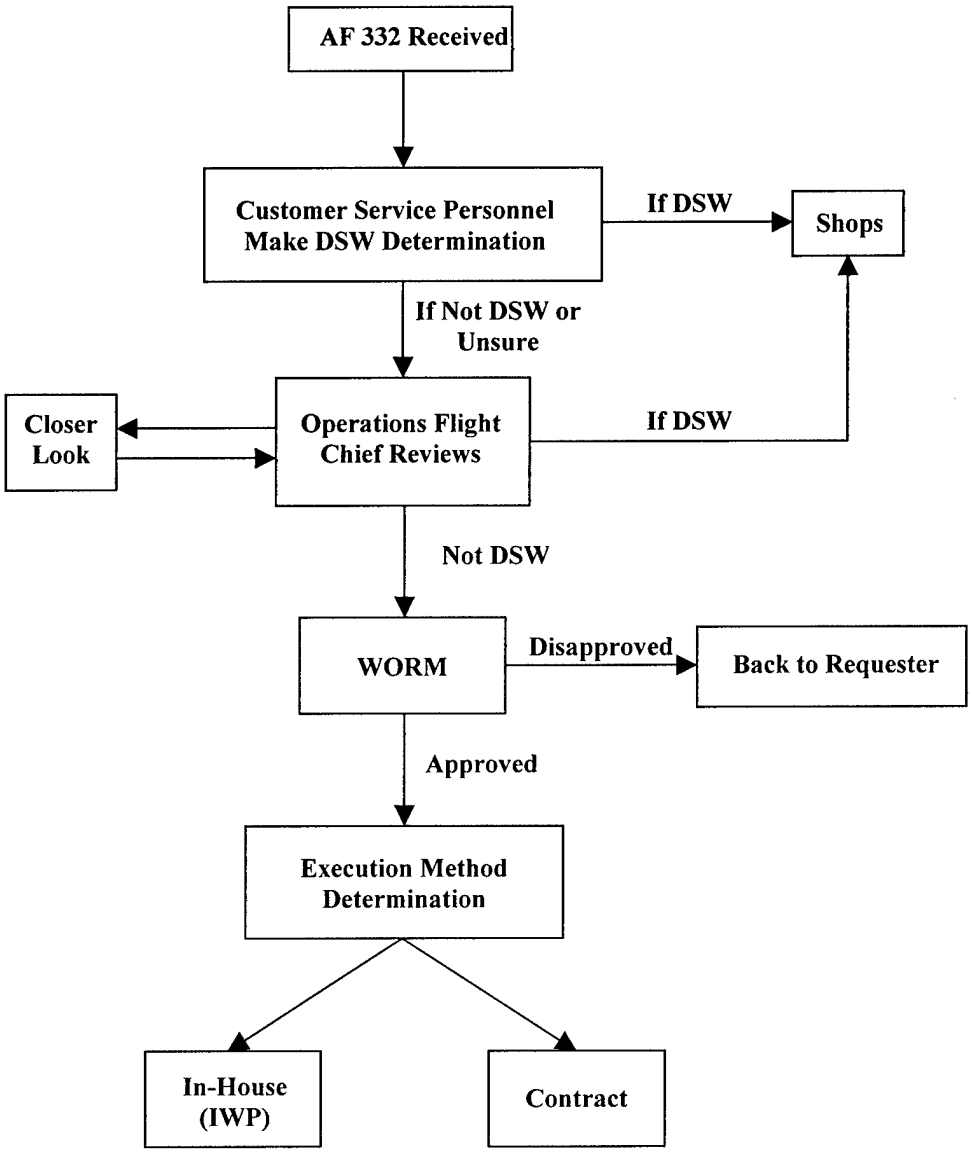

Figure 11. Goodfellow Work Order Approval Process

required, an appropriate craftsman will talk to the customer who made the request, and make sure the requirements are clear. Once these requests come back to the flight chief they can either be classified as a DSW order or sent to the WORM. The WORM is a weekly meeting that is chaired either by the BCE or the Deputy BCE, and involves the IWP programmer, a fire department representative, safety representative, environmental representative, Maintenance Engineering representative, and the Chief of Operations. At

this meeting the work requests are approved or disapproved. If they are disapproved the determination is made whether to add them to the IWP or send them to the Engineering Flight for contract execution. If the work request is approved for in-house accomplishment, it is sent to planning where the entire work order is planned, and then is programmed and scheduled. The flight chief estimated that if a customer submits a work request today, the customer should have an answer on the approval by next week. If the work request is programmed in the IWP, the work should be completed in 45 days.

This process was not changed as a result of the MEO implementation. In fact, the flight chief recalls that they went to the WORM process around the same time as the MEO was implemented. There is nothing about the work order approval process the flight chief would like to see changed. The flight chief did not feel that the process they utilize was unique, but he did state that they do not have the number of work requests submitted that other bases do. He said that since the MEO implementation, that the number of work orders submitted has significantly dropped off. He did not know if this was due to a leadership mindset change or the fact that the base has realized they are a MEO, and that they don't have the manpower available to work thousands of work orders anymore.

The next operations management practice is closely related to the previous, but this investigated how the MEO classifies its DSW orders. Goodfellow's MEO kept the standard work classifications and completion time limits. There are three classifications—Emergency, Urgent, and Routine. The completion time limits for these classifications are 24 hours, 5 days, and 30 days, respectively.

Lower level management functions within the MEO were investigated next. The flight chief has established a structure with two mid-level managers, and five shop supervisors. The supervisors assign day to day work and handle the specifics of their shops. The managers are responsible for their element's functions, ensuring the IWP work orders get accomplished, and handle any out of the ordinary problems. The flight chief stated that if he had it to do all over again, he would not have established the positions for the mid-level managers. He would have made a position for a deputy to handle many of the affairs the two managers do, but he did not think those positions were necessary, other than he had already created them. He was happy with the five supervisors, because their spans of control were large enough not to require additional supervisors, but small enough they could handle all the supervisory duties such as performance appraisals and disciplinary actions. The flight chief's over all goal in establishing the managerial structure of the organization was to have as few people as possible, but still be able to comfortably cover all the supervisory duties.

The final operations management practice explored was the use of multi-skilling and multi-crafting by the MEO. Goodfellow extensively used multi-skilling in three different areas. The first and most prominent of these was the facility maintenance technicians. In order to be hired into one of these positions, the candidate must be skilled in at least two crafts. They do not have to be journeyman level, but their type of work lends itself to knowing more than one skill. Facility maintenance teams are required to do all types of work, so all of these personnel are multi-skilled. Interior electricians were the second group. These personnel will assist the exterior electricians and power production personnel. They do not work on high voltage lines, but they are able to

perform many of the same tasks as these two trades. Finally, the structures shop has personnel who are skilled in carpentry and welding or carpentry and sheet metal fabrication.

The flight did not utilize multi-skilling before MEO implementation, but its use in the MEO was motivated by the fact you can do more with fewer people. The flight chief also thought that by utilizing this technique the flight would be able to provide better customer service. However, he did say that the program has its drawbacks. He believes that sometimes lower quality is obtained from your multi-skilled personnel than you would a journeyman level craftsman, because the multi-skilled craftsman may not be as skillful. There has also been some animosity generated by the multi-skilled craftsmen about their position grades being lower than the journeymen. For example, a facility maintenance technician may be a WG-07, while a plumber is a WG-09. The facility maintenance technician may perceive they are doing the same type of work as the plumber, which would cause a question about their grade. The flight chief explains this difference to his personnel by reminding them that he is paying the plumber for the expertise they do not possess. Overall, he classified the use of multi-skilling as a success, because in Civil Engineering there are a lot of two-person jobs, but rarely any two-journeyman jobs. He would like to add a position in the structures shop that is skilled in sheet metal and welding. In the development of the MEO, the flight chief said they made a 30 percent cut in personnel from the previous organization to the MEO. He then estimated that utilizing multi-skilling has potentially saved an additional half a dozen positions.

Since one of the main purposes of multi-skilling is to reduce the number of personnel, it was only appropriate that the flight's manning situation be discussed. The flight chief was surprised at the amount of vacancies he had experienced. In fact, at one time the flight had a 10 percent vacancy rate. With a normal time period before a replacement employee is hired being 45-60 days, this type of lapse rate can be detrimental to the MEO. The flight chief stated that at any given time he could expect to have an average of four vacancies, which amounts to a four and a half percent vacancy rate. Table 9 summarizes the MEO's use of multi-skilling.

Table 9. Goodfellow Multi-skilling

Multi-Skilling Use
• Utilized in three main crafts ➢ Facility maintenance technicians ➢ Interior electricians ➢ Carpenters • Did not utilize before implementation • Motivated by doing more with fewer people and better customer service • Can cause problems with quality and animosity between multi-skilled craftsmen and journeymen • Classified as very effective • Estimated to have saved the MEO 6 positions—over 6% of current manning

Goodfellow MEO Performance Measurement

The final research area explored for this thesis was performance indicators of how the MEO's were operating. There were seven existing Operations Flight performance metrics, developed by AFCESA, chosen to provide a basic picture on the MEO's performance. These metrics required a series of reports from the squadrons' Work Information and Management System (WIMS) that would consist of the raw data needed

to compute the metrics. However, during the site visit the researcher learned that the reliability and availability of this type of data was extremely limited. There were multiple problems encountered while trying to obtain the required reports including phantom data points and incoherent dates, and most of the data could not be obtained. Each of the seven performance metrics are discussed along with problems associated with data collection.

The first performance metric chosen was utilized to establish the flight's workload in terms of DSW orders. The data was broken into each of the flight's three DSW classifications—Emergency, Urgent, and Routine. The basic form of the performance metric is found in Chapter 3. The researcher was able to obtain the required data to provide a trend of DSW orders. However, due to limitations in the flight's database software, reliable historical data was only available for one year prior to the date a report was generated. Therefore, the researcher was able to obtain DSW order history from 16 October 1999 to 16 October 2000. The data was obtained as paper copy reports, and it was more convenient and efficient to sort and count the data by hand, rather than trying to input the data into Microsoft Excel. The reports were added to the research database in the form that they were collected and not as electronic files. Once the researcher sorted and counted the number of DSW orders in each category the following charts were generated. It should be noted that the October 1999 and October 2000 numbers are only partial since the full months' data was not available. Figure 12 highlights the number of Emergency DSW orders the MEO has opened from 16 October 1999 to 16 October 2000.

As the chart highlights, Goodfellow does not perform many DSW orders classified under the emergency work orders. The bars on the chart represent the raw total of work orders opened in their respective months. The drastic increase in the numbers of Emergency DSW orders opened in July was accompanied cannot be explained with the data collected. As discussed in Chapter 3, there are no performance limits associated with this metric. It is used to establish the typical DSW order workload of the flight.

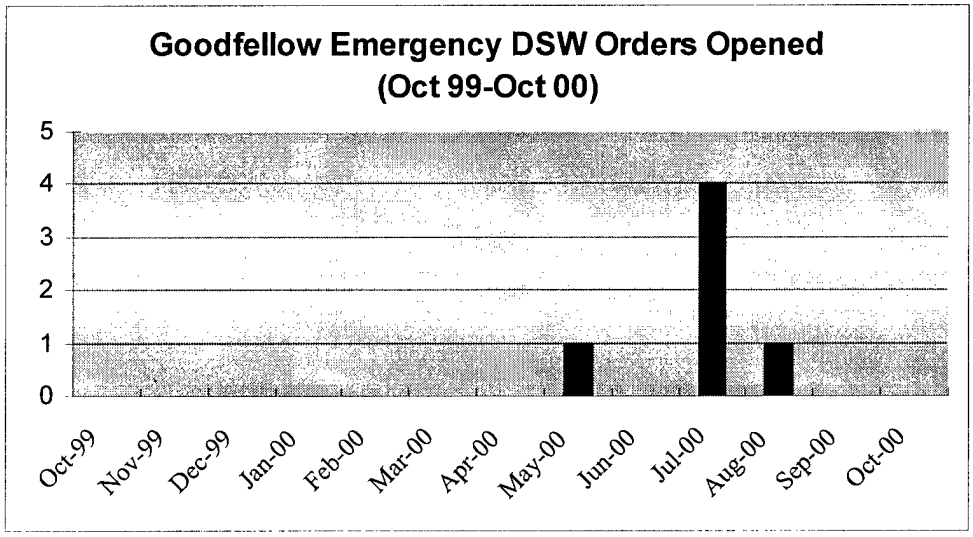

Figure 12. Goodfellow Emergency DSW Orders

Figures 13, 14, and 15 highlight the MEO's DSW order numbers for the Urgent, Routine, and total categories respectively. The y-axis values on the charts represent the raw number of DSW orders opened in each category.

As the data shows, the MEO performs the majority of its work in the Urgent and Routine categories, and opened an average number of 900 work orders per month over the year the data was available. The data, however, may exhibit inaccuracies due to inconsistencies in the database. However, it does highlight the amount of DSW work

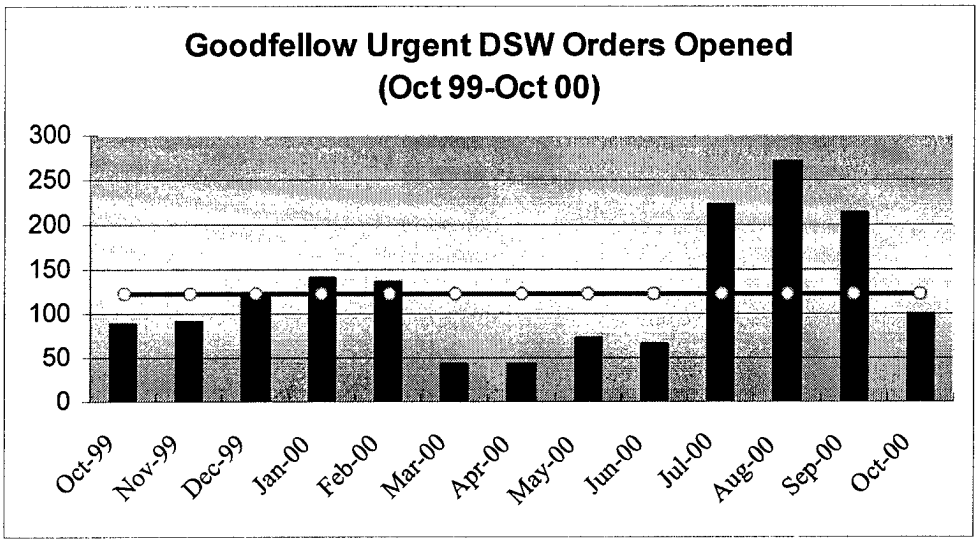

Figure 13. Goodfellow Urgent DSW Orders

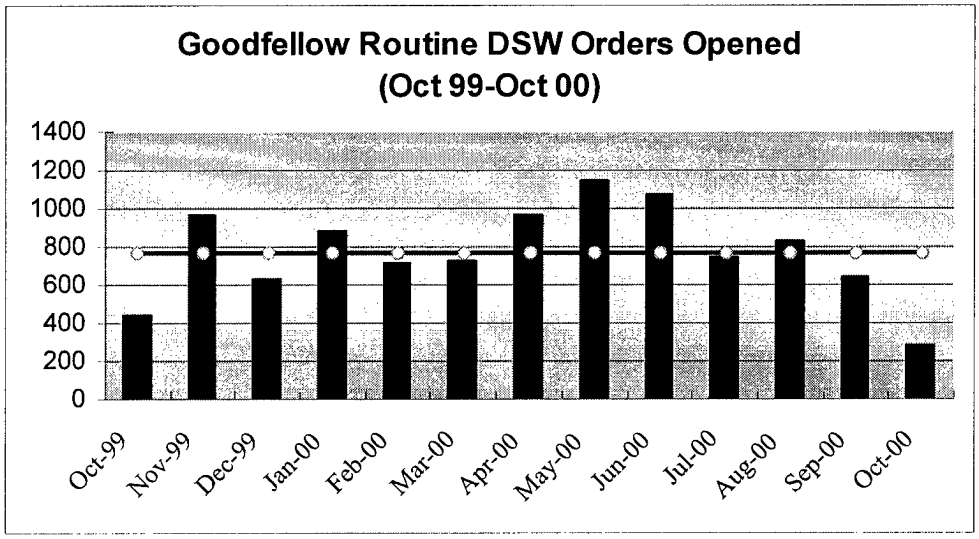

Figure 14. Goodfellow Routine DSW Orders

orders the MEO opened in a year timeframe. Other than establishing the DSW load of the flight there is little significance that can be attached to the data.

The next performance metric chosen was designed to highlight the percentage of DSW orders the MEO completed within the required completion criteria per category. The generic form of this measurement is labeled Equation 1 in Chapter 3. This metric

required data that annotated the opening and completion dates of the DSW orders presented in the previous performance measure. However, when this report was

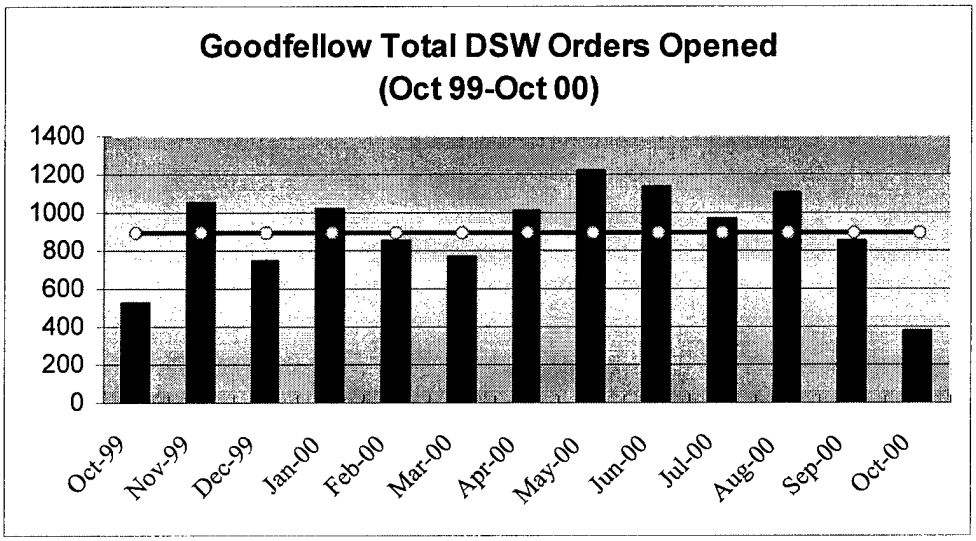

Figure 15. Goodfellow Total DSW Orders

generated from the WIMS, reliability questions were immediately raised. Problems such as no opening date, closing dates before the opening dates, and no dates listed at all were so common that the researcher chose not to incorporate the data into this analysis. In addition to the tainted data, there were no organizational documents, such as performance briefings or past reports, located, which could have shed light on the MEO's performance in meeting completion times. Therefore, this research could not provide any information on this area of performance.

The third performance metric that was chosen was designed to show the overall percentage of DSW orders the flight completed on time. This metric does not break the percentages out by category. This measurement is labeled Equation 2 in Chapter 3.

Again, this metric requires data on the opening and completion dates for each work order that was not available for the same reasons presented above. There was also

no available organizational documentation that could have provided another source of data. Therefore, this research could not examine this performance area.

The fourth measurement was chosen to highlight the number of backlogged work orders within the IWP. This metric simply subtracted the number of completed work orders from the number of open work orders. However, the flight chief explained that the MEO does not track backlogged work orders, because they do not carry a backlog. The advantage to being a MEO is that the number of man-hours they can commit to is fixed. The MEO does not accept work orders that it does not have the manpower to complete. These are sent to SABER or contract for completion. Therefore, this performance measurement is not valid when examining the MEO.

The next performance measure also dealt with the IWP work orders. This measure was designed to highlight how effective the MEO was at planning the work orders by determining the actual man hour percentage variation from the planning estimate of required man hours. The generic form of this performance metric is labeled Equation 3 in Chapter 3.

After meeting with the in-house programmer, and trying to obtain the required reports, it was determined that the data required to explore this performance area was not available. It may have been possible to go through each individual work order package and obtain the necessary data, but due to the time constraints of the site-visit this was not possible. Therefore, the effectiveness of the MEO's work order planning was not explored.

The sixth performance metric was chosen to explore what percentage of the flight's RWP items were completed on a monthly basis. This metric required the number

of RWP items scheduled, and the number of items completed per month. The basic form is labeled Equation 4 in Chapter 3.

The researcher first attempted to obtain raw data for this area that showed the RWP schedule and then completion dates for each item. However, the data was not available, but RWP completion reports showing completion percentages for each month were available through the WIMS. These reports showed many of the same inconsistencies as work order reports, and were deemed unreliable. The flight chief did explain that if the RWP is not marked complete in the WIMS, that a delinquency notification is generated, and to his knowledge he had not seen one to date. Therefore, there was no data available to further explore this performance area.

The final AFCESA performance measure that was chosen was designed to show what percentage of the MEO's facility maintenance inspections were accomplished per month. The flight chief explained that the flight did not track this data, because it was assumed that the facility maintenance teams completed every facility on their weekly schedules. If they were not completed, the random customer satisfaction surveys would have caught the delinquent inspections, and action would have been taken.

Because most of the performance measures chosen for this research effort were not able to be utilized, the researcher further explored organizational documentation to obtain any other performance data that could help establish a basic performance picture of the MEO. The researcher was able obtain customer feedback results from March 1996 to September 1996. The flight randomly surveys twenty percent of the customers who have submitted a work request on a monthly basis. These customers are asked a series of

seven questions, and then asked to rate the overall service they received. The questions the MEO utilize are:

1. Was CE Prompt?	☐ YES ☐ NO
2. Was craftsman courteous?	☐ YES ☐ NO
3. Was work completed?	☐ YES ☐ NO
4. Did craftsman notify customer when starting work?	☐ YES ☐ NO
5. Did craftsman notify customer when work was done?	☐ YES ☐ NO
6. Did craftsman clean up work area?	☐ YES ☐ NO
7. Was customer service courteous, prompt, knowledgeable?	☐ YES ☐ NO
8. How would you rate the service overall?	Outstanding ☐
	Excellent ☐
	Satisfactory ☐
	Poor ☐
	Unsatisfactory ☐

The customer service employee who conducts the telephone surveys will then annotate how many of each of the overall rating categories was received. Each outstanding receives a score of 5, excellent 4, Satisfactory 3, Poor 2, and Unsatisfactory 1. The scores for each survey response are then averaged. An average score of 4.0 has been established as the monthly goal. Figure 16 tracks the MEO's average customer service rating from March 1996 to September 2000.

As the chart highlights, the MEO has met or exceeded the goal of 4.0 every month since March 1996, which was the furthest back the researcher could obtain data. The average customer rating over this time period was 4.77. The researcher obtained no data that would explain why the scores dropped off significantly in 1998. Obviously, this does not conclusively show the MEO is performing effectively, and may not provide a complete picture of how the customers feel about the MEO's service. Since Goodfellow performs telephone surveys, customers may feel pressured into giving higher scores than they would anonymously, but the four year trend of exceeding the customer service goal is

noteworthy, and provides the flight with an indication of the quality of service they are providing.

This research effort was not able to establish an initial picture of MEO performance due to a variety of problems including bad data, unavailable data, and time constraints. There may be other methods of obtaining the required data to perform a performance evaluation, but this type effort was beyond the scope of this research. The time constraints of the site-visits did not allow for further performance exploration.

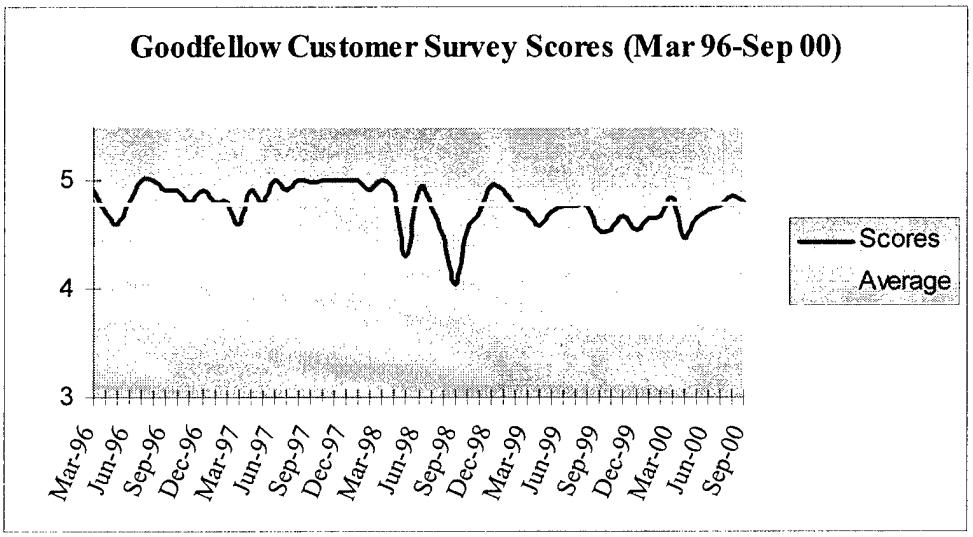

Figure 16. Goodfellow Customer Survey Scores

Results Beyond the Research Areas

While conducting the site-visit interviews, the researcher collected data that did not fit the three research areas established to guide the research effort—Structure, Management Practices, and Performance Metrics. This data did not fall within one of these categories, but the researcher perceived this information as relevant to how a MEO is managed as well as to its development.

First, the Operations Flight Chief noted that it is not the structure or the types of management practices that ultimately make the organization operate effectively. In his

opinion, it is the people within the organization. They have to accept the fact that they are no longer going to be a traditional organization. They have to realize that an attitude of "lets get the job done no matter what" must be adopted, or the MEO will never get off the ground.

The second area identified is a perceived built in cost advantage with a MEO. The flight chief stated that with a MEO there would almost always be vacancies within the organization. Every time a MEO has a vacancy, there is a cost saving to the government, because the government is not paying that vacant slot's salary and benefits. The flight chief stated that contractors have vacancies just as much as a MEO organization. However, every time a contractor has a vacancy, there are no cost savings to the government. The government continues to pay the negotiated contract price no matter if the contractor is fully staffed or at a 10 percent vacancy rate. If the contractor has vacancies, the vacancies equate to more profit for the contractor, because there are salaries that are not being paid. The flight chief's contention was that the MEO's provide more of a cost saving to the government than the bid price during the cost competition phase, because there are always going to be vacancies that add up to additional savings.

This section provided the within case analysis for the Goodfellow AFB MEO case study, and was constructed by analyzing interview data, organizational documentation, archival records, and personal observation notes. The section followed the three research areas established in Chapter 3—MEO Organizational Structure, MEO Operations Management Practices, and Performance Measurement. In addition to these three research areas, case study evidence that did not fall within the specific areas but was still relevant was discussed. The first section outlined the current organizational structure in

use at Goodfellow as well as motivations and goals being the structure development, changes to the structure, and problem areas in development. Next, the specific operations management practices in use at Goodfellow were summarized to include how the flight meets typical Operations Flight commitments, work order processing, and use of multi-skilling. Performance measurement of the MEO was discussed next. Data collection for this research area experienced many problems during the site visits, and most of the performance metrics could not be utilized. However, the researcher was able to obtain customer satisfaction survey results for over a four year time period. These results help paint a picture of customer satisfaction with the MEO performance. Finally, the Operations Flight Chief's opinions on what makes the organization effective, and additional cost savings not taken into account during the cost comparison were summarized. The next section provides the within case analysis for the Columbus AFB case study.

Columbus Air Force Base Results

This section will present the within case analysis results from the Columbus AFB site visit. It will first cover the current organizational structure of the MEO to include Flight level structure, element structure, and discussions on changes to the structure and motivations behind the structure development. Next, it will cover the results from the operations management investigation, which includes a presentation on how the flight meets its typical commitments. Third, the analysis of the performance measurement data is summarized. Finally, items the researcher perceived as unique or did not fit into the three-research area framework are discussed.

The Columbus AFB site visit was conducted on October 19 and 20, 2000. The researcher met with the Operations Flight Chief on the morning of the 19, as well as meeting with his Heavy Repair and Infrastructure managers. The flight chief was an integral part of Columbus' MEO development and is continually asked for assistance by other Operations Flights undergoing A-76 studies trying to develop their MEO's. The results presented in this within case analysis were derived from the interviews with the flight chief and his managers, along with organizational documentation, archival records, and personal observation of the researcher.

Columbus MEO Organizational Structure

Columbus' MEO structure is the classic functional organization, which is characterized by functional groupings that perform different types of work but are related. Figure 17 summarizes the flight level organization chart for the Columbus MEO.

The MEO consists of five sections—Maintenance Engineering, Heavy Repair, Infrastructure, Material Control, and Military Family Housing, and employs 107 personnel. The Maintenance Engineering Section is placed in the "administrative" position on the organizational chart for the same reasons discussed in the Goodfellow MEO within case analysis. Personnel in Columbus' Maintenance Engineering Section are not MEO positions, but are supervised the Operations Flight Chief.

Three of the other four sections bear similar names to the standard nomenclature of the Objective Flight structure. The naming of these sections reflects the types of work performed within them. The final section is Military Family Housing and accomplishes all maintenance in the base housing areas.

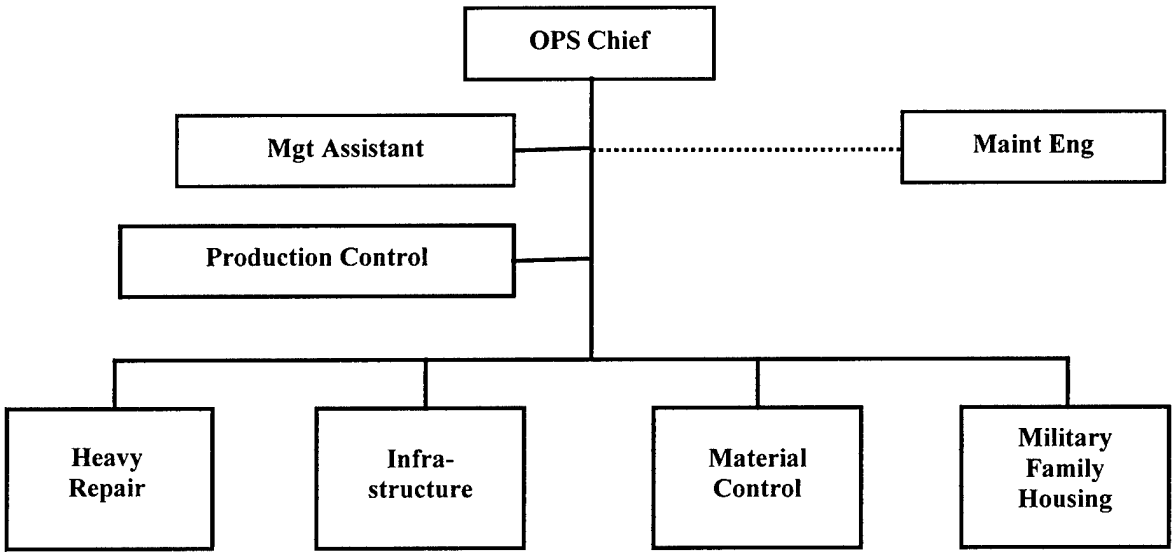

Figure 17. Columbus AFB MEO Structure

The Heavy Repair Section is headed by a single manager, and has two supervisors reporting directly to the manager. The section employs 50 personnel and is the flight's largest section. Figure 18 highlights the section and its shops. The Heavy Repair Section is structured in a form similar to the Horizontal and Vertical components outlined by the Objective Flight. Directly underneath the Heavy Repair Manager is a single planner who handles much of the planning and special projects the section must accomplish. The EMCS and Instrument Control shop is headed by a work leader position, and also consists of four EMCS operators, and two electronic controls personnel for a total of 7 personnel. The Vertical supervisor has four shops under his control. The Carpentry Shop is led by a work leader and employees five carpentry personnel, four painters, and three laborer positions, which totals to 13 personnel. The HVAC Shop is headed by a work leader as well, and consists of five HVAC craftsmen and two HVAC helper positions for as total manning strength of 8 personnel. The Interior Electric Shop is led by a single work leader, and employees three interior electricians. The Metal Shop

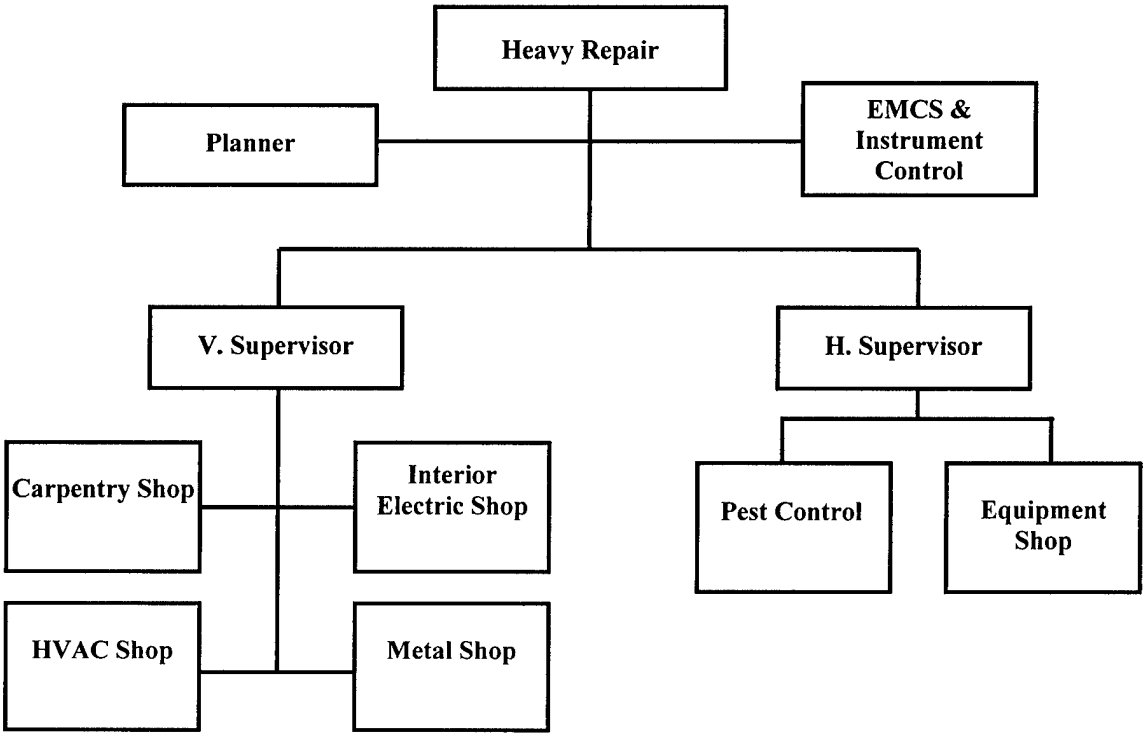

Figure 18. Columbus MEO Heavy Repair Section

consists of only two personnel, and falls under the Carpentry Shop's work leader, but they are considered a separate shop and are physically located apart from the carpenters. The work leader is responsible for assigning their work and handling minor problems within the shop.

The Horizontal supervisor is responsible for two shops—Equipment and Pest Control. The Equipment Shop consists of eight heavy equipment personnel and two laborer positions, for a total manning of 10 personnel. The Pest Control Shop employs two pest control personnel.

The Infrastructure Section is headed by a single manager and is broken into two sub units. Figure 19 represents these breakouts. The Exterior Electric and Power Production Shop is headed by a supervisor who is responsible for all high voltage and power production personnel. This shop consists of the supervisor, five high voltage

electrical personnel, one high voltage helper, and five power production personnel for a total of 12 personnel. The Utility Systems Shop is led by a supervisor and is responsible for seven plumbing personnel, two plumbing helpers, and two liquid fuels personnel for a total strength of 12 personnel.

The Material Control Section employs nine material control personnel made up of supply technicians and materials handlers. The section is led by a General Supply Specialist position.

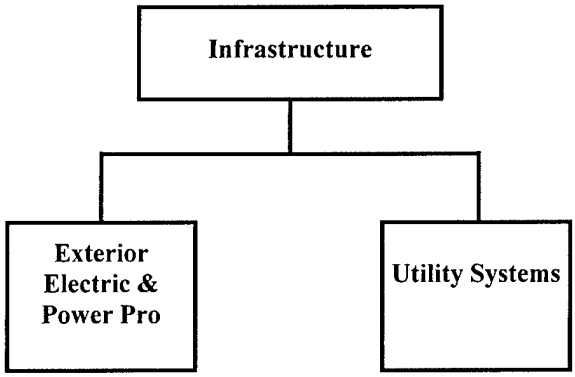

Figure 19. Columbus MEO Infrastructure Section

The final section, Military Family Housing, is headed by a supervisor position. The section is made up of eight maintenance mechanic positions, six painters, two facility maintenance controllers, and one laborer for a total manning of 18 personnel.

The flight chief described the communication flow within the structure as smooth. He stated that all the supervisors and shop work leaders work well together and he has not experienced any problems such as communication difficulties or backups. He did point out that his Heavy Repair and Infrastructure Managers, Heavy Repair planner, and Vertical supervisor all have offices in the same physical location, which he perceives as a facilitator of good communication between the sections.

Since its implementation, the MEO at Columbus has not undergone any changes to its structure. In fact, the flight chief stated they had been very successful with the current structure in meeting all the requirements set forth in their PWS. However, there is a newly constructed hangar on the airfield and construction underway on another hanger. The flight chief stated that this is square footage that was not included in the PWS, and that he plans on requesting a manpower audit to see if they can authorize a few more positions to cover the increased workload. In addition to the new hangars, the base is constructing 200 new Military Family Housing units that include carpet and garage door openers. Based on past experience, carpet and garage door openers in housing cause an increased workload on the housing maintenance crews. He hopes to gain a few more positions from these additions.

In developing the current organizational structure, the flight chief stated that their goal was to become the most efficient organization in the cost competition. After consultation with the flight chief at Goodfellow AFB, they established a goal that they wanted to cut their personnel numbers by 40 percent from what they were prior to MEO implementation. The Columbus flight chief stated that they were able to achieve a 39 percent cut with the current structure and manning. He said another driving force in the structure was the fact that he and his managers made a collective decision that they wanted to go back to the shop concept of organization versus the zonal maintenance structure they were in prior to implementation. He noted that it may not work for everyone, but it was a decision that seems to work for them. Table 10 summarizes the development goals for the Columbus MEO.

Table 10. Columbus MEO Development Goals

MEO Development Goals
• To become the most efficient organization in the cost competition • Return to a shop oriented organization

The flight chief explained that they did not have any particular problem areas during the MEO development. However, once the MEO was announced the winner of the cost comparison process, he did experience some difficulty in hiring the required number of civilians. As he recalled they had to hire approximately 40 personnel to implement the MEO. The MEO was implemented on 4 May 1998 and it was approximately five months before they were able to obtain most of those personnel. These problems stemmed from the civilian personnel system that has so many rules and regulations regarding priority placement of personnel and special preference programs, which caused the system to bog down. The flight chief noted that they have never been fully manned, but they have been fortunate enough to never go below 92 percent manning. The flight chief did state that the implementation of the MEO was a smoother process than he ever expected even though they had the problems with the personnel hiring.

The EMCS shop was classified as Columbus' biggest success story since MEO implementation. The flight chief explained they run a 24 hour shop and handle much of their after hours maintenance problems as well as operate the EMCS system. He also believed that the customers on Columbus were happy with the MEO and the quality of service they were providing. He made this statement based on customer feedback results. He also believed that the customers have come to realize the MEO is in place for

maintenance and they are not a small construction company that can perform major renovations.

Columbus Operations Management Practices

The next area this research explored was the different operations management practices the flights were utilizing. The first of these practices covered how the flights met their typical Operations Flight commitments. One of these commitments was maintenance engineering workload. The Maintenance Engineering Section at Columbus is not officially part of the MEO, but the flight chief supervises it. The flight chief stated that there is nothing different about this section and they still attempt to accomplish everything a typical Maintenance Engineering Element does. The section is staffed with a military supervisor, two engineers, two engineering technicians, and two Quality Assurance personnel.

The section is responsible for the flight's project maintainability review program. One of the engineers has established a liaison role between Maintenance Engineering and the shops to facilitate this program and improve working relationships. The Maintenance Engineering liaison coordinates project reviews through the appropriate shops and ensure they get received by the Engineering Flight. The infrastructure management plans were described as an area that was lacking the proper attention. The flight chief stated the plans are one area that has suffered since Maintenance Engineering is not staffed to accomplish all the things it is charged to do. However, the section has established an Infrastructure Coordination Committee (ICC) that works with the shops to ensure long range infrastructure planning is accomplished.

The Maintenance Engineering Section also manages all the squadron's service contracts, and the relationship between the Quality Assurance personnel and the contractors was described as excellent. The flight chief noted that their three major service contracts (refuse, janitorial, and grounds maintenance) were the best contracts he had experienced. All personnel in the section are qualified to inspect contracts, which allows for greater flexibility. In addition to the service contracts, the section manages and executes a carpet indefinite delivery, indefinite quantity (IDIQ) contract.

The flight chief believes the flight's ability to meet maintenance engineering type demands has improved since MEO implementation. However, he does not think this improvement is due to the MEO. He thinks that the improvement is due to management improvements in the section itself. He thinks that the flight's customers are extremely happy with the performance of the Maintenance Engineering Section. These customers primarily consist of the shops. The liaison role has significantly improved the perception of Maintenance Engineering in the rest of the flight. Table 11 summarizes how Columbus meets its maintenance engineering type commitments.

The next type of Operations Flight commitment that was explored was facility maintenance. The MEO at Columbus does not have a section dedicated to facility maintenance. They do not perform facility inspections or have a scheduled work rotation. They handle all facility maintenance demands through the DSW order program. However, their Military Family Housing (MFH) Section performs facility maintenance on MFH units. This section provides a single point of customer service for all housing customers and takes maintenance calls on an as needed basis. Once a problem is called in, a work order is created and the appropriate shop or shops take care of the problem.

Table 11. Columbus Maintenance Engineering Commitments

Maintenance Engineering (ME) Commitments
• ME positions not officially part of the MEO • Manning strength-8 personnel • No perceived differences from a typical ME element • ME leads project reviews • Infrastructure plans are described as lacking • Created ICC to assist in long range planning • Service contracts are managed by ME—all personnel are QA qualified • Also manage a carpet IDIQ • Perceived improvement since implementation, but not due to MEO structure or practices

Even though they do not have a dedicated facility maintenance section, The flight chief believes that Columbus' performance in meeting facility maintenance demands has improved since implementation. He believes that this improvement is because the MEO is an all civilian workforce with more experience and continuity than a traditional civilian / military mix. He also perceives that his customers are satisfied with the way facility maintenance is accomplished by the MEO. Table 12 summarizes the MEO's facility maintenance approach.

Table 12. Columbus Facility Maintenance Commitments

Facility Maintenance (FM) Commitments
• No separate FM element • Address facility maintenance demands through the DSW program • No scheduled inspections or work rotations • Perceived improvement since implementation ➢ All civilian workforce that is more experienced ➢ More continuity in the workforce

Material control commitments were the third type of work that was explored in this research effort. The MEO at Columbus established a separate Material Control

Section to handle the materials workload. Flight personnel presented the Material Control Section of the flight as an extremely efficient organization. Personnel from the Goodfellow MEO have visited and are trying to model their Logistics Shop after the section, because Columbus performs so well handling these types of commitments. The researcher did note that the warehousing operations were neat and orderly, and the entire operation did appear to be extremely efficient.

The section does not manage the vehicle fleet. The Operations Flight managerial assistant manages this task. The flight chief stated that the self-help aspect of the section had not changed any since MEO implementation. The flight assigns two of the material control personnel to the self-help store and augment them as needed when customer demand is above average. There are designated buyers in the Material Control Section that purchase all the materials for all work orders. The flight chief stated that he did not want IMPAC cards in every shop, because he thought there would be too much potential for misuse and mistakes. Instead, he concentrated all buying in the Material Control Section where he feels there is more control over the flight's spending. The flight chief did not perceive how his flight handles material control commitments as unique. In fact, he stated that they try to operate by the book. He did think that their performance has improved since MEO implementation, because they have fewer personnel who try to run a tighter ship. He thinks there is better accountability in the section and he is fortunate to have very skilled material control personnel. Table 13 summarizes the flight's approach to meeting this type of demand.

The MEO at Columbus established a section designated to provide infrastructure support. The Infrastructure Section Manager stated that they were very concerned about

Table 13. Columbus Material Acquisition Commitments

Material Acquisition (MA) Commitments
• Designated Material Control section • Model for other MEO's • Self-help store is unchanged • Section run "buy the book" • Handles all purchasing for the flight. No IMPAC cards anywhere else in the flight • Perceived improvement in performance since implementation • Flight chief feels fortunate to have outstanding material control personnel

the Air Force program to combine the exterior and interior electrician career fields. He felt that the safety problems involved with having an interior electrician work on high voltage lines was too great, and that the shop orientation was best for the organization. The Infrastructure Section has two shops. The first is the exterior electricians and power production craftsmen. The Infrastructure Manager stated that even though these personnel work separately, they wanted them to work out of the same shop. He did express problems they had had in finding qualified power production personnel due to the great demand in the civil sector. The second shop is a combination of plumbers and utility craftsmen. The Infrastructure Manager explained that if something flows through a pipe it is this shop's responsibility, but they do not maintain any central plants, because the base's water and wastewater treatment plants were closed prior to the MEO implementation. The section is a critical player in the Infrastructure Coordination Committee (ICC), and helps the Maintenance Engineering Section set priorities and advocate for funding infrastructure repair and replacement projects. The Infrastructure Manager would not say that the performance of the flight in meeting infrastructure commitments has improved since the MEO implementation, but he did say that their performance had not deteriorated any. He believes that the customers are happy with

their performance and is evident by their high scores on the customer feedback surveys. Table 14 highlights the flight's approach to meeting infrastructure commitments.

Table 14. Columbus Infrastructure Support Commitments

Infrastructure Support (IS) Commitments

• Designated Infrastructure section
• Two shops
  ➢ Exterior Electric and Power Production
  ➢ Utilities
• No central plants to maintain
• Difficulty in hiring qualified power production personnel
• Members of ICC and assist in long range planning for infrastructure repair and replacement projects
• Customers are perceived as being pleased

The final type of work this research explored was heavy repair type commitments. The Columbus MEO has a section that specifically addresses these type of commitments. The Heavy Repair Section is further divided into a Vertical Section and a Horizontal Section. The Vertical Section is composed of four shops—HVAC, Interior Electric, Carpentry, and Metal. The Horizontal Section consists of the Equipment Shop and the Pest Control Shop. In addition to these two sections EMCS and the electronics craftsmen fall under Heavy Repair. The Heavy Repair Manager, stated that the section does not do any major paving work. They utilize contract support to accomplish any kind of paving requirements. He did state they will perform minor pothole maintenance and will pour concrete structures such as driveways and sidewalks. The flight does try to utilize SABER for work orders it does not have the manpower for, but the SABER contractor at Columbus recently defaulted, so there is a large back-up of Operations Flight related work in the SABER office.

The Heavy Repair Manager pointed out two things he thought were unique about how the flight addresses these types of commitments. The first of these is the relationship they have established between the workers and supervisors. He explained there is conscious effort to obtain feedback and let the workers have a say in how things are run in the section. He also perceived the investment in labor saving equipment such as additional Bobcats and a pavement-patching trailer as unique. He believes that if you are going to operate with fewer personnel, the investment has to be made in this type of equipment. The Heavy Repair would not admit that performance had improved since MEO implementation, but he explained that they were doing the same amount of work with 40 percent fewer personnel. He also believed that the customers were happy with their performance and pointed to high customer survey scores. He made it clear that they stress customer satisfaction to all their personnel and that is one of their biggest goals. Table 15 summarizes the MEO's approach to meeting heavy repair type commitments.

Table 15. Columbus Heavy Repair Commitments

Heavy Repair (HR) Commitments

• Heavy Repair section with traditional Horizontal and Vertical breakouts
• Do not accomplish any paving
• Perform minor paving repairs and pour some concrete
• Utilize SABER extensively for work order accomplishment
• Entomology is in-house
• Perceived uniqueness
  ➢ Supervisor / Worker relationships
  ➢ Investment in labor saving equipment
• Stress customer satisfaction as a main goal

In addition to the typical Operations Flight commitments, four other operations management practices were explored—work request processing, work classifications,

lower level management functions, and multi-skilling and multi-crafting utilization. The first of these practices, work request processing, is summarized in Figure 20. It begins with an Air Force Form 332 generated either by a customer visiting the customer service desk, making a telephone request, or generated internally. The customer service personnel will log the work request into the system and try to make a determination whether the work request can be classified as a DSW order. Columbus utilizes a 40 man-hour breakpoint for work requests. If the work request will take 40 man-hours or less to complete it is classified as a DSW order and sent to the appropriate shop for accomplishment. If the customer service personnel deem the request is not a DSW or are not sure, it is sent on to the weekly 332 Review Meeting, which is chaired by the Operations Flight chief. At this meeting the requests are discussed by representatives from the flight, base safety, environmental, fire department, and any other pertinent individuals. At this meeting, the 332's are either approved or disapproved. If they are disapproved, they are sent back to the customer. If the requests are approved the determination is made whether to accomplish the work through contract or add it to the flight's work order allocation program. The MEO refers to this program as the Top 10. Each group on the base is given 10 work orders that they rank order from highest priority to lowest. The MEO then only places work orders into the IWP that are on a group's Top 10 list. The flight chief explained that this helps them control the amount of requests that are received because the groups know they only have 10 work orders authorized. Once a work order for a certain group is accomplished, the group then places a new work request in the system to take the place of the one that was just completed.

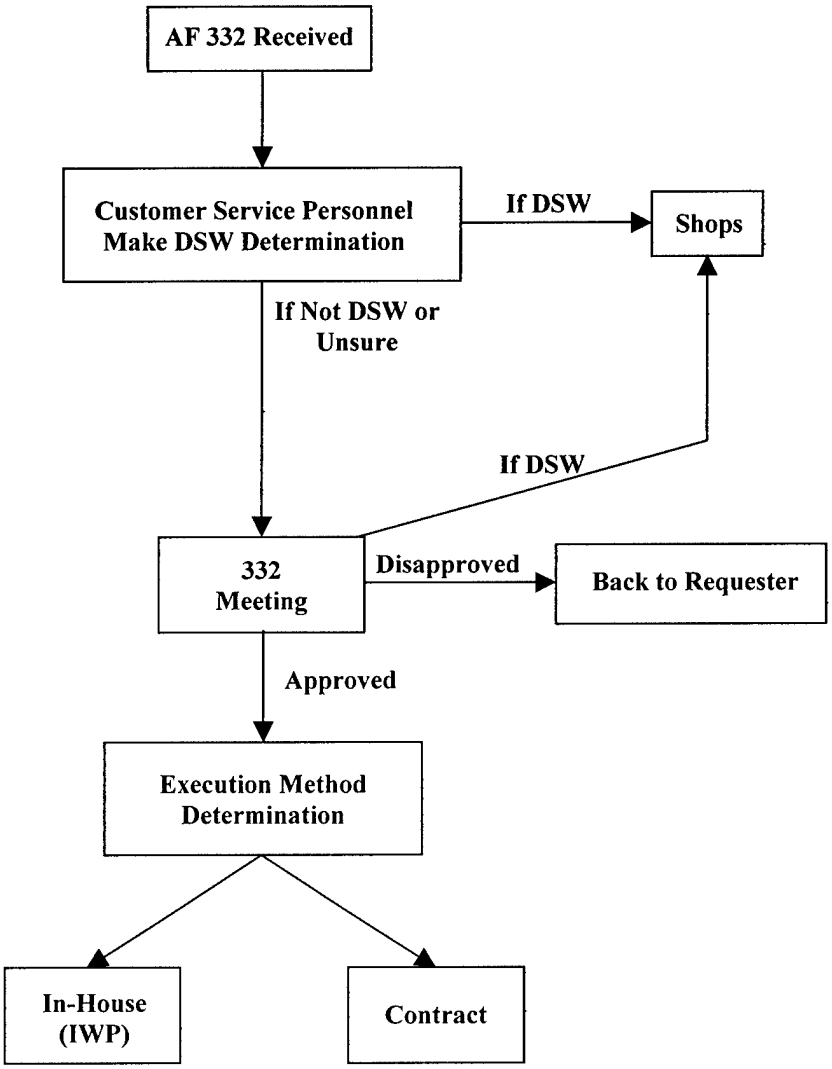

Figure 20. Columbus Work Order Approval Process

The work request approval process was not changed as a result of the MEO, but the flight chief did explain that they are a little more focused now on getting the requests processed now that the MEO has been implemented. However, the Top 10 work order allocation program was implemented as a result of the MEO. The flight chief explained that before the MEO was implemented, there were over 1000 work orders in the IWP system that were awaiting accomplishment. When the MEO was implemented, these work requests were sent back to requesters and then Top 10 program was started.

The MEO has three work classifications a DSW order can be placed within—Emergency, Urgent, and Routine. These work classifications did not change from classifications prior to MEO implementation. The completion time limits placed on these classifications was not changed either. These limits are 24 hours, 5 days, and 30 days respectively.

The next operations management practice that was explored covered the lower level managerial structure the MEO was utilizing. The Columbus MEO has divided into two sections that have single supervisors, and two sections that have managers with two supervisors underneath the manager. This does not include the Maintenance Engineering Section. There are two managers, and six supervisor positions within the flight. In addition to the supervisors, the flight utilizes work leaders in positions where work supervisors might have been used in the traditional organization. The flight chief stated that they wanted to minimize the use of supervisors and maximize the use of work leader positions to allow the organization to be more efficient and save on the personnel costs.

The final operations management practice covered was the flight's use of multi-skilling and multi-crafting. The flight chief explained that with civilians the use of these type initiatives is more difficult than with military personnel, because of position description requirements on civilian personnel. However, the flight chief pointed out that he uses multi-skilling across the board in the organization. He stated that carpenters, HVAC craftsmen, and sheet metal craftsmen have all been multi-skilled and are referred to as maintenance mechanics. He did state that he kept his electricians classified as exterior electricians, and that he did not want them being multi-skilled. This decision was due to the safety concerns of unqualified personnel working with high voltage lines.

The flight chief also noted that all the personnel in the Military Family Housing section are multi-skilled craftsmen and carry the maintenance mechanic title. He explained that the type of maintenance they perform is more suited for handymen than journeymen craftsmen. Therefore, the personnel in this section are heavily multi-skilled.

The flight utilized multi-skilling prior to implementation, but they wanted to continue and expand its use to save personnel costs, and save the number of people required to meet the requirements in the PWS. The flight chief also noted that some workers are not happy with the idea of being multi-skilled. He was quick to add, however, that they have personnel who are extremely happy with the arrangement and enjoy the multi-skilling initiatives. He classified the use of multi-skilling as successful and did not foresee any changes he would make to the program. Table 16 summarizes the flight's use of multi-skilling.

Table 16. Columbus Multi-Skilling

Multi-Skilling Use
• Utilized in multiple crafts ➢ Housing maintenance mechanics ➢ Carpenters ➢ HVAC ➢ Sheet metal • Utilized before implementation • Initiated to reduce manpower and costs • Has some workers unhappy with arrangement • Perceived as very successful

Columbus MEO Performance Measurement

This research also attempted to establish an initial indication of how the MEO's were performing. To accomplish this, seven existing Operations Flight performance

measurements developed by AFCESA were chosen to provide the indications. However, as described in the Goodfellow AFB within case analysis, the data collection effort to obtain the required information to utilize these performance measures was riddled with problems. These problems are explained in detail in the Goodfellow write-up, but they included missing dates, incoherent dates, missing data, and unreliable data. For this reason and since Columbus utilizes the same central WIMS as Goodfellow, the researcher did not attempt to collect the performance data required by the chosen metrics at the Columbus site visit. Instead, the researcher tried to obtain performance data that would coincide with the data that was obtained during the Goodfellow site visit—DSW order counts in each category for a year period and customer satisfaction survey results.

The researcher was able to obtain organizational documentation in the form of Support Group Commander's Update Briefing slides that annotated the number of DSW orders opened per month from October 1999 to September 2000. The Columbus MEO did an excellent job of maintaining and presenting this data. Although this period appears to be one month less than the period obtained at Goodfellow, it is essentially the same time period. The Goodfellow data was obtained from 16 October 1999 to 16 October 2000, and hence included the incomplete data for October 1999 and 2000. The Columbus data is complete numbers for these months. Data for the month of October 2000 was not available at the time of the site-visit. Figures 21, 22, 23, and 24 show the number of DSW orders in the Emergency, Urgent, Routine, and Total categories opened each month as well as the average number of work orders opened for the year long period.

The MEO at Columbus performs the majority of its DSW orders in the Urgent and Routine Categories, and opened approximately 1000 DSW orders per month from

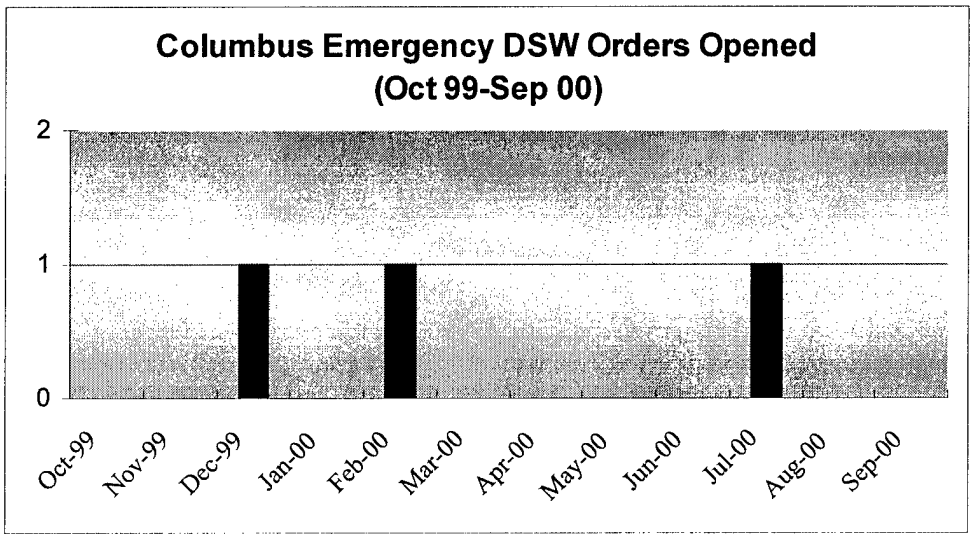

Figure 21. Columbus Emergency DSW Orders

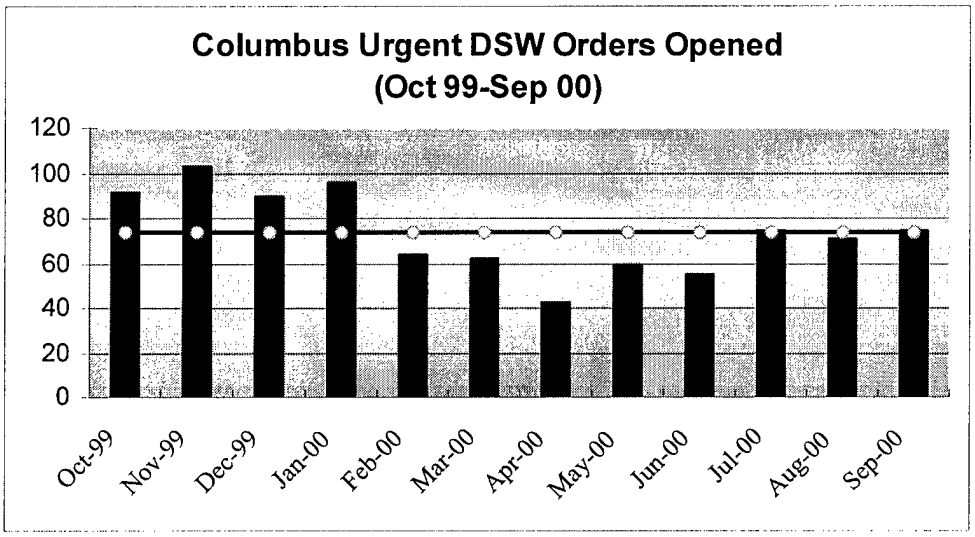

Figure 22. Columbus Urgent DSW Orders

October 1999 to September 2000. This data has little significance other than providing a DSW order count. This data was collected from organizational documentation and

therefore the researcher did not collect the raw data numbers. However, the researcher has no reason to question the reliability of the data in the form it was collected.

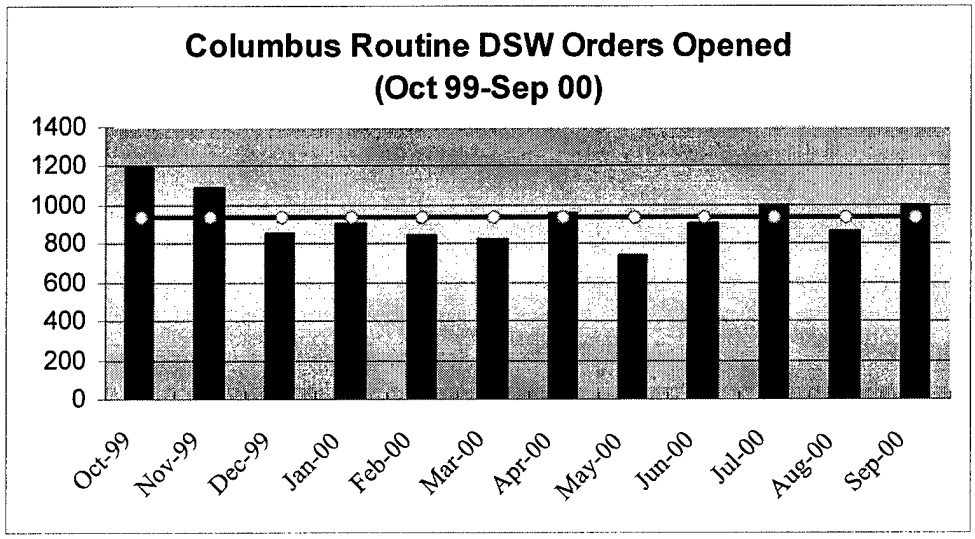

Figure 23. Columbus Routine DSW Orders

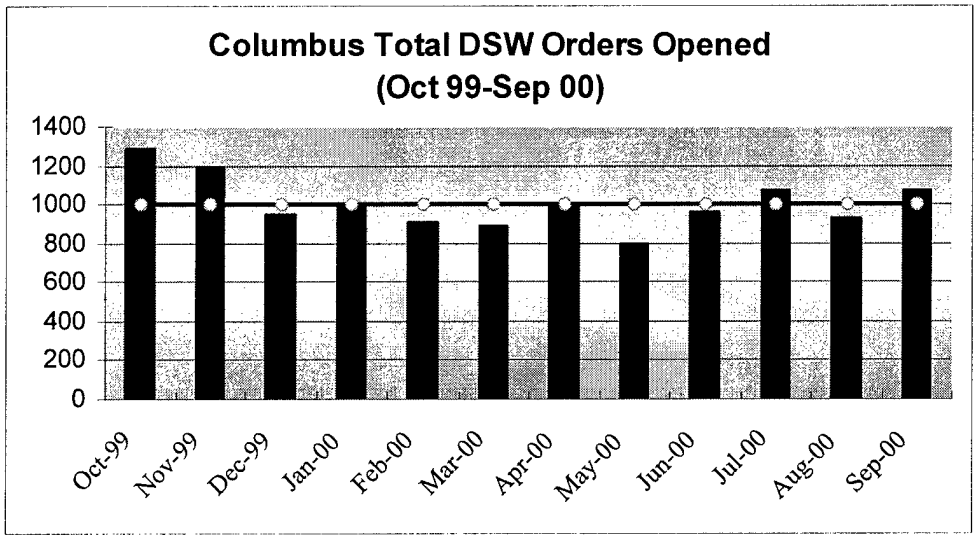

Figure 24. Columbus Total DSW Orders

In addition to DSW order counts, the documentation also provided the researcher with average completion dates for each DSW order category over the same time periods. The MEO at Columbus calculates the average completion date by averaging the

completion times of each DSW order for each category for each month. Figures 25, 26, and 27 summarize the average completion dates for Emergency, Urgent, and Routine DSW orders respectively per month.

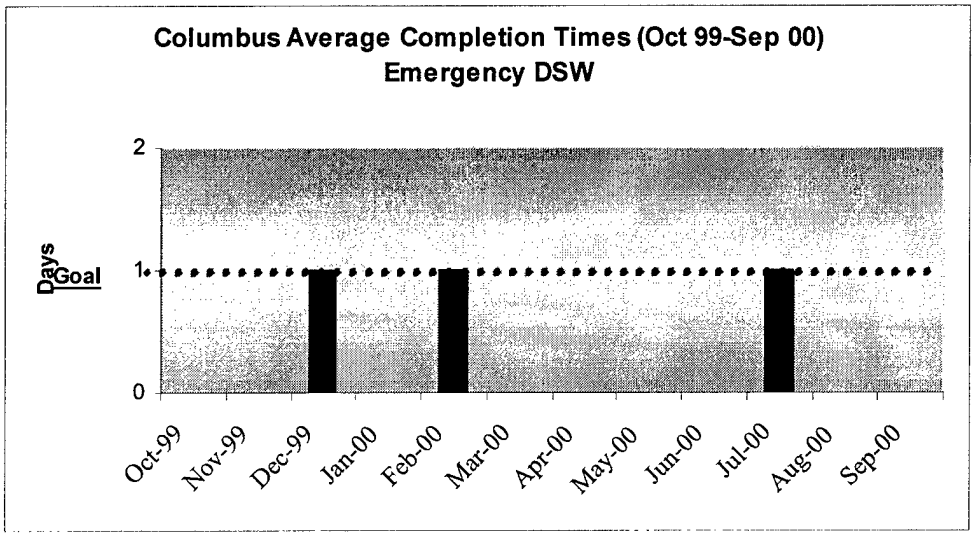

Figure 25. Columbus Emergency DSW Average Completion Time

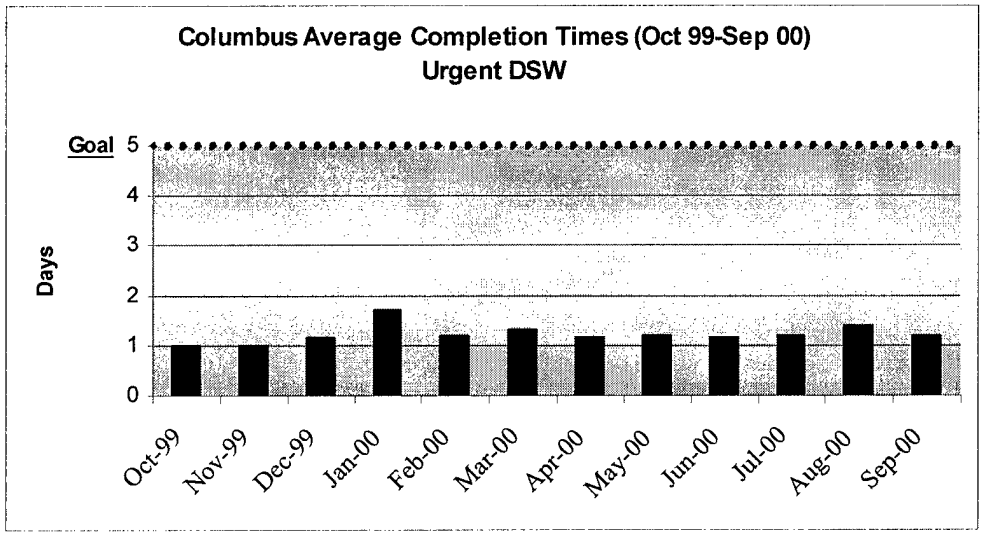

Figure 26. Columbus Urgent DSW Average Completion Time

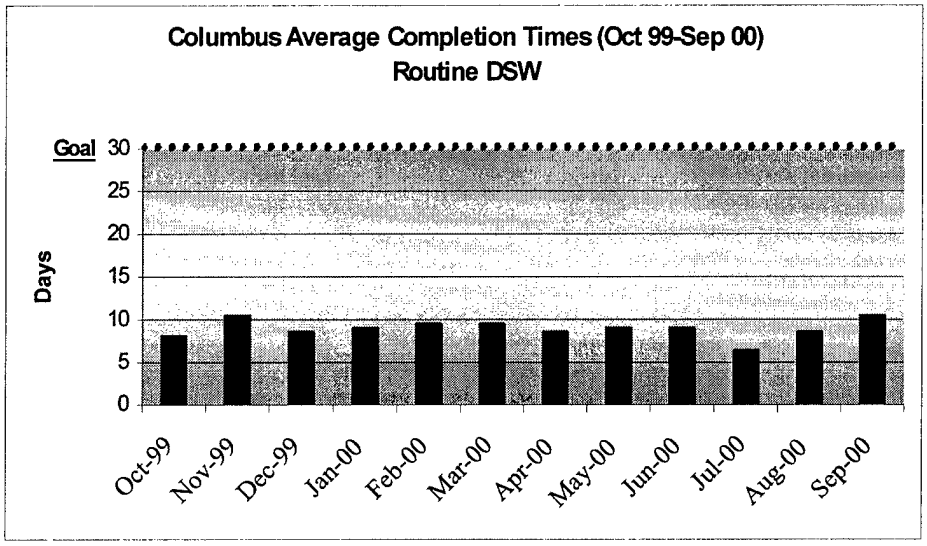

Figure 27. Columbus Routine DSW Average Completion Time

As the data shows, on average, the Columbus AFB MEO is completing its DSW orders in all categories well within the time limits established in the PWS. This data does not provide a conclusive performance picture of the MEO, but it does provide quantitative data that the MEO is able to meet its DSW order time requirements with its current structure and practices.

The documentation also provided customer satisfaction survey scores from October 1999 to September 2000, which is less than the time period covered by the Goodfellow customer satisfaction survey results, but was all that was available at the time of the site visit. Figure 28 summarizes these customer response scores for the period.

As the data shows, the Columbus MEO has achieved very high customer satisfaction scores. The researcher was not able to obtain a copy of the customer satisfaction survey, but Columbus requires the craftsmen who are performing the work to leave a customer satisfaction survey with the customer when the job is completed. The craftsmen may either take the completed survey with them, or the customer can send the

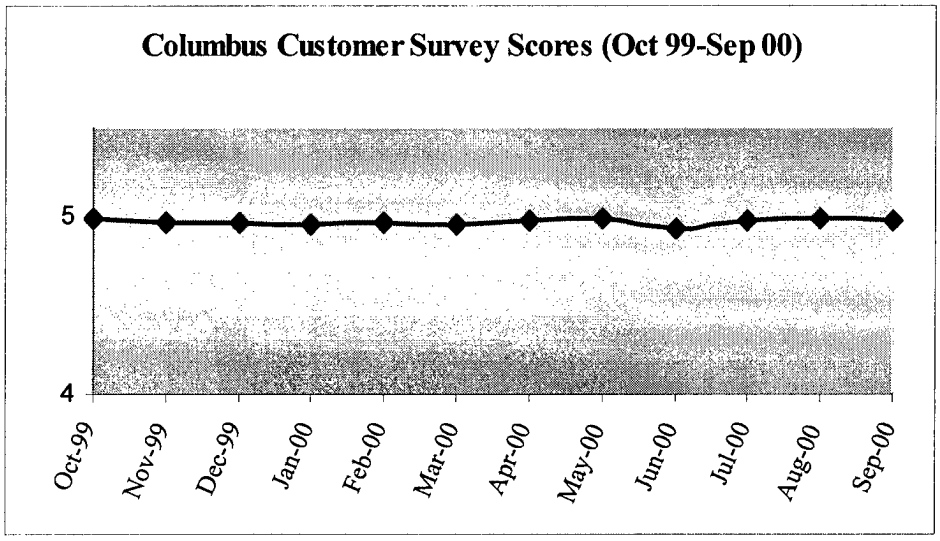

Figure 28. Columbus MEO Customer Satisfaction Scores

survey to the flight through the base distribution system. The customers are asked to rate the service they received on the same scale as discussed in the Goodfellow write-up. The customer may rate the service Outstanding, Excellent, Satisfactory, Poor, and Unsatisfactory. Scores of 5, 4, 3, 2, and 1 are assigned to the ratings respectively and averaged for the month. A monthly score of 4.0 is the established goal, which the MEO has met every month for the year in question. Again, these results do not provide a conclusive performance picture, but it does provide quantitative data to back up claims by Operation's Flight personnel that the customers are pleased with the MEO.

Results Beyond the Research Areas

At Columbus AFB two additional issues were discovered that did not fit into the three research area framework. However, the researcher felt that this information was relevant to the research topic and would prove useful for future flights trying to develop and implement MEO's.

The first area highlighted is the opinion in the Columbus MEO that people are what make the organization successful. There was an effort made to ensure that all members of the organization were informed and that they had a part in the MEO's success. The flight chief and his managers referred to the organization as a family and that they had the attitude of get the job done no matter what it takes. Multiple individuals pointed out to the researcher that the A-76 was looked at as a war—a feeling caused by the threat of competition. They believed their jobs were on the line, and they formed a team to save those jobs.

The second area perceived as unique was the relationship between the MEO management and the union leadership and members. Throughout the interviews with managerial personnel, the relationship with the union was touted as a benefit and they were classified as very helpful. This is not the case in many organizations, and the researcher wanted to obtain more information about the relationship. The researcher met with the squadron union steward to expand on the good relationship. He was adamant that the union is not run like a "1970's model union," where the relationship is workers versus management. Instead, it was pointed out that once the A-76 study was announced, that the union steward continually pointed out to union members that their job was on the line, so they need to adopt the attitude of whatever it takes to get the job done. The union steward stated that you simply cannot win a cost comparison if the union and management cannot put their past differences behind them and learn to work as a team.

This section provided the within case analysis for the Columbus AFB MEO case study, and was constructed by analyzing interview data, organizational documentation, archival records, and personal observation notes. The section followed the three research

areas established in Chapter 3—MEO Organizational Structure, MEO Operations Management Practices, and Performance Measurement. In addition to these three research areas, case study evidence that did not fall within the specific areas but was still relevant was discussed. The first section outlined the current organizational structure in use at Columbus as well as motivations and goals behind structure development, changes to the structure, and problem areas in development. Next, the specific operations management practices in use at Columbus were summarized to include how the flight meets typical Operations Flight commitments, work order processing, and use of multi-skilling. Performance measurement of the MEO was discussed next. Data collection for this research area experienced many problems during the Goodfellow site visits, and hence the researcher did not try to obtain the data required for the measurements defined in Chapter 3. However, the researcher was able to obtain organizational documentation that showed the number of DSW orders opened from October 1999 to September 2000, average DSW order completion rates for the same time period, and customer satisfaction survey results. These results help paint a picture of workload, work accomplishment, and customer satisfaction with the MEO performance. Finally, the Operations Flight Chief's opinions on what makes the organization effective, and a unique union relationship were summarized. The next section provides the within cross case analysis between the Goodfellow and Columbus AFB MEO's.

Cross Case Analysis

This section will present the cross case analyses results between the Goodfellow MEO, Columbus MEO, and where applicable, the traditional Objective Flight organization. It will follow the same analysis framework as the within case analyses

previously discussed. First, the organizational structures of the organizations will be compared and contrasted. Second, the different operations management practices utilized by the organizations will be discussed. Finally, the performance measures that could be obtained will be compared.

Organizational Structures

This portion of the within case analyses compares and contrasts the two MEO Operations Flights and where applicable the Objective Flight. These comparisons include number of elements, type of organizations, numbers of shops or zones, and communication flows within the structures. Table 17 summarizes the Goodfellow and Columbus MEO's as well as applicable areas of the Objective Flight structure.

Both the Columbus MEO and the Objective Flight utilize a 5-Element functional structure as opposed to the 3-Element matrix organization of the Goodfellow MEO. However, the element functions of the Columbus MEO are slightly different than the Objective Flight Elements. The Columbus MEO does not have a Facility Maintenance Element like the Objective Flight structure requires. Instead, the MEO created a Military Family Housing maintenance section that handles all maintenance requirements of housing military areas on base. Even though Maintenance Engineering is listed as an element in the MEO structures, both Columbus' and Goodfellow's Maintenance Engineering Elements are not officially part of the MEO, but are supervised by the flight chiefs.

The nomenclature of Goodfellow's elements can cause confusion to the observer. The flight chief stated that these names were chosen, because they didn't know what else to call them, and the names do not annotate the functions of the elements. Goodfellow

Table 17. Organizational Structure Comparison

Goodfellow MEO	Columbus MEO	Objective Flight
• 3-Element structure ➢ Maintenance Engineering ➢ Heavy Repair ➢ Facility Maintenance	• 5-Section structure ➢ Maintenance Engineering ➢ Heavy Repair ➢ Infrastructure ➢ Material Control ➢ Military Family Housing	• 5-Element structure ➢ Maintenance Engineering ➢ Facility Maintenance ➢ Material Acquisition ➢ Infrastructure Support ➢ Heavy Repair
• Maintenance Engineering not officially part of MEO	• Maintenance Engineering not officially part of MEO	
• Matrix Organization ➢ Temporary work order teams	• Functional Organization ➢ Sections separated by different types but related types of work	• Functional Organization ➢ Sections separated by different types but related types of work
• Element nomenclature is a point of confusion ➢ Element titles do not describe function	• 2 Sections under Heavy Repair ➢ Vertical ➢ Horizontal ➢ EMCS	• 2 Sections under Heavy Repair ➢ Vertical ➢ Horizontal
• 3 shops under Heavy Repair ➢ Planning / Production Control ➢ Plumbing & Facilities ➢ Equipment & Structures	• 4 shops under Vertical Section ➢ Carpentry ➢ Interior Electric ➢ HVAC ➢ Metal Shop	• Shop or Facility Maintenance Zone arrangements are Commander discretion
• Entomology under Environmental Flight		• Entomology under Heavy Repair, Horizontal Section
• 3 shops under Facility Maintenance ➢ HVAC & EMCS ➢ Electrical and Electronic ➢ Logistics	• 2 shops under Horizontal Section ➢ Pest Control ➢ Equipment	
	• 2 shops under Infrastructure Section ➢ Exterior Electric & Power Production ➢ Utility Systems	
• Communication flow described as very open ➢ Deliberate open communication design ➢ Managers and supervisors in same physical location	• Communication flow described as smooth ➢ Heavy Repair and Infrastructure Managers and supervisors co-located	

has a Heavy Repair Element, but it has a diverse set of functions that range from planning to facility maintenance to equipment operations. Both the Columbus MEO and the Objective Flight Structure further divide their Heavy Repair Elements into a Horizontal

Section and Vertical Section. Both include Entomology under the Horizontal section as well. Under Columbus' Heavy Repair Section are the traditional heavy repair functions. The Vertical Section encompasses four shops—Carpentry, Interior electric, HVAC, and Metal Shop. In addition to Entomology, the MEO Horizontal Section also includes the Equipment Operations. A third, unrelated shop falls under the Heavy Repair Section—EMCS.

Goodfellow's Facility Maintenance Element encompasses functions such as HVAC, Electricians, and Logistics. Columbus' exterior electricians and power production shops, as well as the utility systems fall beneath the Infrastructure Section.

Both MEO flight chiefs describe the communication flow within their flight as good. Goodfellow specifically looked at the communication within the structure during MEO development and wanted to ensure that supervisors and craftsmen alike could talk to the people they needed to talk to instead of following a rigid chain of command. The managers of the two elements and the supervisors of each element are located in the same physical areas, which the flight chief perceives as a benefit to communication. Columbus also has its Heavy Repair Manager, Vertical Section supervisor, planner, and Infrastructure Manager office in the same area to improve communication between the sections.

The next area this analysis compared was the changes and reasons for the changes the MEO's had experienced. Table 18 summarizes the changes and reasons for the changes in the MEO's structures. The Goodfellow MEO has undergone three main changes. The first of these was a change in the number of personnel in specific crafts. The flight chief explained that this was because after a year of operation under the MEO

Table 18. MEO Changes Comparison

Goodfellow MEO Changes	Columbus MEO Changes
• Changed the number of craftsmen in each craft ➢ Actual workloads were different than estimated workloads during MEO development • Increased the total flight manning from 70 to 87 ➢ New mission bed down ➢ Workload increases due to SCIF security changes • Flight structure organization ➢ Originally 2 supervisors, 6 work leaders ➢ Structure was too flat ➢ Added 3 supervisors	• No changes to structure or manning • Planning a manpower audit to request additional personnel • 2 new aircraft hangars constructed • Increased workload in family housing

structure the actual workloads were different than the estimated workloads used to develop the MEO. The MEO has also undergone an increase in total manning. This increase was due to a new mission transferred to Goodfellow, and security changes in the Sensitive Compartmentalized Information Facilities (SCIF) of the Intelligence Training Group that resulted in increased workloads. The final change the Goodfellow MEO has undergone is a structural reorganization. The flight chief was quoted as saying the structure got too flat. He surmised that the two supervisors in the original structure had too large a span of control and hence could not handle all of the supervisory requirements. To remedy this problem, three supervisors were added in the new structure.

The Columbus MEO, on the other hand, has not undergone a single change. The flight chief said they were fortunate that the structure developed has performed well. However, due to two new aircraft hangars and maintenance intensive housing being

constructed, the flight chief stated they are seeking a manpower audit with the goal of obtaining additional personnel.

Behind the organizational structures and changes to those structures are development goals the flight chiefs established to guide MEO structure development. Table 19 summarizes the goals each flight chief reported to the researcher during the site visits.

Table 19. MEO Development Goals Comparison

Goodfellow MEO Development Goals	Columbus MEO Development Goals
• Win the cost comparison • Create a non-restrictive organization • Create as flat an organization as possible	• To truly become the most efficient organization in the cost competition • Return to a shop oriented structure

Both flight chiefs had number one goals of winning the cost competition. Columbus' goal was to become the most efficient organization, which would ultimately result in winning the competition. Goodfellow wanted to construct a MEO that was less restrictive than many traditional hierarchical structures. In addition to the less restrictive nature of the structure, the Goodfellow flight chief wanted to flatten the organization by taking out unnecessary supervisory levels. This goal was explained to the researcher as flattening the organization without having a blowout. Columbus' flight chief explained that one of their main goals was to return to a shop concept. They admitted that this may not work for every Operations Flight, but it works for their organization.

In addition to development goals, the researcher also discussed development and implementation problem areas with the MEO's. Table 20 summarizes each flight's development and implementation problems that were encountered. Both flight chiefs reported problems with the civilian personnel system regarding the rules and regulations and cumbersome nature of the system. Goodfellow ran into problems with the system

Table 20. MEO Problem Areas Comparison

Goodfellow MEO Problem Areas	Columbus MEO Problem Areas
• Civilian Personnel System ➢ Limitations on multi-skilled positions due to position description requirements ➢ Cumbersome rules and regulations ➢ Steep learning curve for personnel not familiar with the system	• No specific development problems • Problems hiring during implementation ➢ Civilian Personnel System rules and regulations and preference programs

during development as well as implementation. During implementation, there were limitations on the amount of multi-skilling they could do because of regulations regarding position descriptions. During implementation, the Goodfellow flight chief explained that their managers and supervisors were not familiar with the system in areas such as disciplinary actions. He stated there was a steep learning curve to overcome these obstacles. Although the Columbus flight chief did not report any development problems, they also had difficulty with the system in hiring the 40 personnel during implementation. He stated this was due to backlog in the system and the numerous overlapping preference programs such as veteran preference.

Operations Management Practices

In addition to organizational structure, the research also focused on specific operations management practices the MEO's were utilizing. This portion of the cross case analysis highlights these practices and compares the two MEO's as well as the Objective Flight practices where applicable. The first practices that are highlighted relate directly to how the flights meet typical Operations Flight commitments. The first typical commitment that was explored is maintenance engineering. The Objective Flight has a designated element to handle all types of maintenance engineering commitments. Table 21 summarizes how the two MEO's meet these types of requirements.

Table 21. Maintenance Engineering Approach Comparison

Goodfellow MEO	Columbus MEO
• Non-MEO Maintenance Engineering Element supervised by the flight chief • Little manning—5 personnel • RWP is not managed by the element ➢ Responsibility of the Heavy Repair and Facility Maintenance Managers • Infrastructure management plans are up to date ➢ Developed software to assist ➢ Craftsmen conduct all required inspections • Do not conduct maintainability reviews ➢ Total flight responsibility • Manage all service contracts • All personnel in element are Quality Assurance qualified • Perceived improvement since implementation—not due to MEO	• Non-MEO Maintenance Engineering Element supervised by the flight chief • 8 personnel • No perceived differences from a typical Maintenance Engineering Element • Infrastructure plans are lacking attention • Formed a Infrastructure Coordination Committee (ICC) ➢ Works with craftsmen to perform long range planning • Manage all service contracts • All personnel in element are Quality Assurance qualified • Also manage a carpet IDIQ contract • Perceived improvement since implementation—not due to MEO

Both MEO's do not have a Maintenance Engineering Element as part of the official MEO structure, because the function was not included in the A-76 studies. However, because Maintenance Engineering provides assistance to the Operations Flight, it only makes sense for the squadrons to have given the MEO flight chiefs supervisory duties over the elements. The Columbus MEO is perceived as a typical Maintenance Engineering Element. They have not lessened the workload on the element whatsoever. However, Goodfellow has transferred the RWP, infrastructure plans inspections, and the maintainability reviews to other portions of the flight. Goodfellow's Maintenance Engineering Element still manages all infrastructure management plans, and has created a software program to help with the logistics of tracking the required data to keep the plans up to date. Infrastructure plans are one area that Columbus admitted is lacking attention. However, they did form an Infrastructure Coordination Committee to help these plans along by involving the infrastructure shops in the planning. Both elements manage all

service contracts, and both have made all personnel Quality Assurance qualified to provide greater flexibility in covering all inspection requirements. Finally, both flight chiefs stated that they have seen an improvement in meeting maintenance engineering commitments since MEO implementation, but they do not think the improvement is due to the MEO. They think that management of the elements has improved and the element personnel are becoming more familiar with their roles.

Facility Maintenance commitments were the next type of work that was explored. Table 22 summarizes how the two MEO's meet these types of commitments.

Table 22. Facility Maintenance Approach Comparison

Goodfellow MEO	Columbus MEO
• No separate Facilities Maintenance element—operate out of Plumbing and Facilities shop • 3, 2-man teams conduct inspections and perform work • All facilities inspected at least once annually. High use facilities inspected quarterly • Teams divided the facilities into 3 groups—teams take ownership of these facilities • Accomplish approximately 20% of flight's RWP items during inspections • Performance is perceived to have definitely improved since implementation • Customer satisfaction is perceived to be very high	• No separate Facilities Maintenance element • Address facility maintenance demands through the DSW program • No scheduled inspections or work rotations • Perceived improvement since implementation ➢ All civilian workforce that is more experienced ➢ More continuity in the workforce

Both MEO's chose not to establish separate elements dedicated to facility maintenance demands. However, the Goodfellow MEO has an active facility maintenance program, while the Columbus MEO does not. Goodfellow has established three, two-man teams that perform inspections and work rotations in every facility on base at least once annually. These teams operate out of the Plumbing and Facilities shop, but have divided up the base facilities into three groups of which each team takes ownership of one group.

This type of arrangement was described as a hybrid approach to facility maintenance as opposed to a zonal or shop concept. In addition to performing facility maintenance, the flight transferred approximately 20 percent of its RWP items to the facility maintenance crews. These are accomplished when they visit the facilities on their schedule. As stated above, Columbus does not have an active facility maintenance program. They do not conduct inspections, and handle all facility maintenance programs other than RWP items through the DSW order program. However they have established a MFH maintenance section that provides maintenance to MFH units. Both flight chiefs believe their performance in meeting these types of demands has improved since implementation. Goodfellow believes that their team concept provides some of the best facility maintenance in the Air Force. Columbus believes that an all civilian workforce provides more experience and continuity, which in-turn means better performance. Goodfellow's flight chief stated that the customer satisfaction with their facility maintenance program is perceived to be very high.

The next type of commitment that was analyzed was material acquisition commitments the flights must meet. Table 23 summarizes how the two flights meet these demands. Both MEO's have different approaches to meeting material acquisition demands. Columbus has established a "by the book" Material Control Element. This element handles all purchasing for the flight for all types of work orders. The flight chief stated that he did not want a lot of IMPAC cards floating around the flight with the potential for misuse. The element is so well run that the Goodfellow MEO has visited the flight and is considering patterning its logistics function after Columbus'. Until they change their function, Goodfellow has adopted a different approach. The flight

Table 23. Material Acquisition Approach Comparison

Goodfellow MEO	Columbus MEO
• No Material Acquisition element—shop under the Facility Maintenance element • Self help store carries too much stock, flight chief wants to scale it back • On-time buying program is considered unique ➢ All supervisors utilized the IMPAC card to purchase DSW materials ➢ Planners also utilize card • MA performance has improved due to IMAPC card use not MEO implementation • Customers seem pleased with performance	• Designated Material Control section • Model for other MEO's • Self-help store is unchanged • Section run "buy the book" • Handles all purchasing for the flight. No IMPAC cards anywhere else in the flight • Perceived improvement in performance since implementation • Flight chief feels fortunate to have outstanding material control personnel

chief stated that they try to do as much on-time buying as possible to minimize any material contact with warehousing operations. They perform this on-time buying by issuing IMPAC cards to every shop supervisor, who is responsible for buying the materials needed for their DSW order. Both planners have IMPAC cards as well and utilize them to purchase materials for the work orders they are leading. Columbus feels that their performance has improved since implementation, because they have fewer people in the element and can run a "tighter ship." Goodfellow believes their ability to meet material control commitments has improved, but not due to anything the MEO has done. They believe the IMPAC card is the single most important factor and are proponents of raising its purchase limits.

The fourth type of commitment an Operations Flight must meet is infrastructure support. Table 24 summarizes how the two MEO's accomplish these types of tasks. Again, both MEO's have taken two different approaches to meeting these types of demands. Goodfellow has no designated element and perform maintenance on the infrastructure systems as needed. The craftsmen perform the inspections required by Maintenance Engineering's infrastructure plans. On the other hand, the Columbus MEO

Table 24. Infrastructure Support Approach Comparison

Goodfellow MEO	Columbus MEO
• No Infrastructure Support element—craftsmen work on systems on an as needed basis • No central plants to maintain • Craftsmen provide inspection support for infrastructure management plans • No perceived improvement due to MEO implementation	• Designated Infrastructure Section • Two shops ➢ Exterior Electric and Power Production ➢ Utilities • No central plants to maintain • Difficulty in hiring qualified power production personnel • Members of ICC and assist in long range planning for infrastructure repair and replacement projects • Customers are perceived as being pleased

has a designated Infrastructure Section with two shops. The first of these shops consists of exterior electric and power production personnel. The second shop contains utility systems personnel, and was explained that if a system involves material flowing through a pipe, these personnel maintain those systems. Members of this section sit on the ICC board and assist in infrastructure planning. Both MEO's do not maintain any central plants such as water or wastewater treatment. There is also no perceived improvement in meeting these demands since MEO implementation at both bases.

The final type of Operations Flight commitment that was explored was heavy repair type work. Table 25 summarizes the two flights' approaches to addressing these demands. As the summary highlights, the Goodfellow MEO does not have a designated traditional Heavy Repair Element. They address typical heavy repair type demands through a shop within the Heavy Repair Element, which causes confusion because of nomenclature. The Structures and Pavements Shop accomplishes all heavy repair type work and is not divided into the traditional Horizontal and Vertical sections. The shop does not perform any pavement work accept minor pothole repair and sidewalks. The

Table 25. Heavy Repair Approach Comparison

Goodfellow MEO	Columbus MEO
• No Heavy Repair element—shop with a single supervisor • Not organized into the traditional horizontal and vertical breakouts • Do not perform major pavement work • Utilize SABER, other contract support extensively • Entomology has been moved to Environmental Flight • MEO workload definition is a perceived improvement	• Heavy Repair section with traditional Horizontal and Vertical breakouts • Do not accomplish any paving • Perform minor paving repairs and pour some concrete • Utilize SABER extensively for work order accomplishment • Entomology is in-house • Perceived uniqueness ➢ Supervisor / Worker relationships ➢ Investment in labor saving equipment • Stress customer satisfaction as a main goal

flight utilizes SABER extensively to accomplish many of the multi-craft work orders that are above their workload estimates. The Goodfellow MEO does not perform entomology services, which have been transferred to the Environmental Flight along with the entomology personnel. The Columbus MEO addresses these commitments very similar to the Objective Flight Heavy Repair Element. They have designated a Heavy Repair Section that is divided up into Horizontal Section and Vertical Section. The section does not perform any major paving work. They will repair small areas and pour concrete driveways and sidewalks. The flight also utilizes SABER extensively, but their contractor recently defaulted which has caused a backup in Operations Flight related work orders. The horizontal section performs entomology services for the base. The Columbus MEO perceives its worker and supervisory relationship as unique, because their supervisors treat their employees like they are part of a family. They also perceive their investment in labor saving equipment such as automated herbicide applicators as unique to their organization.

The next operations management area that was explored dealt with how the MEO's processed work requests. Table 26 summarizes how the two MEO's accomplish this task as well as the process that is outlined in the AFI's.

Table 26. Work Order Approval Process Comparison

Goodfellow Process	Columbus Process	AFI Process
• Request received • Customer service make DSW determination ➢ If DSW sent to shops ➢ If not or unsure sent to flight chief review • Flight chief has three options ➢ Classify as DSW and send to shops ➢ Send to managers for a closer look before making a decision ➢ Send it to the Work Order Review Meeting • Work Order Review Meeting approves or disapproves request ➢ If disapproved request sent back to customer ➢ If approved sent to IWP or Engineering Flight for contract	• Request received • Customer service make DSW determination ➢ If DSW sent to shops ➢ If not or unsure sent to 332 Meeting • Work Order Review Meeting approves or disapproves request ➢ If disapproved request sent back to customer ➢ If approved sent to IWP or Engineering Flight for contract ➢ Can also classify as DSW and send to shops	• Request is made • Determine with capability ➢ If yes, schedule the work ➢ In no or unsure send to the Work Request Review Board • Work Request Review Board approves or disapproves request ➢ If disapproved request sent back to customer ➢ If approved sent to IWP or Engineering Flight for contract

As the table shows there is no significant difference between the three approaches to processing a Civil Engineer Work Request. The Goodfellow and Columbus MEO's have added their own personal touches like a flight chief review before the WORM at Goodfellow and personnel at the 332 Meeting can classify a work request a DSW and send it back to the shops. For the most part, however, the processes are the same. Both MEO's have a weekly meeting to approve work requests as called for in the AFI.

Work classifications were the next practice that was explored. The two MEO's and the DSW work classifications spelled out in the AFI were identical. Both Goodfellow and Columbus have three classifications for a DSW work order. The first of these classifications is Emergency, and the flights have 24 hours to accomplish these type of work orders. The second type of classification is Urgent. Urgent work orders have to be completed within five days. Finally, the third type is Routine work. These work orders must be completed within 30 days of the creation date.

How the MEO's organized their lower level managerial functions was the next area explored. Table 27 summarizes the two MEO's managerial structures.

Table 27. Lower Level Management Comparison

Goodfellow MEO	Columbus MEO
• Two mid-level managers • Five shop supervisors • Utilize Work Leaders in the Structures and HVAC shops • Would eliminate manger positions if he had not already made them • Overall goal was to have as little management, but still cover the supervisory duties comfortably	• Two Sections have single supervisors • Two sections (Heavy Repair and Infrastructure) have managers with two supervisors • Three Work Leader Positions in Heavy Repair • Goal was to minimize supervisors to save on personnel costs

Both MEO's attempted to eliminate unnecessary supervisory positions. Both utilize Work Leader positions where supervisors might have been utilized in traditional organizations. The goal behind the minimization of supervisory positions in the MEO's was to save personnel costs and eliminate the hierarchical structure that is common in many government organizations. The flight chief at Goodfellow admitted he would like to flatten his structure by removing the two managerial positions, but since he had already created them he was not in a position to change them.

The final operations management practice that was explored was the MEO's use of multi-skilling in their organization. Table 28 summarizes both flights' use of the initiative.

Table 28. Multi-Skilling Comparison

Goodfellow MEO	Columbus MEO
• Utilized in three main crafts ➢ Facility maintenance technicians ➢ Interior electricians ➢ Carpenters • Did not utilize before implementation • Motivated by doing more with fewer people and better customer service • Can cause problems with quality and animosity between multi-skilled craftsmen and journeymen • Classified as very effective • Estimated to have saved the MEO 6 positions—over 6% of current manning	• Utilized in multiple crafts ➢ Housing maintenance mechanics ➢ Carpenters ➢ HVAC ➢ Sheet metal • Utilized before implementation • Motivated by reducing manpower and costs • Has some workers unhappy with arrangement • Perceived as very successful

Both MEO's reported to the researcher that they extensively utilized multi-skilling in their organizations. The initiative was used in crafts such as facility maintenance technicians, housing maintenance technicians, and carpenters. Both flight chiefs stated that they used this technique to utilize fewer people in their organizations and ultimately save on personnel costs. Goodfellow stated they did not utilize the techniques before implementation, because the Air Force had not started the program when the MEO was implemented. Both MEO's refused to allow interior electricians to work on high voltage lines, but Goodfellow has trained interior electricians on some exterior tasks so that they may assist the exterior electricians if needed. Both flight chiefs perceived the program as very successful and Goodfellow's flight chief estimated he had save approximately six positions by utilizing multi-skilling. However, multi-skilling is not a "cure-all." There are problems such as animosity between workers, quality differences between

journeymen craftsmen and multi-skilled workers, and loss of journeymen expertise with too many multi-skilled workers. These problems must be taken into account, so a proper balance between journeymen and multi-skilled craftsmen can be struck in the organization.

MEO Performance Measurement

The within case analyses discuss the difficulties the researcher had in obtaining the required data for the performance measures outlined in Chapter 3 as well as the decision not to pursue the data at Columbus AFB. However, the researcher was able to obtain some archival data at Goodfellow and organizational documentation at Columbus that provided DSW order quantities and customer feedback results for both organizations. This section of the cross case analysis will discuss why the researcher chose not to compare the to MEO's on the basis of work orders opened. It will also highlight the comparison made between the two sets of customer satisfaction scores that were obtained.

During the site visits the researcher was able to obtain the number of DSW orders that were opened per month for approximately a year time period. This data provided relatively little information, except it enabled the individual MEO's workload to be discussed. These numbers did not show completion rates, on-time percentages, or other information that would allow for a comparison between the two organizations. A comparison between the two MEO's on the basis of work orders opened per month would not provide this research any valuable insight. There are too many factors that affect workload such as base population, weather, facility composition, and mission. These

factors shape the amount and type of work each base will receive. Therefore, the researcher did not perform a comparison between the two MEO's based on this data.

In addition to DSW order counts, the researcher was also able to obtain organizational documentation that provided customer satisfaction survey scores during both site visits. The data at Goodfellow ranged from March 1996 to September 2000, but the data from Columbus was only available from October 1999 to September 2000.

Again, there was a disparity in the time period, so for comparison purposes the Goodfellow data was trimmed to only include data from the same time period as the Columbus data. Figure 33 shows these customer satisfaction scores as well as the average score from October 1999 to September 2000. The data suggests that the Columbus MEO averaged 4.97 on customer satisfaction over the time period, while the MEO at Goodfellow averaged 4.68. The researcher cannot draw any conclusion from these results, because there are too many factors that need to be considered in a proper performance evaluation. For example, both bases utilize different customer sampling techniques, which could make a difference in the scores received. When the remaining previous three years worth of Goodfellow data is factored in, the satisfaction average raises to 4.77, which brings the MEO's average closer to Columbus'. It is possible that if the researcher was able to obtain survey scores for Columbus older than a year, the average score would be closer to Goodfellow's. However, the researcher can conclude from the data, that both MEO's averaged well above a customer rating of Outstanding for the time period in question, which can be interpreted that both of them are meeting or exceeding the expectations of their customers.

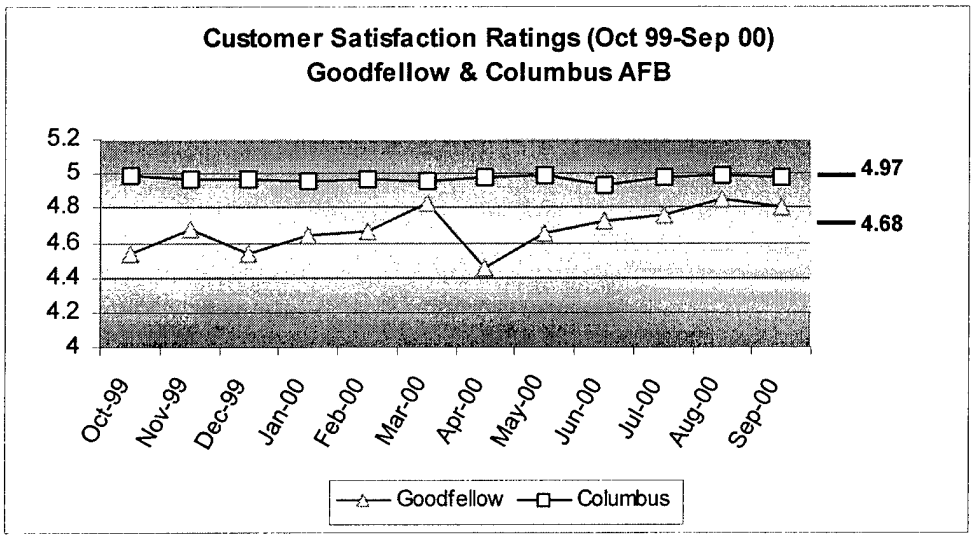

Figure 29. GAFB and CAFB Customer Satisfaction Ratings

This chapter presented the results and analysis from the site visits at Goodfellow AFB and Columbus AFB. The chapter was divided into three sections. All three sections follow the framework provided by the three research areas presented in Chapter 3—Organizational Structure, Operations Management Practices, and Performance Measurement. The first section is the within case analysis of the Goodfellow site visit. It discussed the results from the site visit in terms of the Goodfellow MEO's organizational structure, management practices, and performance data. In addition, the researcher discussed other data that was obtained that did not fit within the three-research area framework, but felt it had relevance to the research effort. The second section provided the within case analysis for the Columbus AFB site visit and follows the identical framework as the previous. The final section provided cross case analysis between the MEO's and the Objective Flight where applicable.

V. Conclusions and Recommendations

This chapter provides a summary of the research effort, presents the major findings, discusses the limitations of the research, introduces future research topics, and finally provides recommendations. The major findings include the different approaches taken by the two MEO's in organizational structure, and problems that exist with undertaking performance measurement of these organizations. Limitations of the research include only two organizations were investigated, no quantitative performance analysis was performed, and only qualitative data was relied upon.

Research Summary

This research consisted of exploring the organizational structures of two Civil Engineer Most Efficient Organization Operations Flights as well as the operations management practices they were utilizing. In addition, an attempt was made to obtain an initial performance measure of each organization. This research began by summarizing the current literature on the Operations Flight, A-76 process, and organizational design. Chapter 3 presented the case study methodology approach to the research. The case study protocol was discussed, and the interview questions utilized at the site visits were presented. The researcher visited both organizations and spent two days meeting with the flight chiefs and other personnel. The majority of the site visits were spent interviewing the flight chiefs, and all interviews were tape-recorded. The results and analysis of the data collected during the site visits were presented in Chapter 4. Both the within case analyses, which provided detailed descriptions of each organization, and the cross case

analysis, which compared and contrasted the two organizations and the Objective Flight, were discussed in Chapter 4.

Conclusions

Neither MEO had the same approach to structuring their organization. Goodfellow has abandoned the Objective Flight structure by incorporating shops that have many responsibilities versus shops with specific areas of responsibility, and restructuring into a three-element organization. For example, instead of designating an element specifically for infrastructure support, their plumbing and electrical shops perform maintenance as needed on infrastructure systems. They have also incorporated a unique matrix structure, which is made up of temporary project teams to accomplish large-scale work orders. This approach is unique to Goodfellow, and they perceive it to be working well for the flight. Columbus' MEO, on the other hand, appears to be an Objective Flight that has performed a 39 percent cut in manpower. The flight has removed many of the supervisory levels, but still utilizes a five-element structure with the same groupings and nomenclature as the Objective Flight. The only difference is that they do not have a designated Facility Maintenance Element, but their Housing Maintenance Element performs as a traditional Facility Maintenance Element for housing units. Overall, the researcher did not find commonality of organizational design between the two MEO's, and it appears that there is a "what works for your base" approach to MEO design. Both flight chiefs were satisfied with their organizations, and indications are that both organizations perceive they are successful.

Since there is no common pattern of organizational structure between the MEO's, future MEO development teams can only learn from the lessons learned by these two

organizations, and not emulate them. There are many factors that shape the way an organization will structure. These include, but are not limited to, size of the base, environment, mission, and desires of base and MEO leadership. Neither of the approaches taken by Goodfellow or Columbus may be optimal or even appropriate for future MEO's. However, they provide valuable insight for future development teams who can incorporate parts from both structures into their own unique organization.

The research also uncovered two different facility maintenance approaches. Columbus does not perform facility inspections or have facility maintenance teams that perform a work rotation schedule. The flight addresses facility maintenance concerns as they are called in as work requests. Goodfellow utilizes three two-man teams to perform inspections and conduct maintenance on every base facility at least once annually. Some high use facilities such as dormitories and technical training facilities are inspected quarterly. The researcher perceived that these two approaches were functions of the number and make-up of the facilities on the bases. For example, Goodfellow has 21 dormitories, which include permanent party, student, and transient housing, while Columbus only has 9 dormitories. Perhaps, since Goodfellow has close to two and a half times the amount of high use dormitories as Columbus, as well as 10 SCIF's, this is the shaping factor in the facility maintenance approaches.

Goodfellow leadership perceives the quality of facility maintenance to be very high, and tout their approach as a significant improvement of the MEO. The crews visit not only with facility managers, but all tenants to uncover maintenance concerns they might have, which ensures the Flight's customers feel like their opinions matter and they have personal service. Their facility maintenance crews have ownership and pride in the

facilities they inspect and maintain, and in the researcher's opinion, their approach will provide higher quality facility maintenance in the long run. There is no quantitative data to suggest that Columbus facility maintenance is of less quality, but the extra attention given to the facilities by the Goodfellow crews will make a difference in the useful life of the facilities as well as maintaining outstanding customer relations.

Both MEO's utilize multi-skilling extensively, and believe this is a necessary component of any MEO. In order for a MEO to be competitive in the cost comparison process, the organization must utilize as few personnel as possible to meet the requirements set forth in the PWS. Multi-skilling is a technique in which an Operations Flight Chief can achieve a higher productivity level with the personnel in the organization. Without the use of multi-skilling a MEO would need to add additional craftsmen to cover for the lost productivity of only utilizing specialized personnel. For example, the Goodfellow flight chief estimated that multi-skilling saved the organization approximately six personnel. Those six personnel slots could have meant the difference in their bid winning or losing the cost comparison against a contractor organization. This technique, however, is not a "cure-all." MEO's whom utilize multi-skilling can expect various types of problems to occur. For example, animosity may develop between multi-skilled craftsmen and journeymen craftsmen because of differences in pay grades. MEO's must also strike a balance between multi-skilled and journeymen personnel. Journeymen personnel possess unique knowledge that multi-skilled craftsmen may not. These journeymen may not use this knowledge on a regular basis, but their expertise is necessary when difficult work arises.

As well as multi-skilling, both MEO's highlighted their efforts to minimize the number of management and supervisory positions in their organizations. This is a necessary step for any MEO for the same reason as multi-skilling—cost savings. The more management and supervisory positions a MEO incorporates into its design, the higher the salary and wage costs will be, which decreases their competitiveness in the comparison. As well as cost savings, reducing supervisory positions to a minimum reduces the risk of communication backlogs developing within the organization.

A final but significant finding of this research was the difficulty in obtaining performance data on these organizations. The few performance measures chosen for this research were simple, and required data that intuitively should be readily available. However, both organizations, as well as all Operations Flights, rely on the WIMS to store data for all aspects of their operations. As noted in Chapter 4, the researcher found it extremely difficult to obtain any recent data and impossible to obtain data older than one year, because the files are removed from the system. The data's reliability was also questionable because of incoherent dates and potential for data manipulation from other users on the system. Columbus did an excellent job of documenting the DSW order numbers and completion rates, but this documentation was separate from the WIMS system and requires a large amount of man-hours to accomplish. Commands that require their Operations Flights to report their metrics monthly force the Flights to analyze the data, but there is still a chance for data manipulation to make the "numbers look good." It was pointed out to the researcher that Air Education and Training Command is no longer requiring the Operations Flights to report metrics. Without a reporting requirement, the MEO's have no motivation to closely track their performance other than

ensuring they meet the PWS standards and meeting the requirements of an audit, but the MEO's do not seem to be closely watched on these types of matters. Using the Air Force Audit Agency report on the Columbus MEO as a benchmark, the researcher found that the audits did not focus on the performance of maintenance activities. Instead it focused on the personnel costs and numbers. Understandably, this is important because personnel costs are the primary basis of the cost comparison, but there needs to be an emphasis placed on task performance as well. Contractor operated Operations Flights require government quality assurance personnel to monitor their performance, but it appears that MEO's are only monitored on their personnel numbers and make-up.

If the MEO flight chiefs are relying on the WIMS system to store all the data they need without closely monitoring and analyzing their performance on a monthly basis, it will be impossible to perform a performance analysis on these organizations. WIMS data is difficult to obtain and is inaccurate in many categories, which lessons the reliability of any attempt to measure performance. In general, there needs to be a close review of the performance measuring systems currently in use. The system that is the backbone of data collection is antiquated and is unreliable. The Civil Engineer community is introducing a new database system (ACES) in the next few years, so perhaps its capabilities will be greater than the current system, but there needs to be an effort to ensure performance is accurately measured.

Research Limitations

There were three main limitations to this research that must be discussed to ensure the results of this effort are placed in the proper perspective. These limitations include a

case size of two organizations, no quantitative data, and only Operations Flight personnel were interviewed.

This research effort only included two organizations—Goodfellow and Columbus MEO's. In order to get a true picture of how the rest of the MEO Operations Flights across the Air Force are structured, the research should have included more than two MEO flights. Due to the time constraints of the research and the maturity of these two MEO's, the two-case approach provided an initial exploration of MEO structure. Additionally, there was no focused placed on how contractor operated Operations Flights are organized. Historical trends show the 60 percent of all Air Force A-76 comparisons are awarded to contractors. These contractor-operated organizations may offer some valuable insights to future MEO development teams.

The second limitation dealt with the type of data this research relied upon. The effort was strictly a qualitative approach that used mostly interviews to describe how the MEO flights were organized. Personal opinions of the Operations Flight personnel were also presented, such as their opinions on their performance and what base organizations thought of their service. However, the research did not focus on quantitative data to reinforce these opinions obtained during the interviews.

Finally, the researcher did not interview any other base personnel. The research only focused on the views and opinions of Operations Flight personnel. In order to get a true picture of how the MEO's are perceived on base, the customers of the flights need to be interviewed and those opinions could be analyzed with the flight personnel's opinions.

Future Research

This thesis focused on two MEO organizational structures and operations management practices, but there are other potential areas of research.

- Explore additional MEO Operations Flights and compare and contrast to the two cases of this research. Interview base personnel as well as Operations Flight members to obtain the full perspective of MEO performance.
- Explore contractor operated Operations Flights to compare and contrast commercial organizations to the MEO's.
- Investigate the perceptions of the MEO leadership of the civilian personnel system. Do they think its regulations hamper MEO development and implementation?

Recommendations

This research found that both MEO Operations Flights took differing approaches to structuring their MEO's. Future flight chiefs trying to develop their MEO's should learn from the experiences of these two MEO's. The first recommendation that can be made is to include everyone in the MEO development. Both MEO's utilized advisory panels made up of craftsmen, supervisors, and managers to determine the structure and personnel composition that met their needs. Second, involve the union. Columbus' MEO made sure that the union was an integral part of the development process and still remains an important part of the day to day operations. The advice given by the MEO's union steward can apply to any MEO. Management and the union must put their differences behind them, and approach the MEO development as a partnership.

In addition to direct recommendations to the MEO's, this research also uncovered areas that can be considered for use by traditional Operations Flights. The first of these is the use of multi-skilling. Multi-skilling allows the MEO's to do more with fewer personnel. Traditional Operations Flights could utilize this technique, and instead of sending two specialists to complete a work order, a single multi-skilled craftsman could be sent to accomplish the job, allowing the additional craftsman to be sent to another commitment. As well as multi-skilling, traditional Operations Flights should also investigate further uses of teaming approaches such as Goodfellow's MEO has done. This is done in some instances already, but instead of having specialized shops wait for each other to accomplish specific tasks within a job, the flight could develop temporary teams to address large-scale work orders. These teams would allow work to be accomplished without the down time experienced while shops try to coordinate work schedules with each other.

Finally, a need for an advisory team to assist flights undergoing the A-76 process in developing their structures was uncovered. Both flight chiefs indicated that they have counseled and provided assistance to other flights developing their MEO's. It would be a valuable resource for an organization such as AFCESA to assemble some of the experienced MEO developers into a traveling team that could assist the A-76'ing flights.

Appendix 1. Case Study Protocol

Research Area #1: How are the MEO Operations Flights organized, and how do they compare to the Objective Flight structure?

Sources of Data:

- Flight organizational chart
- Element organizational chart
- Operations Flight Chief
- Element/Section Chiefs, Managers

Data Collection Goals:

- Obtain or draw organizational chart for the Operations Flight through an interview with the Operations Flight Chief
- Obtain or draw organizational charts for the elements/sections through interviews with the Operations Flight Chief or the lower managers/element chiefs
- Obtain the objectives and goals the Operations Flight Chiefs used to guide their MEO structure development through interviews
- Identify problem areas that the Operations Flight Chiefs encountered when developing the MEO structures
- Identify any areas the Operations Flight Chiefs have changed since initial implementation or would like to change

Interview Questions (Operations Flight Chief):

1. Would you explain how the flight is organized? Do you have a flight organizational chart that I may take with me?
2. Would you explain the communication flow within the structure (how does information have to flow in order to accomplish tasks)? Is there a lot of lateral communication across subgroups? Are problems able to be solved by autonomous groups?
3. Would you explain the span of control each of your managers/section leaders have (i.e., how many people do they supervise, how many different functions)?
4. Do you have organizational charts that break the flight down below element level that I may take with me?
5. Would you explain how the subsets of the flight are organized?
6. Would you please identify and expand on any specific goals or objectives you had in mind when you were developing the MEO structure.
7. Were there any problem areas that made the MEO structure development difficult?
8. Have you made any changes to the MEO structure since implementation? Why? Have any requirements changed? Where the changes due to these changes in requirements?

9. What was the most important factor that led you to your organizational structure?
10. How difficult a change was it transforming from the Objective Flight structure to the MEO?
11. Did you request any waivers to AFI's?
12. What area has been the most successful after the change?
13. What area has been the least successful after the change?
14. Do you have an idea of how your customers, internal and external, feel about the new organization (i.e., are they happy)?

Site-visit Documents/Deliverables Needed:

1. Operations Flight organizational chart
2. Operations Flight subsets organizational charts
3. Interview transcripts
4. Personal notes from observation

Data Analysis Strategy:

1. Summarize each MEO and compare the two organizational structures on the following points:
2. Number of functions/elements/sections
3. Does it appear to be a hierarchical (tall) organization or a flatter, non-traditional structure
4. The goals and objectives they used in development
5. The problem areas the Operations Flight Chiefs encountered
6. Any changes each of the MEO's have made since implementation
7. How do they compare to the Objective Flight structure on criteria #'s 1 & 2

Research Area #2: What operations management practices are the MEO Operations Flights utilizing, and how do they compare to the Objective Flight practices?

Sources of Data:

- Operations Flight Chiefs
- Element/Section Chiefs
- Position charts with grades
- Position descriptions

Data Collection Goals:

- Understand the work order processing and obtain a Work Order process map through interviews with the Operation Flight Chiefs and the lower element/section chiefs
- Obtain and understand the MEO's work classifications for their planned work orders and direct schedule work orders (DSW) through interviews with the Operations Flight Chiefs
- Explore how the lower level management is set up in the flight through interviews with the Operations Flight Chief and copies of their position descriptions

- Explore the use of multi-skilling/crafting within the flights through interviews with the Operations Flight Chiefs and obtain copies of position descriptions relating to multi-skilling/crafting
- Determine whether there is a maintenance engineering function within the Operations Flight through analysis of the organizational charts and interviews with the Operations Flight Chief and, if necessary, the individual responsible for this function
- Explore how the MEO Operations Flights handle facility maintenance requirements through analysis of organizational charts and interviews with the Operations Flight Chief and pertinent supervisors
- Explore the basics of the MEO Operations Flights material control function through analysis of organizational charts and interviews with the Operations Flight Chief and pertinent supervisors
- Determine how the MEO Operations Flights handle infrastructure support demands through analysis of organizational charts and interviews with the Operations Flight Chief and pertinent supervisors
- Determine how the MEO Operations Flights handle heavy repair type commitments through analysis of organizational charts and interviews with the Operations Flight Chief and pertinent supervisors

Interview Questions (Operations Flight Chief)

Work Order Processing

1. Please describe how a work request is processed to include all parties who have a part in the process.
2. Did the process change any from how you did it before the MEO implementation?
3. Do you have a work request process map detailing this process I can take with me?
4. Is there anything you would like to change about the process?
5. Is there anything you feel is unique about how your flight processes work requests?

Work Classifications

1. Please describe how your flight classifies Direct Schedule Work (DSW) work orders.
2. Please describe how your flight classifies its planned work orders.

Lower Level Management Functions

1. Please describe how your flight has set-up its lower level managerial/supervisor functions.
2. How many management positions do you have?
3. Where are these management positions located in the organizational structure?
4. What are these positions responsible for and what is their decision-making authority?
5. What were the goals and objectives you had when establishing this structure?

6. Have you made any changes to the management structure since implementation? Why?
7. What changes would you like to make or planning to make to the management structure? Why?

Multi-Skilling / Crafting Initiatives

1. Please describe the use of multi-skilling / crafting in the flight?
2. In what positions do you utilize these techniques?
3. Did you utilize multi-skilling or multi-crafting before MEO implementation?
4. What were the objectives, goals, and motivations for using these techniques?
5. Do you have copies of the Position Descriptions utilizing these techniques I can take with me?
6. What are the problems and benefits you have experienced utilizing these techniques?
7. Has the use of these initiatives been successful?
8. Is there anything you would like to change or are planning to change regarding the use of multi-skilling/crafting?
9. How would you classify your manning situation? Have you been able to maintain little or no vacancies?
10. How many positions have you saved by utilizing these initiatives?

Interview Questions (Operations Flight Chief and Pertinent Personnel)

Maintenance Engineering Commitments

1. Is there a Maintenance Engineering function within the MEO?
2. Please describe to me how Maintenance Engineering commitments are met within the flight.
3. Does the Maintenance Engineering function support the seven objectives listed for the Objective Maintenance Engineering element?
4. Where are the service contract Quality Assurance Evaluators located in the organization?
5. How would you describe the relationship between the QAE's and the contractors?
6. Who performs maintainability reviews of projects?
7. Are there infrastructure management programs? Who is responsible for these?
8. Where is the energy management program located?
9. Is there any other inspection commitments, such as IDIQ's and utility contracts, within the flight?
10. Do you think that your performance in meeting Maintenance Engineering commitments has improved since MEO implementation?
11. Do you have an idea how your customers, internal or external, feel about the way you handle Maintenance Engineering commitments (i.e., are they happy)?

Facility Maintenance Commitments

1. Please describe how your flight handles its facility maintenance demands.
2. Do you utilize a shop, zone, or hybrid approach to facility maintenance?
3. What kind of process do you utilize for conducting facility reviews? What is your review cycle time?

4. Do you think your performance in meeting Facility Maintenance commitments has improved since MEO implementation?
5. Do you have an idea how your customers, internal and external, feel about the way you handle Facility Maintenance commitments (i.e., are they happy)?

Material Control Commitments

1. Do you have a Government Operated Civil Engineer Supply Store (GOCESS) or a Contractor Operated Civil Engineer Supply Store (COCESS)?
2. Who has responsibility for the vehicle fleet?
3. Please describe how the self-help function has changed since implementation? How would you characterize the self-help store?
4. Is there anything you perceive as unique about how your flight meets its material control commitments?
5. Do you think your performance in meeting Material Control commitments has improved since MEO implementation?
6. Do you have an idea how your customers, internal and external, feel about the way you handle Material Control commitments (i.e., are they happy)?

Infrastructure Support Commitments

1. Please describe how your flight handles its infrastructure support commitments.
2. Does the flight maintain any central plants?
3. Do craftsmen provide any support or handle any of the infrastructure plans?
4. Do you think your performance in meeting Infrastructure Support commitments has improved since MEO implementation?
5. Do you have an idea how your customers, internal and external, feel about the way you handle Infrastructure Support commitments (i.e., are they happy)?

Heavy Repair Commitments

1. Please describe how your flight addresses its heavy repair type commitments.
2. Do you utilize the traditional horizontal and vertical sections?
3. Are there any specific tasks that your flight does not perform, in which you exclusively utilize contract support?
4. How much does your flight utilize Simplified Acquisition of Base Engineer Resources (SABER) to support work order accomplishment?
5. Is entomology located in-house or contract?
6. Is there anything you perceive as unique about how your flight meets heavy repair type commitments?
7. Do you think your performance in meeting Heavy Repair commitments has improved since MEO implementation?
8. Do you have an idea how your customers, internal and external, feel about the way you handle Heavy Repair commitments (i.e., are they happy)?

Site-visit Documents/Deliverables Needed:

1. Work request process map
2. Position descriptions for multi-skilled/crafted positions
3. Interview transcripts

4. Personal notes from Observation

General Site-Visit Documents/Deliverables Needed:
1. Background information on bases (i.e., Chapter 1 of the General Plan)
2. Most recent real property facility numbers (square footage, age of facilities)
3. Unit Manning Document for the MEO
4. MEO Management Plans

Data Analysis Strategy:

Work Order Processing and Work Classifications
- Summarize and detail the work request processing and work classifications of each MEO and results from the interviews
- Compare and contrast the two MEO's processes and classifications with each other
- Compare and contrast the MEO's processes and classifications to the Objective Flight processes and classifications

Lower Level Management Functions
- Summarize and detail each MEO's lower level management functions and results from the interviews
- Compare and contrast the two MEO's lower level management functions with each other
- Compare and contrast the two MEO's lower level management functions to the lower management positions in the Objective Flight

Multi-Skilling and Multi-Crafting Initiatives
- Summarize and detail the use of multi-skilling/crafting and the opinions of the Operations Flight Chief for each MEO
- Compare and contrast the MEO use of these initiatives between each other

Maintenance Engineering Commitments
- Summarize and detail how each MEO addresses its Maintenance Engineering commitments
- Compare and contrast the MEO Maintenance Engineering functions between each other
- Compare and contrast the MEO's maintenance engineering approaches to the Maintenance Engineering objectives set forth in the Air Force Instructions

Facility Maintenance Commitments
- Summarize and detail how each MEO addresses its Facility Maintenance commitments
- Compare and contrast the MEO facility maintenance functions between each other
- Compare and contrast the MEO's facility maintenance approaches to the facility maintenance objectives set forth in Air Force Instructions

Material Control Commitments

- Summarize and detail the results from each interview of the MEO Operations Flight Chiefs
- Compare and contrast the MEO interview results between each other

Infrastructure Support Commitments

- Summarize and detail each MEO's approach to handling infrastructure support commitments
- Compare and contrast the MEO's infrastructure support approaches with each other
- Compare and contrast the MEO's infrastructure support approaches to the infrastructure support objectives set forth in Air Force Instructions

Research Area #3: How are the MEO Operations Flights performing in maintenance activities when compared to each other and the lower limits and upper limits of existing performance metrics?

Sources of Data:
Archival records (Work Information and Management System (WIMS) reports)

Data Collection Goals:

- Explore how the two MEO's are performing in basic base maintenance operations when compared to each other
- Explore how the two MEO's are performing in basic base maintenance operations when compared to the upper and lower limits of the performance metrics provided by the Air Force Civil Engineer Support Agency
- Collect required data from production control or pertinent individuals who operate the WIMS, that dates back to MEO implementation or as far back as the system will allow

Interview Questions

- No specific questions. This will require close working with whomever controls WIMS reporting.

Site-visit Documentation/Deliverables Needed:

- Monthly reports on time to accomplish each direct schedule work order in each category (i.e., Emergency, Urgent, & Routine, or similar classification system)
- Time allowed to accomplish a direct schedule work order in each category
- Monthly reports on the total number of direct schedule work orders in each category
- Monthly reports on the number of Recurring Work Program (RWP) commitments completed
- Monthly reports on the number of RWP commitments scheduled
- Monthly reports on the number of planned work orders opened
- Monthly reports on the number of planned work orders completed

- Monthly reports on the number of facility surveys scheduled
- Monthly reports on the number of facility surveys completed
- Monthly reports on the number of estimated hours per planned work order
- Monthly reports on the number of actual hours used per planned work order

Data Analysis Strategy:

- Utilize the following performance metrics to establish performance metrics for each MEO, and to look for trends that would indicate improvement or degradation of performance over time
- Compare the MEO's to each other on performance metrics
- Compare the MEO performance metrics to the respective upper and lower limits provided by the Air Force Civil Engineer Support Agency (AFCESA)

Number of Work Orders Open by Category

Month i
Number of Emergency DSW:___
Number of Urgent DSW:___
Number of Routine DSW:___

There are no Limits set for this metric. This will enable the researcher to see the workload of the flight, and look for trends in the different categories.

Direct Schedule Work (DSW) Responsiveness

$$\frac{\textit{Total Time to Accomplish Direct Schedule Work Orders (By Category)}}{\textit{Total Time Allowed by Category}}$$

Lower Limit (LL): 90%, Base Line (BL): 100%, Upper Limit (UL): 110%

This metric will be accomplished for each category of direct schedule work the MEO utilizes

Work Satisfaction

$$\frac{\textit{Direct Schedule Work Orders Completed on Time}}{\textit{Total Number of Direct Schedule Work Orders}}$$

LL: 60%, BL: 80%, UL: 100%

This metric will be accomplished for the total of all DSW work categories

Backlog Total

Number of IWP work orders opened-Number of IWP work orders completed

There are no specified limits for this metric. The time series plot of this metric will highlight trends in increasing or decreasing number of backlogs

This metric will be accomplished for the total number of work orders

RWP Schedule Effectiveness

$$\frac{\textit{Number of RWP Items Completed}}{\textit{Number of RWP Items Scheduled}}$$

LL: 90%, BL: 100%, UL: 110%

Facility Surveys

$$\frac{\textit{Number of Facility Surveys Completed}}{\textit{Number of Facility Surveys Scheduled}}$$

LL: 80%, BL: 90%, UL: 100%

Planned Work Order Planning

$$\frac{\textit{Number of Estimated Hours}}{\textit{Actual Hours Expended}}$$

LL: 90%, BL: 100%, UL: 110%

Appendix 2. Goodfellow Interview Transcripts

Researcher: Do you have a flight organizational chart that I may take with me?

Goodfellow Operations Flight Chief: We are in the process of redoing our org charts.

Researcher: Changing everything?

Goodfellow Operations Flight Chief: Kinda realigning a little bit...let me get you the old and the new. Currently, you know our logistics, we never had a supervisor in logistics; we had a work leader. For a long time they were working underneath the manager in Heavy Repair. Just recently I moved them under the manager in Facility Maintenance. They can work either place, it doesn't matter, and I've got a personnel action to put a supervisor in there...not due to the complexity of the work or anything like that, but more the personalities of the people that are in there, unfortunately.

O.K., two managers and two supervisors. Two supervisors. The rest were all work leaders. What I've done since then is I've made two of the work leaders supervisors. So now we have four supervisors under the two managers, and the other work leaders we have two of them who are planners...they're still WL's, but we use them as planners, and the other two are out there in the shops—working. The biggest thing we do different from a conventional organization is that our planners plan the job, and then they take the crew and do the job. So, they're planners in the sense that they actually build the work order packages and do the estimates, and then they buy their materials and just get shop support, craftsmen support to support them, and then they actually go out on the job. Like one planner right now is over at 519 doing a remodel. He planned it, so he knows the job. He's got a carpenter and a helper with him, and their swinging hammers and the work leader is actually on site.

Researcher: Seem to be working pretty well?

Goodfellow Operations Flight Chief: Yeah. Yeah, it really does. He's our work leader over EMCS and HVAC. So, he spends a lot of time back and forth between both. The other guy is work leader in the carpenter shop...in the structures. When we got to that point I asked for volunteers to go to the shop, and if I couldn't get volunteers I was going to make it a rotational thing. He said he would go. So, he's actually in the structures shop. It works out well because we do so many DSW's that at a lot of places would be planned work orders. So, he does and runs those type of jobs.

Researcher: Would you explain the communication flow within the structure? What I'm trying to get at is does a lot of info. have to come back up to you to make things happen...do your supervisors have to talk a lot back and forth to get jobs done?

Goodfellow Operations Flight Chief: One thing that probably really helps us the fact that we only have one building. We're not broken out physically, so therefore they see each other...everybody goes to the bonding room every morning, and they see each other. Since we have the 4 supervisors now; Ken and Jim Bertrand, they're both working for Mitch, so Ken and Jim are in the same office. Then Ted Haviland and Chuck Schembri work for Tom, so they're both in the same office. So communication flow there is better than it used to be. It's still the age old "nobody ever told us nothing." We still have first Friday once a month, everybody is there, and we talk—try to get the word out that way. They all talk pretty well amongst themselves, especially about work. The one good thing is since we have the planners and work leaders doing it the way they do it is when a guy is like Brian now is on the job, if he needs an electrician, he just goes see Ken, that's not dedicated to the crew that work leader that is responsible just goes directly to the supervisor they need to see.

Researcher: So he doesn't have to go see the one supervisor who talks to the other supervisor who can pass it back through the first supervisor?

Goodfellow Operations Flight Chief: No, no. The way we set it up especially in the planned work orders is that work leader is on an equal level with the supervisors for that time. They can talk to whoever they have to. It just doesn't make sense to go their boss to go the other the boss to go to the other guy.

Researcher: Would you explain to me the span of control each of your managers/section leaders have. How many people do they supervise, how many different functions? I think we talked a little bit about that.

Goodfellow Operations Flight Chief: Supervisors under the new organization each supervisor has 16 people. The managers then each have 32. Actually they have more than that, because under here, like this is Mitch, so he has Ken and Jim. Each of these guys have 16 people. Then he also has logistics, and there's 9 out there, so there's about 40 people under the manager. Tom, he has Chuck and Ted, and each of them have about 16 people, and then I grouped planning/production control together as a section to just kind of balance out numbers wise. This is 8 people, so that gives him about 40 people.

Researcher: And these are all functionals, so these are your electricians, power pro?

Goodfellow Operations Flight Chief: We have electrical and alarms. We gave him the alarms people which is electronics. Jim has HVAC and EMCS operators. Chuck Schembri has structures and equipment. So he has carpenters and he also has the equipment shop. Then Ted Haviland has plumbers and facility maintenance. So numbers wise it balanced out to give them about 16 each.

Researcher: What do the guys in facility maintenance do? I mean, they're under heavy repair?

Goodfellow Operations Flight Chief: I know. It's terminology. There's 8 people in the shop. One of them works second shift. There's three two man crews and a floater. These are the ones that go do the inspections and the work on a recurring basis. Similar to the old SMART teams. That's all they do. They have an annual schedule. One week there in a building inspecting, and the next week they do the work. While there doing their work, they factor in their time that maybe half a day has to be inspecting for the next week. You know when we set this up, we called it facility maintenance and heavy repair simply because we didn't know what else to call them. Everybody understood that.

Researcher: Just because they're named that doesn't necessarily mean that the function is tied to that name?

Goodfellow Operations Flight Chief: Correct.

Now, realistically, under Heavy Repair, under Chuck Schembri, that's where a conventional organization would be horizontal and vertical, because he has structures and equipment in the same shop. Under the structures/equipment, that's where Rusty's working, so there is a work leader in that area. And under HVAC, there's a work leader there. They're the best two places for work leaders, because of the type of work they do, and with the technical HVAC/EMCS part of it, Charles is able to cross lines with the operators, and it makes for a little more cohesive group between the EMCS operators and HVAC guys. They have to work together all of the time.

Researcher: That leads us into what I was going to ask you next. How are the subsets organized? You know what we talked about there. Your facility maintenance guys, and how Ken is in charge of your electricians and alarms guys.

Now you said logistics, mat control, is going to have a supervisor.

Goodfellow Operations Flight Chief: Yeah, I'm going to put a supervisor there. The organization will stay the same. Right now Mitch is the supervisor of the people in logistics. Once we put a supervisor in there, that person will be responsible for that.

Researcher: So you're going to have 5 supervisors then.

Goodfellow Operations Flight Chief: Yes. This supervisor will only have 8 people. Logistics. I don't know whether its personalities, people, what it is. And maybe it's because they've been kind of left out there on their own, and not moving down here with us caused a lot of problems, because they were left up there by themselves, and didn't have any guidance.

1Researcher: How long have they been down here?

Goodfellow Operations Flight Chief: They've just been down here about 3 months.

Researcher: Any improvement?

Goodfellow Operations Flight Chief: Getting there, but it's a matter of changing out some personalities. Putting some people there. We had 8 people there at one time, and 4 of them were on light duty. It just really got to be a bad scene. We're trying to clean it up. Logistics has, because of self-help and mat control, and then EMS is about to kick our butt. So, it's more of a paper work oriented section than warehousing. They still do the warehousing, but in the big scheme of things, and this is a thing I allowed to happen, and shouldn't have, when we were getting people from supply, we transferred positions from supply, we wound up with 9 people, seven of which were wage grade employees, two of which were GS. So, we're re-writing position descriptions and trying to clean up the place, because it is more of a paper, GS oriented, deal than others. Numbers of people wise. Do you need a supervisor for 8 people? Theoretically you wouldn't need to, but unless you got a good group. I sent Tom and Mitch out to Columbus just for the logistics section. When they came back is when Mitch took over logistics. He's working from what he say there and trying to reorganize physical layout plus.

Researcher: Has EMS gotten any easier?

Goodfellow Operations Flight Chief: It's still a pain. See EMS doesn't talk to CEMAS, so when you issue stuff out of mat control, if it's hazardous material, you have to issue it out of EMS then you have to issue it out CEMAS. We were doing real good there for awhile. We will get there, and I think organizationally we're on the right track.

Researcher: O.K., the next one. Would you please identify and expand on any specific goals or objectives you had in mind when you were developing the MEO structure.

That can be originally, with the changes, both.

Goodfellow Operations Flight Chief: Other than the obvious is to win. Probably work under an organization that's not restrictive. You know, functionally restrictive, you have to have this person work for this person who works for this person. Or this person can't talk to that person. Try to get it as flat as possible without having a blowout. Probably, this may be going on to some of the other questions, but you know we got it so flat that we needed to inflate it a little bit. That's why we added the 2 supervisors.

A lot of it is working with civilian personnel system. You get too flat you really get into the civilian personnel arena. You know, a work leader can only do this, and a work leader can't do that. There's just some things that have to happen to stay within the system. Work leaders can do a whole bunch, but if you get to far out there, their not getting paid to do it, and some of the craftsmen resent that. As a matter of fact, when we came over and got set up, you know hind sight's 20-20, but one of the worst things I ever did was allow that white shirt crap. Quite honestly, the craftsmen didn't know the difference between a work leader and a supervisor. They though they were all supervisors. According to the craftsmen we had way too many supervisors—not fully understanding the difference.

I guess the biggest goal was to get a flat, workable organization.

Researcher: We've already touched on this a little bit, but were there any problem areas that made the MEO structure development difficult?

Goodfellow Operations Flight Chief: Probably personnel was the biggest.

Researcher: Specifically just the rules and regs behind the system?

Goodfellow Operations Flight Chief: Rules and regs behind supervision, and before we went we were heavy military, light civilian. So we didn't have much a union problem, we didn't have much a discipline problem. You know if you had a discipline problem with a GI, turn him over to the first sergeant, and somebody would take care of it. When we first went into the MEO we were inundated with personnel problems. There was a big learning curve with our supervisors to learn the civilian personnel system, and weed out problem employees.

Researcher: How about the position description stuff. Did that cause any trouble? Because it seems to me you're trying to go to a more functional organization, but civilian personnel keeps dragging you back to this where you've got to specifically lay out duties.

Goodfellow Operations Flight Chief: Yeah. You know though the biggest problem I had with that respect is on a civilian PD you can only put 3 skill codes. So, when you're trying to get a multi-skilled position, even helper that can help all kinds of different crafts, you can only get 3 skill codes. So, you're limited there what you can put on a PD. But quite honestly, personnel was more help than they should have been. And maybe if they hadn't been at the beginning, it may not have caused some of the troubles afterwards. Our goal has always been to write PD's for what people do. Not write them for grades, not write them for people. When you build the MEO, you have to build it exclusive of people. You can't keep any of that in mind. Build an organization and assume you have skilled people in all of the positions that are willing to work and get the job done, and then that's your MEO. Reality, you should probably build in a 10% slack factor, because you're not going to have qualified people, you're not going to have go-getters, you're going to have some just average people. When you're minimally manned and you're set up to work an organization, you can't accommodate that kind.

The one thing I've never been able to get across to anyone is if you build an MEO and you put a hundred people in it—you will never have a hundred people in it. The problem is when you bid a hundred people that's what your bid is costed out on. When the MEO wins every time there's a vacancy, the government benefits. If a contractor bids a hundred dollars, that's what it's going to be—a hundred dollars, period. Never any savings. He's got lapse rate just like we do, but none of that comes in. So when you're bidding and MEO, and you bid a hundred people, I've had as many as 8 vacancies at a time. You know, you're pushing 10% vacancy rate. So, now, the government is getting...theoretically, when you're that many down you work ought to back up or do something. But quite honestly, we can control our workloads pretty well. If we're short,

we can either not do as much on facility maintenance as we normally would. We'd do enough to keep everything going. You can kinda float through those periods of vacancies, especially if your level of maintenance is real high. Then when you have vacancies, you could theoretically not do any maintenance for a period of time before it starts catching up with you. While you're manned up and doing good, get your level of maintenance up here, and then if your manning drops off, your maintenance drops off, but the effect on the customer doesn't, because the equipment and facilities are in good shape, so therefore it takes longer for that [effect on customer] to drop than it does for your manning to come back up. Your level of maintenance is up here, and your manning is here, so your manning drops off, and your effect on the customer doesn't drop as drastically as the manning. Hopefully your manning can come back up and meet it before it gets too far down. So the effect on the customer, because of the lag, there is no perceived effect.

Researcher: But that's a big savings to the government right there.

Goodfellow Operations Flight Chief: Oh yeah. Now if all we did was keep our maintenance kinda OK, you know even when we were fully manned, it would more closely track the manning level than it does now. When we're manned and we're running, our emergencies are down, our urgents are down, and our routines are up, and quality of facilities...that's hard to measure. You can look at numbers of called in job orders, but quite honestly our records are as good as anyone elses, and CE is never real good at keeping records. You could probably track it if you had enough time to look at numbers of calls. Say OK this month we averaged 100 calls a month. Then it went theoretically when this comes down your calls are going to go up, so now we're at a 105 calls, now a 110 calls. If you could get the two together, you could say OK, now we made it to a 110 now the calls started dropping back off. Why? We just hired some new facilities guys, and that's what brought the level of maintenance back up.

Researcher: That would have to be a really long-term deal.

Goodfellow Operations Flight Chief: Oh Yeah. And again, you would have to have too many intangibles. Building managers are different, people call in different. Is the number of calls up because they're repeat calls, are they new calls. I'm convinced though, if you could track it, you would see this theory about as manning drops off, that there is a lag, and the only time it really effects is when your vacancy rate stays vacant too long. So thats the cost to the government...

Researcher: There's an overall savings. If you're a contractor that doesn't happen because you are charging a flat rate no matter what your lapse rate.

Goodfellow Operations Flight Chief: Yes. That's a disadvantage in my opinion, and I've never been able to get anyone to look at it. OK, MEO bid a hundred dollars, contractor bid a hundred dollars, they apparently look the same, but long term this hundred dollars is a guarantee. This hundred dollars [MEO] is the most it will ever be. 99 times out of a

100 it will be less, because you always have vacancies. But that's going to take a lot of legislation.

Researcher: We've already talked about some of this. Have you made any changes to the MEO structure since implementation? Why? Have requirements changed? Were the changes due to these changes in requirements?

Goodfellow Operations Flight Chief: Yes, we've plused it up. Originally, we had 70 people. Currently we have 87. We've added the fire school, so we got a new mission. We took down the fence around the SCIF. That gave us increased workload. And transferred manning from supply based on IMPAC. That's the three biggest things. Even though we don't have a contract, because you're an MEO, you're just a government worker. We try to work like we do, so we make manpower adjustments just like you'd mod your contract. You have to show a difference in workload, and Pat Saldin, the manpower guy, is real close with numbers, and you can't just call up and say Pat, I need another person. That's another thing we did wrong when bid our is we bid basically 70 people to get all the stuff done, and so it was real hard when it came time to bring the fire school on, we didn't have manpower data. So, when you do generic 70 people for 2 million square feet. OK you gained a million square feet, you get another 35 people. Well, maybe not. Because the main thing with the fire school is not so much the square footage, but the utilities. So, I think a lot of the places now that are bidding you almost have to have your manpower equations figured out when you go in. Because otherwise what we had to do was back into them. To make a mod to our "contract" when we got the fire school, manpower guys had to sit down with us. We said OK, we got 4 utility plumbers, and they currently maintain this many linear foot of pipe. We're adding this many, and what percentage. With the old Air Force manpower standards, there was an equation. At least for OPS it was square footage. Before that, every shop had a manpower standard. Exterior electric was based on number of poles and linear feet of electrical line. Plumbers was based on linear feet of plumbing, linear feet of sewage, linear feet of gas, and lift stations. There was some tangibles, so that if you got some new stuff you could go back to that craft and say that's how it changes. With the MEO, when we got the fire school, we did the numbers and based on those numbers we figured out we're going to add 8 people.

Researcher: Now as for your changes with the structure. These aren't the first changes right?

Goodfellow Operations Flight Chief: Oh no. That's the one thing we've tried to make it from the get-go. It's a moving, dynamic organization as opposed to static one.

Researcher: So, if you see problems you can change it and address those.

Goodfellow Operations Flight Chief: Right. And we've changed numbers of crafts. As a matter of fact, the first briefing I did for AFIT. That's one of things I hopefully tell people is, set up what you think you're going to need, and then hire several temporaries, or create several slots as temporaries. Permanent positions but hire temporaries.

Because, it's a best shop. It's harder to change them because of the civilian personnel system. So, if you think you need 4 electricians and 4 carpenters, and that's what you hire. After a year, you say I needed 5 electricians and 3 carpenters. Well, if they're temporaries, you can fix that. Being permanent employees, you're stuck with it, until you figure out a way to rearrange those.

Researcher: So, the biggest factor in changing was that you just saw things that weren't working quite like you wanted.

Goodfellow Operations Flight Chief: Yeah. You track workload. You say, you know, just even looking at job order listings the carpenters' list is always 3 pages long and the electricians is always half a page. Well, is that because the carpenters are lazy or do they have more work? If they have more work maybe we need to take one of the electricians and make him a carpenter. If you find the people that can qualify, it works real well, because I had a slot that was a carpenter/electrician, and I had a guy who was a master of both. So, it worked out real well, but he was card carrying both. Where it doesn't work out well is where these people here become real possessive. You know, electricians are electricians dammit—period. So that's why we really tried to organize them the way we did, like equipment, structures and plumbing being together. The equipment guys support the other shops—that's basically all they are is a support shop. And the ones they support are concrete and plumbing—digging up plumbing lines. It just works real well for us.

To come up with this particular organization, I formed a working group about 6 months ago, and 4 or 5 guys volunteered from the shops. The hardest thing for them to realize is I'm not talking people, I'm not talking promotions—where does it make sense for this person to work and this person to work. It makes it easier for everybody to buy in when you've had a group work on it, and at least convince everybody it was their idea.

Researcher: Let's see, what else. How difficult a change was it transforming from the Objective Flight structure to the MEO?

Goodfellow Operations Flight Chief: Organizationally I don't think it was that hard. Personality it was tremendously hard, because in our case we had 30 civilians, the rest were military. So, when we went under the MEO we hired more people than we had. Our biggest challenge was when you have a core group of people that have a certain work ethic, and you bring in one or two at a time the core changes the one or two. What happened with us was our core wasn't as big as what was coming in, and so we brought in at one time like 15 people from the same base right off the stopper. Well, their work effort wasn't a very good one. The transition was a nightmare personality wise.

Organizationally, I don't think it was that hard, because the group that we had here at the time was pretty much a work together, let's get it done, group anyway, which is what it takes in an organization like this anyway. This same organization wouldn't work worth a flip if it wasn't for the people. It's the mentality of the people. I've told some people, and they don't like to hear it, that I could run the same organization with contractors as I

could an MEO if the people's mentality and the focus and all of that were the same. Whether they get paid by GTE or uncle Sam.

Researcher: Did you request any waivers to AFI's?

Goodfellow Operations Flight Chief: You know, I don't know of any. We probably should have. A lot of things too, when we did our was about the time they changed to the AFI's. The first AFI's were like half a page. They basically said, get the job done. There wasn't a whole lot of requirements to waivers from those. Now they have gotten a lot longer, and I haven't worried about it. We still just keep going along, and about the only time we ever worry about is every two years when the IG comes. And then you rationalize how you're doing it.

Researcher: And the IG is pretty open to it?

Goodfellow Operations Flight Chief: Yeah, we've had three IG's under the MEO and all three have been excellents.

Researcher: What area has been the most successful after your change?

Goodfellow Operations Flight Chief: I think the quality of maintenance. I don't think it's so much that the military had less quality. I think it's just...you know, in a conventional organization the main reason you were there was to train airmen—basically. And now we don't have to do that. We have, supposedly, a more mature workforce. And they have a lot of pride and ownership. I think it is because we're an MEO, and because we were the first. People watch us, and we want to sho just how good we really are. That's why our job order...our DSW's emergencies and urgents went down. Our availability rate is up, simply because...when we had military we had PRIME BEEF, that was LUC 20, and our LUC 20 ran 15-20% of our total available time. See, you take that away, and you are already more efficient. Here, we're small enough, well you know, everybody knows what everybody is doing. Sometimes that's good sometimes it's not. But when we first transitioned, and I told you about the group that came from this particular base, it was a huge base that they came from that they could get lost all day. And when they came here, it was like being underneath a microscope. So, we didn't do a very good job understanding that first, and maybe we could have done things differently. But I had a guy ask one of my supervisors what do you care what I do today. But I just think the overall level of quality facilities has improved tremendously.

Researcher: What was your least successful?

Goodfellow Operations Flight Chief: It's probably a personnel thing. Personalities, and also we hadn't had civilian personnel issues before, and we don't have a whole lot of them now. It's like I was telling you before, 98% of the people out here just want to come do there job and do it well. But you get one or two that can just be a thorn in your side. I never really thought about it when we went to it, but before in a conventional organization there was a lot of esprit de corps, if you want to call it that. You know, we

would have Christmas in April, and there would be a big pool of people who would get together, and we would have a picnic or something like that. Civilians don't work that way. That's just the way it is. There's not a "CE" group. Intramurals, this last softball season, they did have a softball team. I don't know whether it takes awhile or if there is a certain group that likes to do that. Sometimes I think it is 3 or 4 similar people—I don't know what the makeup is. We kind of lost that "oneness" if you will.

Researcher: Finally, I know we talked a little bit about this one. Do you have any idea of how your customers, internal and external, feel about the new organization?

Goodfellow Operations Flight Chief: I don't know that external customers know the difference—organizationally. I think all they know is CE support is excellent. Again, I'm biased, but Major Hafeli just got here in June, so one of this things is every time you become a new commander, you go around to all the commanders and see how they can fix things. Lance told me the other day that everyone he talks to talks about the great support they get from CE. To me outside the organization, they don't care, because I don't care how services organizes. All I care is that if I go to the bowling alley I get hot lunch.

Researcher: Alright, this is the work order processing. Please describe to me how a work request is processed to include all parties who have a part in the process.

Goodfellow Operations Flight Chief: OK, 332 is mailed or hand carried to customer service section—Marlowe. She looks at them and if she can make the determination right away that it's a DSW by looking at them, she just approves it for a DSW and it goes. If there's a question about it, she sends all 332's to me. I look at them for the same basic context. I think they can be DSW's or they need to go to the WORM. The only reason I do the same thing, is that I can force a DSW a lot more than she can. Hers are obvious DSW's. I kinda make a decision that they're going to do it on a DSW versus a work order.

Researcher: And yall use the 40 hour breakpoint?

Goodfellow Operations Flight Chief: Pretty much. We try to work a 40 hour, no more than 2 shops involved type of deal. Sometimes, if you're building a wall, you usually have a carpenter and an electrician. If by looking at it, I feel we need a little more information about the request, I may give it to Mitch or Tom and ask them to go have somebody look at it. Mainly, so that when we go to the WORM, we have a good idea of what the customer wants. Because sometimes they write down this, but...there may be HVAC involved that they don't know about, so we get them to go look at it. Not to do a shotgun, not to do anything other than coordinate with the customer and verify the request. Once that's done 332's go back to Marlowe. They're either DSW's and go to the shop or they go to Benny who's in charge of the WORM. At the WORM then, Mike, or the Major, whichever one is chairing it at the time, can make the determination with the person who went and looked at it, they're at the WORM, either Brian, Rusty or Gary, planner types, craftsmen get it all explained, then they make the determination whether to

approve it or not. If it is approved then they'll normally ask me if I want to do it in-house, and I kinda work with Benny on what do we have backlogged, what do we have going. We can do anything in-house that anyone else can do, and it's never a capability question. It's a man hour question. We can do anything. We're manned to do anything a contractor can do construction wise, it's just a man hour determination thing. We can't do pavements. Mike will approve or disapprove it. If it's in-house, Benny will track it back to planning. It'll be planned. Then when it's planned, it goes to Benny for programming. Then it goes to Dorothy for scheduling. The flow is pretty much the same as a conventional organization.

Researcher: Time lines? Have a WORM every week still?

Goodfellow Operations Flight Chief: Try. As long as Benny has 3 or 4. I mean if he only has one or doesn't have any, we don't have them. We try to have them consistently every week. You know the players, safety comes, fire comes. On a normal 332, if it comes in this week there ought to be an answer by next week to the customer, and I would say if it is approved for in-house, it would be done in 45 days. That gives the planner time to do it and it be programmed. That's the biggest thing. That's the average from 332 submission to job completion. There's some that have been floating around for some time now, but after Dave left, we didn't have the technical expertise to do the EMCS programming. So there's some convert buildings to EMCS work orders out there are still just hanging, because when Dave left we lost the expertise. Now, Charles is learning it, but without a person there, it takes a long time. So, that's basic flow.

Researcher: Did this process change any from how you did it before MEO implementation?

Goodfellow Operations Flight Chief: I'm trying to think. It seems like we made a transition to the WORM and the flow about the same time, but it wasn't a result of the MEO. We actually moved our in-house programmer over to base development when A-76 was announced. We did that when we set up base development trying to put in-house programmer, contract programmer, community planner and when we originally set it up, we had real estate in there kinda as they all work together and if you submit a 332 when it goes there between all those people they know what's happening on base. Prior it would be approved by me as the Deputy Chief of OPS or the Chief of OPS, we didn't' have a WORM, we'd approve it for contract, well we don't have any power to task engineering, so by setting up the WORM, and making the BCE or the Deputy the one then a 332 went there and they said SABER or engineering then it was a done deal. There wasn't any of this OPS approval, track it to engineering, getting lost in the black hole. I don't think it was MEO driven, I just think we were ahead of our times.

Researcher: Is there anything you'd like to change about the process?

Goodfellow Operations Flight Chief: As far as work order flows, I would like to see them, it's more how work orders are accomplished, I'd like to see them do away with EPS standards on planned work orders and stuff like that. I think any journeyman

craftsmen, and especially and supervisor or work leader, can look at a job and estimate it without having to go to a Means book or go somewhere else or whatever.

Researcher: So, your requirements are now, that you have to use some type of estimating tool?

Goodfellow Operations Flight Chief: To use EPS standards. A certain percentage of your planned work has to be done in EPS. Engineering Performance Standards, it's a Navy thing really. It's where they'll take, OK how long does it take to check an air conditioner. They have these crews, they do it 10 times, and they take the average time. When you start building things you have to account for your time. I don't know if you've aver seen a planned work order correctly. I written up like Task 1, this shop goes in and does this, Task 2, this shop goes in and does this. If you have a guy come to your house to give an estimate, they do it for a living. They look at the wall and know it's going to take a couple of their guys an hour or two, whatever. They figure it out and give you their estimate. I would like to change that for work order process. Everything else we pretty much do what we want. It's pretty flexible.

Researcher: Anything you feel is unique about how your flight processes work orders?

Goodfellow Operations Flight Chief: You know, I don't know why, I don't know whether it's...I don't know why we don't have the numbers of 332's that other bases have. I have a theory, and that is because our facilities are in such good shape. But it's hard to quantify. You know we talked about work order backlog yesterday. I can call any OPS Chief around and ask them about it and they'll have months of backlog. I think a lot of may be the leadership mentality, knowing that we are a MEO and that we are not manned to a bunch of stuff. It's unusual when we have a WORM and there's more than 10 332's. In my opinion, it's pretty unusual to have more than 5. Almost every base has an allocation system.

Researcher: And you said the reason you don't have a backlog is if you can't do it, you don't put it in IWP, you send it to SABER or contract?

Goodfellow Operations Flight Chief: Yeah. But even then, years ago, we'd get 332's every time Sgt. Smedly moved into an office, we'd get a 332 to move the door from here to there. You know, repaint it and do a bunch of stuff to fix up his little place. You just don't see that anymore. I haven't spent enough time at another base looking for that kind of stuff, but I know when I talk to other OPS Chiefs about backlog, they have a work order allocation system. When I've done the IG's at other places, their work order allocation system they give this group commander their top 10. Some people call them their top 10 programs. In my opinion, if they've got over 10 332's submitted, something's wrong anyway. Maybe it's because other bases are bigger and they just have the volume. In my opinion, bigger bases have bigger squadrons, so they can do more work, so it all otta equal out. But we don't have near the numbers we used to. I kinda figure its because our facilities are in such good shape, and we take care of people.

Researcher: OK, let's see. Work classifications. We talked about this, same, same time to complete?

Goodfellow Operations Flight Chief: Yep. When we did the statement of work we took the same.

Researcher: I know we talked about a lot of this yesterday, it's the management functions. My first question is how have you set up your lower level managerial/supervisor functions? I know we've got all of this on there.

OK, how many management positions do you have? 5 supervisors, once you get the one in mat control. 2 managers.

Where are these positions located in the organizational structure? We've got this on there as well.

Let's see.

Goodfellow Operations Flight Chief: If I had to do that over. I'm not so sure I wouldn't have myself with a deputy, and all supervisors—not have the interim manager. Mitch and Tom. Simply because the size of the organization. I interact with the supervisors daily, and if I have a problem, or I have something I need done, normally I will just go straight to the supervisor. I shouldn't. I should go through the manager. It just kinda depends on what it is. In the grand scheme of things, I think I would have been better off not having then. If one of them were to leave right now, I'd probably hire a supervisor, not a manager. I'd make the other one deputy. That flattens it even more.

The one position that we're creating, and you'll see it in the new org chart, under planning/production control, there's a GS question mark. We're creating an administrative assistant position, extra duty person. Because, currently, like Chuck Schembri's my vehicle person, he's also the structures supervisor. Jim Bertrand is the HVAC supervisor, and he handles all the 55's for everybody. One of the guys in mat control handles safety. They're all additional duties. And because they're additional duties, they get treated like additional duties. So, our goal is to create this other position, that person this will be their job. You know, the vehicle person, the safety person, the training person. These other guys, they will become the alternates. That's something I learned from Lee. When he set his up he did this. Again, if I could do it all over, I might have a deputy do those things, where he would have some clout.

Researcher: What are these positions responsible for, and what is their decision making authority? We talked a little about this, but the managers…do they actually assign the work or do the supervisors.

Goodfellow Operations Flight Chief: Supervisors assign day to day work. The managers are responsible for their overall area, and ensuring the programmed work gets done.

Handle any out of the ordinary problems. Again, it's a case of if I already didn't have them I would probably do away with them.

Researcher: We kinda touched on this too, but what were the goals and objectives you had when establishing this structure?

Goodfellow Operations Flight Chief: Mitch does a lot. He manages the RWP program, he's more computer literate, he kind of takes care of that aspect of the shop. Tom is a more get things done type of deal. So, if we have a project we need to get done, I can give it to Tom, and he can go get whoever he needs to and get it done. Mitch is a more detail, methodical, check things out type of thing. Really, when we set them up we had a manager and a supervisor over each element. And originally, I only had a manager. Then I got to looking at numbers. There was like 30 people in each one, and I thought, there aint know way that guy's going to write that many appraisals, and just do the supervisory type of stuff that has to be done. So, that's why I added the one supervisor, and then used work leaders for the other direction thing. Then work leaders did more than work leaders should, and became supervisors anyway. So, that's when we made the transition to the additional supervisors.

Researcher: So, basically, have as little people as possible, but still cover all the required stuff?

Goodfellow Operations Flight Chief: Yeah. They talk span of control, and they talk all this other stuff in management class. Really, it's dependent on the individuals. If you get 5 journeymen, they don't need a supervisor. You just kinda give them the job, and they go do it. If you've got personalities or even journey that are journeymen by trade, but need to discuss things. You know, plumbers and HVAC guys are the worlds greatest at discussing problems. Group trouble shooting is what I call it. They need a little more hands on, technical supervision. They need to have somebody they can go to that is the smartest person around. That should be your front line supervisor. Your front line supervisors should be the smartest ones in the field. So, if the electricians have a problem, they can go to Ken, and if he doesn't know the answer he can find it real quick. HVAC wise, this is were you run in to a little bit of problems. Jim Bertrand is pretty good and air conditioning, but he's a heat man by trade. So, heating, he's your man—boilers, stuff like that. Air conditioning, he's coming around. He's been doing it since he's been here, but they have the work leader in there, Charles, he's an air conditioning guy. You just can't do it as flat as I thought you could. You still got all that additional stuff. And in the civilian personnel arena, there's some thing a work leader cannot do. A work leader cannot write appraisals. They can provide input, but they can't write. But if you get too flat, then the craftsmen get an appraisal from the supervisor that's got no idea what they do. A work leader can handle minor discipline things—minor. Can approve minor amounts of leave, in case of an emergency or something. Can direct a crew, those type of things.

Researcher: Alright, multi-skilling, multi-crafting. Please describe the use of multi-skilling and multi-crafting in the flight?

Goodfellow Operations Flight Chief: We have more multi-skilling than multi-crafting. In the electrical area, and I think I talked a little bit about this yesterday, just because of the shear numbers...exterior and power pro are like necessary overhead. Because if the power goes out you gotta have them. Originally my thought was, but we fixed it before we bid, thanks to Ken and some others, we had these working groups sit down and figure out what we need. My thoughts were always you gotta have exterior and you gotta have power pro, so why couldn't your exterior guys be power pro guys, because the exterior guys really just think up stuff to do. Waiting for something to happen, so they could be maintaining generators. That would be a good concept, except when the power goes out the exterior guys are up on the pole and if the generator doesn't start, you got nobody to start it, because they're up there fixing it. So, our interior electricians kinda support the exterior and power pro. If we are short handed, then that's who fills in.

Researcher: Now, are your interior guys on high voltage?

Goodfellow Operations Flight Chief: No. No, we have two exterior electricians, two high voltage electricians, and Ken, the supervisor. So, actually we have three. As long as one of them is here, we're OK. You have an exterior electrician on stand by, and if he gets a call he just gets a ground crew. The only difference is, all of our guys are trained on the truck...they all know what they're doing. They're not just Jack off the street come watch this guy. They know how to operate the truck, they know how to get somebody down.

In the carpenter arena, our biggest thing here is when we go on a job, especially now the way things are planned...Brian plans the job, he's the work leader on the job, he goes out and says I need a carpenter a helper and the electricians come over every once in awhile when I need them. Then if there is some minor stuff to do while they're there, like taking out a plug, some thing that really doesn't need an electrician, They will do that while they're there.

Researcher: The carpenters will?

Goodfellow Operations Flight Chief: Yeah. And if the electrician comes over and needs help pulling wire, the carpenter or the carpenter helper will help them pull wire.

Researcher: Let say your plumbers are working, can they close off a wall, or do they go in...

Goodfellow Operations Flight Chief: They don't patch their holes. The facility maintenance guys, they're our most multi-crafted shop. To be hired they have to be skilled in two trades. So, they are our true multi-craft. They do all things. They're not journeyman level, but you don't have to be to do minor fixes.

Researcher: Did you utilize the multi-skilling/crafting before the MEO?

Goodfellow Operations Flight Chief: Not a whole lot other than...we've always had the attitude here, that if one shop needs a hand, the other shop is going to help them. But not as much as we do with the MEO, facility maintenance crews and that stuff.

Researcher: What were your objectives, goals, and motivations for using these techniques? I guess obviously you have to use them to have less people.

Goodfellow Operations Flight Chief: Yeah. Also better customer service.

Researcher: What are the problems and benefits you have experienced utilizing these techniques?

Goodfellow Operations Flight Chief: I think the benefits are obvious, the fact that you can get more done with fewer people. Problems are twofold. One, sometimes your quality isn't as good, because anybody can do carpenter work, but sometimes your quality on your secondary skill may not be as good. Another problem is civilian personnel. Multi-skilled craftsmen think...I'm doing the same thing as a carpenter, how come they're a WG-9 and I'm just a WG-7. They don't understand that I'm paying a WG-9, whether or not they do it, that they have to know how lay out trusses, how to lay out rafters. They have to know how to be a full blown carpenter, whether or not they do that is irrelevant. You have to have the expertise, so that's what you're paying them for. Plumbers are WG-9's, facility maintenance guys are WG-7's. Well, they do the same thing plumbers do how come they're not journeymen? Well, technically what ought to happen, is we ought to downgrade all the 9's to 7's. You pay for plumbing expertise. How to install rough in, proper slopes, all that stuff that the facility maintenance guys don't do. They do minor maintenance. That's probably the biggest struggle because it causes a little animosity.

Researcher: Would you classify the use successful?

Goodfellow Operations Flight Chief: Yeah I would. In CE we have a lot of two person jobs, but very few two journeymen jobs. So, when you multi-skill and you use people to help each other, they not only learn a trade a little better, they become more proficient. If you have a good helper, they know what it is you need next. So, when you have two guys helping each other that are multi-skilled, they know what it is. Your productivity level goes up.

Researcher: Is there anything you would like to change or are planning to change regarding the use of multi-skilling/crafting?

Goodfellow Operations Flight Chief: We currently have in the structures area, we have a person who's carpenter/sheet metal, and we have one who's carpenter welding, we need one that's welding sheet metal. It's more of a personality thing I think than PD. I think we could better utilize those particular skills.

Researcher: I think I know the answer to this, but how would you classify your manning situation? Have you been able to maintain little or no vacancies?

Goodfellow Operations Flight Chief: We have had surprisingly more vacancies than I thought we would have. I've really been surprised at the turnover. I thought once we went over to all civilian, we would plus it up, and that would be the end. I've probably averaged since the MEO was started...I bet it's safe to say that at any given time I'm liable to have 4 vacancies...easy. One thing is that if you are fortunate enough to get to promote from within, and your vacancy just transitions. So, you have one vacancy, and our lapse rate right now is probably running 45 to 60 days, if you're lucky enough to get to promote from within, you have a vacancy now for twice that long, because all you're doing is transfering a vacancy somewhere else.

Researcher: Why are so many people leaving you think?

Goodfellow Operations Flight Chief: Back to the group that came here originally from another base, and their work ethic wasn't the same as ours, we had a lot of those that were miserable. They left either by their choice or by ours. So, we kind of cleaned house there. A lot of it is, I think, where we're at, we get a lot of people off the stopper from San Antone. San Antone's not that far. So, they never really move here. They're here, but they're not like the Guam guys who are really here. A lot of the San Antone guys came here, but never moved here. Some never moved their families. They'd go home on a weekend, and all their trying to do is get back. Some managed to do that. We've had retirements, you have just turnover. I don't know why I expected things to be great. I guess when you bid that, you bid numbers, you bid based on those people being here. So, when they're not, it's just a whole lot more noticeable.

At one time, I had 8 vacancies. 10% vacancy rate. Right now I have 2. I also have three positions that are being filled by temporary employees and I'm doing that because of utilities privatization. If we lose that, then we lose those slots, and I don't want any permanent employees to go out the gate.

Researcher: The last question on this section. How many positions have you saved by utilizing these initiatives? Got an idea on that estimate?

Goodfellow Operations Flight Chief: We did a 30% cut when we went to the MEO...the manning before. But I would say because of multi-skilling, probably say half a dozen positions.

Researcher: Is there a maintenance engineering function within the MEO?

Goodfellow Operations Flight Chief: It is not within the MEO, but it has been realigned into the Operations Flight. They're not MEO positions, and until recently, on the UMD, they have been in Engineering. They were not part of the bid at all.

Researcher: This kinda goes...can you talk to me how you typical Maintenance Engineering commitments are met? Do you pretty much use the same processes? Do they try to model themselves to meet the 7 objectives for Maintenance Engineering?

Goodfellow Operations Flight Chief: As a matter of fact, during the recent FIX visit, they came in and did a review of maintenance engineering based...they have a matrix set up and they score maintenance engineering. Ours was half a percent below the best one in command. We do things a little differently...like RWP review is a thing in Maintenance Engineering. Well, the way we handle it is during the scheduling meeting, Dorothy puts up the slide for RWP for last week. It's got hours scheduled, actual. I review the hours from last week, and if there is anything that looks out of line, then I'll ask her to take a look at it.

Researcher: So, they're not going to the shops and reviewing it with them?

Goodfellow Operations Flight Chief: No. It's on an as needed basis.

Researcher: All the infrastructure plans, are they taken care of by Maintenance?

Goodfellow Operations Flight Chief: All the plans are done, the infrastructure manager program helps tremendously. Pavements inspections are done by the shop. Roof inspections are done out there as well. We don't have the engineering expertise. So, the mechanical in EMCS gives us the mechanical expertise. The chief position works best as a civil.

Researcher: Where are all the QAE's located in the organization?

Goodfellow Operations Flight Chief: All service contracts and QAE's are in Maintenance Engineering.

Researcher: How would you describe the relationship between the QAE's and the contractors?

Goodfellow Operations Flight Chief: Respectful. Grounds is excellent. Custodial is sometimes contentious. Paint's not a problem. Refuse is OK. It depends on what the contractor is doing, and it depends on our QAE. I still am a believer in rotating QAE's. We don't have that luxury a whole lot of times, because we only have one real QAE, but we just kind of keep an eye on it.

Researcher: Who performs maintainability reviews of projects?

Goodfellow Operations Flight Chief: Everybody. Maintenance Engineer section does, and of course, Tom and Mitch, all the shops.

Researcher: It's not strictly a ME function?

Goodfellow Operations Flight Chief: No, it's because they don't have the expertise. We usually put a set out here on the table. Put the word out that they're there. If you don't come by, you aint got a right to bitch.

Researcher: Are there infrastructure management programs? Who's responsible for these?

Goodfellow Operations Flight Chief: Maintenance Engineering has got them. Now, the pavements program is actually being done in engineering. This is because of expertise. Tammy's an environmental. Cathodic protection, we finally got put over there.

Researcher: Where's the energy management program located?

Goodfellow Operations Flight Chief: It's in maintenance engineering.

Researcher: Is EMCS part of Maintenance Engineering? Are those MEO positions.

Goodfellow Operations Flight Chief: EMCS operators are MEO positions.

Researcher: Is there any other inspection commitments, such as IDOQ's and utility contracts, within the flight?

Goodfellow Operations Flight Chief: We inspect recurring contracts. We inspect the small recurring contracts for trap pumping, overhead door, those type of recurring contracts. They get farmed out to the expertise that would do them. Maintenance Engineering does the bulk of them.

Researcher: Do you think that your performance in meeting Maintenance Engineering commitments has improved since MEO implementation?

Goodfellow Operations Flight Chief: I think it has but not based on the MEO. I think it has just based on the learning curve. Not as a result of the MEO.

Researcher: Do you have an idea how your customers, internal or external, feel about the way you handle Maintenance Engineering commitments?

Goodfellow Operations Flight Chief: External doesn't know, internal doesn't care. I think the shops, who are the primary internal customer are real happy with maintenance engineering. They feel like they're a part of OPS as opposed to those guys.

Researcher: Please describe for me how your flight handles its facility maintenance demands. I know we talked about some of it, but can we go through it again?

Goodfellow Operations Flight Chief: Our facility maintenance is done on a recurring basis similar to a zonal maintenance concept. We visit every building on base, at least annually. Numerous facilities quarterly, and they provided you with a schedule so you

could look and see. We have three 2 man crews with an extra floater that inspect facilities one week and do the work the next. The pretty much have divided up the buildings, you know, on their own. So when they go into like 3311, which is the Angelo Inn, it's a multiple facility facility. They each have their own building, so they know their buildings. They have a lot of pride and ownership if you will.

Researcher: But it's not something you forced, saying you will have this building and so on?

Goodfellow Operations Flight Chief: No. We just provided the schedule, and they kinda broke it up on their own. When you listen to them, when they talk about something, it's "my building." That's my building, I go there, and so and so does this. Facility maintenance, day in and day out maintenance, is what I think is some of the highest quality there is.

Researcher: Still the standard type of stuff where the building manager keeps a list and hands it to them when they come in?

Goodfellow Operations Flight Chief: Some so, but the majority don't. They do their own inspections.

Researcher: Do they do any RWP?

Goodfellow Operations Flight Chief: We actually de-automated some of our RWP and included it in facility maintenance.

Researcher: How much would you say percentage wise of your RWP did you transfer?

Goodfellow Operations Flight Chief: 20. They do all the fire alarm/sprinkler tests. Our facility maintenance schedule isn't exactly quarterly. It may be 12 weeks, it may be 13 weeks, so what was happening when we first started off was, we'd be in a building this week, and the next week RWP would kick out, so you gotta go back to the same building to do the RWP. We took a look at what was in there, and what was automated, and what we could take out, and just made it part of the facility maintenance schedule. It's still being done on a recurring basis, but it's not part of the RWP program. That's been real beneficial. For us saving time and for the customers.

Researcher: So, if you didn't have the folks out in the shops, that took it upon themselves to divvy up the buildings, would you have gone ahead and done that you think?

Chuck Kikring: I think, yeah. I think that was the ultimate goal.

Researcher: We've already answered this. It just says, do you use a shop, zone, or hybrid approach?

Goodfellow Operations Flight Chief: Hybrid. We have shops, but not like shops, and we certainly don't use zones. It's interesting. When you go to Columbus you'll see different, and it works for them. We are more facilities oriented. They have an airfield. Their MEO numbers wise is a little bit bigger than ours, but they don't have near the dormitories we do.

Researcher: We talked about the process you use for conducting facility reviews and your cycle time you have high use buildings that get looked at once a quarter.

Goodfellow Operations Flight Chief: If something's not quarterly they're annuals.

Researcher: Do you think your performance in meeting facility maintenance demands has improved since MEO implementation?

Goodfellow Operations Flight Chief: Definitely. I think you can base it on the number of emergencies and urgents.

Researcher: Do you have an idea of how your customers feel about it? The way it's handled?

Goodfellow Operations Flight Chief: Every indication I get is that they really like it. We do real good on customer feedback forms, Marlowe does that, but I don't know that we do a real good job on following up on facility maintenance. As a matter of fact, we got wrote up by the IG two times ago because we didn't follow up with facility maintenance. You know, the guys would go do their inspections, do the work, and move on. So when I was up at Vance, I think it was, their guys had written this program for random selection, so Ken, who is currently the supervisor over in facility maintenance, he can load in building numbers, and it will randomly kick out by statistics, how many he is going to look at and follow up on. Nothing formal. He's just goes out and interviews, how's things going, did we do OK. He will follow up on specifics sometimes.

And like I said earlier, when a new commander comes in, he interviews all the commanders on base and asks what's your impression of CE. A lot of that is facility maintenance.

Researcher: OK, Mat Control. I know the answer to this one, but it hjust asks whether you are a COCESS ot a GOCESS. You're a GOCESS.

In typical organizations, the folks over in Mat Control do the vehicle fleet, but Schembri does that right?

Goodfellow Operations Flight Chief: Right.

Researcher: Alright. Have you changed the self-help function since implementation? How would you characterize your self-help store? Is it pretty active, big?

Goodfellow Operations Flight Chief: More active than it needs to be. Right now it's kind of bad since we have relocated Mat Control. When we had them both up there, it was really efficient, because Mat Control and self-help were co-located. We reduced the number of people to operate it, because they were all multi-skilled. They could all work warehouse, self-help, whatever. We cut out alittle bit on inventory, because we started allowing the craftsmen to go to self help, and so instead of having light switch covers in the self-help store and light switch covers in the back for the CE guys, we just had them in one place, the self-help store. Anything that was available in the self-help store that the craftsmen used, we didn't put it in the shop stock, because it made no sense.

Researcher: Did it change any from what it used to be?

Goodfellow Operations Flight Chief: Well, when we implemented the MEO is when we allowed the craftsmen to start going to the self-help store. That was a change. Now, since we've moved logistics down here, my goal is to streamline self-help to the no kidding what do we need. I mean, housing's a big user, but we have water hoses, we have sprinklers, we have...you know, people are PCS'ing and there goes our water hose. So we've kinda toned down on what we're carrying.

Researcher: Is there anything you perceive as unique about how your flight meets its material control commitments?

Goodfellow Operations Flight Chief: We do as much on-time buying as possible.

Researcher: Heavy use of the IMPAC?

Goodfellow Operations Flight Chief: Oh yeah. Max. We do on time buying and it goes back to the way we plan, the way we do our work. We don't warehouse stuff or try not to anyway. We have a store, but any work orders, we buy when we need it. We try to keep our store down to a minimum.

Researcher: So you don't have any buyers that go out?

Goodfellow Operations Flight Chief: Not right now. We're reorganizing out there. I think almost everybody out there has been threatened with bodily harm by Tish, because they've screwed up their IMPAC so bad. Because they can't buy something and put it in a spreadsheet, and then buy something and put it in a spreadsheet. You buy something, you buy something, you buy something, and think, I'll do that later, and pretty soon, you've over spent, you've over committed. Right now, the ay we have it set up is there is one buyer in mat control. He buys the store. Within each of the 4 supervisors, there's electrical, structural, plumbing and HVAC, there's a credit card. They buy their respective DSW stuff. Each of the planners has a credit card—they buy their work order stuff.

Researcher: So, basically, you've taken Mat Control out of the loop?

Goodfellow Operations Flight Chief: As much as possible. Now, after Mitch and Tom came back from Columbus, Mitch's goal is to put everything back in Mat Control, have buyers there.

Researcher: Why is that?

Goodfellow Operations Flight Chief: You'll see when you get there. It's just a real efficient organization. They have true supply people. Then again, once Mitch gets in there and tries it, he may find out real quick that it's not going to work. One reason it works there is that they don't have the number of buys that we do, because they don't have the number of facilities. You know, maintaining barriers, flightlines, power pro stuff, does not require near the store stock that maintaining facilities does. But, they saw, they liked, they're going to try. I figure, why not let them try.

Researcher: Do you think your performance in meeting material control commitments has improved since MEO implementation?

Goodfellow Operations Flight Chief: I think it has simply because of IMPAC, not because of the MEO.

Researcher: Internal and external customers? How do they feel about it?

Goodfellow Operations Flight Chief: Yeah, they're pretty happy.

Researcher: OK, please describe for me how your flight handles its infrastructure support commitments.

Goodfellow Operations Flight Chief: We don't have an infrastructure element. Our exterior electricians are in the electric area with the interior and power pro. Our plumbers, interior and exterior, so they maintain the distribution systems. We do RWP on mains, sewers. But we don't have a specific section.

Researcher: I know you don't have any central plants right?

Goodfellow Operations Flight Chief: No.

Researcher: Do your craftsmen provide any support or handle any of the infrastructure plans?

Goodfellow Operations Flight Chief: Mainly on the inspection side.

Researcher: Do you think you have improved your performance in meeting infrastructure support commitments has improved since MEO implementation?

Goodfellow Operations Flight Chief: Same. Because, we never really went to an infrastructure. About the time we went into zones was about the tie A-76 was

announced. We did have two zones, a heavy reapir and an infrastructure, and, the base isn't big enough for that. You can't separate inside plumbers from outside plumbers, inside electricians from outside electricians, because you have to co-utilize them. From an MEO standpoint it's more efficient to do it the way we are doing it. I think if I were at a bigger base that might need it...I'm not sure I'd even then have it. I just don't think that's an efficient way to do it.

Researcher: OK, the last question. There are not too many customers that deal with this type of stuff.

Goodfellow Operations Flight Chief: Yeah...as long as they've got power and water.

Researcher: OK, that's all I have for infrastructure. Now, Heavy Repair, the last one. Please describe for how you meet your heavy repair type commitments. We've talked about it a lot already, but...

Goodfellow Operations Flight Chief: Even though we don't have vertical/horizontal as separate shops. I guess that if we've done it here is that if you had Chief of Heavy Repair, a Chief of Vertical, and a chief of Horizontal. All we have is the one supervisor over both.

Researcher: That leads to my next question. That you don't utilize the traditional vertical and horizontal sections.

Are there any specific tasks that your flight does not perform, in which you exclusively utilize contract support?

Goodfellow Operations Flight Chief: We don't do any pavement overlaying. We don't major pavement repairs. We do minor potholes.

Researcher: How much does your flight utilize SABER to support work order accomplishment?

Goodfellow Operations Flight Chief: We use SABER quite extensively I think. I think we use SABER more for what SABER was designed for since the MEO. SABER was designed for small in-house work, that the in-house force didn't have time to do, and reduce backlog. Here, we do a lot of that, simply because we're MEO, we do workload estimates, and we do x amount of work. Anything above and beyond that, that has to get done, is going to get done by SABER.

Researcher: Do yall use any other type of contract support other than SABER?

Goodfellow Operations Flight Chief: Again, we're able to do up to $2000 on credit card, so that's given us some flexibility. Then Maintenance Engineering still does small contracts.

Researcher: Entomology located in-house or contract?

Goodfellow Operations Flight Chief: In-house.

Researcher: Anything you perceive as unique?

Goodfellow Operations Flight Chief: I don't think there is anything unique about it. I'd have to go visit a whole bunch of other bases to be sure, but we get stuff done.

Researcher: Do you think your performance has improved since the MEO?

Goodfellow Operations Flight Chief: I think it has. Simply because we're more focused. I'm not sure if that's a result of the MEO or the A-76. Focused in the sense of workload definition. As a conventional organization, before we went MEO, the amount of work we did was based on the amount of people we had, and how much we wanted to work overtime, and how much we wanted to work on the weekends. There was no definitive. With the A-76 you have workload estimates, so you pretty much have a controlled environment. Which I think is advantages and they should do at every base.

Researcher: Finally, customers?

Goodfellow Operations Flight Chief: Just fine. Again, external customers don't care how you're organized. All they care about is that their commode flushes and their lights turn on when you

END OF INTERVIEW

Appendix 3. Columbus Interview Transcripts

INTERVIEWER DID NOT ASK ABOUT FLIGHT ORGANIZATION CHARTS, BECAUSE THEY WERE PROVIDED AND DISCUSSED BEFORE THE TAPE STARTED RECORDING.

Researcher: This question here says would you please explain the communication flow in the structure? Do you have problem with the different sections talking back and forth, any problems?

Columbus Operations Flight Chief: No, they're good. That's one area we did look at. Just right on the other side of this wall here I have 5 offices. I have my Heavy Repair manager, my Infrastructure manager, I have my planner in there, actually I have 4 offices in there. Then, once my other planner left, became the hospital facility manager, I moved up our vertical, I guess he's kind of the assistant Heavy Repair manager. He's over all the Heavy repair, except the equipment shop. These guys all work together. They fill in for each other.

Researcher: This is probably a pretty obvious question considering how much experience you have, but are they pretty good about solving stuff on their own...they don't have to come up to you all the time?

Columbus Operations Flight Chief: That's right. That's right. Well, you know we're so short, when I'm gone, one of those guys are in charge. I've never had a problem as to which one. Normally, my Heavy Repair manager will take over. My infrastructure guy has too many opportunities to get lost on base as far as getting called out on the flight line where he's isolated from the rest of the Operations. It's kinda common sense, but the Heavy Repair manager takes over when I'm gone, because he doesn't have many opportunities to get trapped away from the rest of us.

Researcher: Let's see. You've got how many people they supervise on here. That's what I needed to see. Can we go over again, just so I get it on here, how you are organized?

Columbus Operations Flight Chief: Yeah. Our Heavy Repair section, which includes all my HVAC, it includes all my interior electricians, it includes my carpentry, paint, my metal shop, and then it has my equipment shop with EMCS also and instrument control. Then infrastructure, I took my plumbing section and utilities section and combined them and made a utilities section out of them. I have my power production and I have my exterior electric. They are strictly utilities. They also run a DIN truck, what they call the old DIN truck, and they do DSW's for the base facilities. Stopped up toilets, replace and repair, that kind of stuff.

Researcher: Would you please identify and expand on any specific goals or objectives you had in mind when you were developing the MEO structure. Other than winning.

Columbus Operations Flight Chief: Our goal was to become the most efficient organization. I talked to Chuck, and he first said if you are going to be competitive you need to cut by 40 percent, that was a goal we had. We worked on it, and we worked on it, and I think we finally got down to about 39 percent. We reached a point there that if we cut any more, that it wasn't going to be worth our time to do this.

Researcher: Were there any problem areas that made the MEO structure development difficult?

Columbus Operations Flight Chief: No. Things seemed to fall in to place.

Researcher: Civilian personnel worked well for you?

Columbus Operations Flight Chief: Civilian personnel worked real well with me. They brought in a team from Keesler, and some folks from headquarters to help us staff our positions. The only problems we had were hiring civilians. You have so many rules and regulations that apply to hiring civilians. They have to meet certain criteria to become qualified. You have your VERA, your veterans readjustment, all the different things you have to go through to reach the people you need...it makes it hard sometimes. Then you have the priority placement program. You have so many other bases going through this same situation, and other agencies, Navy is the biggest one. I just brought in 3 on the priority placement program from Guam. They're working out really well for us, but it could have just as easily been the other way around. It could hurt your organization. Out of all our priority placement folks, all but two have been working out. They're not team players, and the majority of your operation has to be team players.

Researcher: Have you made any changes to the MEO structure since implementation? Why? Have any requirements changed? Where the changes due to these requirement changes?

Columbus Operations Flight Chief: No, we have not. We were successful in the fact that we put our MEO together and we were able to cover all the requirements of our PWS. Not only cover the requirements, but...my main mission is to keep the flying going on base, keep producing pilots, and our part is to provide support to keep producing pilots so their operation runs smoothly. I don't think we need to reorganize, but what I need to do is go in for some changes to our MEO. We're adding a lot of new facilities, like this new T-1 hangar, and in the process of building another T-1 hangar, built a new UOQ. That's all square footage that's being added to the base, and hey didn't tear another hangar down, the just added a new hangar, so we're going to go back and probably request a manpower audit on those new facilities, and see if we can pick up another body or two. Housing maintenance, I'm going to do the same thing. Even though they're getting new houses, they are going to be more labor intensive than the older houses, because they're going to have carpet, garage doors—that's going to be a problem. I know at my house,

I've got one garage door, but between my wife and myself, I work on the garage door all the time. I can only imagine what's going to happen when I have 200 electric garage doors out here. But, no, I have not made any changes to the structure.

Researcher: What was the most important factor that led you to your organizational structure?

Columbus Operations Flight Chief: I think collectively how we got to together with my managers. We all made a collective decision that we wanted to go back to the old shop concept. I wanted to be sure that it wasn't just me. It was a group decision. That was the most efficient way to do it. Logically, if you lay it out on a piece of paper, it's no doubt about it, you can...like I say, we eliminated 11 supervisory type positions by going back to the shop concept. It may not work for everybody, but for us it was the best. For the size of our base, for the layout out of our base, it only made sense to go back to shops.

Researcher: How difficult a change was it transforming from the Objective Flight structure to the MEO?

Columbus Operations Flight Chief: It was a lot smoother than I ever expected. I don't think we missed a beat.

Researcher: Were yall pretty heavy on the civilian side versus military before the MEO?

Columbus Operations Flight Chief: We were. No, we were about 50-50. Actually I had one person out of the whole Operation that was RIF'ed out of the squadron. Then we ended up hiring about 40 more people. It worked out pretty well. It took awhile to get those 40 people. We took over May the 4th, and it was probably October/November before we were a 100 percent manned. We've never actually been a 100 percent, but it is as close as you're going to get. Actually, we have not been below 92%. We have a good strong work force here. We have people who have grown up in the community here and aren't leaving. I mean they have family here. And most of the folks who come here, want to stay. They make it home.

Researcher: OK. Did you request any waivers to AFI's?

Columbus Operations Flight Chief: No.

Researcher: Let's see. What area has been the most successful after the change?

Columbus Operations Flight Chief: I think that our EMCS has been most successful. Just by the fact that they run a 24 hour operation. They do it with very little overtime. They have 5 people in there. If you look at a year schedule with the 5 workers and one work leader, it's hard to schedule, plus they do that first response plan I was telling you about. I think they're out success story.

Researcher: The least successful?

Columbus Operations Flight Chief: I wouldn't say we have any least successful. You can look at our numbers, work orders and job orders. Or completion rate and customer satisfaction there's not one are that comes near to being below the standards.

Researcher: Do you have an idea of how your customers, internal and external, feel about the new organization?

Columbus Operations Flight Chief: We have a lot of 4.9's out of 5 on customer satisfaction rates. Of course the customer always wants more done, they want their projects done, but it just doesn't happen. They've finally become educated in the fact that we're here for maintenance. We're not a construction business that does renovations any more. That's left up to SABER and contract.

Researcher: Alright, that's all I have on the overall picture. Let's see. Please describe for me how a work request is processed to include all parties who have a part in the process.

Columbus Operations Flight Chief: We have a top 10 work order program here. Just a few years ago we had over a 1000 work orders in the system. That was unmanageable. It was unrealistic. You're just not going to get that many work orders done. What we've done, when we took over, we took all the work orders, we sent them back to the organizations that they came from. We told them to prioritize them. So, we have what we call the top 10 work order program. So, each group gets their 10 work orders, and they prioritize them. They pretty much manage their top 10, and they hold their work orders there. So, if we do two OPS Group work orders this month, next month they'll bring two up into their top 10. That's how we manage the work order program.

Processing a 332 is done just the way it has always been done. 332 comes into customer service. Customer service will log it in, assign a work order number to it. On every Monday morning, I have a 332 review meeting in the conference room here. I have myself, my infrastructure, my reheavy repair. I have a safety representative come. I have a fire department representative come. A COMM representative comes. Let's see, who else comes, maintenance engineering is there. I guess that's about it. Oh, environmental comes. So, we sit there and we go over each 332. We pass it around the table, and if it needs coordinating on, they coordinate on it there. If they need to look at something, it'll be logged to them at the end of the meeting, then they go look at it and make a coordination. Rather than putting it in a holey Joe. 90 percent of the time it just gets lost.

Researcher: Do you chair this meeting?

Columbus Operations Flight Chief: I do.

Researcher: Are they approved there?

Columbus Operations Flight Chief: They are. The ones that aren't approved, we'll go ahead and make notes on them. It depends on who submitted it, who makes the call and tells me we're not going to do it or it needs to go another route. With the IMPAC card, a lot of the times other agencies can purchase things themselves. A lot times we get a lot of cabinets and shelves on 332's. We send it back to them and tell them to purchase it on their IMPAC. That's another good thing the IMPAC card has done for us.

Researcher: When your controllers receive a 332, can they make the determination to farm it out to the shops on a DSW?

Columbus Operations Flight Chief: Yes, normally. We pretty much pretty much draw a line if it's 40 manhours or less then it's a DSW, 40 to 200 we'll make a job order out of it. A lot of the time, I'll decide at the meeting. We're pretty fortunate, one of controllers is an old exterior electrician. He's a retired master sergeant, so he's pretty well familiar. He can estimate work orders pretty close too. If he doesn't, by Monday it's not going to sit on a shelf long. If we still have a question, we still have a planner, so we can give it to the planner and let him go take a look at it, talk to the customer, and then we'll make a determination on how it should go.

Researcher: Did this process change any from before the MEO?

Columbus Operations Flight Chief: We're probably a little more streamlined. I guess we're probably a little more focused on getting them processed quicker than we were then. Back then you had 5 or 6 controllers, so you could pretty well juggle quite a bit of paperwork. Our goal now is not to have a lot of paperwork on the shelves. It's kinda like getting behind. Once you get behind you'll never get back. So we don't want to get behind, so we try to stay on top of it. This is a program that we've already seen get out of hand in a hurry.

Researcher: Is there anything you'd like to change about the process?

Columbus Operations Flight Chief: No.

Researcher: Is there anything you feel is unique?

Columbus Operations Flight Chief: Mr. McCall's our chief control, he actually goes...each group has a point of contact to this, and normally it's like a deputy group commander, and Mr. McCall goes once a month and sits down with these folks to manage their work orders. He compares notes. He takes our computer print outs and compares them against theirs, because a lot of times some of these guys will still not run, especially in the OPS side of the house, you know they're such a big organization, you may have the OPS group down at the fight sim building, they may submit a 332 and it doesn't filter all the way through, it just comes straight to us. So, we compare notes to make sure they're aware of what we have in the system.

Researcher: For work classifications, do you use the standard emergency, routine, urgent? Same time periods for completion?

Columbus Operations Flight Chief: That's right. We kept our same standards, and our same completion dates.

Researcher: We've talked about this some too, but please describe to me how the flight hs set up it's lower level manager functions.

Columbus Operations Flight Chief: OK. Well, we have work supervisors and then we have work leaders, and we minimized our work supervisors and tried to use our work leaders to a maximum. You know work leaders...now if you look at the description of a work leader, a work leader sets the pace. He's out there on the ground setting the pace. He's limited as to what type of supervisory duties he can perform, but he's our eyes and ears out there on a job site. You can see in our organization chart there, we'll have one work supervisor, and you may have 2 work leaders under him. Where before, what you normally had was a work supervisor, and then you had another supervisor, and then you'd probably have a work leader under that. That was only the military way, because a master sergeant in a shop, you'd have a tech under him. Then you'd have to have a civilian as well. We were supervisor heavy in are old organization.

Researcher: Are your work leaders pretty good about getting out there and working and not getting too wrapped up in trying to be supervisors?

Columbus Operations Flight Chief: Yes. Occasionally you'll have a worker squeal when he thinks a work leader is getting a little to supervisory. We work that out. That's another thing, that's a buy in process there. We tell them, look guys this is the way it is. What your options are.

Researcher: What we your objectives you had in establishing this management structure?

Columbus Operations Flight Chief: I guess our requirement was to meet all of our requirements as comfortable as possible.

Researcher: Have you made any changes to the management structure?

Columbus Operations Flight Chief: No.

Researcher: Are there any changes you would like to make?

Columbus Operations Flight Chief: I'd love to make some changes but I can't. One thing about the MEO, once you establish your dollar amount, you have to stay within that dollar amount. The only way you can do it is to do what we've done and eliminate a position or downgrade a position. We're certainly not going to downgrade any more positions. There are some positions I'd like to upgrade, but it's not likely to happen. We

don't have any more money. I don't have a bank of money out there. Like I just got through telling you, we just got through raising everybody back to where they were.

Researcher: OK. Multi-skilling and multi-crafting. Please describe the use of it in the flight.

Columbus Operations Flight Chief: With civilians it is a little bit more difficult. One thing we have done, instead of having like a carpenter you have maintenance mechanics now. Not only carpenters, but everybody across the board are maintenance mechanics, maintenance helpers, maintenance workers. Of course carpenters can become a painter just as quickly as they can become a sheet metal guy. We think we have a good set of core documents, PD's, for these guys, so we don't get challenged on them. That goes back to the union which helps out quite a bit with that. We don't ask anybody to do something you wouldn't do, and it works out.

Researcher: What positions do you utilize these techniques?

Columbus Operations Flight Chief: Across the board. I have them in carpentry, in sheet metal, the HVAC, I think my interior electricians are pretty much electricians. I don't want them, and one thing I'd never do, even when we were in the objective squadron was, and that was where your exterior guys could cross over to interior and interior to exterior. I don't mind exterior crossing over to interior, but I have a big problem with an interior electrician trying to be an exterior electrician. I always have and I always will, because it takes a lot of experience. Even though we required to do it, we did send our military to cross over, and we were fortunate we never got anybody killed. I think we were setting ourselves up for a big accident. We don't do that now, and we're not going to.

Researcher: Did you utilize multi-skilling and multi-crafting before the MEO?

Columbus Operations Flight Chief: Yes. Another area is housing maintenance. Those guys really use maintenance mechanics there. They're pretty much handy men. You know an electrician in housing maintenance could be changing a window this afternoon.

Researcher: Let's see. What were objectives, goals and motivations for using these techniques?

Columbus Operations Flight Chief: Save money. Save people.

Researcher: What are the problems and benefits you have experienced using these techniques?

Columbus Operations Flight Chief: I don't know of any problems. Some of the workers aren't to happy with it. They're not going to be happy with anything. I don't think we have any problems at all, and the ones that aren't happy with it, I have just as many who are tickled to death to be busy all the time. We're not going to get into this New York

style union. You know, you got one guy with a hammer, one guy with a screwdriver, one guy with a paintbrush, they're all waiting for each other to get done with their job.

Researcher: Would you classify the use of these initiatives successful?

Columbus Operations Flight Chief: Yes.

Researcher: Anything you'd like to change or are planning to change regarding the use of multi-skilling/multi-crafting?

Columbus Operations Flight Chief: I don't think so. Most of these guys, you look at what they do. If you own a construction company on the outside, and you're trying to build a house, you do whatever you have to do to get the house built. Those guys don't really have position descriptions out there.

Researcher: We've already talked about your manning situation. 92 percent is about as low as yall have gone.

Columbus Operations Flight Chief: Yeah, that's it. We never have reached that 10 percent.

Researcher: How many folks are yall down to, total?

Columbus Operations Flight Chief: 107. We started with a 109. I de-obligated 2. You can have a lot of things happen. I've got one guy that's been on workman's comp. for two year. He's never worked a day for the MEO.

Researcher: DO you have an idea of how many positions you have saved using these initiatives?

Columbus Operations Flight Chief: No.

Researcher: OK. Allright. We're getting into the specific commitments now. We've talked a little bit about this already, but Maintenance Engineering is not in the MEO, correct?

Columbus Operations Flight Chief: They're officially not MEO. But, they work for me.

Researcher: Are they still a standard section that try to meet the 7 objectives set forth in the AFI? Anything different about them?

Columbus Operations Flight Chief: That's right. Nothing different about them.

Researcher: Is that where your service contract QAE's are located?

Columbus Operations Flight Chief: That's right.

Researcher: How would you describe the relationship between the QAE's and the contractors?

Columbus Operations Flight Chief: Good. Right now our big 3 are outstanding. Refuse, I've been here 20 years, we have the refuse contractor that was here when I came here. Grounds Maintenance, we have the best grounds maintenance contractor since I have been here. Janitorial, this is our janitor's second or third renewal on his contract. He does a good job. The QAE's do an outstanding job on paperwork. Everybody in the office is QAE qualified.

Researcher: How performs maintainability reviews of contracts? Is that strictly a maintenance engineering function or do they work with your folks out in the shops?

Columbus Operations Flight Chief: Brenda, our civilian chief of maintenance engineering, that's one of the projects she has taken underneath her wing to be a liaison between the shops and our engineering flight, which is a pretty hefty chore for anyone to take on. She's working that issue real hard trying to get all of our reviews done. Not only done, but making sure the reviews get recognized in the engineering flight and get passed along.

Researcher: Are infrastructure management programs in maintenance engineering? Who's responsible for these?

Columbus Operations Flight Chief: We do the best we can with that. That's one of the areas we're not staffed in maintenance engineering to do everything maintenance engineering is supposed to do. Your long range plans, that's one of the things that Brenda's working on. She's got her ICC program put together. She's working with my heavy repair manager and infrastructure guy and their subordinate supervisors and they're getting these plans. They're doing a good job. Every two years when we have an IG that's one area your not doing as well as you should be doing. Maintenance engineering has never been staffed appropriately.

Researcher: Where is the energy management program located?

Columbus Operations Flight Chief: It's in maintenance engineering.

Researcher: Are there any other inspection commitments such as IDIQ's and utility contracts?

Columbus Operations Flight Chief: They do. Maintenance engineering has an engineering tech there who also has the carpet IDIQ. He's over some of the plans too. The roofing plan, some of the long term plans. That's the only IDIQ we have. We have like 12 other service contracts. Elevators, oil water separators, grease traps.

Researcher: Do you think your performance in meeting maintenance engineering requirements has improved since MEO implementation?

Columbus Operations Flight Chief: Yeah, it has improved, but I don't think it has anything to do with the MEO.

Researcher: OK. Last question on Maintenance Engineering. Do you have any idea how your customers feel about Maintenance Engineering?

Columbus Operations Flight Chief: Right now our shops are extremely happy with maintenance engineering. Brenda has placed herself in a position where she goes and shadows the shops. She has spent time with the heavy repair managers and infrastructure managers and every supervisor below that.

Researcher: OK. Facility maintenance commitments. Please describe for me generally how your flight handles its facility maintenance demands.

Columbus Operations Flight Chief: It's pretty much handled by, we cut a DSW, and send it out to whatever shop it needs to be. They still do the RWP, the RIPE.

Researcher: Yall don't have scheduled facility maintenance reviews where you send teams out to do 1219's, inspections.

Columbus Operations Flight Chief: We try, but your building managers are supposed to do a lot of that. Mr. McCall our chief controller is trying to get the building manager program going.

Researcher: Do you think your performance in meeting facility maintenance demands has improved since MEO implementation?

Columbus Operations Flight Chief: Yeah. I do.

Researcher: Specifics on that at all?

Columbus Operations Flight Chief: Yeah, I think with civilians here. A lot of times in the past your shops were training grounds for a lot of airmen. Basically, now we hire a journeyman in as a journeyman, a journeyman helper in as a journeyman helper. I think we have more experienced workers.

Researcher: Do you have an idea how your customers feel about the way you handle facility maintenance? Pretty good?

Columbus Operations Flight Chief: Yeah. We have no problems.

Researcher: OK. Material control. Obviously you have a government operated?

Columbus Operations Flight Chief: That's right. No problems at all over there.

This portion of the interview was stopped due to the fact that Mr. Columbus Operations Flight Chief had a commander's update meeting to attend. This portion is completed at the end of this transcript. The interviewer then met with the Heavy Repair and Infrastructure mangers (Heavy Repair Element Manager and Infrastructure Element Manager) to discuss their respective commitments.

Heavy Repair Element Manager: Heavy repair is broken down into basically two sections. One, we'll call vertical and horizontal, now sometimes that may be a little different. The vertical shop has Ronnie Haas supervises 5 different shops. HVAC shop, interior electricians, carpenters, painters, and the metal shop. The HVAC, interior electricians, and the carpenters have work leaders in them. The work leader in the carpenter shop takes the paint shop and the metal shop. They kind of run themselves. We have minimum manning in all of them of course.

The horizontal section supervisor is Ozzie Bond. He has I think 14 people. He also has entomology shop, which consists of 2 people. They take care of just about everything, equipment operations, laying concrete, pouring asphalt, etceteras etceteras.

Now one thing that has helped us in the MEO is we started a good while ago, say 5-6 years ago if not longer, they were downsizing at that time. I guess it started when they combined pavements and equipment. When I first came here we had 23 people in the pavements section, and then had about 17 or 18 equipment operators, and they didn't do any of the block laying or anything like that. So that was like almost 40 people. Now we have 14 doing the same job. The way we supplemented that was to get equipment, like a dura-patcher. Man, it's quick. We have better concrete saws. We have 2 backhoes instead of 1. We have a little track hoe, which is very versatile. If it weren't for that equipment we'd have to have the manpower. As you can see we're still doing the same job. We don't try to tackle any big jobs, but some of our jobs are pretty intensive. We're able to do that because of our equipment. And entomology is the same way. They used to have 5 or 6 people in it, now they only have 2. We just bought entomology a weed seeker not long ago. These kind of things are helping out. I'd recommend anybody to get those because you have to cut back on your manpower.

Then the EMCS is under Heavy Repair. We have 5 operators. They run that section 24 hours a day, 7 days a week. Then we have two instrument control people that work the fire alarms, burglar alarms, etceteras etceteras. We also have a service contract from Johnson Controls that does any maintenance on the EMCS we can't handle ourselves. They have like a 2 or 3 hour response time. They come up 2 days a month any day they want to—they work that out with EMCS. They do maintenance, programming, or whatever it might be we need them to do. We also have a work leader in EMCS.

We've cut back from probably 10 supervisors to 3, and that's a big savings. Then you got work leaders, they're not doing supervisory work by any means, but they're good people who take care of things. You can trust them to do anything.

Researcher: Have yall had any confusion between what a work leader is supposed to do and what a supervisor is supposed to do?

Heavy Repair Element Manager: I suppose our relationship with them is what keeps us out of trouble. They do tell co workers what job to go do, and if they don't like it they can come to a supervisor, an he can tell them. Our supervisors are pretty good at that. They wont put up with anything like that. If a work leaders says it, it's just like a supervisor said it. That's just the way it works. It's the way it has to work. We didn't do that just to be doing that. There's a purpose behind that. In our opinion, prior to doing this, we had supervisors stepping over one another. When you had a meeting, everybody and their brother was at the meeting. No you have 4 or 5 people. We have 1 planner under Heavy Repair versus the 4 we had before. He's doing a good job, and because we don't do the amount of hours per work order that we used to do his job is cut way back. He does a lot of ordering for DSW's and things like that. If the wing tasks us with a work order, say like Go Forth, an unusually large work order, you can't contract anything like that out. So, he works that.

Researcher: Are there any tasks that yall don't perform that you exclusively use contracts?

Heavy Repair Element Manager: We don't do any paving as far as paving a road or overlaying a road, but we do patch potholes. We'll do some driveways, especially if it is a concrete driveway, we'll pour that. But as far as laying any large amount of asphalt, we don't have a lay down machine. If we had to, we think we could, but we would try not to. It would depend on the circumstance. If we could, we'd probably pour cement.

Researcher: How much do yall use SABER? When you have work orders come down, how much do yall farm out to SABER?

Heavy Repair Element Manager: That's kind of a hard question, and probably Lee needs to be answering that. I'd say some, but I don't know how much. We have a work order review program every Monday, where Jerry and I and Lee and several others look at them and see if it is more than we can do. If it is then they go to SABER or contractor. But I don't know to what to degree.

Researcher: You said entomology is in-house?

Heavy Repair Element Manager: That's right.

Researcher: Do you see anything unique about how yall handle heavy repair?

Heavy Repair Element Manager: Yes, I do. I think we have a unique relationship between the workers and the supervisors. From the very top to the very bottom. I think we're as fair as anybody possibly can be in every sense of the word. We pay attention to what work leaders and workers say. They have a lot of weight with us. We just don't

make a decision based on our experience. There is tons and tons of experience of all kinds in Heavy Repair. In others words, an electrician may not have a say so in another field, but they have an idea, and hey, we'll listen to that idea. And each supervisor meets with their respective shops regularly, and get feedback daily. I think that is unique. Although it used to happen, I didn't happen that much as then as it did now. He reason I think is that we had too many chiefs and not enough indians. Were now we don't, we can all get in this room.

Researcher: Well, I've heard, well, Lee was talking about family. Yall seem like you get along pretty well and there's really good relationships back and forth.

Heavy Repair Element Manager: I believe that. And I believe that's unique about us. We kinda take care of one another. I don't mean to pull our chain or anything like that, but if one hurts we all hurt. If one's glad, everybody's glad. We listen to them, and we know everybody by name. Even Jerry knows all my folks, and he's the Infrastructure manager, and I know all his people by their first names. And when I'm not here, they don't have a problem coming to Jerry and asking him what about that and what about this. He makes the decision, and when I get back that decision stands. We have an open door policy for supervisors, workers, everybody. The most unique thing about is that we work together so well. Everybody knows everybody. Nobody is afraid of anybody.

Researcher: Do you think that your performance in meeting Heavy Repair commitments has improved since MEO implementation?

Heavy Repair Element Manager: That's kind of hard to say, you know. I don't want to say we are. I want to say we are doing just as good. I don't think I'll step out on that limb and say we're doing better. But if you take into consideration that we're working with at least 40 percent less than we were, you be the judge. We're handling the jobs. There's been nothing given to us that we haven't done in a professional way.

Researcher: Do you have any idea how your customers...this would be like folks within OPS, do they feel like yall are doing a good job?

Heavy Repair Element Manager: I think that may have improved some. We've been tracking customer satisfaction, like comment cards and so forth, and we're up there right at a 5. I would think that has improved. And again, I wouldn't say that's because of anything we've done other than you don't have as many people to deal with all the time. We do stress customer satisfaction every chance we get from every level—from Lee right on down, and of course the colonel does it too. We still work for the colonel, you know. We understand that even if we're an MEO, that we're still part of this organization and want to be part of it. We've still got a job to do and that's to do whatever he says the best we can in a professional way and part of that is customer satisfaction, and we realize that. So, we're customer oriented.

Researcher: OK. That's really all I have. Thanks. Anything else you want to add?

Heavy Repair Element Manager: I will say one other thing about that's maybe unique going back to our unique question. We have a good relationship with the union. We have the president and the union steward working within our organization, and very few problems. Some exist, of course, when you got a 100 people or more, you know you are going to have some personality differences. You're going to have people saying they don't want to do this or that. But overall, we have a real good working relation with our union. We listen to what they have to say, and although we do our job, we know what that job is. We have our personnel center up there we work real close with. If we're going to write a formal letter or anything like that we get both CBPO and our union involved before any problems arise. That would be another part of our uniqueness. And you'll see if you talk to the union, he'll say the same thing. I think we have a real good relationship, not only with the union but with personnel too. We've heard from other bases that this was their problem. They didn't...of course you have to word it right. Instead of "stand-by" for civilians, you can't say stand-by, it's "on-call." It aint no big deal.

Researcher: If you could please describe for me how your flight handles its infrastructure commitments. How you broke it down, how you're organized.

Infrastructure Element Manager: Well, you know the Air Force went through the whole thing of double jobs, you know, being qualified in more than one, and we thought from a safety aspect, we'd go back to shops.

Researcher: Talking about your interior and exterior folks?

Infrastructure Element Manager: We didn't mix them. There's just too much. You know, 220 volts is enough, but 16,000 will get you. We did leave our, under the old Air Force structure, exterior and power production under one shop. They're completely separate, but they work out of the same shop.

One thing we found that was difficult was to hire the expertise in that particular shop that we really need. Well, you go outside the gate to 4-county or City of Columbus and they pay 6 or 7 dollar an hour more that what our structure pays. The way that the Air Force is getting now, you know, when I came on 30 years ago, when you started working for the government you pretty well thought that here was a future and you were working for something, but that's not there now. Then we got into privatization. We one the MEO, and privatization came up, and we have absolutely no say so in that. They're going to sell these systems, we can't compete against them.

We don't do any treating, but up to about three years ago we made our own water and treated our own waste water. We tied on with the City of Columbus and they take our waste water and provide commercial water. The plants will be torn down here probably this year. The sewage plant was getting to the point where we couldn't keep up with the standards, it was just too old. The best thing was what happened.

Researcher: Did yall lose many positions when you closed down the plants?

Infrastructure Element Manager: No. It was right along the time that we were converting, or we would have had to do some more hiring.

Exterior and power production were two places we just didn't get...we were luck enough to have a couple of good guys that were civilians, but technically, especially on the generator side, all our expertise left with the military. I mean, the real good ones. Well, you can go outside the gate, and you know what you're doing around generators, you can make 30 or 40 dollars an hour. I mean, there's a demand for good ones. We're probably still a little weak down there in hat area as far as trouble shooting. We've got some bodies, but we don't have a whole lot of knowledge. Exterior we've got some expertise. We were lucky. We had a couple come in from other bases. The problem was the airfield. Some of them were Navy, so they didn't have much airfield experience. But all in all, we're in pretty good shape.

Plumbers, we've got some good ones.

Researcher: So, basically, yall are divided up into three shops under infrastructure?

Infrastructure Element Manager: Well, plumbing and fuels all work out of the same shop. Well, basically, we're transporting stuff in a pipe. That could be water, sewage, or fuel.

Researcher: Do yall provide any kind of support to the Maintenance Engineers on their long range planning?

Infrastructure Element Manager: We all sit on this ICC board. Infrastructure on the base is old, very old. We've got to fight to get our share of the money. Infrastructure Coordination Committee, we kinda make our own priority list up, and then give it up to the facilities board, and get it on that listing, because you've got to get it up there if your going to get anything.

Researcher: Do you think your infrastructure commitment performance has improved since yall have been an MEO?

Infrastructure Element Manager: Well, I don't think we've slipped any. I think we are working to a point that things are starting to improve a little. We stay fairly busy, because we have to work the night shift on the airfield. It's the only time we can get out there. We do that every other week.

Researcher: Let's see. Do you have an idea how your customers, this could be people in or out of OPS, how they feel about how yall are doing?

Infrastructure Element Manager: I think that now we have spun up, I think some of them were scared to death. I think wing leadership was part of it because they could reach over and grab a GI anytime of the night or day or what. Once we got in to it, and we've got a

beeper system where you've got 30 minutes to call back and a hour from that time to get to work. We've had some big problems come up that we were able to take care of, and see we've made a big deal out of customer comment cards. It's a quality indicator that goes to headquarters. We run 4.98, 4.99 most all of the time. We've never exceeded on an emergency. Of course command is 5 days on an urgent. We average about 2.5. Routine's about 30 days. We average about 10. That's data that's been tracked ever since we took over, and that's hard facts. Once people got over being scared about it, and realized we were serious in what we were trying to do, it took a lot of work to convince some people. I think now, the base is very well satisfied with the job we do. We make it a point we do the best we can do all the time.

Researcher: Is there anything you would want to change if had it to do all over again?

Infrastructure Element Manager: No. Well, with this personnel system changing over to computers. We've got jobs that have been up in San Antone for three months now and we still haven't gotten a list. As far as the shops and things go, I think we're organized the best way we can do it. I would like to see the personnel system where we could do a little more investigation on people. For the most part, we got people who would work, but you can't have all of them the same way.

To follow up on the unique relationship between the MEO and the union, the interviewer interviewed the union steward (Squadron Union Steward) to obtain his viewpoint on MEO development.

Researcher: What's some good advice for folks that are implementing a MEO?

Squadron Union Steward: The main thing I see, talking to other bases, and going to union conventions. The main thing that labor and management got to do is forget the past, forget their differences. They've got one thing in mind they need to do and that's win the MEO. They've got to forget all their bad stuff. We got asked a lot of questions, what if, what if, what if. The only question I'd ask back to them is "what are you going to do if you don't got a job?" That's the only thing you have to figure out what right now. All this what if stuff, what if I got to work stand-by? Well, were going to work all that out. Your main goal is to win the contract. That was mine when I was involved in it.

We would have a lot of doors slammed in our face, you know, base level. Just political games. You gotta beat the politicians, the generals—it's a political game. One thing as a union, we never really got a door slammed in our face. We could call Washington D.C., our national headquarters, and they'd open the doors back up. Lower level management that was sitting here doing the paperwork, these guys up here told them shut the hell up, you know, do it this way. Well, we didn't have to listen, we could call Washington D.C., get our people working. That was a big help on winning the MEO. That wasn't all, you got to have teamwork. But, we were able to call Washington D.C., and we'd get our national folks up there to make the phone calls, and go talk to the people up there in Washington. We were fighting for 200 jobs.

Fortunately, I worked with Lee. Lee and I go way back as kids. That's what helped us, I believe, we've gone back so long. He started out here, and he worked his way up to the position he's at. He's super. You can't ask nobody being better as a manager. We just work together.

The main problem I see from the conventions and going off with Lee to these other places, I aint going to say it's the union, and I aint going to say its management, but they aint working together. One group says we're going to do it this way, and management says this is the way were going. Well, if they're not taking any input from the union. At the same time, unions are sitting there stonewalling from the 1970's model union. They got to get away from that. Management's got to get away from that. The only goals they got to look at with MEO's is we got to win it. What can we do as a team and win this thing. That was our philosophy when we went in to it.

If you've management sitting over here, and the union sitting over here fighting one another in the MEO. Hell, you can't win it. That's the bottom line, you can't win it. Fortunately we won it. And it wasn't one person, it wasn't management that won it, it wasn't the union that won it, it was everybody.

The interview resumed with Mr. Columbus Operations Flight Chief the following morning.

Researcher: He said he wasn't sure how much yall utilized SABER. How much do yall utilize SABER?

Columbus Operations Flight Chief: SABER here has been abused I think. They use it for small projects instead of work order accomplishment. Most all of our work orders that are over 200 hours we send to SABER. They're so backed up. We just has a SABER contractor default, so OPS is in the ditch in that area. But they're working to get it straightened out.

Researcher: OK. Going back to Material Control questions. Does Material Control run your vehicle fleet?

Columbus Operations Flight Chief: No. No Kathy does that.

Researcher: Has your self-help function changed since implementation?

Columbus Operations Flight Chief: No. We have 2 people pretty much assigned full time. They manage the program. A couple of times a year we have to augment them, you know, during the spring for flowers, spring spruce up.

Researcher: Anything you perceive as unique about the way your flight meets its material control commitments?

Columbus Operations Flight Chief: I don't think so. We operate it according to the book.

Researcher: Do yall have designated buyers?

Columbus Operations Flight Chief: No. We have buyers in material control. I didn't want IMPAC cards scattered around. We had some bad experiences at first with the IMPAC cards. That's the only place we have IMPAC card is back in material control.

Researcher: Do you think your performance in meeting material control commitments has improved since MEO implementation?

Columbus Operations Flight Chief: I think we have a little tighter ship. We've got less people back there so we can see what's going on. I don't know if it's really improved. We've always been fortunate to ave really good material control folks.

Researcher: How do your customers feel about it?

Columbus Operations Flight Chief: They're happy with it.

Researcher: OK. How much of the DSW's a month would you say go to housing. You say you've got a 1000 a month you go through.

Columbus Operations Flight Chief: I've never broken that down. We say 39 percent of our workforce. I think on this report 39 percent of our work was housing. You can probably do that and come pretty close.

END OF THE INTERVIEW

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Vita

First Lieutenant Jeffrey A. Payne was born on [redacted] in Dallas, Texas. He graduated from Edward S. Marcus High School in Flower Mound, Texas in June 1992. He attended New Mexico Military Institute in Roswell, New Mexico for a year prior to entering the United States Air Force Academy in Colorado Springs, Colorado in June 1993. He graduated from the United States Air Force Academy with a Bachelor of Science Degree in Civil Engineering in May 1997.

His first assignment was at Goodfellow AFB where he worked in the 17th Civil Engineer Squadron. While there he served as Chief of Maintenance Engineering. In August 1999 he entered the Graduate of Engineering and Environmental Program, Graduate School of Engineering and Management, Air Force Institute of Technology at Wright-Patterson Air Force Base. Upon graduation, he will be assigned to the 355th Civil Engineer Squadron at Davis-Monthan AFB.

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14. ABSTRACT

This research explored how two MEO Operations Flights were structured and what type of operations management practices they were utilizing. The research involved performing site visits at the 17th Civil Engineer Squadron at Goodfellow AFB, and the 14th Civil Engineer Squadron at Columbus AFB. Data was collected through the use of the case study methodology in the form of interviews and organizational records. Data was organized to describe the two MEO's structures and management practices as well as compare the organizations to the Objective Operations Flight, the traditional Air Force Operations Flight.

The data showed that both MEO's have taken separate approaches to organizing. Analysis provides valuable insight into how these organizations are structured and conducting business. The research also provides a glimpse into how difficult it is to conduct a performance analysis on these organizations. Although this was not the main focus of the research, discrepancies in data collection, storage, and availability were discovered that should be addressed in the future.

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