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COLLEGE OF SOCIAL AND BEHAVIORAL SCIENCES

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Abstract

A Phenomenological Study Exploring Change Management in Public General Aviation

Airports

by

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M.P.A., Troy University, Alabama, 2000

B.S., Embry Riddle Aeronautical University, Florida, 1996

Dissertation in Partial Fulfillment of the Requirement for the Degree

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Abstract

Public general aviation airports and their associated operations function in an unstable and unpredictable environment. In part, this situation is caused by the effects of federalism and government regulation. To further complicate matters, the environment is influenced by external factors, such as weather, public safety threats, and other impacts beyond the control of the airport or individual managers. The academic or professional literature largely fails to address this critical gap in knowledge. This study sought to explore strategies deployed by public airport managers particularly related to organizational change and effects of federalism in dynamic and changing work environments. Accordingly, this study's theoretical framework is largely drawn from Beer & Nohria's Theory E and Theory O conceptualization of organizational change management. Data were collected and analyzed through the phenomenological research tenets of epoche, phenomenological reduction, and imaginative variation. Data were collected through in-depth interviews, surveys, and recursive interactions with 10 airport manager. The data were then separated, sorted, and coded into invariant constituent elements reflecting the common essence of the experiences of the managers. The findings indicate the managers are principally concerned with facilitating federalism and participating in intergovernmental relations, but may be inhibited from full organizational change that would be proactive in nature because of the myriad of regulatory bodies that guide aviation policymaking. The implications for positive social change stemming from this study include providing guidance on how airport managers can better manage change within their organizations thereby promoting a more enlightened aviation profession and the development of policies that encourage safety and security of the flying public.

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Chapter 1: Introduction to the Study

Introduction

Aviation organizations or airports have a unique and complex role in serving the public good (Milakovich & Gordon, 2004; Rodwell, 2003, Rodwell et al., 2008). As public entities most airports are subject to tighter budget restraints, held to higher standards of litigation and regulation, and are affected by change that comes to fruition at a quicker pace than private and nonprofit organizations (Rodwell, 2003; Rodriquez & Bijotat, 2003). The dynamic environment of aviation can further complicate aviation management because it is controlled not only by federal, state, and local governance entities, but also by a unique set of regulations, laws, statutes, and funding restraints (Boyne & Meier, 2009). Additionally, airports are among the most dynamic, potentially dangerous, and strictly regimented operations and settings today. The combination of operation and commerce create a fluctuating atmosphere requiring keen oversight from all areas. Consequently, airport management must respond to change with a great sense of urgency.

Implementing change in any public organization is a complex undertaking of which airports are no exception (Dasgupta, 2003). Change is a phenomenon occurring in and altering nearly every aspect of all organizations; many needed changes or implementations can be disrupted, delayed, or cancelled, this is particularly true of aviation organizations (Rodwell, 2003; Rodwell et al., 2010).

Aviation operations are among the most potentially dangerous environments for any living, environmental, or human-made entity (Rodwell et al., 2010; Rodwell, 2003).

Airports typically consist of flight operations, aircraft maintenance, fueling facilities and functions, air traffic control, and monitoring systems all performed by humans. Also contributing to the environment are the activities associated with economic commerce. Accordingly, the airport manager is central to effective, efficient, and safe operations (see Figure 2) of both flight-related activity and facility management.

In this research, the aviation industry was reviewed from a statistical perspective in order to identify the components that make up the aviation environment. The researcher's purpose in conducting this study was to investigate the scenario surrounding change, change implementation (specific to aviation), and possible obstacles or hindrances to successful mission accomplishment at general aviation (GA) airports in North Carolina. This study is significant in that there is a lack of literature available on managing GA facilities and the challenges they face with published solutions, studies, and similar information.

Statement of the Problem

From 2004 to 2009, there were 19 aircraft accidents originating from, occurring at or near North Carolina airports, 18 of which occurred at GA facilities, accounting for over 90% of all accidents (NCDOT, 2010). Considering that only about half (62 of 110) of the facilities in North Carolina are GA facilities, there is a disproportionate number of accidents occurring at GA facilities (NCDOT, 2010). Additionally, there are unstable and unpredictable management structures associated with managing these facilities. These facets present challenges for any manager or public entity with the responsibility of managing GA facilities and preventing these occurrences. Accordingly, there is a need

for a template of performance for all in GA, particularly managers, to base future decisions and actions on.

Leaders of public organizations are confronted with procedural and organization structure problems regularly (Starling, 2011). This is particularly true in aviation organizations, and many of them operate at a fraction of their true capability (Rodwell et al., 2010; NCDOT/A, 2010). This is coupled with the fact that changes in culture and climate are driven primarily by information technology, policy, and demographics. Public airport organizational leaders are adjusting to meet timeliness of identification, need for accuracy, and process of implementing change challenges. In this study, it was determined that few hindrances to mission accomplishment and change implementation exist in public airport organizations in North Carolina. Understanding these phenomena provides knowledge, literature, and data to assist current and future field leaders, professionals, and academics on managing the public aviation facility.

Beer and Nohria (2000) submitted that there are "two dramatically different approaches to organization change" (p. 4), approaches they refer to as Theory E and Theory O. Theory E or "economic" is driven by economic goals and might require elaborate measures to stay economically competitive. Hiring consultants, offering financial incentives to employees, intense planning, and program advances characterize this approach. Theory O, the "organizational" approach, is centered on human capacity or capability. Rather than focusing on the bottom line, strategy for change is developed and implemented by personnel. These approaches are not mutually exclusive; they intersect and overlap, particularly in performing the functions ultimately to implement

change. Beer and Nohria's (2000) theories advocate the process of change as a reactive rather than proactive approach. Thus, the aforementioned theories will be used as a backdrop for the research.

Statistical Perspective

Most people are familiar with the sound and expanse of aviation operations, as aviation is an essential function in the economy (Rodriquez & Bijotat, 2003; Rodwell et al. 2010). Add Army, Air Force, Navy, Marine, and Coast Guard facilities to international, regional, and private airports, and the result is more than 19,800 aviation facilities in the United States. The largest encompasses over 34,000 acres: Denver International Airport (DIA) in Denver, Colorado, houses facilities that accommodate hundreds of businesses, aircraft, millions of passengers, and cargo annually (Federal Aviation Administration [FAA], 2009).

Although airports are government entities, their management can take on several different forms (FAA, 2009). The National Plan of Integrated Airport Systems (NPAIS) indicates that North Carolina has over 100 civilian aviation facilities spread over approximately 135,000 acres, and covering roughly 5% of the state's land mass (see Figure 1 and Appendix A). The operation of aviation facilities contributes to the respective economies of these areas.

Fiscal year 2006 economic indicators revealed the aviation industry contributed nearly \$12 billion to North Carolina's financial system and added over 88,000 sources of employment for state citizens. Additionally, as of 2008, North Carolina airports helped transport 43 million passengers and hauled more than 1.6 billion pounds of mail and

freight (NCDOT, 2009) (see Figure 1 and Appendix A). Presenting the sheer number of facilities and their economic impact fails to reveal the true complexity of the aviation environment. This is particularly true because the environment is affected by forces originating from both outside in and inside out; these forces are related to an airport's micro and macro perspectives as well.

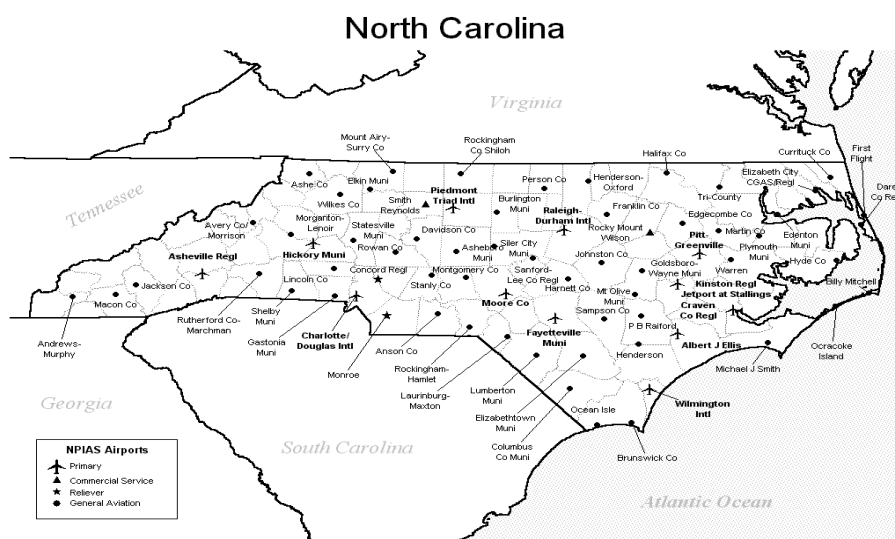


Figure 1. Dynamic aviation environment of North Carolina. From the Federal Aviation Administration (FAA; 2001–2005) NPIAS.

The impact aviation has had on society is immeasurable (Rodwell, 2003). Today, it is difficult to imagine life without aviation or its contributions to commerce, transportation, national defense, emergency management and response, and society in general. Convenience of travel, transportation of cargo and mail, and the reduction in time to meet those ends are also immeasurable. There are negative elements linked with these as well.

Aircraft accidents and incidences and the catastrophe associated with them, public noise nuisances, land use and acquisition issues that can result in eminent domain actions

against property owners are but a few of the negative effects associated with airports and air travel (Rodwell, 2003).



Figure 2. Aviation organization entity flow.

Figure 2 shows the aviation industry and outlook from the perspective of an aviation facility manager. The airport manager is marked with asterisks on both sides; above the manager are the governing bodies (policy developers) from federal, state, and local levels. Below the manager are the entities they oversee. Accordingly, as aviation facilities are government owned and run facilities, the airport manager is a bureaucrat who falls on the implementer side of the policy developer versus implementer dichotomy associated with public management and public organization management settings (Anderson, 2003; Milakovich & Gordon, 2004; Starling, 2011).

Essentially the airport manager receives guidance (policy, change, direction) from macro level policy developers (governmental entities) charged with oversight of the industry and ultimately the facility. Consequently, the manager implements policy, change, and direction by instructing those under their tutelage and subject to their oversight and management to carry out the requirements.

Macro Policy and Political Environment

Figure 2 also lists several factors in the macro environment that are controlling and affecting airports. At the top of the figure are the U.S. Department of Transportation (USDOT); FAA, North Carolina Department of Transportation, Department of Aviation (NCDOT DOA); and local government (in North Carolina, a city or county in most cases). As alluded to, similar to all public run and operated organizations (Starling, 2011; Anderson, 2003), the aviation industry or environment is subject to the policies that regulate, oversee, and ensure compliance for the good of citizenry. Under this heading, the aviation industry responds to pulling influences from several different organizations and areas of public policy and management.

Among the organizations listed in Figure 2, the federal ones are the USDOT and the FAA. These two somewhat overlap, as the USDOT is the organization whose mandate is to oversee all transportation activity, and the FAA was established to govern and regulate aviation activity. Another organization essential to aviation is the National Transportation Safety Board (NTSB); it investigates aviation accidents and incidents, depending on severity, and develops policy in concert with the FAA to inform the industry and establish safety standards. As the aviation industry encompasses many

facets, it falls under the aegis of other organizations (Diermeier, Swaab, Medvec, & Kern, 2008; Dasgupta, 2003) in the areas of commerce and security.

Continuing state oversight originates from the North Carolina Department of Transportation (NCDOT) and the state Department of Aviation (NCDOT/DOA). Local level enforcement and oversight stem from various governmental entities to include city, county, or the specific entity that oversees a particular facility. These are usually called airport authorities, and, coupled with the federal agencies, establish law and policy that must be followed and adhered to (Griffin, 2008; Dasgupta, 2003; Feldman, Khademian, Ingram, & Schneider, 2006). The organizations listed are traditional in that they have managed the aviation industry since its inception. However, contemporary political and threat presences have changed the awareness of various aspects in the industry. For example, there is an increased, intensified, and insisted cognizance of and monitoring of security in and on aviation facilities (Howard & Sawyer, 2006).

The September 11, 2001 (9/11), terrorist attacks have affected all facets of life in America and have added another dimension to airport oversight at the federal level and to airport security in general. This was accomplished by the creation of the Department of Homeland Security (DHS) and subsequently the Transportation Security Administration (TSA).

Since 9/11, there has been a prevailing argument about the conflict between civil liberties and protecting citizens and preventing terrorism (Cole & Dempsey, 2006; Leone & Anring, 2003). Several organizations were charged with that responsibility prior to 9/11: the Federal Bureau of Investigation (FBI) and the Central Intelligence Agency

(CIA). However, the shock of antiquated security practices exposed on 9/11 pressured Congress to pass sweeping legislation within two months of that crisis: the *Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism* (USA PATRIOT Act). To carry out much of the responsibility engendered by the act, Congress enabled an organization known as the Department of Homeland Security (DHS), to which it funneled most of those mandates; this is particularly true of security practices in the aviation industry (Howard & Sawyer, 2003).

Created after the USA PATRIOT Act, the Homeland Security Act of 2002 created the DHS. Considering the fervor with which the PATRIOT Act was created, the Homeland Security Act represented a steep elevation as it “created a vast new bureaucracy directed toward surveillance and security” monitoring (Cole & Dempsey, 2002, p. 196). Accordingly, DHS is charged with checking and balancing many questionable post 9/11 behaviors, and standardizing them. The DHS has not only had to balance constitutional protections against preventing terrorism, but has had a myriad of other responsibilities to negotiate. Transportation security, border protection, immigration, natural disaster and emergency management, the United States Secret Service, and Coast Guard management are among the vast and varied tasks of the DHS. Specifically to handle transportation security issues, the 107th Congress passed the Aviation and Transportation Security Act on November 19, 2001; this act established and enacted the TSA.

With the need for “increased security for airports, nuclear facilities, dams, and bridges” (Nyatepe-Coo & Zeisler-Vralsted, 2004, p. 45), the DHS delegated these

functions to the TSA. The TSA, originally under the guise of the USDOT, had three primary or general authorizations it was required to meet by December 31, 2002.

1. Provide security for all modes of transportation.
2. Recruit, assess, hire, train, and deploy security officers for 450 commercial airports from Guam to Alaska in 12 months.
3. Provide 100% screening of all checked luggage for explosives

The TSA met all mandates, and it is currently recognized as one of the largest personnel management undertakings in the history of the U.S. Government. As security consciousness spread and grew to become a chief national concern, the TSA was officially moved from the USDOT to the DHS in March of 2003. The DHS, created in November 2002, by the Homeland Security Act of 2002, inherited the colossal responsibility of unifying the nation's response to threats to the United States (TSA, 2010). The enormity of this responsibility has raised concerns about control in public organizations.

Conversely, managers of the DHS struggle to unite 22 element series and groups to provide necessary planning and oversight on a macro, federal level (U.S. General Accounting Office, 2003). Considering that the mandates of many of the organizations in the DHS is to plan for, manage, and respond to catastrophic events, questions arise about span of control, communication effectiveness, and general competence (Brook & King, 2007). These questions have led to a concern that the DHS has too much responsibility that could lead to it being inadequate or ineffective. Further, the DHS takeover of the TSA raises the question of micromanagement on behalf of the government, as “managers

consequently tend to rely too heavily on government response in the event of a disaster” (p. 29). However, since 9/11, the lower tier government levels have established homeland security offices to enhance the functions of emergency management departments (U.S. General Accounting Office, 2003). “At the local and municipal level, however, disaster planning has lagged behind efforts seen at the national level” (Federal Emergency Management Agency [FEMA], 2002). In addition to the aforementioned, security consciousness and practices have reached unprecedented levels, all of which are primary concerns to airport and aviation managers from the perspective of a macro policy implementation and other areas.

The authority for airport management ranges from its being the property of a city, county, or local government entity where they are located, yet military installations are typically considered federal property. Airport facility management forms range from advisory boards and member panels or authorities to simple, government-entity, employee structures. The complexity of the management structure does not appear to follow any particular standard. Rather, it appears to be subject to the politics of the applicable government entity (Diermeier et al., 2008).

For example, the Philadelphia International Airport (PHL) is run by a director who is an employee of the City of Philadelphia, whereas Raleigh Durham International Airport is run by an authority consisting of nine members; both are property of the cities where they reside and accommodate international air traffic. Regardless, they appear to be subject to the same level of scrutiny. Airports are further categorized by the mission or kinds of flight operations that can function there. The FAA uses various directives to

govern airports. This is largely regulated via 14 Code of Federal Regulations (CFR), Federal Aviation Regulations (FAR). Title 14, consists of five volumes, which include six chapters and 1,399 parts (see Figure 3).

Table 1

The 14 Codes of Federal Regulations (CFR)

Title	Volume	Chapter	Browse Part	Regulatory Entity
Title 14 Aeronautics and Space	1	I	1–59	Federal Aviation Administration,
	2		60–109	Department of Transportation
	3		110–199	
	4	II	200–399	Office of the Secretary, Department of Transportation (Aviation Proceedings)
		III	400–1199	Commercial Space Transportation, Federal Aviation Administration, Department of Transportation
	5	V	1200–1299	National Aeronautics and Space Administration
		VI	1300–1399	Air Transportation System Stabilization

Notwithstanding the aforementioned, airports are part of a complicated, macro level, policy-predisposed atmosphere, one of which sources are from the three levels of government. Further, airport functions are very dynamic; they are operationally centered as they encompass the action of aviation. Additionally, the facility is affected from the outside in by economics, politics, academics, legal constrains, and other contributors to the complexity (Diermeier et al., 2008; Dasgupta, 2003). As it is pressured or bound by overarching and underlying regulatory influences, other types of controls are macro

influences. Accordingly, there are micro level, routine day-to-day operations that further complicate the way the aviation industry affects the GA airport.

Micro Operational and Local Environment

Polar to macro influences are micro influences or controls as shown in Figure 2.

The micro functions are the most critical in the aviation activity and management scenario. The airport manager is operationally responsible for activities such as implementing change, air traffic control, emergency management, facility compliance, wildlife management, and functions associated with human resource management such as training and supervision. Other functions include orchestrating the activities of competing factions, aircraft maintenance, aircraft refueling, facility maintenance, ensuring fair and equitable competition, and commerce—all of which are supported by the foundation of ethics and ensuring ethical behavior (Griffin, 2008). No industry is exempt from the scrutiny of ethical implications, as generally a public venue aviation facility (airport) management and those charged with carrying out its operations are subject to levels of scrutiny associated with the public manager or bureaucrat (Ciulla, 2004; Johnson, 2005; Milakovich & Gordon, 2004). Further, as public organizations, airports must comply with the ethical standards of other professional organizations such as the American Society of Public Administration (ASPA) whose code calls for service to the public “beyond service of oneself” (ASPA, 2011).

Airport managers are the units of analysis for this research. The airports at which they are employed are public organizations or entities. Accordingly, the manager of a public venue is commonly referred to as a bureaucrat. Public managers are policy

implementers rather than policy developers and their organizations are subject to different and heightened levels of scrutiny (Milakovich & Gordon, 2004) than nonprofit and private organizational counterparts.

Micromanagement and Public Policy

Behn (1995) noted that aviation or airport facility managers, as public managers, are policy implementers, but that they are appointees, generally charged with carrying out the business of government. Behn (1995) posed three questions that have different implications for management as they surround the sub elements of micromanagement, motivation, and measurement:

1. Micromanagement: How can public managers break that micromanagement cycle—an excess of procedural rules—which prevents public agencies from producing results, which leads to more procedural rules, which leads to even more?
2. Motivation: How can public managers motivate public employees as well as those outside the formal authority of government to work energetically and intelligently towards achieving public purposes?
3. Measurement: How can public managers measure the achievements of their agencies in ways that help to increase those achievements? (p. 317)

Airport managers answer these questions similar to managers in other public organizations. This presents challenges, for they must recognize the tendencies associated with being a public organization i.e., being micromanaged. Within this environment, they must simultaneously motivate themselves and those they are

responsible for and determine means for measuring success or finding ways to prevent failures. Within this arena is the propensity for micromanagement. Being cognizant of these possibilities is of paramount relevance (Starling, 2011; Griffin, 2008; Scholtes, Joiner, & Streiber, 2003). As noted in Figure 2, several activities occur in the micro area that require the airport or facility manager to make snap decisions and take action without time for coordination with superiors. This is particularly tedious, as airports are inherently busy and complicated places. Thus, managing the operation of every facet (micro) is cumbersome: terminals, business within those terminals, and points of aircraft ingress and egress for passengers. Additionally, flying requires the dangerous functions of taking off, landing, fueling of aircraft, ground vehicle transportation concurrent with aircraft movement and operation, and the general maintenance of airport facilities and aircraft. Further, aircraft operations area consists of numerous pavements and surfaces meant for the safe and efficient transport, take off, landing and taxiing of aircraft and various types of ground vehicles. In addition to the operationally centered issues, business and commerce functions fall within the micro area as well (see Figure 3 and Appendix D).



Figure 3. Aircraft movement area (PHL).

Although airports tend to be public entities, many functions in the aviation industry are business-related, including private businesses in the public facilities, placing them on both sides of the public–private dichotomy. On the business side, they are subject to commerce laws designed to oversee the business interchanges between airlines, government entities, and customers. Similar to other professions, personnel issues include negotiations with human resource entities for dealing with employees in aviation lobbies. Many aspects contribute to the complex aviation environment. Yet another pertinent issue surrounds the micro level contributors to the aviation conglomeration: the various and varied management forms by which individual aviation facilities can be governed.

Management Forms

Vasigh & Gorjidoz (2006) discovered that airports are the cornerstone of the international commercial transport structure. Transporting people and cargo dominates air travel rather than military and other reasons for air transport. Accordingly, there is a concomitant increase in demand for aviation activity, but the increase in demand and activity leads to exponential increases in cost and finally increased exposure to liability and subsequent susceptibility to litigation. This cycle and other economic indicators are causing governments to micromanage financial bottom lines on levels never before experienced. “As a result, governments recognize that private investment capital is needed to meet airport expansion, and commercialized management is needed to meet airports' operating efficiency and customer services, and therefore governments began to look into airport privatization” (p. 321).

For clarification, the propensity for airport privatization is more prevalent outside the United States. Supporters insist privatization would infuse capital into a starving aviation commerce infrastructure (Vasigh & Gorjidoz, 2006). Those opposed argue that local governments advocate privatization because it facilitates measures for them to switch airport proceeds earmarked for developing infrastructure to different community functions or causes, a measure that can only cost operators, airlines, and passengers more. The first privatization project in the United States was Stewart Airport in Newburgh, New York, as part of the FAA five-airport pilot program when that airport was leased for 99 years to a British company, National Express, in 2000. On a positive note, the passenger count increased by 33%, which provided aviation services for over 5 years.

Other applications for privatization included New Orleans Lakefront Airport for a long-term lease to American Airport Corporation, submitted to the FAA in 2002; however, as of June 27, 2005, the application has lacked required information for FAA final review (Bennett, 2005). Another application in 2005 was for FAA approval for construction of Abraham Lincoln National Airport in Peotone, Illinois. The South Suburban Airport Commission held a competition and selected a team led by LVOR and SNC-Lavalin to finance, build, and operate the airport as a public-private partnership in which the government owns the land and the private contractor owns and operates the facilities (Sander, 2004).

Vasigh and Haririan (2003) presented figures that revealed positive indicators for advocating privatizing airports. Vasigh and Gorjidoz (2006) concluded that airport operators managing more than one airport would enjoy a higher level of total factor productivity (TFP) than those that operate only one airport. Operators find this improvement through possible economies of scale in several areas that contribute to overall productivity of airports. This follows the reasoning of basic economics. Privatizing airport management can be a viable option for governments. Not mentioned in the privatization research were GA facilities, which are a significant oversight, as GA facilities encompass a proportionate share of aviation industry activities and facilities and normally accommodate specific types of aviation operations. The FAA uses these functions to categorize facilities further, which is the key to determining applicable management levels and forms.

The major types of aviation operations are either a form or combination of commuter or GA, cargo, major passenger carrier or passenger operation, and military. Airports, on the other hand, are classified by the operation they are most closely associated with accommodating. The FAA (2008b) classifies airports by role they perform and noted:

Role is one of four FAA airport categories, based on the 2007–2011 National Plan of Integrated Airport Systems (NPIAS) report updated for calendar year 2006 enplanements.

- PR: Commercial Service—Primarily publicly owned, have scheduled passenger service, and have more than 10,000 passenger boardings each year.
- CS: Commercial Service—Nonprimary, publicly owned airports that receive scheduled passenger service and have at least 2,500 passenger boardings each year.
- RL: Reliever airports—designated by the FAA to relieve congestion at a large commercial service airport and to provide more GA access to the overall community.
- GA: General aviation airports, the largest single group of airports in the U.S. airport system.

Essentially, airports are primary, nonprimary commercial service, reliever, or GA. As noted by the FAA (2008b), GA airports encompass the most facilities by volume in the United States are the focus of this study. General aviation refers not only to an operation but also to a facility type, for this research GA operations include commuters

and are associated with private industry and corporate jets chartered (hired) to handle specific organizations. Other general operations include cargo operations like UPS, Federal Express, and DHL, chartered with moving packages and mail. General aviation stops short of commercial aviation.

Commercial aviation encompasses operations associated with major airlines and are essentially chartered with transporting passengers. Their operation can be as simple as a two-city daily commute or as complicated as an international city rotation. Other types of aviation operations include the complicated military and governmental areas of aviation that consist of aircraft designed to do all of the operations in the preceding paragraph. Additionally, they are designed to function as weapons of mass destruction as needed by those charged with their control. Still other aviation operations include medical, rescue, air tours, entertainment, and training. Other pertinent issues surrounding aviation facilities are their physical characteristics, as size, location, and other topographic distinctions determine the type of aircraft and operations airports can accommodate. Figure 4 illustrates the runway safety area.



Figure 4. The length and width of a runway determines the types of aircraft it can accommodate.

The NPIAS identifies more than 3,400 existing and proposed airports that are significant to national air transportation and thus eligible to receive federal grants under the Airport Improvement Program (AIP). It also includes estimates of the amount of AIP money needed to fund infrastructure development projects that will bring these airports up to current design standards and add capacity to congested airports. The FAA is required to provide Congress with a 5-year estimate of AIP-eligible development every 2 years (FAA, 1991). Accordingly, airports are either certified or not through this process. Federal grants and funding are essential to survival for many airports. Also significant is if airports receive AIP funding and other grant benefits, they must maintain their facilities in a manner conducive to nonexclusive, fair, and competitive commerce opportunities; this is particularly true of GA facilities. Appendix B list NPIAS certificated GA airports throughout North Carolina (FAA, 1991; NCDOT, 2010; Rodwell, 2003; Rodriquez & Bijotat, 2003).

North Carolina aviation issues include but are not limited to citizen concerns surrounding noise and safety, the facilities' contribution to economic growth and development, compliance with federal, state, and local policies; and maintaining its contributions to the survival of local communities through employment, education, tax revenues, and tourism. Other areas of concern are the management of wildlife on and around facilities. Environmental issues that are more contemporary address pollution, hazardous material disposition and disposal, storm water runoff and drainage of hazardous materials (e.g., aviation fuel, aircraft deicing fluid, oil, pesticides) into various

water and sewage systems surrounding the facilities. Finally, depending on the area, location, and political climate, airport expansion is a real and constant concern.

Courts are inundated with cases involving airport governing bodies and their needing to exercise eminent domain action and measures to commandeer property to bring it in compliance with applicable FAA safety standards. Examples include the need to remove trees or other tall structures on surrounding property that interfere with line of sight or serve as obstructions to aircraft entering and exiting the airspace.

Accordingly, citizen groups, committees, nonprofits, elected officials, and others attempt to control the activity in and out of these facilities by lobbying and developing ordinances, laws, and statutes in an attempt to mitigate or eliminate perceived threats, and enhance positive aspects associated with them. The dilemma is in some cases, the local ordinances, statutes, rules, and regulations can thwart or circumvent the intent of higher-level government laws and regulation that should hold precedence. This essentially fosters and contributes to a less than safe environment in some cases. Although this situation might be germane or applicable to the aviation industry, facilities, and environment in general, this research study focused on only GA facilities in North Carolina.

Airports literally serve as the driveway and garage for the most sophisticated transportation system on earth. Airways are governed by air traffic controllers using highly technical information technology, the airways are documented using aeronautical charts that list and identify them in a fashion similar to interstate, state, and local roadways (USDOT, 2010; FAA, 2010). Airspace charting and identification is a

complicated system consisting of nuances and intricacies that fall outside the scope of this work.

Background of the Study

Many researchers have examined the concept of change in public organizations. Seo, Putnam, and Bartunek (2004) identified dualities and tensions of planned change that are applicable over a range of first, second, and third generations of organizations involved in the development of planned change. However, understanding the phenomena of change or factors hindering the effectiveness of management is limited. This is particularly true of aviation facility management. The facility is a public organization; therefore, it is subject to the intense public scrutiny afforded the normal public organization (Dasgupta, 2003; Milakovich & Gordon, 2004; Starling, 2011). Other aspects of managing aviation organizations include maintaining safety and security as well as managing day-to-day responsibilities associated with an aviation facility today. Managers must oversee the implementation of change (policy, procedures, IT) at a rapid pace in a dangerous and dynamic environment. However, the process of implementation and enforcing applicable statutes, rules, laws, and the like appear at times to be deficient (Milakovich & Gordon, 2004).

Conceptual Framework

This is a phenomenological study on 10 airports managers from the state of North Carolina; it includes a pilot study of one manager that proceeded prior to the remainder of the research. Conceptual framework for this study was derived from prior studies in the aviation industry. Sharp (1989) conducted a study on the efficacy of African American

students in aviation science programs in the state of Florida. Additionally, Oderman (2004) determined the need for ethics in aviation curriculums. Although Sharp (1989) and Oderman's (2004) work is more academically centered, more aviation profession specific research was conducted by Rankin (2008) and Carmichael, Kutz, and Brown (2003); additionally, Rodriquez and Bijotat (2003) conducted a study to determine whether performance measurement, strategic planning, and performance-based budgeting were taking place at local and regional airports in Illinois.

Rankin (2008) conducted a study on runway incursions. Rankin's (2008) research is on a specific phenomena occurring in the operational component of aviation, expounded on more in-depth in chapter 2. Carmichael et al.'s (2003) research is centered on a geographical area (State of Oklahoma) similar to this work (State of North Carolina). Authors covered various areas in the industry; however, none of the authors specifically addressed general aviation facilities or the managers of them (particularly in the state of North Carolina). In this study, the conceptual framework of Sharp (1989), Oderman (2004), Rankin (2008), Carmichael et al. (2003), and Rodriquez and Bijotat (2003), constitute the conceptual foundation for this work.

Research Questions

1. What are the major obstacles to change in North Carolina airport organizations?
2. What processes influence implementation of operational policy at North Carolina airports?

3. How do North Carolina airports respond to demands for change, whether from government or private sources?
4. What primary factors drive change in North Carolina airports you are associated with?

Subquestions

1. How does information technology affect airport management?
2. How do changing demographics affect change in airports management?
3. How does policy development force change in airports?

Nature of the Study

A phenomenological approach was used to conduct in-depth interviews with airport managers or directors of GA facilities in North Carolina. This study included a pilot study as well. This approach is appropriate, as McNabb (2002) noted the phenomenological approach to qualitative research has its roots in such traditions of philosophy as existentialism and the study of the meaning of language and other symbolic behaviors. In public administration research, the phenomenological approach is used to establish meanings that social actors apply to events, works, symbols, and the like. Further, Babbie (2004) acknowledged that it might be applicable to determine a sample based on the researcher's experience, knowledge of idiosyncrasies, and characteristics of the population being studied; this type of sampling is referred to as "purposive or judgmental" (p. 183). Accordingly, the researcher employed in this study a qualitative research method that consisted of in-depth interviewing of a purposive sample of GA facility managers in North Carolina.

The questions asked were designed to investigate and account for potential biases and trustworthiness of the participants. They were designed to probe topics thoroughly to obtain objective responses and unbiased points of view from participants. This part of the project proceeded as follows: person-to-person interviews were conducted where possible and other processes were via telephone, e-mail communication, and questionnaire. The research methodology and research/interview questions are listed in chapter 3.

Scope and Limitations of the Study

The study performed was in the traditions and tenants of qualitative phenomenology to understand the essence and meaning of managing the general aviation facility in the state of North Carolina as perceived by the managers of North Carolina general aviation airports. The participants were the managers of these facilities, they were selected because of their firsthand knowledge of the phenomena studied, managing the general aviation facility. Other personnel were left out of the study in the interest of saving time and getting the perspective of the managers only. Limitations of the study are particular to the scope of the study as only managers of these facilities are interviewed or studied, only their perspectives are used as the findings presented in chapters 4 and 5. The limitations of this study are further expounded on in chapter 5, there more recommendations are made to address the limitations and recommendations for future action and research are discussed.

Rationale for and Significance of the Study

Change in organizations and the management of aviation facilities would appear to be top priorities for public leaders, be they elected or appointed. Implementing mandated policies from superior organizations and replacing antiquated equipment and facilities (change) are of particular interest. North Carolina, notwithstanding its rich aviation history, has over 100 aviation facilities (author, year). Of these, 62 are GA while others are military, private, or primary international (NCDOT, 2009). Airports are typically subsidized. In most cases, this is via the FAA through a block grant to the North Carolina Department of Aviation, a subsidiary of the North Carolina Department of Transportation. To remain eligible for funding, these facilities must comply with applicable federal aviation regulations (FARs). The primary purpose of this study is to determine whether requirements for change in airports hinder their ability to implement change effectively, and if so, to determine whether this might lead to an unsafe environment. The information gathered from this study will offer insight and enlightenment to engender PSC. This will be achieved by instilling positive consciousness of the aviation industry.

Definitions of Terms

The following are terms and phrases as they are used in this paper:

Accident. An accident is an occurrence associated with the operation of an aircraft that takes place when a person boards an aircraft with the intention of flight, all persons have disembarked, and in which any person suffers death or serious injury or the aircraft receives substantial damage (Rodwell, 2003).

Airport master plan. According to FAA Advisory Circular 150/5070-6B, an airport master plan describes the plan for long-term development of an airport. The master plan displays this concept graphically and documents the data and logic upon which the plan is based (Rodwell, 2003). The goal of a master plan is to provide guidelines for airport development that will satisfy aviation demand in a financially feasible manner, while resolving the aviation, environmental, and socioeconomic issues existing in a community (FAA Advisory Circular 150/5070-6B, Change: 1). The FAA recommends that a master plan be completed or updated at least every 5 years or when an airport experiences unexpected rapid growth in activity (Rodwell, 2003). The airport master plan process is guided by the FAA and ultimately results in projections of future growth and an airport layout plan (ALP; Rodwell, 2003). An ALP is needed because all development at federally obligated airports must be done in accordance with an FAA-approved ALP (Rodwell, 2003).

Airport layout plan report. This type of report is based on current physical conditions at an airport that recommends improvement projects (Rodwell, 2003). The purpose of the ALP is to define the current short- and long-term needs of the airport (Rodwell, 2003). It provides a schedule for airport improvements that will help maintain the airport category minimum standards and its projected demands (Rodwell, 2003). The design of the airport should be guided by the FAA Advisory Circular 150/5300-13, Change: 7. Airports must have improvements approved by the FAA by submitting FAA Form 7480-1 “Notice of Landing Area Proposal.” Completed improvements must be reflected on the ALP. Per federal grant assurance No. 29, airport owners shall keep the

ALP up to date at all times. Generally, ALPs are updated every 2–5 years depending on the type and size of the airport.

Incident. An incident is an occurrence other than an accident that affects or could affect safety of operations (Rodwell, 2003). Runway incursion: Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft (Rodwell, 2003).

Aeronautics. Aeronautics is “Transportation by aircraft; the operation, construction, repair, or maintenance of aircraft, aircraft power plants and accessories, including the repair, packing, and maintenance of parachutes; the design, establishment, construction, extension, operation, improvement, repair, or maintenance of airports, restricted landing areas, or other air navigation facilities, and air instruction” (Rodwell, 2003, p. 249).

Aeronautics instructor. This person is anyone who teaches aeronautics for pay, either in flying or ground subjects, or both, usually at an airport (Rodwell, 2003).

Aircraft. An aircraft is any contrivance now known, or hereafter invented, used or designed for navigation of or flight in the air (Rodwell, 2003).

Air instruction. This instruction is teaching aeronautical information at any air school or flying club (Rodwell, 2003).

Airman. This person is in command of aircraft while under way and, excepting those employed outside the United States, anyone employed by a manufacturer of aircraft or aircraft parts, an inspector or mechanic, one who is directly in charge of the inspection,

maintenance, overhauling, or repair of aircraft engines, propellers, or appliances; and anyone who serves as an aircraft dispatcher or air traffic control (ATC) tower operator (FAA Advisory Circular 150/5070-6B, p. 42).

Air navigation. This type of navigation is the operation or navigation of aircraft in the air (Rodwell, 2003).

Air navigation facility. This facility is an airport (Rodwell, 2003).

Airport hazard. Such a hazard is any structure, object of natural growth, or use of land, which obstructs the air space required for the flight of aircraft in landing or taking off at any airport or restricted landing area or is otherwise hazardous to such landing or taking off (Rodwell, 2003).

Airport protection privileges. These privileges are easements through, or other interests in, air space over land or water, interests in airport hazards outside the boundaries of airports or restricted landing areas, and other protection privileges, the acquisition or control of which is necessary to insure safe approaches to the landing areas of airports and restricted landing areas and the safe and efficient operation thereof (FAA Advisory Circular 150/5070-6B, p. 25).

Air school. This school is any commercial facility that gives instruction in aeronautics, either in flying or ground subjects, or both (Rodwell, 2003).

Civil aircraft. This aircraft is other than public aircraft (Rodwell, 2003).

Flying club. This club is an organization that owns one or more aircraft for the purpose of instruction or pleasure, or both (Rodwell, 2003).

Navigable air space. Such air space is above the minimum altitudes of flight-prescribed laws (Rodwell, 2003).

Public aircraft. This aircraft is used by any government (Rodwell, 2003).

Public policy. This is the fundamental policy on which laws rest, especially policy not enunciated in specific rules (Rodwell, 2003).

Restricted area. Such an area is land, water, or both that are used or made available for the landing and takeoff of aircraft (Rodwell, 2003).

State airway. This is a route in the navigable air space over and above lands or water designated as a route suitable for air navigation (Rodwell, 2003).

Summary and Overview

The aviation industry is complex and dynamic and is affected by many influences. Most facilities are publicly owned, operated, subsidized, and managed by government entities. Simultaneously, they are used by private industry and commerce. The aviation industry is subject to forces from several different sources. As public entities, facilities must deal with citizen concerns, public hearings, and policy development micromanagement and operate in a dangerous atmosphere. These entities, influences, and activities originate, exist, permeate, and proliferate from both macro and micro perspectives. Although the information applies to the aviation industry in general, this study was focused on GA facilities in North Carolina.

The literature review in chapter 2 includes information on the subject of managing change, its definitions, and the application to organizations in general as well as public organizations. Because no research exists on managing GA facilities in North Carolina

aviation industry topics and research are addressed in the literature review. Some of those topics include safety, education, air traffic control, and aircraft maintenance.

Chapter 3 focuses on the research method to be used in the study. Chapter 4 focuses on data analysis and findings; chapter 5 offers recommendations for further study.

Chapter 2: Literature Review

Introduction

The chapter offers a review of literature on aviation topics as well as change management. Aviation culture looks into statutes, laws, and policies about the aviation facility as a public organization and its governing body. The aviation-specific literature presented here include information on change management in aviation regarding safety, safety education, aircraft maintenance, ATC, education, training, flight activity, environmental concerns, emergency management, facility management, security, and wildlife hazard management. Other areas of concern are noise agitations and aircraft fueling operations and activities associated with it.

The purpose of this review is to demonstrate how organizations and leaders tend to prepare personnel for change and garner their cooperation for the positive and successful ends of change implementation. It also presents a view of the aviation industry evolution and functioning environment as it relates to change in several areas: it facilitates description of how aviation has affected society in general. Researchers who have studied the adoption of aviation provide insight into what contributes to citizens' choices and decisions regarding aviation; these phenomena include economics, transportation, education, and public management. Literature on common public organizational management and aviation facility governance includes descriptions on how political bodies can influence organizational change by falling within the parameters established by them.

Contemporary aviation literature covers areas such as pilot perceptions of aircraft technological developments (Mitchell, Vermeulen, & Naidoo, 2009), flight level conflict experiences from air traffic controllers (Sporer-Feller, Fluhr, Haider, Kapper, & Horst, 2009) and framework for analyzing aircraft wake turbulence (Boyd, Bass, McDaniel, & Bowles, 2009). Other subjects surround ethical behaviors of aviators (Diels, Northam, & Peacock, 2009), fiber optic implementation in avionics (Hannon, 2009), and linking pathways of a safety climate in aircraft maintenance (Fogarty & Buikstra, 2008).

Additional industry subjects are on safety-related issues: lighter than air aircraft accidents (Jarvis & Harris, 2008), aircraft runway incursions (Rankin, 2008; FAA, 2002a, 2004 & 2008a), alarms in aircraft cockpits to assist pilots in making decisions (Bustamante, 2008), locus of control (Stewart, 2008), and collegiate flight planning (Beaudin-Seiler, Beaubien, & Seiler, 2008).

Maintaining safety in practices is the foundation of the aviation industry; those practices filter into managing aircraft maintenance data in manuals (Rogers, Hamblin, & Chaparro, 2008), studying the effects of fatigue in flight training instructors (McDale & Ma, 2008), cockpit alarms (Newlin, Bustamante, & Bliss, 2008), stress in ballooning (DeVoogt, 2008), fundamentals of instruction in flight training related to cognitive theory and behavior (Hoover, 2008), and task management on pilot performance (Hoover, 2008). Understanding demographic differences in the three components of (a) air travel stress (Bricker, 2008); (b) situational awareness (Hubbard, 2008); (c) personality screenings in determining compatibility in ATC personnel (King, Schroeder, Manning, Retzlaff, & Williams, 2008); (d) helicopter instrumentation (Curry, Estrada, Grandizio, &

Erickson, 2008); and (e) pilot cockpit make up (Casner, 2008; FAA, 2001) are also contemporary research topics contributing to safety. Finally, literature on emergency management scenarios (Burian, 2008; FAA, 2008), strategic planning impacts in ATC (Bartlett, Vowels, Raacke, & Shanteau, 2008), the significance of demographics in airport driver training schools (Rankin, 2008), and pilot perceptions on using a ballistic parachute system (McMahon, 2008) are also discussed.

The literature provides information on change as well as organizational structure, culture, leadership, and politics (Chidurala, Kaminskas, Sridhar, & Tsfati, 2001; Office of Management and Budget [OMB], 2003). Other possible obstacles to change are addressed to include communication (Fountain, 2001; Lau, Tse, & Zhou, 2001), and prioritizing and aligning change initiatives in accordance with the expectations of employees, which are their values, goals, and motivational sources (Seo et al., 2004). An assumption is that the process of change, its implementation, and inherent obstacles are not specific to any particular type of organization.

Airports as public organizations share interests and concerns; however, they are engrossed with managing issues of maintaining security and safety of facilities and operations. In fact, a constant, current, real-world scenario the United States is confronted with is terrorist threats via air transportation. Change in organizations (in general) deals with a large spectrum of considerations that can augment or derail initiatives. Some of these “dualities and tensions” (Seo et al., 2004, p. 73) are considered as opposite poles that serve as obstacles in the overall process: organizational structure,

culture, leadership, politics, and employee concerns, both individually and collectively. The strategy for presenting this review is presented next.

Literature Review Search Strategy

This chapter reviews the literature about change in public organizations and pertinent issues in the aviation industry. It is approached from two perspectives: it reviews research and literature as it relates to change in public organizations and evaluates literature pertaining to the aviation industry in general. These topics were selected because of a lack, of aviation connected literature as it relates to change and general aviation facilities. However, there is sufficient literature on aviation industry topics. Accordingly, the strategy is to marry literature on change management to readiness for change in aviation, which will serve as a foundation and transition to the aviation-specific literature. Additionally, various articles in the literature review are referred to in the findings presented in chapters 4 and 5. The sources of the literature presented here are academic journals, peer evaluated articles and aviation specific professional data bases.

Understanding Change

Approaches to planned organizational change have developed and existed since the 1950s. Kreitner and Kinicki (2008) determined three, relatively contemporary types of change: Lewin's (1947) model, systems model (Kreitner and Kinicki (2008)), and change through organization development (Kreitner and Kinicki (2008)). Supplanting the change types are what Kreitner and Kinicki (2008) referred to as "generic typology of change" (p. 536).

Three types of change fall along a continuum consisting of complexity, cost, and uncertainty; another phenomenon falling along this continuum is potential for resistance to change. Because the typology shares and consists of all types of change—it incorporates both administrative and technological changes—changes are adaptive, innovative, or radically adaptive (Kreitner and Kinicki (2008). Adaptive change is less intrusive, as it follows a recognizable course of action; innovative change introduces a new practice or procedure to the organization; finally, radically innovative change introduces a new practice, procedure, or policy to not only the organization but to the industry as well (Kreitner and Kinicki (2008). An example of change in the aviation industry is the revamped and increased security practices after 9/11 (Howard & Sawyer, 2006). Relating these typologies to the continuum covering resistance, cost, complexity, and uncertainty, adaptive change is low, and radically innovative change sits high on the continuum related to cost factors listed above (Kreitner & Kinicki, 2008). Understanding change makes it possible to define and identify the various types of change and relate them to aviation.

Lewin's (1947) change model consists of three steps: the first is to motivate or garner support for change and is referred to as "unfreezing," or methodically chipping away at current procedures as a precursor to implementing. Implementing is putting the change in place, establishing the procedure via applicable measures such as training, service delivery, performance—and in the case of some public organizations—micromanagement or intense oversight of the process (Milakovich & Gordon, 2004; Starling, 2011). After unfreezing and changing, the final step in Lewin's process is

“refreezing,” where making the change policy includes rewriting procedures, rules and regulations, manuals, and checklists, all of which are common in aviation. Refreezing solidifies and confirms the change as law and policy, and is where all involved are held accountable for the process after implementation, a process normally accomplished via positive or negative reinforcement (Griffin, 2008; Scholtes et al., 2003). Unfreezing, changing, and refreezing are relatively simple compared to endeavors that are more sophisticated.

The premise of the systems change model is that any change, regardless of size, engenders a ripple effect on the organization. The components of the systems model are inputs, strategic plans, target elements, and outputs (Kreitner and Kinicki (2008). Inputs stem from the organization’s mission statement, vision, and internal and external forces; strategic plans are relatively self- explanatory as they lay out the organization’s goals and desired outcomes (Kreitner and Kinicki, 2008). Target elements of change are more specific as they pinpoint which facet, entity, or process the change is to be directed towards; accordingly, targeted elements range from organizational arrangements, people, methods, and social factors. Outputs or results are specific goals of the mission or vision; they are realized either at the organizational, departmental, or individual levels (Kreitner & Kinicki, 2008). Researchers have revealed that change goals are not always met exclusively or congruently at these levels (Balogun, 2006; Seo et al., 2004).

Using eight typical oversights as the reason senior managers typically fail at change, Kotter (2008) established countermeasures to change approach:

- Establish a sense of urgency.

- Create a guiding coalition.
- Develop a vision and strategy.
- Communicate the change vision.
- Empower broad-based action.
- Generate short-term wins
- Consolidate gains to produce more change.
- Anchor new approaches in the culture (p. 74).

All of these measures are meant to counter what Kotter (2008) identified as failures: failing to establish a sense of urgency, create a powerful coalition, establish a vision, effectively communicate, remove obstacles, systematically plan, declaring victory too soon; and failure to anchor the changes into the organization's culture (p. 74). Kotter's eight steps are an established sequential process somewhat analogous to incrementalism (Milakovich & Gordon, 2004). This process can work in an environment where change can be planned, is proactive rather than reactive, and is not time sensitive. In the aviation environment, often change is not planned, is reactionary, and is done out of necessity with little to no notice (Rodwell, 2003). Other change techniques are in contrast to those purported by Lewin (1947) and Kotter (2008); they are not detained, regimented, and sequential; rather, they are centered on the continuous process of organizational development (OD).

OD refers to deliberate endeavors directed toward a human resource coherent, cohesive, and collaborative professional and personal existence. Occurring within the organization, it is a desired state achieved via enlisting "behavioral science principles,

methods and theories adapted from the fields of psychology, sociology, education and management” (Kreitner & Kinicki, 2008, p. 543). Change through OD is a far more sophisticated model than those previously mentioned. Based on the principles and methods used, OD is a continuously involved process. Likening change via OD to the aviation industry and facility management is simply acknowledging there are constant influences, occurrences, and the like reframing aviation and the GA facility, specifically 9/11 and the formation of the TSA (TSA, 2010; Rankin, 2008).

Coexistent with the change methods are the mannerisms, practices, and assumptions associated with each. There are also dualities and tensions to change declared by Seo et al. (2004). Among them are action research, sensitivity training, team building, sociotechnical systems, and quality of work life, organizational transformation, large group interventions, learning organizations, and appreciative inquiry Seo et al. (2004). These categories or characteristics associated with change fall along a continuum of three generations from historical to modern perspectives.

Three generations span from traditional to contemporary approaches to change in organizations. First generation approaches include action research, sensitivity training, team building, sociotechnical systems, and quality of life work (Kreitner and Kinicki (2008). There are two second-generation approaches: organizational transformation, and large-scale interventions. Third generation is more modern or contemporary and includes learning organizations and appreciative inquiry. Essentially, Seo et al. (2004) subsumed these approaches under the overarching concept of OD, similar to the summations of Kreitner and Kinicki (2008). Conclusively, OD is an ongoing process subject to the

whims of change. Change is instigated, initiated, and fed by many factors; in the aviation industry, similar to others, those sources are both internal and external.

Change Process and Sources

Beer and Nohria (2000) discussed change as it applies to business or private organizations and determined that change is an intentional venture that leaders of organizations undertake; this mindset is applicable to public (airports) organizations as well. Beer and Nohria's (2000) approaches are referred to as Theory E and Theory O. Theory E, "economic," is driven by economic goals of the organization when it takes elaborate measures to stay economically competitive (Beer and Nohria, 2000). Hiring consultants, offering financial incentives to employees, intense planning, and programmatic advances characterize this approach (Beer and Nohria, 2000). On the other hand, Theory O takes an "organizational" approach and is centered on human capacity or capability (Beer & Nohria, 2000). Rather than focusing on the bottom line, a strategy for change is developed and implemented by personnel (Beer and Nohria (2004). These approaches are not mutually exclusive; they intersect and overlap, particularly in performing the functions ultimately to implement change. Beer and Nohria's theories advocate the process of change as a reactive rather than proactive approach. Beer and Nohria's (2000) idea that "academics in the field of organizational behavior recommend high employee involvement to motivate change and develop a high-commitment culture" (p. 1), change is a reactive rather than proactive process. The willingness to accept change is a part of culture: one that needs to be established, nurtured, and maintained. The position espoused by Beer and Nohria (2000) is that leadership is constantly seeking

ways to improve, inject, and implement better practices, procedures, and postures to achieve change. This mindset is similar to the tenets of change surrounding OD (Seo et al., 2004).

Stedman (1990) elaborated on change and associated the ability to adapt to change quickly with maturity. According to Stedman (1990), “We all experience change, whether it be physical, emotional, spiritual, mental, relational, or vocational. Immature people resist change; it makes them nervous. But the mark of maturity is to adapt to change because it is inevitable” (p. 51). This view is more focused on the individual rather than on an organization, is attitudinal rather than procedural, and views change as an ongoing phenomenon rather than an intentional undertaking. Since organizations are run by people (Kreitner & Kinicki, 2008; Milakovich & Gordon, 2004), they must be viewed, studied, and approached from both individual and organizational perspectives, as this research does by interviewing the managers of airport facilities.

Less contemporary information on the subject of change in public organizations surrounds the revamping, reinventing, and modernizing of government (Behn, 1995; Golembiewski, 1985). Within that realm, new management practices such as total quality management (TQM) and contagion were change agents of the day (Kelman, 2005).

Public organizations are pulled by the influences of private organizations as they pick up their innovations, best practices, fads, and trends (Burriss et al., 2009; Stich & Eagle, 2005). The mere environment in which public organizations exist and function contributes to their being dragged “kicking and screaming long after the reasonableness

of change in question has been obvious to almost all” approach to change (Golembiewski, 1985, p. 1). This mindset, coupled with contemporary philosophies, lends credence to the quagmire of influences on the aviation industry as well. However, it is in contrast to Beer and Nohria’s (2000) change processes.

Essentially, airports change because they have to change even if they do not want to. This is primarily because of budget constraints and intense oversight (Milakovich & Gordon, 2004; Rodriquez & Bijotat, 2003). Airports in North Carolina are subject to rules and regulation regarding meetings, conducting business, and making decisions, and there are varying techniques for and sources of change in the public organization. One requirement is that there must be public notice of all meetings (see Appendix E).

The strict guidelines and procedures listed in Appendix E support the assertion that change can be slow. Not only are the meetings regulated, but there are also quorum standards that must be adhered to as well. Conducting meetings is merely the venue through which public organizations operate. The North Carolina General Statutes (NCGS) are one example of a source of change and possible process for doing so.

Readiness for Change/Aviation Compatibility

Most researchers who have studied public organizations regarding change have focused on implementation of various policy developments and analyzing their effectiveness or lack thereof. As the realm and range of public organizations is vast and varied, policy initiatives stem from medicine, education, security, military, and aviation information.

Essentially, public organizations are a result of political action(s) or mandates that are to be monitored and managed in a transparent fashion. Public organizations are often born out of necessity, resulting from a scenario, event, or need for government oversight of a process, industry or the like (Milakovich & Gordon, 2004; Starling, 2011). Within the aviation industry, the FAA fits the description as its mission is to provide “the safest most efficient aerospace system in the world” (FAA, 2010, p. 1).

Pertinent to aviation is the fact that TSA emerged following the September 11, 2001, attacks, for this was the event that forced legislators into action that resulted in its establishment. The Aviation and Transportation Security Act (2001) established the TSA, and the Aviation and Transportation Security Act serves and functions as its enabling legislation. Acts or laws are not necessary to create a public organization; however, enabling legislation is required (Milakovich & Gordon, 2004; State of North Carolina (1991); Starling, 2011).

A public organization’s enabling legislation is essentially the bloodline through which it functions. It among other things establishes its tenure of existence, inherent authority, responsibility, and available funding sources. This atmosphere creates a paradoxical situation for a public organization to operate within; a case in point is the TSA, formed after one of the most intense events in American history. Accordingly, incumbent politicians paid close attention to the USDOT because then the “TSA’s still unbalanced. It continues to focus almost exclusively on one mode of transportation” (Rogers, 2006, p. 2). Public hearings as late as February 2006 were used as venues to discuss and complain about TSA’s \$6.3 billion budget request for 2007. Rogers (2006)

noted that “TSA [is] still inefficient. It continues to be wholly dependent on airport screeners and dated technologies” (p. 10). A key figure on the issues, Rogers has chastised and sited the agency for disregarding congressional direction and not adhering to statutory deadlines. Rogers (2006) stated, “A flat budget may not be sufficient” (p. 10). The high visibility focused on the TSA has led to two legislative proposals whose goals are to minimize the perceived problem. Currently, there are no plans to dismantle the TSA. However, attempts will be made to change radically the way the agency functions. Additional ways are being sought to both “streamline costly and labor-intensive aviation passenger and baggage screening” (Dickey, 2006, p. 3), as they have “kept TSA from spending more than about 0.5% of its annual allotment on transit, rail, port and highway security” (Dickey, 2006, p. 3). Budgetary issues continue to plague the economy in general as well as the TSA.

The discussion of the TSA illustrates the micromanagement public organizations are subject to. Similar scenarios lend themselves to the paradoxical situation that is the political and administrative dichotomy relationship peculiar to the aviation industry. Terms such as “watchdog,” “intense oversight,” and “micromanagement” (Behn, 1995, p. 170) were born out of this correlation. Interestingly, the TSA functions as a middle entity charged with oversight of the transportation industry in general while simultaneously being subject to similar micromanagement. Understanding this scenario and others similar to it offers a clear view of the environment in which public organizations function and how change and its implementation is an ongoing, prevalent phenomenon worth studying. The scenario behind the FAA and TSA are specifically

applicable to aviation; however, equally significant is determining the reasons, drivers, and sources behind change in organizations in general and relating them to aviation.

Anderson and White (2003) as well as Fernandez and Pitts (2007) noted that public organizations are under constant and persistent pressure to change. This is in response to constant fluxes in their political, economic, sociocultural technological environments. However, Anderson and White (2003) analyzed change by visiting the phenomenon of psychoanalysis, arguing that it should be used to support organizational membership at varying levels for change development and implementation. Anderson and White (2003) also discussed “psychoanalysis as a means of bringing about increased personal, group, and organizational performance in public organizations (p. 190) is sparingly visited. Accordingly, they purported that psychoanalysis could be employed as a way to handle intuitive commotion of employees of public organizations when change is on the horizon. They discovered that psychoanalysis failed to submit specific recommendations for what they term as a “disarticulated state” or leading to ultimately not discovering a solution to the problem of effective change implementation. In a positive sense, psychoanalysis contributes to the comprehension of public organizational behavior by measuring performance and relating that performance to “psychic disruption,” a phenomenon experienced by employees due to change initiation or implementation relevant to aviation.

Psychoanalysis is not without flaws. Anderson and White (2003) noted its limitations: one is that it is expensive and time consuming and that the pressure to change from political, economic sociocultural and technological factions might contribute to

individual employee resistance to change. Overwhelming personnel with change initiatives and perhaps not including them in the process of developing change is a major contributor to failed implementation attempts. Lines (2004) similarly argued that personnel participation could positively influence change in public organizations.

Employees can thrive in a constantly changing environment if they are consulted; it gives them a sense of ownership. Not including them in the process is counterintuitive as it can exhaust valuable resources (Lines, 2004). This phenomenon normally serves as a distraction, causing the organization to miss the mark of intended outcomes and results. Failing to request input fails to engender the sense of ownership wastes and resources meant to bring closure to initiatives (Lines, 2004). Personnel involvement can prevent the failures identified by Lines (2004).

Some researchers have suggested similar reasons for public organizational change, among them are attempts to predict outcomes and implement various practices to insure desired results. Managed change within an organization can result in outcomes that are more predictable. Balogun (2006) developed a framework to demonstrate how intended and unintended outcomes result from the way middle managers (usually the recipients of a change strategy devised at the top) makes sense of senior management initiatives. The highlights of this framework are the significant impact of change on recipients and the outcomes achieved and suggest a need to reconsider both, what is meant by “managing” change, and the way senior managers lead change. Balogun (2006) studied a privatized utility undergoing strategic change from a middle management perspective. Balogun (2006) illustrated among other things how the

framework can account for the phenomenon of unintended outcomes. The framework implementation largely followed what could be described as a textbook, top-down approach to change and illustrated problems many organizations face when implementing such change programs. Some of the problems noted are similar to those noticed and publicized by others; work task adjustment (Lawrence & Lorsch, 1967; Pfeffer & Salancik, 1978).

Additionally, cost, timeliness, and employee rejection of change because of their lack of inclusion in the decision (Balogun, 2006; Lines, 2004) were identified as obstacles. The results of Balogun's (2006) research are useful, particularly as a foundation for the various features, the environment, and the forces pulling on aviation management. Understanding the characteristics of the aviation facility and thus recognizing its own OD and change warrant a closer look at the type of airports, mission, vision, and goals within them.

Aviation Organizational Culture

Influences on aviation organizations range from citizen groups in local government to federally sanctioned, comprehensive, policy development entities. Thus, aviation is affected by a plethora of entities contributing to its governance (see Figure 1). Not only is aviation governed because of its primary function (flying operations), the aviation industry is a catalyst for commerce and business practices; accordingly, commerce and business practice laws prevail and influence its governance. Another factor is the land where aviation activity takes place normally determines its status or management (FAA, 1991; Rodwell, 2003; Rodwell et al., 2010). It is normally owned or

operated by state or local government; therefore, it is governed by those laws or statutes. Additionally, it must comply with FAA standards to remain eligible for federal assistance.

Typically, GA facilities are subsidized with state and federal funds. The federal funds are filtered to facilities from the state via block grant. To remain eligible for funding, facilities must meet and maintain certain criteria. The GA facility as a governmental entity is not normally run or organized similar to business or private organizations (Milakovich & Gordon, 2004), and specific guidelines govern their existence and management, normally in the form of enabling legislation of some sort. In most states, they are bound by and held accountable to applicable statutes.

Accordingly, North Carolina has authorized municipalities “to accept, receive, and receipt for federal moneys and other moneys, either public or private, for the acquisition, construction, enlargement, improvement, maintenance, equipment, or operation of airports” (North Carolina General Statute, 1991, p. 22).

Additionally, any other air navigation buildings or locations are required to be in compliance with stipulation and limitations of federal-level laws established with the use of funds from this source. Moreover, the prevailing association of any municipality is sanctioned, as needed, to fulfill any federal law or regulation of any agency thereof to designate the North Carolina Aeronautics Commission as its managers to acknowledge, take delivery of, and receipt for federal moneys on its behalf for airport purposes. Such moneys as are paid over by the United States government shall be paid over to said municipality congruent to requisites and

environment as might be imposed by the United States government in issuing such an allotment. Finally, any agreement for the attainment, creation, improvement, upgrading, preservation, apparatus, or action of airports or other air navigation conveniences finished by the municipality shall be completed pursuant to the law of the State governing the making of like agreements, present, however, that where such attainment, creation, improvement, upgrading, preservation, apparatus, or action is funded wholly or partly with federal moneys, the municipality may let contracts in the manner prescribed by the federal authorities, performing within the guise of decrees of the United States and any policy or system made there under so long as it is not in contrary with any other superior North Carolina law opposing it. (NC, GS 1945, c.490, s.7.)

This control extends to land use and to land surrounding the aviation facility.

This dilemma has caused governing entities to seek or invoke control measures beyond the parameters of aviation facilities to requisition land to comply with federal laws and regulations relating to flying activity. This issue encroaches on the area of imminent domain litigation:

Any lands acquired, owned, controlled, or occupied by such cities, towns, and/or counties, for the purposes enumerated in G.S. 63-2, 63-3, and 63-4, shall and are hereby declared to be acquired, owned, controlled and occupied for a public purpose, and such cities, towns and/or counties shall have the right to acquire property for such purpose or purposes under the power of eminent domain as and for a public purpose. (NC, GS, 1929, c.87, s.5)

The basic state laws governing North Carolina aviation facilities reveal the underlying authority of federal law over managing its facilities. Predicated on the use and acquisition of federal funds, facilities, and surrounding property must remain in compliance with NC GS 63-2, 63-3, and 63-4. This clear guidance presents a nonnegotiable stance on aviation facility management; however, considering the change phenomena from a policy perspective and applying it to the aviation industry is intriguing and the basis of this work.

Aviation facilities present a unique setting, as they operate at facilities with strong private and public influences. This can be perplexing, as private business activities are conducted out of a publicly owned and operated facility. In a micro sense, another significant characteristic of aviation facilities is they are categorized by the operation they perform and the aircraft and flying operation they can accommodate (FAA, 1991; NC General Statutes, 1991). These requirements are identified and listed in chapter 1 under management forms.

The FAA has the task of categorizing aviation facilities related to the requirements listed in chapter 1. After a facility is deemed appropriate, the FAA categorizes and publishes the names in the NAIPS (an annual publication). Public aviation facilities are managed in various ways depending on the location and prevailing governmental entity. Conversely, there is no one management standard applicable to aviation organizations in general. Nonetheless, the public organizations are run by boards, commissions, authorities, or bodies consisting of members who typically follow general public management standards outlined in NCGS. As with all public forums,

procedural standards must be followed for conducting business and making decisions and developing policy (Anderson, 2003; Dasgupta, 2003).

Public organizations run by boards or bodies are required to be open and transparent as described in the Freedom of Information Act (2007). Essentially, public organizations are not free to arbitrarily make decisions, purchases, or even construct budgets without making its intentions public. This is often accomplished via a public hearing. In the aviation community, this process can be time consuming or create tension if immediate action is required (Seo et al., 2004). The specific legislation supporting the management of aviation facilities in North Carolina has existed for only a few decades.

Governing airports in North Carolina are refereed by House Bill 719 of the General Assembly Session of 1991. In article V of the state constitution, authority is granted to municipalities to develop new and improve existing aviation and seaport facilities. Those powers consist of authority to construct, improve, enlarge, adopt rules, laws, regulations and ordinances, leasing rights, and other actions surrounding real property. Accordingly,

They [airport management] must conform to and be consistent with the laws of this state and shall be kept in conformity, as nearly may be, with then current federal legislation governing aeronautics and the regulations duly promulgated there under and rules and standards issued from time to time pursuant thereto.

(State of North Carolina, 1991)

Perhaps most importantly, they must vest an officer, a board, or body of the applicable municipality via ordinance with the power to comply with the statute. This

ordinance must lie out and specify the authority as it pertains to an officer, board, or body. Maintaining compliance with other state and local laws focuses on aligning airport management with various other public entity management issues. This is particularly true because airport authorities shall “constitute a body both corporate and politic” (North Carolina General Statute, 1991, p. 71). Once established, this body is vested with the legal standing and authority to conduct business and perform the activities listed in applicable North Carolina statutes and subsequent amendments. Despite the procedural parameters established by statute for aviation facility governing bodies, questions of efficiency surrounding timeliness of decision-making, development of policy, and implementation of decisions and policy (change) could surface. Addressing less contemporary literature and decision making as it relates to change in the aviation industry, particularly those facilities in North Carolina, is reviewed in the next section.

Change in Aviation

The prevailing government entity or municipality (state or local) is vested with the powers to develop new and existing aviation and seaport facilities. Those powers consist of authority to construct, improve, enlarge, adopt rules, laws, regulations, and ordinances, leasing rights, and other actions surrounding real property. Additionally, they are subject to federal policy whims as well (NC GS, part 163; FAA).

Poole and Van de Ven (2004) noted that leadership is an integral part of all facets of organizational management. Further, Seo et al. (2004) also supported the dualities associated with all aspects of change, and several are associated with the leader’s role as well. This is further complicated or centralized in the management of aviation facilities.

Acknowledged throughout this work is the fact that policy developers and implementers comprise the management of aviation facilities. The board, authority, or governing body develops applicable policy and delegates implementation to a hired bureaucrat, administrator, or manager. The development for implementation can be construed as change in this case. This is not always apparent or easy to orchestrate considering the dynamic aviation environment.

Addressing pros and cons, advocacy versus adversarial, and sponsorship versus opposition (dualities) in aviation management requires keen insight and knowledge of all factors and facets necessary to its existence and survival. The manager of the aviation facility (see Figure 1) is central to this process. Equally significant is keen knowledge, awareness, and constant communication with the entities to which they are central. Implementing policy, overseeing vast and constant technological developments, and managing diverse human resources are but a few of the aviation manager's responsibilities (Rodwell, 2003; Rodwell et al., 2010). Orchestrating, synthesizing, and controlling each contributor is possibly the most important and significant responsibility incumbent on the contemporary aviation manager. Thus, being versed on aviation-specific concerns provides appropriate information for research.

Aviation facilities or organizations as a public entity engender very specific and idiosyncratic characteristics. Accordingly, this research will shift its focus to the aviation industry in general. This will support the assertion that the aviation facility is a complex enterprise vulnerable to aviation-specific issues and political forces, intergovernmental

policy development and implementation if the airport is to comply with the issues concomitant with managing the typical public organization.

Aviation Industry Management

The researcher has reviewed literature on change as it might apply to the aviation industry. This section will specifically address aviation and the nuances contributing to change as well as the need to implement and oversee the change. Aviation is affected by many factors: safety, aircraft maintenance, air traffic control, education, flight activity, environmental issues, emergency management, security, and wildlife management. Operationally centered these areas sit atop the common denominators of safety and communication to ensure the safest possible surroundings for the conduct of aviation business. Undoubtedly, maintaining a safe atmosphere is the number one priority of any transportation or operationally centered organization. Maintaining this environment is critical and essential because of the catastrophe, tragedy, public paranoia, and attention afforded to typical aviation accidents and incidents (FAA, 2004; Rodwell et al., 2010). Conversely, most involved in aviation operations understand the need for fiscal competence and financial bottom line management (Rodriquez & Bijotat, 2003). Equal concurrent balancing of safety and financial competence are phenomena that do not always coincide or harmoniously coexist. One of the goals of this research is to discover, determine, benchmark, and enunciate procedures, techniques, and best practices surrounding these issues.

Safety

Accident investigations and studies reveal a conflict between managing a safe operation and securing profit margins. In fact, the airline industry is faced with a critical challenge: improve safety in an expense-reducing environment. In this situation, a practical model that assists safety managers in promptly identifying safety deficiencies would be helpful (Lu & Wetmore, 2006). Lu and Wetmore (2006) discovered the bulk of airline accidents and incidents were committed during operations where costs were cut without maintaining a safe setting. Researchers have revealed the factors leading to ground crew error: (a) poor situational awareness (clearance, airstair/jet bridge/vehicle operations), (b) ineffective communication (tug/truck/belt loader driver-pilots-wing walkers), (c) lack of supervision/quality assurance, (d) ramp agents' ignorance of safety criteria, (e) physical fatigue, and (f) personal health and medication (Lu & Wetmore, 2006). These are all areas where the public was made aware of the scenarios and situations, funding priorities, and management practices of the industry. Further, they lend credence to the concerns about human factors. From the public's standpoint, each accident is a metaphor for either the government's or the airline's failure to adequately protect its clients. Lu and Wetmore demonstrated how using safety system tool is another viable approach to achieve the goal of zero accidents. Safety system tool is a measure that instills intense practices, awareness, and culture in the organization.

Although prevention of accidents is of paramount importance, aviation, similar to other businesses, must juggle and balance profit and safety. Schulman (2006) studied this topic using a new independent analysis method. Using data from 1995–2004,

Schulman (2006) determined that investments in safety and the level of maintenance outsourced impacted safety by reviewing data from three primary areas: “airline incidents, financial reporting, and fleet usage” (p. 66). Schulman concluded that financial stability has a direct positive impact on safety. Essentially, the more resources that the organization invests in safety, the fewer incidents and accidents will occur. Factors to consider were that the findings in the aggregate were based on 10 airlines rather than individual ones. Individually, the data from each airline produced varying results. It is significant for the manager of any aviation facility, GA or otherwise, to be aware of the trends associated with profit margin and safety. Cost in safety is the tip of the iceberg on safety matters; willingly committing resources to prevention is apparently well worth the cost. The prevailing concern is determining where to commit resources to enhance prevention. One such area is recognizing errors.

Aviation accidents normally follow a chain of events consisting of some sort of error (FAA, 2004; NTBS, 2010; Schulman, 2006). Helmreich et al. (2005) noted that errors committed in aviation are typically associated with procedures, communication, proficiency, or decisions. Errors are further grouped as decisions (which encompasses procedures, choices, and general problem solving), skill (or lack thereof) and perception. These errors or bad decisions lead to aviation accidents and incidents (see definitions in chapter 1 for difference between accidents and incidents). Ultimately, Saleem and Kleiner (2006) noted that all incidents and accidents could be attributed to a breakdown in communication on some level; accordingly, they place the incidents under the

communication error classification identified by Helmreich et al. Accidents and incidents, unfortunately, are a regular part of the aviation scenario.

The NTSB (1986, 1991 & 2001) and FAA (2004 & 2008) (through various accident reports) have noted the most common types of accidents and incidents are during aircraft descent and landing, taxi and takeoff, aircraft mechanical failures, pilot errors and negligence, fuel mismanagement, inclement weather, and other causes which include bird (wildlife) hazards, midair collisions, ATC errors, structural defects, lack of maintenance, air show accident and search and rescue operations. Countless studies and reports exist on the various types of accidents and incidents, all of which are important in GA facilities and management. An area not mentioned is the constant movement of nonaircraft vehicles on the ramps, taxiways, and runways of aviation facilities. Ground vehicles and taxiing aircraft contribute to one of the most frequent mishaps on aviation facilities.

Movement of various types of vehicles and aircraft on the pavement of airports is necessary. This ground movement often leads to dangerous practices, including driving vehicles on runways, taxiways, and other surfaces designed to accommodate aircraft and its transportation (see Figure 3). Among these vehicles are emergency management responding (fire stations, apparatus maintenance), employee driving and training (operations personnel), aviation fuel management (fuel transportation and loading on to aircraft), electrical equipment management (airfield lighting and markings). The combination of incidence and operation of these vehicles operating, controlling and communication often lead to a common ground incident (accident facilitating) referred to

as a runway incursion. Runway incursions are a frequently occurring event that accordingly gained the attention of the FAA, local airport management, and various groups from the industry, including the Airline Pilots Association (ALPA). Although incursions pique the interest of many, the FAA is charged with clearly defining it and establishing standards to prevent it from occurring. The FAA describes a runway incursion as any occurrence in the airport runway environment involving an aircraft, vehicle, person or object on the ground that creates a collision hazard or results in a loss of required separation with an aircraft taking off, intending to take off, landing, or intending to land (FAA, 2004 & 2008).

Recently, the FAA modified its definition by adopting the International Civil Aviation Organization ([ICAO], 2008) definition of “any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area or a surface designed for landing and takeoff of aircraft” (p. 10). Comprehending runway incursions requires understanding the makeup and components of an aviation facility. A runway is used specifically for the takeoff and landing of aircraft. All other pavements are designed to lead aircraft to and from runways (see Figure 3). Any unauthorized entry of a runway (or runway-protected areas) constitutes an incursion. Countless studies have been conducted which add to the literature designed to inform and procedures for preventing incursions (ALPA, 2007; Rankin, 2008).

Rankin (2008) expounded on the FAA’s categorizing of incursions into three types: pilot, operational, and vehicle deviations. Pilot deviations account for 57%, operational deviations account for 23%, and vehicle deviations account for 20%

occurrences in the United States (Rankin, 2008) . Occurrences are further categorized along a continuum indicating severity, ranging from A–D where

Category A separation decreases and participants take extreme action to narrowly avoid a collision or there is a collision In Category D, little or no chance of collision exists but [the event] meets the definition of a runway incursion. (FAA, 2004)

The decade 2000–2010 has seen a decrease in incursions; however, significant to GA facility management there is an increase in personnel and aviation vehicle occurrences. The primary FAA reason cited is poor or lack of communication between radio operators (ground traffic) and ATC tower personnel (Rankin, 2008). Other contributors to ground vehicle incursions were lack of airport familiarity, airport layout, and signs and markings (FAA, 2004). Historically, runway incursions, while contributing to an unsafe aviation environment, have not historically been the cause of many accidents, but they do constitute an aviation incident.

Most researchers have identified the most serious incursion in history as the one in the Canary Islands where a pilot deviation that caused an aircraft collision between two aircraft killed over 500 people (Clarke, 2002; Rankin, 2008). This accident involved two (Boeing 747s), the largest aircraft in inventory in 1980. According to the NTSB:

Both aircraft—Pan American Boeing 747-121 N736PA, and KLM Boeing 747-206B PH-BUF—had been diverted to Los Rodeos Airport on the Spanish island of Tenerife in the Canary Islands due to a bomb threat at the airport at their final destination, the neighboring island of Las Palmas. The aircraft collided on the runway while

departing Tenerife as the KLM Boeing 747's captain initiated a takeoff without permission while the Pan American aircraft was using the runway to taxi out for departure (NTSB, 2001).

Although it is debatable where the blame lies for this accident, it is clear the runway incursion was the initial step in the chain of events. The Tenerife accident is an extreme example, worst-case scenario of possible incursion ramifications, but it occurred more than 3 decades ago, and the reduction in incursions over the past decade is indicative of improved practices. However, there have been increases in personnel and vehicle incursions, giving credence to the assertion there is a need for continued monitoring and training on the subject. Rankin (2008) offered recommendations for prevention techniques to be listed in future FAA runway safety publications. In general, Rankin (2008) identified three areas and or actions for the FAA to direct their focus.

1. Establish a steering committee on runway incursion reduction.
2. Accelerate development of and field deployment of the Airport Movement Area safety system.
3. Emphasize the analysis of pilot-related causal factors in runway incursions.

Within these general areas are five more specific recommendations: (a) enhance and clarify procedures in the cockpit and control tower, (b) improve and increase training ground vehicle drivers (see Appendix F, excerpt from CFR FAR 139.11), (c) increase awareness of the runway incursion problem, (d) properly illuminate and identify signs, markings and lighting on airports, and (e) simplify surface traffic movement.

ALPA (2007) has analyzed incursions over the past several decades and surmised the potential for or risks of incursions can “kill hundreds of people in a single accident” (p. 3). ALPA revealed that since 1990 there have been five, fatal, runway-incursion-caused accidents in the United States involving airliners. Further, as recently as 2006, a B-747 landed at Chicago’s O’Hare International Airport while another aircraft was taking off. Fortunately, this was only an incident; however, the NTSB estimated the two aircraft missed colliding by a mere 35 feet. ALPA recommended the following intense proactive measures to mitigate and perhaps eliminate incursions:

1. Design the hazard out-modify the system (this includes hardware/software systems involving physical hazards as well as organizational systems).
2. Install physical guards or barriers to reduce exposure to the hazard or reduce the severity of consequences.
3. Issue warnings, advisories, or signals of the hazard.
4. Institute procedural changes to avoid the hazard or reduce likelihood of severity of associated risk.
5. Train pilots and controllers to avoid the hazard or reduce the likelihood of an associated risk.

Similar to Rankin (2008), ALPA (2007) listed several suggestions to mitigate the problem and to make those involved more cognizant of the potential for occurrence. The ALPA work focused on pilots or operators, whereas Rankin’s approach is more holistic in that it incorporates other players into the scenario: ground vehicles and personnel. Training of personnel who operate ground vehicles is ensuring that they as well as

operators and controllers understand the intricacies of the typical certificated airfield.

The conclusion to be drawn on this topic is that government entities and the aviation industry have taken considerable measures to address and mitigate the problem.

Conversely, there is still a high likelihood of an occurrence, and ALPA (2007) deemed the current level of risk as “unacceptable” (p. 13). Runways incursions are normally a ground operation issue with obvious implications. More severe and flight-centered activities are concerned with making sure aircraft participating in flight maintain appropriate separation during takeoff and landing and flight operations. This is significant, as not maintaining appropriate separation has momentous ramifications.

Aircraft range in size and capability and have performance characteristics commensurate with their size features. One such category is that of glider aircraft; they are heavier-than-air craft supported in flight by the dynamic reaction of the air against their lifting surfaces, and whose free flight does not depend on an engine. Mostly these types of aircraft are intended for routine operation without engines, though engine failure can force other types of aircraft to glide (FAA, 2001). The relevance of these aircraft to this work is as smaller aircraft normally operate out of GA facilities rather than larger facilities that can accommodate larger, more sophisticated aircraft. Jarvis and Harris (2008) compiled data on all glider accidents in the British Gliding Association database from 2002–2006 and determined that there are differences in accident rates between experienced versus inexperienced glider pilots. Accordingly, the “results revealed the inexperienced pilot accidents associated with seminal event in the approach phase occurred 8 times the rate than for experienced. Conversely, seminal events in the landing

phase of accidents occurred [at] 6 times the rate” (ALPA, 2007, p. 219). These statistics are fodder for the aviation management industry to facilitate awareness education, prevention, plan development, and determination of the level and volume of glider category operations at any facility. Gliders can also be lighter than air. A wide variety of lighter than air aircraft exist, differing in the construction of wings, aerodynamic efficiency, and location of the pilot and controls. Some have power plants to take off or extend flight. Others are designed simply to descend, but the most common varieties exploit meteorological phenomena to maintain or even gain height. These types are principally used for air sport gliding, hang gliding, and paragliding. Perhaps the most familiar type is the paper airplane. As these are lighter than air, they are subject to shifts in the aerodynamic environment in which they fly. Wind, precipitation, atmospheric pressure, and other natural forces contribute as well. In addition to the natural forces, aircraft affect the flying atmosphere and leave a signature that changes the dynamics of these factors. A phenomenon referred to as wake turbulence can alter environmental characteristics; thus, there are implications for following aircraft. Wake turbulence requires extensive monitoring and research aimed at mitigation, education, and prevention. Studying wake turbulence falls in the genera of aviation science, and accounting for it is a major reason for managing the operation of aircraft, particularly during takeoff.

Boyd, McDaniel & Bowles (2009) used a framework for analyzing simulated aircraft wake vortex encounters. This is significant, as wakes are dangerous, turbulent air that trails behind aircraft after taking off (National Aeronautics and Space Administration

[NASA], 2003). Accordingly, larger aircraft have larger wake signatures than smaller aircraft, requiring the establishment of procedures at various aviation facilities that require significant separation between aircraft depending on characteristics. According to NASA (2003), “Wake vortex and turbulence generated by larger aircraft can cause instability, uncontrollable rolls, and sudden loss of altitude” (p. 34). This is further relevant, as there have been numerous incidents and accidents where fatalities have occurred because of wake turbulence. The software developed by Boyd et al. (2009) added to the research and technology to help mitigate and manage this unavoidable phenomenon; further, it showcases the flexibility of the framework’s software implementation, as its ultimate purpose is to aid researchers studying wake vortex encounters. Analyzing wake signatures offers necessary fodder on prevention in the realm of maintaining appropriate separation of aircraft. Regardless of knowledge, accidents and incidents continue to occur. These data continues to chip away at the factors contributing to accidents. This is significant as the aviation industry takes a dogged stance to combat accidents via several venues.

Error classification, cost, incursions, and wake turbulence all contribute to accidents. Accordingly, several measures for analyzing and directing accidents and incidents once committed are constantly being developed. Errors are the constant and consistent occurrence contributing to the accident scenario. A measure designed to prevent further occurrences and analyze them after the fact known as fault tree analysis (FTA), a useful tool for aviation safety management (Wong & Yeh, 2007), and whether the tree structure conforms well to the mechanisms of the safety system is critical

(aircraft, maintenance, and ground traffic). FTA normally includes events from hardware and material failure or malfunctions. A highly technical process, it zeros in on the equipment rather than the operator. Originally developed for various missile-launch safety studies in the early 1960s, the techniques and processes are still applicable in today's highly technical, constantly changing industry. FTA entails five distinct steps:

1. Define an undesired event to study.
2. Understanding the system.
3. Construct a fault tree.
4. Evaluate the tree.
5. Control the hazard.

Because FTA deals with system or equipment, the concepts surrounding it lend themselves to aircraft maintenance and perhaps ATC and other ground equipment. Accordingly, there will be differences among tree structures as FTAs are derived from system recognition by each assessor. This is particularly true considering the definition of system boundaries and the normally causal relationships among events. Wong & Yeh (2007) proposed a rapid and efficient validation process to build a valid representation of FTA in the safety system, provided follow-up demonstration of numerical cases validated, and revealed the success of the process.

Wong & Yeh (2007) also noted that the proposed concepts for model validation are not only suitable for FTA, but also have the event tree analysis (ETA) or Bayesian analysis with its own tree structure. The main difference among them is the causal relationship between events associated with a logic gate in FTA that associates with a

conditional probability in other tree analyses. In theory, each logic gate could be represented as a specific conditional probability. Three possible circumstances are discussed in the study: (a) obtaining a part of the combinative events data but excluding the top event; (b) obtaining only the data of the top event; and (c) obtaining a part of combinative events data and including the top event Wong & Yeh (2007). Although the top event data, especially dramatic accidents, could be acquired from worldwide open databases, the data might not be suitable for aggregate use because of the varied causes and situations for each accident. Therefore, screening the accidents for homogenous data is important for the model validation of FTA (Wong & Yeh, 2007, p. 37).

FTA is a highly technical, mechanical investigation of a system designed to investigate and subsequently prevent accidents. Additionally, implementing the tenets of FTA, reallocating funds appropriately, and controlling flight are all needed to achieve optimum aviation safety. It should be used to investigate accidents after they occur (Wong & Yeh, 2007). Combining these tenets and teaching safety in education throughout the professional development process should make the aviation culture more safety conscious.

Safety Education

Safety issues at aviation facilities not only surround actual flight, maintenance, and control of aircraft, but pre- and postflight operations are equally significant. Most airfields are sophisticated outlays of specific items that assist in their identification and capability (see Figure 3). The typical airfield has terminals, ramps, taxiways, runways, aircraft fueling facilities, and communications devices. Teaching safety consciousness is

essential for mitigating, preventing, and possibly illuminating the causes of accidents and incidents.

Safety consciousness, cognizance, and competence most certainly are demanded in the aviation atmosphere. This is certainly true, considering the potential for incidents and accidents. In the last 5 years, historical research and literature have focused on identification, prevention, and education to increase awareness. Dillman, Lee, and Petrin (2003) argued that creating a safety culture starts in collegiate flight programs. Drawing on the work of Kornblum (1991), Dillman et al. (2003) identified culture as “system of values, beliefs, attitudes, traditions, and behavior norms” (p. 92), all of which relate to a certain population of people. Setting or establishing a safety culture requires supporting values, beliefs, attitudes, traditions, and behavior related to aviation to insure successful outcomes. Aviation incident and accident databases are essential to this process.

Teaching safety principles from the beginning of the education process engenders understanding. This is accomplished by creating an awareness of the problem by making available past scenarios for use in instruction, application, and comparison. Information in incident and accident databases serves as instructional material in the academic setting for instant referral. This is somewhat analogous to case law and prior decisions in court proceedings. Essentially all accidents and incidents serve as a litmus test for future operation, education, and practice in flight schools, postsecondary education, CEUs, local facility training, and recurring certificates. Understanding how to merge culture with safety to create a “safety culture” is of major significance and a continuous process (Dillman et al., 2003).

The aviation industry continues to experience growth and is subject to constant change in information technology, policy development and implementation, and demographics (Milakovich & Gordon, 2004; Rodwell, 2003). Thus, instilling safety into the aviation culture and continuously thrusting it in aviation academia can only serve to permeate it in the overall aviation industry. Dillman et al. (2003) and Rankin (2008b) advocate making safety incident data available via databases to assist in the process. Two are identified here: Airplane Discrepancy Analysis Matrix (ADAM) and Airplane Incident Analysis Matrix (AIAM). Wildlife management systems (U.S. Department of Agriculture [USDA], 2009) serve the same function; they foster education, awareness, and prevention by facilitating readily available information to teach and base decisions and training on. The establishment of a safety culture using databases meets the short-term goal of educating the aviation student, as safety consciousness and safe practices serve as the common denominator in all aspects of aviation. Teaching safety is applicable as well. Asserting the effectiveness is not sufficient; equally important is investigating and probing to determine whether safety education and culture permeation have been successful.

There is a constant probing of the profession to determine whether safety standards are being met. Patankar and Ma (2006) endeavored to determine the current state of affairs in Aviation Safety Action Programs (ASAP) maintenance organizations by surveying 20 maintenance organizations and asserted that ASAP program effectiveness is to be measured by the percentage of actual changes at three levels of impact: the task, organization, and industry levels. Measuring these change levels

individually rather than in general reveals a clearer picture of ASAP effectiveness.

Patankar and Ma also noted growing support for ASAPs among management in the industry and that regular and frequent probes of program effectiveness should continue.

Another value in safety is maintaining an awareness of the total environment; this concept is applicable for flying, maintenance, and ground personnel. Situational awareness is a consciousness of the total environment around flying operations.

Several have endeavored to categorize and identify situational awareness; Endsley (1989) identified a three-level model consisting of perception, comprehension, and projection. Essentially, these elements reflect a pilot's collective concept of the current scenario and available choices for potential decisions. Further, Hubbard (2008) identified the elements of situational awareness, as person and environment exist together.

Hubbard packaged situational awareness into five rules of probability that generally fall in line with mathematical and statistical rules or determining whether a situation or problem will occur. For example, being aware of your surroundings allows anyone to infer what might or might not happen. This keenness serves to engender safe, competent practices leading to a safe environment. Another significant concept and assertion regarding situational awareness is that it is developed via experience and training (Hubbard, 2008; Endsley 1989).

Aircraft Maintenance

Aircraft maintenance, an essential element of a safe flight and environment, encompasses keeping aircraft mechanically sound and in good working condition.

Similar to other vehicles, aircraft have recommended service periods, specifications

regarding replacement of parts and the like. Other areas to consider in aircraft maintenance are that humans perform the work on aircraft and accordingly should be studied in the field. One way to achieve safe, operational aircraft is to develop maintenance manuals. As manuals spell out various requirements for aircraft service periods, replacement of parts, and periodic inspections, they should be kept current and followed.

A necessary cog in the safe and efficient conduct of flight operations is to monitor the process to ensure Aircraft Maintenance Manuals (AMMs), are current. Further, the upkeep of those manuals must be supplemented via Publication Change Requests (PCRs). The effective upkeep of AMMs is important because several aircraft incidents and accidents have been attributed to incorrect, inaccurate, or out of date information (FAA, 2004; NTSB, 2001; Rogers, Hamblin, & Chaparro, 2008). Aviation manuals are the foundation for prescribed, routine, and required mechanical upkeep of aircraft. Various sources (FAA, 2004; NTSB, 2001) note that roughly 13% of aircraft accidents are a result of faulty maintenance practices. Unfortunately, maintaining current and efficient manuals can be expensive and time consuming which also detracts from the fiscal bottom line for aircraft management. These issues fall in line the tensions of safety with safety versus financial concerns outlined and noted by Lu et al. (2006), Schullman (2006), Saleem and Kleiner (2006) and Helmreich (2000). Aircraft maintenance is performed by humans; therefore, mistakes will occur and can lead to structural problems or fuel mismanagement (Cashman et al., 2007).

Cashman et al. (2007) noted many approaches to human factors in aircraft maintenance exist throughout the world. However, to date, the FAA (2004) has yet to establish regulations regarding monitoring of maintenance, but has created procedures similar to the voluntary USDA wildlife management programs. Not monitoring human factors maintenance keeps the discretion within various organizations. The lack of enforcement is somewhat perplexing as research and study of human factors reveal errors committed can be attributed to deficiencies ergonomics and fatigue management (human factor tenets). Failure to monitor human factors in aircraft maintenance contributes to a relatively slipshod demeanor surrounding the topic in the industry. There are no mandated procedures in this realm; therefore, several intrafactors have endeavored to determine whether such a program should be enforced. Accordingly, several initiatives have been undertaken to gauge the industry to determine consensus on the attitude toward implementation. Cashman et al. also determined that there are many advantages to implementing a human factor-monitoring program: increased flight safety, worker safety, regulatory compliance, and other enhancements. The lack of enforcement initiatives confounds leaders, academics and researchers in the field as human factors is a large consideration in other area of the industry as well, for example flying and air traffic control.

Resource management or human factors training is mandatory for pilots, flight engineers, dispatchers, and flight attendants, but it is only optional for aircraft maintenance technicians (AMTs) or nonflight workers. Cashman et al. (2007) revealed the need to determine whether the use of the aviation rulemaking committee (ARAC) is

appropriate to establish and rule on making nonregulatory MRMs mandatory. ARAC members revealed that the FAA could pay more attention to airline/aviation professionals regarding proposed regulations. Areas needed, according to Lu et al. (2006), are developing legislation regarding financial status, evidence of cost-benefit analysis, scope of voluntary, air transportation, oversight system (ATOS), and operational flexibility.

Lu et al. (2006) also reviewed the FAA's inspection and the ability of inspectors: "Regarding the current training status without regulatory enforcement, major air carriers are willing to voluntarily participate in the alternative system, namely ATOS" (p. 34). Yet this is somewhat controversial, as regional airlines and fixed base operators (FBOs) refuse to provide MRM to maintenance technicians because of the cost; Schullman (2006) identified cost as a tension experienced in most management practices. Moreover, dealing with fiscal consciousness, the whole industry will not support the MRM regulation; thus, only major airlines with more money could incorporate MRM into maintenance safety training. This is clearly significant, as the financial status of the industry is increasingly delicate and tenuous.

Post-9/11 revealed a reasonable amount of MRM training for nonflight employees, but top industry management still needs to evaluate the return on investment in safety. ATOS input and oversight also forges the necessity of further training and accordingly requires further investigation before future action can be taken. Accordingly, as with most nonmandatory recommendations, they will only be done when it benefits the industry as a cost benefit.

Lu et al. (2006) concluded it is still possible to regulate MRM training in the future. This opinion is based on the six policy determinants described earlier.

Essentially, if any of the following exist:

(a) the industry is making enough profits; (b) cost-benefit analysis shows a sound result; (c) the FAA has sufficient numbers of qualified inspectors; (d) the ATOS does not work well; (e) the FAA decides to grant the industry with operational flexibility; or (f) the government is aware of the urgency of such regulation-regulating MRM or related ground safety training would encounter less resistance. (p. 299)

Monitoring maintenance practices and instituting regulatory controls have clear ramifications for aviation professionals, customers, and the surrounding community. Hence, research devoted to aircraft maintenance and safety is paramount. Fogarty and Buikstra (2008) evaluated pathways for errors and procedural violations, testing direct and indirect pathways linking safety climate, psychological health, and unsafe behaviors. These are of paramount consequence as Lu et al. (2006) noted; the FAA continues to contemplate its level of oversight and involvement in these matters.

Fogarty and Buikstra (2008) delved further into this topic when they examined whether there was a correlation between work place safety climate factors, individual psychological health factors, self-reported errors, and human factors (Cashman et al., 2007). The methodology employed was to survey over 300 maintenance engineers. Their study demonstrated the importance of matching organizational and individual variables to assess safety status of the organization. Fogarty and Buikstra (2008) proved

maintenance safety perception extends beyond the goals of the organization and are determined by the individual. Accordingly, more effort is appropriate on the part of industry entity leadership to incorporate initiatives that couple individual concerns with those of the organization. Nonetheless, it behooves aviation maintenance facility managers to implement policies and procedures that acknowledge both (Fogarty & Buikstra, 2008). This initiative could be further enhanced with FAA regulatory mandates and guidance (Lu et al., 2006). Keeping an aircraft in good working condition via reliance on current aircraft publications, studying human factors and maintaining aircraft are a small piece of the overall aviation safety environment, there are other equally considerable factions contributing to the picture as well. Flying aircraft is function that is not performed in a vacuum. It is an activity that requires not only adequately maintained equipment, but also requires competent personnel managing it, a function performed by ATC.

Air Traffic Control

Keeping aircraft separated on the ground and during flight are essential, and ATC and personnel have this responsibility. In the past half decade, a rush of air traffic controllers was hired by the FAA because of a shortage of personnel (FAA, 2008a). To compensate for the deficiency and to facilitate a streamlined approach, the FAA used the Air Traffic Selection and Training (AT-SAT) computerized test battery. As with all personnel hiring innovations, efforts should be directed towards filtering out biases inherent with the measure or instrument. Accordingly, King, Manning, and Drechsler (2006) described AT-SAT functions and rescoring of similar past batteries or methods

used in screening and hiring. The results revealed that efforts to re-evaluate prior methods are productive as they all but eliminated the validity of claims of discrimination. King et al. (2006) acknowledged that while AT-SAT as a recruitment and screening tool is clean and primarily objective, research should be conducted to determine correlations or relationships with training and on-the-job performance.

Other techniques used include how King, Schroeder, Manning, Retzlaff, and Williams (2008) used the Minnesota Multiphasic Personality Inventory 2 and discovered a personnel-screening tool consisting of 16 factors. Results revealed few effective means of screening applicants for air traffic controller positions. This is significant because of the number of aviation incidents caused by communication errors between ATCs and pilots (Saleem & Kleiner, 2006). ATCs provide pilots with information to base flying decisions on, and at times personnel have only ATCs for information (FAA, 2010).

Accordingly, the air traffic controller has to be an effective English language speaker and communicator, as only English is used throughout the world (Mitsutami & O'Brien, 2003). Aside from industry jargon, communication needs to be precise, consistent and error free.

Mitchell et al. (2009) investigated the evolution of pilot attitudes and perceptions regarding automated flight decks, focusing on many areas: situational awareness, automation, technology skills, stress, workload, and computer literacy. The Mitchell et al. research revealed an appreciation for modern technology and its perks; however, there is still apprehension about over-reliance on and the omnipresence of computerized

technology in the cockpit. Communication and control are not only applicable in operating aircraft; they are perhaps more heavily relied upon in ATC).

Not unlike the equipment used in aircraft, the equipment used by the ATC is highly technical and constantly upgraded and updated. This upgrading can cause nearly instant obsolescence of ATC equipment (FAA, 2004). One such piece of equipment is a mobile horizontal radar display filter for air traffic controllers (Sporer-Fellner, Fluhr, Haider, Kappertz, & Hering, 2009). The device allows controllers to quickly select and change the requested flight level by scrolling an operational display system (ODS) mouse wheel. Using a multimethod approach, Sporer-Fellner et al. (2009) studied human factors to investigate the mobile horizontal radar display filter called “WHEELIE.” They discovered there was a reduced perception of mental workload resulting from WHEELIE. Relying on the necessity of analyzing multidimensional complex constructs in multiple areas, the study focused on subjective ratings of mental workload and physiological variables of heart rate and heart rate variability, the objective parameters for mental workload to assess performance in safety and efficiency. Acceptance of the WHEELIE functionality was revealed by a semistructured interview at the end of the study. Results indicated positive effects on mental workload, indicating an increase in mental task loads. The result was acceptance of WHEELIE; however, there was insignificant benefit for the aviation facility. Essentially, the controller has a new piece of equipment to work with few benefits. ATC span and innovations are significant to warrant separate research and literature. For the purpose of this work, it is important to be aware of how significant and intermediate ATC is to the aviation industry and management of the facility.

Education

Aviation, like most businesses, is heavily dependent on professionals produced via its academic programs. A relatively young academic entity, aviation management education continues to proliferate and grow in numerous institutions. As the educational needs of practitioners have increased, the legitimacy of aviation education programs has been reinforced (Prather, 2006).

The Council on Aviation Accreditation (CAA) was created in 1988 out of a necessity for formal, specialized accreditation of aviation academic programs. This was noted by the University Aviation Association (UAA). The first program was accredited in 1992, and there are currently 60 accredited programs at 21 institutions nationwide, of which 20% are UAA member institutions with CAA-accredited programs. Prather (2006) conducted a two-part case study of the CAA. Part 1 addressed the historical foundation, and the second part allowed for a “more thorough understanding of the contemporary issues faced by the organization as well as alternative strategies” (p. 700). This should allow the CAA to increase the number of accredited programs and fulfill the CAA presence in colleges. When conducting this study, Prather (2006) concluded there are contemporary issues to be considered; non-CAA accredited programs does not necessarily equate to a less than quality education. However, accreditation might not be the answer as “it does provide reassurance for students, scholarship grantors, and employers that a specific institution is ‘up to par’” (Knauer, 2005, p. 28). Accordingly, Knauer’s (2005) research investigated why there are a small number of CAA-accredited schools, clearly a planning concern for the CAA as it examines the course it has taken

and strategizes about the future. Ultimately, the CAA goal is to provide international accreditation as well as national. Concerning cost and benefit of CAA, accreditation will simultaneously answer or identify the benefits and simply why programs either do or do not seek CAA affiliation via accreditation.

Based on the extensive case analysis performed on the CAA, examining past, present, and future issues, it is obvious that this organization has achieved a significant feat in a short amount of time. After accrediting the first program only 13 years ago, the organization currently recognizes 60 accredited programs at 21 institutions nationwide. However, raising the standards involves continuous improvement, and the CAA, although clearly meeting the needs of some institutions, must examine itself in an approach similar to this research effort to enable this organization to more fully meet the needs of aviation programs in the U.S. and throughout the world. (Prather, 2006, p. 705)

Future concerns and objectives require projections and foresight, as 15 years into the future, estimates are that aviation students need to be graduates of CAA-accredited programs. Further projections indicate that in the same amount of time, 80% of aviation programs will be CAA sanctioned. The result will be enhanced competence as the industry comes to rely on graduates from CAA-accredited institutions as their reputations as standardization are confirmed.

Prather's (2006) overall assessment is that the CAA is filling a critical void in the aviation academic community. Establishing international as well as national standards serves to improve standing in academia and in the profession as well. The ultimate result

is not only approval and sanctioning but competent and sought-after professionals who graduated from these programs. Research conducted on aviation program course legitimacy, efficacy, and learning styles lays the foundation for determining what should be taught in these programs. There are constant opportunities for the aviation professional to recall and apply knowledge. It is determining what should be taught and how that presents a challenge for many industry academic professionals.

Sharp's (1989) studies of African American students illustrated significant differences in performance levels across races. Later research (Kanske, Brewster, & Fanjoy, 2003), noted the differences between upper and lower level aviation students. Kanske et al. initiated a 5-year study with status checks reported annually. At first glance, they determined differences in learning styles manifested themselves in 67% of students, a result comparable to those of United States Air Force pilots. The results were that students were a converger, assimilator, accommodator, or diverger. The research is ongoing and covers over 420 students from nine academic institutions; their assumption is that the data might reveal that students either shift learning styles or self-eliminate from aviation education programs. Accreditation, legitimacy, and competent graduates are the ultimate results of successful aviation academic programs. To achieve these ends, accredited programs should have curriculums consisting of courses that prepare students for the rigors of the profession. Determining what constitutes an appropriate curriculum is the next step.

An earlier section reviewed the importance of establishing safety consciousness and practices in educational programs. Hubbard (2008) listed two databases referred to

in this case, Airplane Discrepancy Analysis Matrix (ADAM) and Airplane Incident Analysis Matrix (AIAM). They are similar to maintenance and wildlife management databases (USDA, 2009; FAA, 2008), as they serve the same function: education, awareness, and prevention. Using safety databases serves a short-term goal of educating the aviation student and academia; this is done by providing ready accessible real world information. Consequently, and positively, the databases have a positive impact on the aviation industry and aviation facility manager. Providing readily accessible safety data is positive as it provides real-world scenarios for teaching.

Avionics is also crucial to modern aviation, as it includes electronic systems for use on aircraft, artificial satellites, and spacecraft and comprises communications, navigation, and the display and management of multiple systems. It also includes the hundreds of systems that are fitted to aircraft to meet individual roles; these can be as simple as a searchlight for a police helicopter or as complicated as the tactical system for an airborne early warning platform. As this is a highly technical area, it is a separate academic branch of the industry as well (Hannon, 2009).

Hannon (2009) reported on the process of integrating a fiber optics minicourse into an existing aviation electronics technology curriculum. Fiber optics is a continuation of applied science and engineering concerned with the design and application of optical fibers. Optical fibers are widely used in fiber-optic communication, which permits transmission over longer distances and at higher bandwidths (data rates) than other forms of communications. Fibers are used instead of metal wires because signals travel along them with less loss, and they are immune to electromagnetic interference. Fibers are also

used for illumination and are wrapped in bundles so they can be used to carry images, thus allowing viewing in tight spaces. Specially designed fibers are used for a variety of other applications, including sensors and fiber lasers.

The study conducted at Southern Illinois University concluded that there was a lack of class time to integrate “extensive hands-on fiber optic splicing techniques into the course material” (Hannon, 2009, p. 305). Nonetheless, the course provides adequate depth in the areas necessary for understanding. Accordingly, it is recommended that a mini fiber optics course be integrated into any aviation technology curriculum. Academic programs and their associated curriculums are particularly significant to the aviation industry. Hannon (2009) indicated the value of continued study in the areas of ethics and moral development in pilot populations.

The topic of values in education has been discussed by many. Carmichael et al. (2003a & b) determined that “the potential pitfalls of failure to develop leadership skills that address development of shared values in organizations are equally high” as those of possible developing values education (p. 164). Accordingly, it is argued that the industry and academia improve communication, cooperation, and consistency in the development of curriculum designed to teach, share leadership, and develop leadership skills directed toward ethics and values. This was revealed via a study conducted in Oklahoma where aviation is a primary source of commerce (Carmichael et al., 2003a & b) that examined aviation professionals from Oklahoma. On a micro level, individual organizations, airports, airlines, local governmental entities run the risk individually. On a macro-level, the industry will suffer if concerted efforts are not continued to teach and practice values.

Values are only part of the moral compass of ethics (Johnson, 2005). Ethics takes the character element to different levels of inquiry and understanding (Oderman, 2004).

Ethics in aviation penetrates all genres of the industry, and its history includes allegations that various entities made false statements to the FAA and the NTSB (1991, 2001) during accident and incident investigations (FAA, 2004). Further, airline and airport ethical violations stem from luggage tampering and theft, illegal substance trafficking, sabotaging aircraft for additional work, gouging consumers with inflated fuel prices, and misuses of municipal resources. It is for these reasons Oderman (2004) advocated the inclusion of ethics in aviation management programs.

In a three-part study, Oderman (2004) interviewed faculty and compiled data to support the need for the inclusion of an ethics course. However, many factors hinder full implementation: funding, course development, approval at the appropriate accreditation level and entity, and acquiring qualified instructors or lecturers to conduct classes. Considering the magnitude of the violations, ethics courses are necessary.

Oderman's (2004) three-part study examined how 4-year schools with baccalaureate programs in aviation management include ethics instruction in their curricula. It determined that ethics is not widely included in aviation curricula and that little was being done to increase ethics instruction, as no sense of urgency exists to bring about change. Recommendations to require ethics in the curriculum included involvement of those interested in the subject, cooperative relationships between academia and the aviation industry, and a phased program to increase ethics courses in the curriculum. To date, Oderman is the only instructor in the industry to do so.

Elizabeth City State University's aviation management program, under the direction of Dr. J. Anthony Sharp (1986) is designing an aviation-specific ethics course to be offered that should at least raise the integrity consciousness of those entering the industry.

Clearly, no profession or industry can continue to survive without sound educational programs, whether formal schooling, CEUs, professional organizations (American Association of Airport Executives, AAAE, 2010), and national level conferences. It is becoming commonplace to expect the completion of a degree or certification program before being hired for certain positions in the industry. This adds legitimacy and professionalism, but the ultimate certification in the industry proven ability and certification to fly aircraft.

Flight Activity

The primary purpose of all personnel, facilities, and equipment at airport is to support the flying of aircraft and preventing accidents. This is particularly true of GA facilities. Acknowledging a concern for incidents at GA facilities, Saleem and Kleiner (2006) observed three flight incidents at a midlevel GA facility. The incidents occurred during visual flight rules (VFR) and instrument flight rules (IFR) flights. The scenarios were failure to repeat aloud ATC instructions, requesting the incorrect runway, and failure to comply with a course recommendation from ATC. Significant in GA facilities are the inconsistencies in ATC facilities. This is exacerbated by the fact that many pilots who frequent them are not commercial flyers, but private, seasonal, or recreational. As such, they are not always familiar with these facilities. Further lending to the problem is that GA facilities typically lack current air traffic management technology.

GA airports are usually plagued by antiquated equipment and facilities (FAA, 2008b). It is for these reasons that oral communication between aircraft operators and ATCs be precise, concise, and standardized at GA facilities (King et al., 2006; Mitchell et al., 2009). Saleem and Kleiner (2006) concluded pilot error or inefficient communication contributed to each of the incidents researched.

Diels et al. (2009) observed three groups of aviators either employed or enrolled at Embry Riddle Aeronautical University to discern “moral development levels” (p. 39). Diels et al. revealed that aviation faculty (from universities, flight schools, and training facilities) demonstrated a higher degree of moral development than nonaviation faculty. Conversely, they discovered instructor and student pilots scored lower than anticipated. These findings led Diels et al. to recommend ethics training in aviation curricula. Moral and or ethical behavior demands following standard operating procedures and not circumventing mandated policies and procedures for financial gain or saving time. This is a highly sensitive issue, for “As aviation faces high consequences of failure, it has developed as a profession based on stringent selection, training, and oversight” (Diels et al., 2009, p. 86). Pilots’ behavior tends to reflect the culture of the organization for which they fly or work,

Thus, the pilot in command may be faced with many dilemmas and tradeoffs between effectiveness, efficiency, safety, and satisfaction. Moreover, the expectations of different groups of providers and customers may differ widely.

One recent example of a complex aeronautical decision-making chain, which had a catastrophic outcome, was the weather-related crash of Continental Flight 3407

near Buffalo. The finger pointing related to this accident spread far and wide, way beyond the pilot in command, and many people, policies, and practices were identified as being lacking. (p. 86)

Continental Flight 3407 was a much larger scale accident than the typical GA facility will encounter; however, the findings were appropriate to this study, as it investigates the underpinnings associated with managing an aviation facility. Ethical awareness and implications extend much further than the cockpit and spread to general behavior issues as well.

Environmental

Another part of aviation facility management is the mitigating of and perhaps removal of environmental problems, including disposition of storm water runoff, wetlands, soils management, air and noise pollution, and hazardous waste management; all of which are on the agenda of the aviation facility manager. The National Business Aviation Association (NBAA) noted how environmental issues have implications for the GA industry. A key area in this realm is climate change. “Aviation is responsible for a mere 2% of C₀2 emissions worldwide” Spurson (2008, p. 22), and business aviation for even less. Several initiatives have been designed to mitigate the effects of emissions, such as those initiated by the European Union (EU), and the emissions trading scheme (ETS), but these initiatives affect only aircraft weighing over 12,000 pounds. More specific to GA in North Carolina are initiatives to control storm water runoff. The EPA has issued new revisions to the existing Spill Prevention Control and Countermeasures (SPCC) regulations.

Published in 2009, the SPCC requires that all facilities need to be in compliance by November of 2010. Essentially, all airports and facilities need to develop a SPCC plan as well as storm water pollution prevention plans; items to be included are SPCC Plan, supplementary plans, fuel management manuals, staff training programs with documentation and audits. The implications for an effective (or ineffective) EP program are obvious. This is particularly true of the aviation facility as there is a constant and real scenario of events where emissions can take place.

Another issue surrounding environmental issues is noise abatement, mitigation, and management. In fact, noise abatement issues impact all levels of government: federal, local, and state, airport operators, carriers, managers, and the surrounding community. Facilities nationwide take measures to diminish the problem by altering flight paths, establishing quiet hours, charging fees for landing certain types of aircraft, and similar actions (FAA, 2008a).

Emergency Management

Easily imaginable is the chaos and mayhem associated with responding to emergencies. This is particularly true of aviation accidents and emergencies. A major challenge is insuring that personnel adhere to an established chain of command and that communication exists. Brunacini (2003) advocates a position of centrality in the management of accidents and incidents. Essentially, he indicates that transparent, established, and understood lines of authority need to exist within and during management of emergencies. Considering that the aviation industry has to upgrade equipment, having current information is necessary for all involved. Accordingly,

improved communication, updating procedures, and prioritizing resources might prevent reoccurrence. Not all emergencies can be handled and followed in a textbook fashion. However, practice tends to engender success that equates to minimal loss of life and property.

To insure an appropriate emergency management system (EMS) is in place, ISO directive 1401 requires airport leadership periodically review EMS to ensure its “suitability, adequacy, and effectiveness” (Korul, 2005, p. 73). Essentially, management should ascertain whether EMS is enabling the airport to reach desired results and benefits. The review can expose the need for action to meet the airport's environmental policy and commitment to continual improvement. The desired interval of frequency of review is at airport management’s discretion, as ISO 14001 does not stipulate.

Notwithstanding the high risks associated with airport activity, it is recommended that such a review be conducted at least yearly. Additionally reviews should be conducted after significant changes in operations, requirements, regulations, personnel, and equipment. Other times to review are after incidents and accidents or the discovery of noncompliance. Korul (2005) concluded, as do the EPA and CSA, that environmental issues get multilevel attention and concerns accordingly,

EMS implementation and certification do help companies to integrate their environmental, health, and safety management systems and in some cases their environmental and quality management systems. (p. 84)

Acknowledging that an EMS should be developed is obvious; as there has been a however, the research indicates that it might need improving, modifying, and

communicating to all involved. This will bring them with in ISO 1401 standards. Korul (2005) noted that a designated EMS accomplishes two objectives: “It will allow the firm to uncover ways in which they can reduce its environmental impacts while simultaneously reducing costs or increasing productivity. Second, it will coordinate their environmental activities to achieve greater organizational efficiency and effectiveness” (p. 302). Korul developed the report to help aviation industry professionals develop an EMS consistent with ISO 140001 standards and to improve the overall environmental and emergency management performance at airports.

As Korul (2005) indicated, significant in the management and monitoring of aviation facilities is the ability to oversee emergencies. In the aviation community, the bulk of emergency training and preparation surrounds flight operations (FAA, 2008a). Depending on the facility type, those functions are handled on or near the airfield. Another area with potential for devastating events is aircraft fueling operations. Typically aviation fuel has a very high flash point or is extremely flammable. Accordingly, intense, meticulous, and specific procedures must be followed in refueling.

The National Fire Protection Association (NFPA) preparedness standard is well known and used in the business community. The NFPA document provides preparedness basics and is applicable to many transportation sectors (NFPA, 2007). It includes hazard identification, assessment of the organization's resources, development of procedures for responding to a disaster and resuming operations, development of communication systems and employee training (Cadrain, 2004). Airport managers and the TSA would do well to utilize its contents and template. In conjunction with that use, airport

operators, supporting airlines and the TSA must take care not to destroy any evidence in the event of a catastrophe, no matter how overwhelming that task might first appear. Practice and coordination ensure a functioning, reliable, and successful program in emergency management.

Conclusively, airport officials need at least to be aware of appropriate emergency management and forensic techniques. Heightened awareness facilitates their ability to react safely to the inevitable human toll and not to hinder any follow-on investigation. Having a decisive plan can be useful in many respects. Modern day matters force the aviation facility manager to address with not only aviation-related events, but also terrorist bomb, nerve gas, or anthrax attacks. Concerns also include possibly responding to workplace violence incidents, earthquake impact, hazardous spill, large-scale electrical failure, hurricane, or flood (Mankin & Perry, 2005).

Security

Aviation is rooted in the consciousness of society from several different perspectives. It is a mainstay in the commerce industry, military, education, and history. It is still statistically one of the safest modes of travel in the world (TSA, 2010). Accidents, however, are what attract public attention and create paranoia and anxiety like no other event. This is because of the magnitude of aircraft accidents. Recent history has added the threat of terrorist activity during flight and surrounding operations (Howard & Sawyer, 2003). These effects present huge challenges for the aviation industry from the time passengers arrive at the facility, board the airplane, take off, and depart. Others involved in the process are those who fly and maintain the aircraft, those who maintain

the facility, and those who monitor and direct aircraft when they are in the air. The catastrophic events of 9/11 diminished Americans' sense of security like no other.

History has demonstrated that actions engender reactions. The United States government's reaction to 9/11 was swift and ongoing. The PATRIOT Act and subsequently the Homeland Security Act attempted to consolidate the efforts and functions of 16 existing organizations into a focused undertaking intended to protect the nation's borders and respond to emergencies and natural disasters. As the PATRIOT Act has implications which filter down to state and local governments, "Federal funding priorities have encouraged county officials to shift resources from programs to deal with natural and technological hazards to counterterrorism programs" (Benton et al., 2007, p. 967). The implications of reallocation has obvious implications, it has engendered a need to establish an organization whose mandate is to manage objectives of the PATRIOT Act. The Office of Homeland Security was the congressional answer to implementing, strengthening, and managing policies and procedures designed to reduce vulnerabilities from terrorism, all of which have left an indelible mark on aviation.

The 9/11 ignition effect on policy development cannot be overemphasized. Brook and King (2007) noted how it "changed the context, priorities and goals of public management reform" (p. 399). It "increased security for airports, nuclear facilities, dams, and bridges, and employment of sky marshals on airlines" (Nyatepe-Coo & Zeisler-Vralsted, 2004, p. 45).

The United States PATRIOT Act immediately cut into existing terrorist investigation laws and incidentally breached many of the civil liberties guaranteed by the

U.S. Constitution. In subsequent legislation, the HSA created an organization, the DHS which was designed to carry out the fight against terrorism and several other national duties that might have overwhelmed and inundated it, including responding to natural disasters and emergencies. Consolidating 22 agencies and over 17,000 federal employees into a “cabinet level department—the largest and most complex reorganization of the federal government since the Department of Defense” (Brook & King, 2007, p. 399) nearly 60 years ago is now the DHS. Among the organizations that make up the DHS are the TSA, U.S. Customs and Border Protection, U.S. Citizenship and Immigration Services, U.S. Immigration Customs Enforcement, U.S. Secret Service, FEMA and the U.S. Coast Guard. Accordingly, the DHS purports to have a team approach to protecting the United States from attacks on its soil, all of which foster increased screenings, monitoring, and management of aviation facilities that is more stringent. Although there is sufficient concern safety in countering and preventing terrorism, there simultaneously exists the need to prevent aircraft accidents (FAA, 2010).

The 9/11 attacks had a profound effect on aviation, particularly security at aviation facilities, and after the emotional effects, the most difficult part is the funding to carry out mandates (Howard & Sawyer, 2003). Ghobrial & Irvin (2004) offered a post 9/11 report that dealt with effects on airlines, airports, passengers, and finances related to them. Although government assistance is needed for the dire situation that the aviation industry is in, all entities—the federal government, airlines, and airports—need to work together to come up with equitable and practical policies to deal with increased security costs. (p. 78)

Where the financial liability lies for aviation security continues to be a heavily contested issue. The argument centers on whether security is a federal issue or an airport or airline issue. Accordingly, the cost should be borne nationally. Another concern is for passengers and that the cost should not be shifted to them. The opinion here is if this happens, the industry will collapse. This same concern has been stated by members of Congress. For example “Congress will ultimately have the responsibility to ensure a proper combination of costs paid for by airlines, airports, passengers, and the federal government” (Ghobrial & Irvin, 2004). Ghobrial noted that analysts believe most of the problem is over for the industry.

The literature on aviation security exposes how events of this magnitude filter into several different arenas, and airport managers must be held responsible for maintaining reasonable care to maintain security. Security management leading to prevention of terrorist act or disasters is certainly necessary. Although not on the scale of severity as security management, another phenomenon, if not controlled or mitigated, can cause catastrophes in the form of accidents is bird strikes or (wildlife management).

Wildlife

Yet another significant concern for the aviation facility manager, operators, ATCs, and others is uncontrollable wildlife activity and accidents and incidents associated with it. Dolbeer & Wright (2009) noted a significant component of any airport safety management system (SMS) is its wildlife management program. The FAA (2008) indicated that wildlife strikes have causes incidents and accidents resulting in 229 deaths and the destruction of over 200 aircraft over the past two decades. This means an

increase in the threat to aviation operations in general. Three primary causes contribute to increased wildlife accidents: more species of wildlife that are hazardous to aviation, more aircraft movements, and changes in aircraft themselves.

Accounting for over 97% of wildlife incidents, bird-strikes present an extremely difficult hazard to manage. This is because of the various sizes, species, and flocking behaviors of birds on and around aviation facilities. A recent, familiar example is the U.S. Airways (Flight 1549) aircraft that landed in the Hudson River—the result of Canada geese being swallowed into both engines of the aircraft (FAA, 2008; NTSB, 2001). Although the crew of Flight 1549 was able to land the aircraft safely with no serious injuries or death; airstrikes can have catastrophic results. The pilot, aircraft environment, weather, and topography can determine the result.

Simultaneous with species growth have been the boon in aircraft operations across all genres of aviation operations. FAA (2008) statistical data indicate that from 1990–2008, overall passenger enplanements in the United States has increased over 50% from roughly 490 million to 750 million; these increases have filtered to commercial and military aircraft movements, realizing 22% and 23% increases respectively.

The FAA (2009) predicts further increases of about 1.3% per year to \$35m by 2025. Certainly, additions in enplanements serve as a ripple effect on the aviation industry: more flights, more aircraft, and more opportunities for wildlife strikes. Commercial air carriers have replaced older, three- to four-engine aircraft with more efficient, quieter two-engine aircraft. This, although effective on several levels, is counterproductive for mitigating the effects of wildlife incursions. An aircraft that loses

one quarter of its engines can maintain flight more easily than one that loses half of its power. The organization charged with managing the wildlife program is the USDA Wildlife Services (USDA/WS) and has been a collaboration of the USDA and the FAA since 1995.

Management of the wildlife program requires only reporting strikes, which are then maintained in the FAA National Wildlife Strike Database (NWSD). Ironically, it is only recommended that wildlife strikes be reported, a measure encouraged via FAA Advisory Circular 150/5200-32A FAA (2001). Reporting wildlife incidents and accidents is significant, as NPIAS GA airports with at least one strike grew from 66 in 1990 to 152 in 2005 with a minor decline from 2006–2008. Regardless of those numbers, there are many strikes occurring at GA facilities.

Studies of wildlife strikes are to determine whether reporting strikes should be made mandatory (Dolbeer, 2009; FAA, 2008). Dolbeer (2009) determined there is not an immediate need to enforce or make reporting strikes mandatory. His assertion is based on the increase of occurrences based on knowledge garnered from the NWSD; additionally, it is recommended that all aviation facilities develop a wildlife management plan to implement as part of their safety management system (SMS). This is significant as, 50% of strikes reported indicated damage to aircraft. Bird strikes are a significant element that affects aviation safety. Managing it along with understanding the other facets reviewed throughout offers information and plans conducive to a safe aviation environment. It is incumbent upon the aviation facility manager to become familiar with

this information and the other topics presented in this chapter and employ this knowledge accordingly.

Managing wildlife hazards is but one major responsibility of the aviation facility manager, as they include safety and safety education, air traffic control, flight activity, environmental issues, emergency management, and security. All of these are pertinent to the industry and the research conducted in this work, as such, they will be explored via interviews with participating managers.

Summary and Conclusion

Airports are affected by local statutes, as well as state and federal law (Dasgupta, 2003). This condition presents a unique environment, as regulatory inputs are from several levels, and the facility houses many functions that contribute to a potentially dangerous setting. Couple managing a flying operation with managing innovations, modernization, and mandates from public policy, information technology, and demographics, and the result is an environment and public setting conducive to investigating many phenomena. There is no major research that considers safety, education, aircraft maintenance, air traffic control, flight activity, environmental concerns, emergency management, security, wildlife management, and other areas as they relate to the management of airports. For that reason, this literature review identified real world, pertinent factors in the industry and dealt with how change applies to the aviation industry. The methodology used for this research is presented in chapter 3.

Chapter 3: Research Method

Introduction

The purpose of this qualitative phenomenological study was to examine the management processes and experiences of airport managers in dealing with the dynamics of change (scenarios and sources) in the aviation industry at North Carolina GA facilities. The qualitative research was used to analyze and describe each leader's perspectives about management practices, decision making, and policy/change implementation practices as they relate to mission accomplishment. Because the researcher did not focus on the lived experiences of the managers surrounding a specific event, the researcher used a modified method of collection, coding and establishing meaning including those described by Moustakas (1994), Jones (1996), Miles and Huberman (1994) and Husserl (1931/1969). The results include experience both from the individual leader's perspectives as well as the statewide perspective of success based on established indicators. This study adds to the literature on managing change, particularly in the public aviation organization.

Qualitative research facilitates an investigation of phenomena void of experimentation and controls to determine expected outcomes. Leedy and Ormrod (2005) noted that qualitative research views occurrences in their natural environment. Merriam and Associates (2002) stated, "Meaning is socially constructed by individuals in interaction with their world" (p. 1). Accordingly, Merriam et al.'s (2002) view is that the crux of qualitative research is based on observing, monitoring, and recording reality. This can be accomplished via examining the real life experiences and lives of those of

interest. Creswell (2007) categorized qualitative research into five different modes of operation:

1. Narrative research involving the examination of a person.
2. Grounded theory, in which field data are used to create assumptions and conjectural representations of truth.
3. Ethnography, in which the common faction of tradition is the focus of examination.
4. Case study, in which events, activities, or programs are intensely scrutinized for comprehension.
5. Phenomenology, in which common knowledge of participants is investigated.

(p. 78)

However, as Merriam et al. (2002) indicated, phenomenological research and science are the denominating concepts for qualitative research, which is distinctively separate from the other qualitative approaches. As I sought to understand the phenomena of managing the GA facility in North Carolina, I chose phenomenology.

Chapter 3 includes a description of the application of qualitative research methodology to this project. Further, I discuss the phenomenological approach, the questions, data gathering and analysis, and issues surfacing and concerning participant confidentiality. I also address information related to design applicableness, the population selected, and sampling data collection approaches. This chapter also includes specific research instrumentation, data coding, and the qualitative analysis software used.

Phenomenological Science

The qualitative tradition of phenomenology derives from constructivist or from the ontological view that states that there is more than one actuality and that it can originate from several entities. Instead of establishing a theory, researchers develop theories inductively. As Creswell (2007) stated it, “The researcher’s intent is to make sense or interpret meanings others have about the world” (p. 21). The constructivist approach involves an affiliation between the researcher and the participant. Accordingly, methods other than face-to-face interviews are discouraged, as they preclude researcher and participant interaction.

Husserl (1913/1969) recommended a three-part research approach regarding experiences with varying phenomena: epoche, phenomenological reduction, and imaginative variation. Within epoche, the researcher attempts to dismiss personal knowledge of the phenomenon to clear any biases and perhaps facilitate relearning (Husserl, 1913/1969). The phenomenological reduction step is to establish comprehension of the phenomenon as it unfolds (Husserl, 1913/1969). Phenomenology is a “pure descriptive discipline which studies the whole field of pure transcendental consciousness in the light of pure intuition” (Husserl, 1913/1969, p. 176). Accordingly, phenomenological reduction entails data gathering and analysis to isolate the phenomena from what Husserl termed “corruptions” (p. 176). Essentially, phenomenological reduction is the analysis of life experiences less corruptions. The conclusion should become knowledge.

The third element of the phenomenological method, imaginative variation, is attaching meaning to information acquired. Husserl (1931/1969) related imaginative variations to fabricated ambience; other words associated with it are *bracketing* and *imaginative*. Consequently, Husserl's concept of phenomenology moves away from the sciences of surveillance and fosters human imagination as a source for breaking the code of enigmas to assign meanings. "Principle of all principles" (Husserl, 1913/1969, p. 92) elucidates the phenomenological research concepts:

Every primordial datur Intuition is a source of authority for knowledge, that whatever presents itself in primordial form (as it were in its bodily reality) is simply to be accepted as it gives itself out to be, though only within the limits in which it presents itself. (Husserl, 1913/1969, p. 92)

Another advocate of Husserl's (1913/1969) position on phenomenological methods is Merleau-Ponty (1964), who described phenomenological science as a search for quintessence or connotation. Merleau-Ponty also noted that facts gained via life experiences assumed "we are living through something from what it is we are living through in this fact" (p. 54). Knowledge is gained not only through experiences but through concentrated expressions of the facts of those experiences.

Phenomena of Perception

Merleau-Ponty's (1962; 1974) declarations offers further insight into the phenomenological research process and issues strengthening it, noting

Science and philosophy have for centuries been sustained by unquestioning faith in perception. Perception opens a window onto things. This means that it is

directed, quasi-teleologically, towards a truth in itself in which the reason underlying all appearances is to be found. (p. 54)

Perception is realized through inspection that is relative to the beholder (Merleau-Ponty, 1962; 1974). Essentially, knowledge gained from anything is first by living through it. An example could be that of airplane noise; some might see or hear it solely as noise whereas others might hear it as a gateway to freedom. The definition of perception is the act or ability of capturing using the mind and or senses to garner understanding (Merleau-Ponty, 1962; 1974). This leads to each person perceiving his or her environment, phenomena, and functions differently. Accordingly, managers of North Carolina GA facilities perceive the phenomena or managing their particular facility through lenses personal to their own experiences. Additionally, they collectively perceive their experiences and would most certainly view or perceive various experiences or phenomena differently than professionals of other industries.

Modern Phenomenological Applications

Modern phenomenological applications are essential to conducting contemporary research. Areas pertinent to understanding modern applications are attaching meaning to perceptions and determining the significance of experiences. Moustakas (1994) asserted that in “phenomenology, perception is considered to be the primary source, the source that cannot be doubted” (p. 52). Attaching meaning is essential to the process of perceiving; it might require psychological functions to include memorizing, thinking, and might even cause using the imagination. Moustakas noted that the process develops a disposition of conjecture as more perspectives develops and transforms into knowledge.

These are the result of experiences and perceptions from past, present, and future knowledge being born out of the revealed, ultimately resulting into what something is and means.

Husserl (1931/1969) and Merleau-Ponty (1962; 1974) elevated the classical perception of phenomenology to a more contemporary and usable process for qualitative researchers and offered a systematic process for learning from experiences. Moustakas (1994) also advocated the three-phase process for gaining knowledge: epoche, phenomenological reduction, and imaginative variation. Throughout that process, the qualitative researcher isolates himself or herself from the phenomena and tries to put aside knowledge and experiences that might cause biases, assumptions, and obstacles to the unique experiences of the participant. During the reduction phase, the responses of participants are assigned “meaning units” (Creswell, 2007, p. 159), descriptions are analyzed, participant statements are listed, and the results are converted to a usable form for transition to the last phase, imaginative variation.

The goal of this study is to determine idiosyncrasies specific to managing GA facilities in North Carolina. I used a qualitative, interpretive research, phenomenological process described by Creswell (2007), McNabb (2002) as well as Moustakas (1994) to interview airport managers of 10 North Carolina GA facilities to develop organizational change theory from the experiences and perspectives of each manager. These managers had experiences that are representative of persons in similar positions. In staying with the identified phenomenological science procedures, this study falls in line with the tenets of epoche, phenomenological reduction, and imaginative variation.

Research Questions and Procedures

As I proposed to discover how managers of GA facilities in North Carolina deal with mission accomplishment, I interviewed 10 selected managers of these facilities. My intent was to determine how they deal with requirements handed down from many overlapping and potentially conflicting levels of authority while they simultaneously managed the day-to-day operations of a potentially dangerous and dynamic environment. Using their responses, I developed an organizational change theory applicable to management of these organizations.

Research Questions

1. What are the major obstacles to change in North Carolina airport organizations?
2. What processes influence implementation of operational policy at North Carolina airports?
3. How do North Carolina airports respond to demands for change, whether from government or private sources?
4. What primary factors drive change in North Carolina airports you are associated with?

Subquestions

1. How does information technology affect airport management?
2. How do changing demographics affect change in airport management?
3. How does policy development force change in airport management?

Determining Participants/ Selection Criteria

Groenewald (2004) stated that phenomenology determines not only the research method, but also the types of research subjects as well. Determining the selection of participants was accomplished via the combination of random convenience sampling and volunteerism. Considering that this research is on North Carolina GA airports and their managers, and that I am a member of the research population (Director of Dare County Regional Airport), unique techniques for participant selection were employed. To ensure validity and avoid impartiality I went through a state airport professional organization to solicit participants. Convenience sampling techniques are sparingly employed; however, because of my professional affiliation with the population, it was deemed appropriate to solicit the assistance of the state sanctioned NGO North Carolina Airports Association (NCAA).

The NCAA whose mission is to “promote aviation and airport management in North Carolina through networking and professional development opportunities” (NCAA, 2010) were used to help assist with developing the population for the research. They also oversee and manage an aviation scholarship program. As advocates of academic research and development, the NCAA agreed to assist with finding participants. The NCAA assisted with soliciting research participants by pooling airport managers via e-mail announcements, conferences, and other measures. Using the NCAA to assist with the process met with Walden University’s IRB approval process; the NCAA assisted only after approval was granted via IRB approval # 05-05-11-0034106. The NCAA’s role entailed their executive secretary polling members to solicit participation in the study.

Groenewald (2004) recommended two to 10 participants for in-depth interviews; the nonprobability convenience sampling allows latitude in number of subjects (McNabb, 2002). Accordingly, I solicited 10 airport managers to interview (via NCAA solicitation); they were selected because of their willingness to participate and the convenience of sampling for the researcher. I assigned each manager a color code (see Table 2 in chapter 4) through the presentation of the findings to maintain confidentiality and protect their identity.

Once a pool of 10 volunteers was accumulated, I established how the interviews were conducted. The discretion for conducting the interviews consisted of considering the parameters of participant availability, as well as time and cost for myself. Based on the availability of the managers, I interviewed them in person or via telephone; five of the 10 were conducted in person and the other five over the telephone. Additionally, a pilot study of one of the participants (Manager Orange) was conducted to test the methodology proposed. Manager Orange was selected as the pilot study because of the close proximity to the location of the researcher. After conducting the pilot study, I determined that the planned methodology was practicable and feasible, which was an indication I could proceed with the remainder of the study.

I used three methods to collect data; one was via an online survey to gather basic demographic information: the survey is entitled Airport Managers General Information Survey (Appendix J). Information requested was education, experience, gender, and age as well as information specific to the facilities they manage. The survey did not have any impact on the research responses, nor was it analyzed for that purpose; it was used as a

basis to recommend future research (see chapter 5). Participants were asked to complete the online survey prior to the interview. Only seven of the 10 participants responded to the survey. The reason the other three participants did not complete it was not determined. I could only speculate as to reasons; however, in the interest of academic integrity, and maintaining the validity and reliability of the process, they were reminded that completing it was part of the research process. They were offered an opportunity to complete the survey after the interview as well, to no avail. Their failure to complete it was not problematic as they were informed (from the onset of the process) that participating in all or part of the study was entirely their option. The second data collection method was the review of public records (which were used to verify information that was not obtained via interview), and the third included conducting the actual interviews.

The chain of collecting the data for research did not follow any particular sequence as the interviews were scheduled and completed based on the schedules and availability of the managers and myself; the types of information derived from each source differed. The actual interviews lasted no more than one and a one-half hours; the lengths varied between 30 minutes and 1 ½ hours. The interviews were structured in a manner conducive for effective communication and interaction between the managers and myself. The questions are categorized into eight themes: organizational structure, defining change, decision making, process obstacles, income/revenue sources, managerial perspectives, future, and operational management perspectives (Appendix K list all questions). The eight themes were selected to flush out experiences to develop pertinent

change theory. Unlike Kotter's (2008) themes, these themes were selected based on the professional experiences, self-reflection, and judgment of the researcher. A brief explanation of the themes follows.

- Theme 1, Organizational Structure, will review lines of authority, communication, and rapport.
- Theme 2, Defining Change, asks for information about the process, timeliness, sources, and effectiveness of change implementation for the manager and his or her facilities.
- Theme 3, Process Obstacles, seeks nuances specific to the particular facility to determine whether the facilities are deficient in any way.
- Theme 4, Decision Making, asks who is in control and makes decisions. This is significant as obstacles to lines of authority can hinder timely decision making.
- Theme 5, Income/Revenue Sources, requests the major sources of revenue.
- Theme 6, Managerial Perspective, asks for the manager's years of experience in that capacity and number of staff available, this allows the manager to develop personal philosophies regarding managing the facility and the industry in general.
- Theme 7, Future Perspective, asks for the direction the facility is headed and focuses on growth initiatives and local political resistance or support for expansion.

- Theme 8, Operational Management Concerns, asks for concerns about safety, aircraft maintenance, air traffic control, personnel, technological advancement, and environmental topics.

Determining managers' perceptions, review of public records, and the online survey facilitated the process of successful triangulation of data and to ascertain whether these areas were consistent concerns of those interviewed. The in-depth interview was the primary source for the unit of analysis. Other information came from reviewing the public records to include the facility's master plan, a document that includes the number of flight operations, passengers, assigned aircraft, and other data pertaining to the facility to flush out data not garnered or discussed during the actual interview.

Research Model

This study was conducted in a fashion similar to those conducted by Oderman (2004) and Sharp (1989) and it followed the pattern of the phenomenological study of educational leadership by Pierce (2009). I also followed a pattern established by Rodriquez and Bijotat (2003) who examined airports in Illinois to determine budget preparation and management practices. As indicated in the conceptual frame work section of chapter 1, Oderman (2004) and Sharp's (1989) work are directed specifically toward aviation education issues; as such, their model(s) are appropriate references for this work as well. Additionally, this followed the patterns of Rankin (2008), who researched runway incursions and Carmichael et al. (2003) who studied aviation industry professionals in Oklahoma, additionally Rodriquez and Bijotat (2003) examined an

aviation specific topic in the state of Illinois, all applicable as this work examines a phenomena in the state of North Carolina.

Interviews

Oderman (2004) used the in-depth interview to determine whether a course in ethics should be offered in aviation education. McNabb (2002) noted that in-person interviews facilitate gathering large amounts of data in a short time and the advantage of nonverbal communication the researcher and participant engage in. This was applicable to this research as when feasible, in-depth interviews served to take advantage of the nonverbal communication advantages inherent with interviews. The next area examines the role of the researcher.

Procedures of Epoche and Role of Researcher

It should be understood that the researcher is a part of the population being interviewed. Accordingly, concerted efforts were directed toward avoiding and eliminating researcher bias. As Thome-Diorio (2009) noted, “there is no single process or approach for demonstrating or providing evidence of quality in qualitative research” (p. 70). Accordingly, the role of the researcher should be understood. This was done by acknowledging and being aware of two concepts; one of the tenets of phenomenology, Epoche (expounded on in the philosophical foundation of phenomenology section of this chapter) and self-reflection. Self-reflection centers around the “researchers’ understanding of how they are intertwined with the subject” (Thome-Diorio, 2009, p. 70). It is accordingly significant to be cognizant of how this relationship can possibly influence documentation, interpretation, and perception of participants’ experiences,

views, and perceptions. Appropriate self-reflection on the part of the researcher avoids these possible pitfalls.

Properly applied self-reflection avoids hidden agendas, biases and fosters valid results in the research process (Richardson, 2000). Richardson (2000) used bracketing techniques to set aside predetermined opinions regarding the study. This was accomplished by exploring and revealing my own personal experiences; this facilitated transitioning into phenomenological reduction, smooth and void of imbued personal influences that could potentially cloud the results. Accordingly, these techniques and experiences are appropriately documented in chapter 4. Procedures for conducting the interviews, and request or invitation to participate as well as consent acknowledgement are explained below.

Participants received a letter (Appendix G) or request and affirmation to participate. This letter was issued to them by the executive secretary of the NCAA. The letter listed explicit instruction on the study, who was conducting it, how it would be carried out and most importantly, the voluntary nature of the study; which insured them that there would be no compensation for participation, they could withdraw from the study at any time and more importantly their participation as well as contact information will be kept completely confidential. After the participants were identified, they were given an agreement and consent form (Appendix H). This letter is similar to one developed by Pierce (2009) who conducted research on college presidents in Florida regarding community college transition to four year institutions. The letter contains a

specific clause addressing the confidentiality of the study and how the collected data is maintained.

Each manager in the study was color coded within this document for identity protection as well. The next areas discussed are data collection and phenomenological reduction.

Data Collection/Phenomenological Reduction

Three methods were used to collect data; one is via an online survey. Information included in the survey includes airport facility classification, characteristics, staff, service capacity of operational accommodations, runway lengths, and other objective information. Information asked about the manager includes demographics; education, tenure, and experience (see Appendix J). The plan was to interview the participants at their locations, however; logistical complications and availability led to five being interviewed over the telephone and the other five at the participants' locations; all interviews were recorded and followed the same established sequential protocol with each (see Appendix K). As the interviews were conducted in person and via telephone, they were recorded.

The interviews were recorded as they were conducted, after which they were transcribed into raw format via word document. The raw transcripts were analyzed; this process also served as transition to the next step in phenomenology, imaginative variation. Throughout the entire process, all participants were offered the opportunity and option to contact me at any time with any questions, comments, or concerns, and to

review subsequently coded data and the final report as well. This process also lends itself to ethically protecting the participants as well.

Ethical Protections

Considering the selection criteria presented earlier and that the researcher is a member of the research population, the researcher adhered to strict ethical protective measures. In addition to following the research tenant of epoche, the interviewer took no measures to persuade, influence, or make assumptions on the information provided by the participants. For verification and validation, the interviewees were offered at least two follow up interview opportunities; they also had the option to discontinue or terminate the interview or their participation in the research as well. Another measure that fostered ethical protection was that not only was the NCAA was informed of the study, the NCDOA director has been informed of the study as well. The director thought that conducting the research would provide positive insight into the professionalism of the aeronautics in the state of North Carolina as well as contribute to the academic genera of North Carolina aviation as well. Additionally, any future publication, and or communication of this study will not be performed without the expressed written permission of all involved to include, the participants, NCAA and the NCDOA. When the findings of this study are published, the identity of the participants will remain anonymous; this process is further solidified via the coding process used throughout.

Limitations

McNabb (2002) noted, “The phenomenological approach to qualitative research has its roots in such traditions of philosophy as existentialism and the study of the meaning of language and other symbolic behaviors” (p. 278). As a subsection of qualitative, interpretive phenomenological research draws on the connection and perhaps affiliation between the researcher and study participants. This is applicable as I am an airport director, a member of the research population, who conducted in-depth interviews with other airport managers or directors from other aviation facilities throughout North Carolina.

The study is limited to GA facilities in North Carolina. As there are over 60 in the state, nonprobable convenience sampling of 10 managers (selected through the NCAA) are sufficient for this research (McNabb, 2002). Ten of sixty are adequate for the nonprobable sampling concepts of McNabb (2002), and Sandelowski (1995) noted that sample size is “ultimately a matter of judgment and experience” of the evaluator (p. 35). Other limitations included the time spent with each manager, this was because each manager was extremely busy and subject to recall at any given time. Accordingly, the manager was not observed extensively, but data came from in-depth, face-to-face interviews. Other data came from the preliminary survey and public records. Gathering and using data from these three sources facilitates the requirement of triangulation. Additionally, only the manager was interviewed, not any members of their staff or governing body. Participants were informed they can decline to answer any question for

any reason and could withdraw from the study at any time, this was evidence by the lack of total participation on the online survey.

Data Analysis/Imaginative Variation

To test the proposed methodology it was important to conduct a pilot study. The study was conducted to assess the feasibility of the proposed methodology. After interviewing Manager Orange, I determined that the research was feasible and accordingly no major modifications were needed to the proposed methodology. The results of the pilot study allowed me to proceed with interviewing the remainder of the participants. I subsequently offered two interviews as needed; this technique was used by Miner-Romanoff (2010), who audiotaped interviews with prison inmates. Miner-Romanoff (2010) allowed participants to review the transcripts to confirm her interpretations as a form of member checking. All participants reviewed transcripts and were satisfied that they reflected their intended meaning. All procedures were adhered to ensure anonymity of participants.

Another requirement is triangulation, a process similar to the Monopoli and Alworth (2000) research of Navajo World War II veterans. This procedure enabled comparison of the running record of public documents to artifacts, and mass media (McNabb, 2002). The majority of data collected to meet requirements of triangulation were garnered for the online survey (see Appendix J) and various facilities (published public documents). Throughout the triangulation process, I remained cognizant of the potential biases engendered when conducting this type of research; this is necessary as

Webb, Cambell, Schwartz, & Sechrest (2000) noted can occur with public records: selective deposit and selective survival.

Data Coding and Analysis

McNabb (2002) mused on how data serves as the foundation and provides substance to all research. This project is no exception. Several have attempted to narrow down and establish tangential procedures in qualitative data management and analysis (Denzin & Lincoln, 1998; Emerson, Fretz, & Shaw, 1995; Miles & Huberman, 1994; Neuman, 2000). Additionally there are two components associated with discerning qualitative data, data management, and analysis. Qualitative data can be either “words, pictures, artifacts, music scores, and so on” (McNabb, 2002, p. 389). McNabb (2002) elaborated on three methods for interpretation and analysis of qualitative data.

Qualitative data analysis (QDA) requires that data be ordered. McNabb (2002) suggested three techniques to accomplish this. Advocated primarily by Miles and Huberman (1994) the first is a nine-step process consisting of preliminary analysis for patterns and structure; open coding to form clusters and identify themes; comparative analysis for similarities and contrasts; analysis for unbundling of early constructs; axial coding to clarify constructs and themes; reiterative analysis to identify relationships; selective recording of major themes; reiterative analysis with links with the literature and develop appropriate theory from data. Another method consists of twelve steps incased in two parts.

Jones (1996) systematized the same process into two parts consisting of 12 steps, one preparing for qualitative research and two, analyzing and reporting. Part 1 consisted

of defining the problem, establishing research objectives, doing necessary homework, becoming immersed in the setting, gaining entry into the study group, and planning the data-gathering process. Part 1 centers on planning, gaining trust of the subjects, and scheduling the actual research. Part 2 includes the details of conducting the interviews in this case. It also consists of taking extensive field notes, completing first level coding and grouping data, completing second-level coding and grouping data, complete third-level grouping, third-level coding and grouping of data, generate final constructs and theories, prepare final report, and present findings. Although the two parts identified are specific to qualitative data collection and interpretation in general, Emerson, Fretz, and Shaw (1995) discussed a process specific to collecting ethnographic data.

The research conducted in this project is on airport managers in North Carolina. Although not studying the managers themselves, it probed them and their setting or interaction with and managing their facilities. Accordingly, understanding an ethnographic element of research or “the study of people in setting in which they live, work, and/or play” was appropriate (McNabb, 2002, p. 379). According to McNabb (2002), “To gather ethnographic data, researchers must gain entry into a social setting, earn and maintain the trust of members of the group, and observe” (p. 379). This is already established because the researcher in this case is a peer of the research subjects. As with the other techniques noted the process of recording, coding, and reporting follows; accordingly, the six-phase process includes reflective contemplation, interpretive questioning, open coding and interpretive memoing, identification of themes in the data,

focused coding and interpretative memoing, and final analytical contemplation to generate theory.

All techniques listed identify a redundant process of categorizing and coding from general to specific areas. This work followed a similar pattern however, as McNabb (2002) noted in QDA “usually little or no categorizing is done prior to the data being collected” (p. 25). Accordingly, data was conceptualized, coded and categorized according to themes (Themes 1–8, see Append K). Additionally the data were managed and appropriately stored in consensually recognized information management system. I used audio recorders and the current version of NVivo 9.0. This was appropriate as “NVivo 8.0 a tool designed to assist qualitative researchers in the theme identification and overall organization” (Mungai-Coles, 2010, p. 102); my using the later version provided the same data gathering and sorting options with enhanced capability suitable for this research.

Coffee and Atkinson (1996) and Kelle (1995) remarked that many qualitative analyses could be supported by personal computer software packages that have been developed since the 1980s. However, there is “no one software package that will do the analysis in itself” (Coffee & Atkinson, 1996, p. 169). This point is solidified as, understanding of the meaning of phenomenon “cannot be computerized because it is not an algorithmic process” (Kelle, 1995, p. 3). This is true as use of the software offered many advantages for storing and sorting data; however, analyzing the data and developing appropriate themes, codes, and categories fell on the researcher to develop. I was able to accomplish this because the interviews and questions were structured in a

manner conducive to effective manipulative coding which allowed me to attach effective meaning to the narratives and develop meanings individually and consolidate them aggregately for the entire research population (see Appendixes L and M).

Appendix K list questions that were asked during the interview. The questions are separated by themes as stated earlier in this chapter, these themes served as initial coding of invariant constituents (see chapter 4) and served as the basis of further categorizing. Questions were arranged according to theme (see Appendix K). Initial coding and categorizing was based on respondents and themes as well. Categories and codes focused as the responses were gathered and analyzed, coding as well as triangulation also allowed for identification and manipulation of discrepant data. I took notes to supplement the narratives taken during the recording process. This falls in line with consensus qualitative practices as Groenewald (2004) indicated, field notes are an alternate technique of data storage in qualitative research. Using them is applicable as noted, human attention span limitations can cause forgetfulness that is extremely problematic in retaining data gathered. This requires discipline on the part of the researcher, and calls for immediate action to develop the various types of field notes as soon as possible after the interview was conducted.

There are four types of field notes:

1. Observational (ON)
2. Theoretical (TN)
3. Methodical (MN)
4. Analytical (AN)

ONs refer to what has happened since using notes; TNs attach meaning to experiences; MNs are for setting reminders throughout the process, and AMs are used to tie together information. Throughout the process of conducting the interviews, I took a variation of each type.

Conclusion

Qualitative research is an intense process that can take many forms. This research used a phenomenological approach to study the phenomena of managing aviation facilities in North Carolina. The research started with a pilot study consisting of one participant (selected at researcher's discretion); the pilot study would have allowed the researcher to make modifications to the research protocol if needed, after completion of the pilot study the remainder commenced as planned. As the research process included interviewing managers of these facilities, there were ethnographic analysis implications to consider. This proved to be relatively simple, as the researcher is a peer of those being reviewed. The technique employed to conduct the research was in-depth interviewing in the environment in which the managers work, thereby establishing a comfortable setting, yielding an effective dialog, and gathering and recording pertinent data. Further analysis of the data and collection, the researcher's bracketing his experience, specific data on research participants, initial presentation of the findings, the essence of the experience of the general aviation airport manager, an extensive review of the findings including participant professional data and a summary and reflection on the research questions are presented in chapter 4.

Chapter 4: Analysis of the Data

Introduction

Evaluating the experiences of airport managers who oversee general aviation facilities in the state of North Carolina is the central objective of this study. Data were analyzed through the phenomenological procedures of epoche, phenomenological reduction, and imaginative variation involving 10 airport managers who voluntarily served as participants in this study. The participants shared the common experience of being the manager of a general aviation facility in the state of North Carolina; these airports all meet the characteristics of the typical general aviation facility as spelled out in the NPIAS.

Specifics on the collection, analysis, and verification of the data are presented first, followed by the epoche, my reflection or bracketing of my experiences as a member of the research population or an airport manager. The subsequent section of the study will include the findings of the study in an aggregate form to reveal the essence and meaning of the phenomenon derived from the individual experiences of the participants. Finally, the conclusion of the chapter relates the final extraction of the findings to the research questions and addresses these in the context of the changing nature of aviation facility management.

Data Collection and Analysis

The majority of the data collected for this project derives from eight themes (Appendix K) surrounding the structural description of the experiences of each participant. Each description is developed from an in-depth interview with each

participant, subsequent e-mail, and telephone communications with the participants. These communicative reiterations were necessary to the goals of purity and quintessence consistent with phenomenological research. In the following sections of this chapter, details of the application of this methodology are provided. The themes and structural descriptions are included in Appendix K and represent confirmed essence based on the experience from each participant's perspective.

The data collection process started with each prospective participant receiving an invitation letter via e-mail from the executive secretary of the NCAA (Appendix H). Verbiage in the letter expressed the purpose and central focus of the study, soliciting and inviting the managers' participation. The managers forwarded their agreement to participate to me via e-mail. Approximately a week following the e-mail correspondence, each manager was contacted by me via e-mail and or telephone. Each was requested to participate and complete an online survey. Once contact was made between the participant and myself, an interview was arranged and scheduled. The first participant served as a pilot study.

The pilot study was used to test and verify the feasibility of carrying out the methodology as planned. Accordingly, the first/pilot interview (Manager Orange) partially represented the beginning of the phenomenological reduction process. The first interview was conducted on May 12, 2011, and the final was on May 27, 2011. Throughout the data collection period, field notes were made in my process journal to list important steps taken in the process. These notes assisted with the coding and categorizing process as well.

Of the 10 interviews conducted, five were held in the participant's airport office, the other five were conducted via telephone. In both interview venues, we were free from obstructions, distractions, and interruptions less the normal aircraft takeoff and landing noises associated with airports. The interviews followed the format identified in chapter 3; the questions asked were according to themes as listed in Appendix K. The questions asked provoked short to extended answers that consisted of conversation foundationed out of the participant's experience. The interviews ranged in time from 40 minutes to slightly more than one hour. The variation in length did not detract from the effectiveness of the interviews; all were validated via subsequent e-mail and telephone communication.

Each interview was digitally recorded using a Sony "T-Mark" recorder (product code: ICD-PX312; ICES/WMB-003 Class B). As soon as practicable after each interview, the recording was downloaded to my personal computer; this served as a backup and contributed to security. The interviews were transcribed into separate Word documents for each interview. Also during transcription, the interviews were edited to delete or omit information that would lead to obvious identification of participants. This practice was followed throughout presentation of the findings. Although the documents were purged of identification data, the actual audio file is preserved and maintained as recorded. The notes, recordings, and other materials pertaining to the study are maintained in a locked facility of which I only have access; they will be maintained there for a period of 5 years or later.

The phenomenological reduction continued with a process in which large portions of material were separated, sorted, and coded. This was done using the qualitative research software NVivo 9.0 (NVivo software was used for other purposes mentioned later in this section) and Microsoft Word and Excel. The purpose of using the mentioned software was to reduce the transcripts to their finest elements and identify useful categories of relevant data. The analysis of transcripts and data began after conducting the last interview on May 27, 2011. The interviews were transcribed and returned to the participants on June 16, 2011.

On that date, the participants were given the opportunity to review and offer any clarification on statements and meanings of the interview or questions. This was done by e-mailing the transcripts via Microsoft Word file attachment. Over a period of 5 days, each participant including the pilot study confirmed that the transcripts of the interviews were accurate and reflected the meanings intended. Each of the transcripts was color-coded. I read each transcript several times for clarification. Parts of the interview that met with Moustakas' (1994) criteria of invariant constituent were highlighted in bold or underlined. These elements include those portions of the transcripts deemed to be "a moment of the experience that is a necessary and sufficient constituent for understanding it" accordingly warranted appropriate labeling (Moustakas, 1994, p. 121). Invariant constituents included elements that were ultimately reflective of the common essence of the experience such as how Manager Orange described his working relationship with his airport authority, their affiliation with others and financial sources:

Yes, while we are an independent airport authority, an independent governmental body, we get a stipend from both the city and the county. Not a whole lot—in our budget—but we get some money from them. They also, through our enabling legislation, provide some measure of oversight, in [which] they are ultimately responsible for example of any debt that we occur. Should the airport authority default, the city and the county are equally liable for that debt. If we were to enter into any debt agreement, we would have to get their approval first because they are ultimately liable through that connection. The city manager and the county manager are two of the non-voting ex-official members, meaning it's by position and not person. They [managers] appoint my board members. The city council appoints three of the members; the county commissioners appoint three members, and alternately, the city and the county, appoint the chairman.

Another example of an original invariant constituent was the following element from the narrative from Manager White and how he described affiliation with others with a quasi interest and membership in the organization:

No. Owned by the City and County jointly. A company called XXX County Economic Development Corp. who is funded by the City and the County looks at what kind of businesses can come in and what type of incentives to give. The president of XXX County Economic Development Corp. is an automatic member of the Airport Authority

Unlike the previous constituent of Manager Orange the latter from Manager White differed in that it referred to a unique relationship established between the airport

authority and a funded organization charged specifically with attracting business and economic interest to their area.

Highlighted invariant constituents from each transcript were copied electronically into a separate area or “node” in the NVivo 9.0 software; this allowed the initial labeling to take place. In this case, it was classifying each constituent in to one of six initial categories: (a) echelon, (b) revenue generation, (c) budget preparation, (d) policy implementation, (e) human resources (HR), and (f) information technology (IT). The narrative referred to by the Orange Manager was coded “echelon” to indicate the management structure of the facility; the narrative from Manager White was labeled under the “echelon” invariant as well however, a side note is that its situation was noted as unique, and led to the subsequent development of more invariant constituents. This initial set of codes facilitated effective manipulation of large amounts of data.

Each invariant constituent was lined up with the themes they represented (Appendix K). After this was done, each interview was transcribed, reviewed, and dissected further in to more micro, separate invariant constituents. This process was accomplished using NVivo 9.0. Essentially as the interviews were reviewed after transcription, more invariant constituents were developed, as they were developed segments of the interviews were highlighted and segmented in the program. Once this was accomplished, several documents were produced listing all statements within each invariant; this facilitated the ability to view the all of the interviews aggregately separated by invariant constituent. It facilitated the ability to attach meaning or inferences from the information collected (appropriate codes and categories).

I reviewed and sanitized the data several times to eliminate errors, mistaken meanings, clarification of industry specific jargon, and further classification in the course of phenomenological reduction. My efforts in this area fell in line with Husserl's (1913/1969) caution that phenomenological reduction must accurately reveal in glowing, lucid clarity the experience of the phenomenon studied; this will allow meaningful knowledge to be extracted from the experience. Ultimately, this led to the development of more labels as those originally developed became deficient in complying with Husserl's (1913/1969) philosophic modus operandi to flush out connotation and comprehension.

Each invariant constituent was assigned to one of the final classification categories; these were originally identified as themes (Appendix K); nonetheless, as the project progressed the number of categories increased and are accordingly the textural descriptions extracted from the participant(s)' experiences and resulted in the following: individual participant meaning statements and codes, aggregate codes and classifications (Appendix L), combined codes, and meaning statements (Appendix M). These 22 classifications or categories include

- Budget Development
- Change Management
- Communication
- Community Inv and act
- Decision Making
- Environmental

- Echelon
- Future Vision
- Human Resources
- Information Technology (IT)
- Legal Counsel
- Perspective (Public Vs Private)
- Policy Development
- Property Management
- Revenue Sources
- Safety
- Security
- Defining Change
- Process Obstacles
- Managerial Perspective
- Operational Management Issues
- Time Use

The invariant constituents, which totaled over 150, were subsequently extracted from the aggregate data and listed under each of the participants' color code according to the categories listed above (see Appendix M). The managers' narratives quoted earlier, Orange and White, were not reclassified as after completing the phenomenological reduction process those statements were deemed to have been appropriately coded or classified. Appendix L is the result of that process. As indicated, several of the

classifications pertained to several of the participants simultaneously (i.e., they shared several characteristics), and conversely there were several differences among them as well. This process facilitated my ability to analyze the participants based on likeness and differences alike.

The phenomenological reduction process continued and concluded with the completion of each textual description. As I developed the textual descriptions, I did so within the themes established for the project, as well as remaining cognizant of the new themes, codes, and categories that surfaced throughout the process. This process included a combination of techniques borrowed from Jones (1996), Husserl (1913/1969), and Moustakas (1994).

It is at this point, where the imaginative variation process began, or simply trying to attach meaning to the themes of phenomenon under consideration, I developed meaning statements for each participant using reflection and review of the interviews, review of the aggregate list of invariant constituents, as well as the categories. As I developed individual meanings, composite or aggregate meaning for the participants began to surface as well. For example, when acknowledging understanding of the versatility of the position of an airport manager, and allocating the use of time Manager Green meaning statement was developed as follows:

Time use for this manager is spread over two primary functions; that of an airport manager and an economic developer, that time is split 90/10.

The manager's understanding of this phenomenon helps him or her to help identify potential commercial properties to market. Conversely, the meaning statement crafted for Manager Yellow reflected his limited access to staff:

Time use for this manager takes on a different spin as he functions as a one man entity who serves primarily as a liaison for the airport authority between the tenants on the airport, the local community, governmental agencies and civic organizations.

In both the meaning statements, time use surfaced as a significant theme; however, the connotation and substance of the themes were nearly completely different. After I constructed meaning statements for each participant, I developed an individualized description for each, and compiled it with the overall transcribed narrative.

As the meaning statements were developed for each manager, a meaning table (Appendix L) was constructed to categorize meaning statements derived from the invariant constituents under common labeling. It is important to note that due to the length of statements and raw number of the invariant constituents developed, there were too many to produce a useful, productive table suitable for this project or document. Further, it would have been difficult to share with the participants as well. Accordingly, I used the verbiage in the transcribed interviews to revisit the participants with the information as well.

To eliminate confusion, the participants were given only their meaning statements and transcripts. The participants were contacted by e-mail containing the documents for their review. All of the participants provided review and validation of the documentation

of their experience. There were no conflicts with any of the participants, thus no need for subsequent interviews or e-mail communication. To follow up, confirmation e-mails were sent to the participants on June 16, 2011. I received responses from all of them by June 21, 2011; I followed those e-mail responses with phone calls to further corroborate the intent of the interview, offer an opportunity to reengage and to inform them that they will be provided a copy of the final report.

Each participant confirmed that the narrative accurately harnessed and reflected the essence of their experience and I had done an adequate job of assessing their meaning and providing the sense-making summaries. Through the subsequent conversation, the conceptual frame of the study was reiterated to them and they were again reminded of their right to withdraw from the study.

Epoche: Bracketing My Experience

Amid the information and data collected for this study, my personal experiences as an airport manager must be revealed and visited to facilitate focus on the actual research participants. The purpose of this section is to expose and explore my experiences through the phenomenological process of epoche, bracketing, or efforts to set aside any preconditions I carry to the analysis of the experience and to enter the phenomenological reduction with a purity of reflection (Husserl 1913/1969). I started this bracketing and documenting it several years before actually conducting this research. Accordingly and subsequently, updates were made to this document and others chronicling my own experience as an airport manager.

The airport management profession has served to identify with my personal career. After retiring from the United States Air Force in 2003, I entered the industry after about a year and a half in the teaching profession at the preparation level. In 2006, I was hired as an airport operations officer at Philadelphia International Airport (PHL; not a general aviation facility) where my job was to manage real-time emergencies and other day to day events occurring at the facility.

Although PHL is not a general aviation (GA) facility, working there offered and facilitated the industry experience necessary to apply for a leadership level position in the industry and to ultimately transfer (for personal and professional reasons) to the GA neighborhood of the profession. I began my work in the leadership capacity of general aviation as the Director of Dare County Regional Airport, Manteo, NC, in March of 2008.

From performing various roles in the industry, I have experienced, retained, and internalized the multifaceted environment and mission of the aviation profession, specifically the GA facility and its nuances. I also serve as an adjunct professor in an aviation management division of a state university. During my tenure in the profession, I have learned that the aviation industry is a very complicated one. As an operations officer charged with monitoring and overseeing emergency responses, I acquired firsthand the tenuous nature of the environment, as there are infinite amounts of possible scenarios that can result from the operations referred to in the chapter 2 literature review. In my current position, I garnered the knowledge and experience that has led me to conduct the research necessary for this project.

As the director of Dare County Regional Airport in Manteo, North Carolina, I know firsthand the intricacies of managing the general aviation facility. As indicated by several interviews conducted for this research, there are “as many management forms for running these facilities as there are airports” (Airport Manager Brown). Like several others, my airport is run by an authority vested (via enabling legislation) with the legal grounds to function as a body politic and corporate. Within this capacity, they have ability to function as a government municipality; which allows them to condemn and purchase property for the legal and safe use of aviation operations. Through dealing with this body, and managing the facility, I spend a great deal of time exercising group management and dynamics techniques and situations (Dasgupta, 2003; Feldman et al, 2006; Griffin, 2008; Gugerty & Kremer, 2008; Grissom, 2009; Grubbs, 2001; Howard & Sawyer, 2006; Kreitner, 2009; Pfeffer, 2000; Rodriguez & Bijotat, 2003; Rodwell et al., 2010; Scholtes et al., 2003).

To facilitate effective public organization oversight it is important to understand the impact and effect of boards on the public management setting. Pfeffer (2000) concluded, “Boards of directors of formal organizations can be productively analyzed as one mechanism linking the organization with its environment” (p. 349). Further, there are primarily two matters to consider as connectors of boards (or commonly referred to as authorities in the aviation industry) with their communities. One is the function that board might perform and, two there is no real tangent, textbook way that boards link or connect with their communities. In contrast to linking with the community, boards are at times in conflict with their communities as well. Similar to Pfeffer’s (2000) assertions,

Grissom (2009) purported that board members' effective decision making play an important role in the success of organizational outcomes, or perhaps ineffective decision making can cause a negative outcome on the linking of board with community (Anderson, 2003; Hafteck, 2003; Johnson, 2005; Stich & Eagle, 2005). Being cognizant of this information is of paramount importance and serves to assist with bracketing my experiences.

Withstanding that decision-making effectiveness is the foundation of attitudes of the public toward public boards (Burriss et al., 2009; Dasgupta, 2003) the factor of board member characteristics is of paramount importance. Grissom (2009) as well as Dasgupta (2003) noted these characteristics as "both external and internal" to include, board size, selection procedures, member qualifications, and "the environment in which the board operates" (Dasgupta, 2003, p. 623). Its understanding these nuances that places the airport manager (as I currently am) in position to serve as a mediator between the community (public) and the board they serve. Simply put, it is incumbent on the airport manager to positively represent the board, and carry out the business of managing the general aviation facility based on decisions made by their respective board (Starling, 2011), while simultaneously managing the day to day operations of the dynamic environment referred to throughout this work (Rodwell et al., 2010). These are significant because addressing boards in the public setting is where the majority of my time is spent as an airport manager.

In my opinion, most phenomenological research centers on a specific event, and experiencing that event through the lenses of those who lived it and it is still ongoing.

However, the essence of general aviation airport management cannot focus solely on one event; this is because of the complex and combined nature of the experience.

Accordingly, to facilitate the continual process of bracketing my experience as a general aviation facility manager, I identify a few of the items inherent with the management experience.

Some of the challenges I have been faced with (as an airport manager) in dealing with the board and managing the facility include, managing rental properties, contracts and other arrangements made based on decisions that have brought negative light and attention from the public. Examples include the purchase of a graveyard, mobile home park, and residential property located near or adjacent to the airport. Some of the property has low-income housing located on it to which the airport manager by default becomes the property landlord. As a public organization or board, they are held to a higher standard of care (Milakovich & Gordon, 2003; Starling, 2011) of these facilities than the previous owners are. As mentioned earlier, the airport manager is charged with carrying out the decision of the board.

The scenario leading up to the purchase of the property surrounds the need to remove obstacles to one of the runways leading into the airport. An option the airport had was to condemn the (air rights or aviation easement) property and have the obstructions removed at minimal cost. However, the authority chose to purchase the property instead. There are countless other issues to mention regarding this property, for example it was in bad repair and needed several thousands of dollars worth of replacements, the previous owner was cited for several environmental health violations to

include water well and septic tank systems, conflicting appraisals of its real value existed, and there was/is an ordinance on the county and city books that would force the property owner to have the obstacles removed from the property. However, the board chose to ignore these items and use taxpayer funds to purchase. It is events and scenarios such as these that constitute my own experience in managing the general aviation facility. They

also qualified and prompted me to conduct this research. Simply put, I wanted to know whether other managers dealt with the same types of problems.

My experiences in the phenomena of airport management is parallel to those of the participants, however as indicated throughout this work, effectively studying it is only successful if the researcher separates their experiences from those of the research population and in a nonbias fashion and present them (Husserl 1913/1969). In meeting these ends, this project will shift its focus to presenting the phenomena regarding the 10 participants of the study. Table 2 below lists basic information on the participants to include the color code, education, and other identification data carefully selected to protect the identities of the participants.

Participant Data

Table 2

Research Participant Data

Color Code	Region	Completed	Nick Name	Method	Survey 1	Education	*Demo
Yellow	Northwestern Area	5/19/2011	Sole Mgt	Phone			WM
Red	Southeastern	5/23/2011	4 cents	Phone	X	AA	WM
Blue	Southeastern	5/26/2011	Barely Fen	Phone	X	High School	WM

Color Code	Region	Completed	Nick Name	Method	Survey 1	Education	*Demo
Green	Northeastern Area	5/19/2011	New Guy	in-person	X	BS	WM
Orange	Northeastern Area	5/12/2011	Pilot S	in-person	X	AA	WM
Brown	Capital Area	5/23/2011	Grass n Gas	in-person	X	BS	WM
White	Northwestern Area	5/26/2011	Contractor	Phone	X	MS	WM
Black	South Piedmont	5/27/2011	Military	Phone			WM
Tan	Northeastern Area	5/17/2011	Ageless	in-person			WM
Beige	South Piedmont	5/16/2011	Golf Bud	in-person	X	BS	WM

*Wht male

Note. Participant data gathered via survey; it and other information is discussed further in Research Finding 12.

The information gathered from the participants serves to present a cursory view of them, as well as indicate characteristics the researcher used to maintain who each is. Presenting this data also serves to initiate the transition of this chapter to the initial presentation of the findings. After the initial presentation of findings, the chapter precedes with the consolidated experience of the participants through which the findings will be fully supported by the data collected.

Initial Presentations of Findings

The initial presentation of the findings is a macro look at the discoveries in this project. After developing and reviewing invariant constituents both textural and structural, and compiling aggregate and combined codes and meanings, It was determined that there are many items worthy of discovery. The first point to note is that airports are an interesting collaboration of public and private actions and organizations that function in arguably the most dangerous environment known to man. The problem statement of this study noted the potentially unsafe environment (aviation accidents) the participants function in as well as the inconsistent management practices associated with managing their facilities. The important issue to note is that the participants themselves are not operators of the aircraft associated with the accidents; rather they are managers of the facilities where some of the accidents may have occurred. Accordingly, the findings are primarily centered on the overall management of the facility, change management surrounding the research questions and the overall human aspects congruent with managing the facilities as well. The unsolidified characteristics of GA facilities further underscores this fact as according to airport Manager Brown “there are as many ways of running airports as there are airports.” This research produced three primary categories within which the findings are subcategorized under. These categories refer to the setting in which the interactions of airport managers occur regarding the people and organizations with which they interact.

Accordingly, managers interact with *governmental* organizations (for example the FAA, TSA and governing body), *operational*: internal and external (businesses, tenants

and employees) to the airport and the *community* (citizenry groups i.e., residents, clubs and the like). The governmental and operational organizations present themselves internally and externally. Further, they are from various levels of government or federalism (Figure 1). Citizen groups primarily function from the outside in. Within these three preliminary categories are 15 separate or *micro findings*. The three categories are not necessarily mutually exclusive as some of the 15 individual findings fall into one, two or all of the finding categories given a particular scenario. However, for the purposes of maintaining simplicity and avoiding confusion in this project, they will be classified based on their primary category.

Each finding also addresses one or more of the four research questions of this study as well, similar to the way the findings fall under the three categories; they address the four research questions in a nonmutually exclusive fashion and accordingly address more than one question. Table 3 combines the research findings and lists which category they fall under. Additionally, the category that the research questions fall under is indicated as well. Relating the findings to the research questions is presented at length in chapter 5.

Table 3

Finding Category and Research Question Application

Finding	Setting Category	Research Question(s)
One	Governmental	one, two,
Two	Governmental	one, three,
Three	Governmental	one, two, three

Finding	Setting Category	Research Question(s)
Four	Governmental	one, two, three
Five	Governmental	one, two, four
Six	Governmental	one, two,
Seven	Operational	three
Eight	Operational	four
Nine	Operational	three, four
Ten	Operational	one, two,
Eleven	Operational	two, three, four
Twelve	Operational	four
Thirteen	Community	three, four
Fourteen	Community	three, four
Fifteen	Community	four

The next several pages list these categories, *governmental*, *operational* and *community* and the corresponding findings.

Governmental Category

1. The success of managers is directly related to their cognizance of group dynamics and functioning with members in regards to managing public organizations. Available literature on governing boards in public organizations surrounds school boards in California (Grissom, 2009) and Hospital boards of directors Pfeffer (2009). This is significant as boards control the actions of managers, this is done primarily through limitations or parameters placed on the manager.
2. The propensity of whether an airport is reactive versus proactive regarding change is relative to where the direction or mandate to change is from; in

some cases it is simply impossible to be proactive as directives, procedures and equipment becomes antiquated or outdated. It is impossible to be proactive in these cases. There is also customer feedback as a measure for being proactive to change implementation and management.

3. All are funded/subsidized via federal grants administered by the NCDOT/A. Variations exist in where local matches to those grants are funded. At several airports the local match was split by the two local prevailing governments i.e., county and city governments. Funding and activities and capital projects seem to get prioritized based on the occurrence of various high level events. Earmarks or political influence plays a significant role in project funding at some airports.
4. Because airports are subject to a vast number of governing bodies, it is difficult to nearly impossible to be in compliance with the requirements of all at any given time.
5. Security enforcement is a common problem in the General Aviation industry, this is because of the geographical location prevents them from being fully fenced in. Other security problems are several of the airports use prison inmates to perform various tasks on airport property which could be a violation of FAA and TSA personnel screening procedures. Other issues continue to be a high priority of the federal level organizations (FAA, TSA) charged with improving security practices at these facilities. As such they

continue to be highly susceptible to drug trafficking, illegal immigration, and smuggling.

6. Managers are typically constrained by tight budget controls i.e., line item limitations. Budgets are also tied into decision making (i.e., dollar value determines the autonomy of the manager.)

Operational Category

1. (7) General aviation facilities are perfect alternate use facilities with various types of operations. All of the airport managers offered at least one example of where their airport was the host of a political, military or governmental dignitary. Arriving at GA facilities offers a low profile, low security facility that dignitaries can avoid many public nuisances associated with traveling to larger facilities.
2. (8) Employment/employee arrangements: Varying arrangements exist for employees/employment situations within the population community. They range from contractual, full and part time, and employees being part of the governmental entity where the airport is located. A vast majority of the managers (in fact all except one) and their staff's have served in the military or are still affiliated in some capacity.
3. (9) Information Technology: the facilities were in possession of and using the most current information technology in regards to operational capability (aircraft operations); this was because the FAA is primarily responsible for maintaining navigational aids at these and all aviation facilities.

4. (10) Military use of or affiliation with facility tends to generate a different level of qualification for facilities. This presents an issue as GA aircraft use cannot be restricted. Airport management forms manifest itself in several different ways.
5. (11) Safety practices primarily surround fuel operations (management of fuel and its nuances are beyond the scope of this work) however, all employees and the manager are required to take and maintain currency in the selling fuel agency's safety training and certification.
6. (12) Inconsistency exists in the levels of educational qualifications among the participants. There was no consistency among them as far as various other professional qualifications or certifications and organizational affiliations either. This is an issue as all participants are subject to the same levels of and or requirements which call for high levels of competence, insight and knowledge as it relates to, managing aviation operations and facilities, intergovernmental relations, and basic management principles (Rodwell et al., 2010; Scholtes et al., 2003).

Community Category

1. (13) For the most part the managers reported conflicts with their local communities. There were minor, rare complaints of noise generated from aircraft operations, none of which caused legal action.

2. (14) Board member profession has impact on effectiveness, cooperativeness in process or carrying out business of organization. New Board member agenda can hamper effective business management and decision making.
3. (15) Communicating with board or authority members outside of the normal meeting times can possible create a problem if more than half of the members are present; this constitutes a quorum, accordingly all communication should be made public.

Each of these findings will be extensively supported in the following sections; the participants' narrations provide proof of their experiences relative to each finding. The accounts will begin with a brief acknowledgement of the unique circumstance and the understanding. These accounts are significant to placing the participants' experiences with the appropriate environmental context.

The Essence of the Experience of the General Aviation Airport Manager

Phenomenological research tends to surround a specific event as McNabb (2002) noted, "Phenomenology researchers use participant observation, in-depth interviewing, and passive recording of life histories data-gathering methods" (p. 278). Further qualitative research facilitates an investigation of phenomena void of experimentation and controls to determine expected outcomes. Additionally, Leedy and Ormrod (2005) noted that qualitative research views occurrences in their natural setting or environment. As this research views the action of airport managers in their natural environment of managing the general aviation airport in the state of North Carolina, the timing of the research is relevant as two actions are occurring simultaneously to the research; this point

is reviewed in chapter 5. Further, these two actions are not the premise upon which the research is conducted. It is attaching meaning to the experiences of the participants regarding the theme of this study. This is another latent and relevant fact as Merriam et al. (2002) noted, “meaning is socially constructed by individuals in interaction with their world” (p. 1) or they attach meaning to the experiences and consensus is developed among them.

The aggregate experience of the 10 participants of this phenomenological study is drawn from the meaning statements implanted in each participant’s confirmed interview transcript. Accordingly, the compiled description of experience of each participant experience provides significant and meaningful contribution toward revealing the phenomena of managing the general aviation facility in North Carolina. Additionally, the problem identified for this study centered on the potentially unsafe environment as well as the inconsistent management arrangements present at the facilities. The fundamental and central question of this research is this question: *Are there hindrances to mission accomplishment in public airport organizations in North Carolina?* The four steering and interconnected research questions for this study were as follows:

1. What are the major obstacles to change in North Carolina airport organizations?
2. What processes influence implementation of operational policy at North Carolina airports?
3. How do North Carolina airports respond to demands for change, whether from government or private sources?

4. What primary factors drive change in North Carolina airports you are associated with?

The combined experiences of these 10 participants are set in three categories or settings common to each participants account. For most participants, dealing with governmental organizations to include their own authorities, municipalities, and local governments appeared to be the most important because of their influence on them and their ability to develop policy specifically directed toward them and subsequently their implementation. It focused on policy making from legislative and from board approval. The setting or category is the internal communication, or the intra communication, management and oversight of the facility with which they are charged with managing. This is significant as airports serve as a collection of actors including staff, tenants, customers, operators and other slackly associated supporters and perhaps stakeholders. Each manager engaged in internal scenes as they conducted the business of managing the airport. As is for all of them, internal work occupies the majority of their time and focus. Lastly, the participants are engaged in a category or setting, that of the public or local community where applicable. In this venue the manager was directly involved with respect to conveying the intentions, plans and procedures of the airport authority (where applicable) to the public. Important in this venue is the policy implementer verses policy developer dichotomy expounded on earlier in this work.

The manager of these facilities is charged with implementing policy and procedures developed by the various sources identified (i.e., federal, state, and local governments and their governing boards). This was significant when developing and

categorizing the invariant constituents (IV); they were produced considering the process of not only implementation, but development as well. For example, the IV “budget development” actually compiles the process or activity of developing the budget as well as implementing, managing and executing the budget. Withstanding this facet, often this requires the manager to serve as a communicative conduit and liaison for local citizenry and other factions with tacit, and perhaps stakes in the airport or facilities they manage. The exact timeframes each participant is involved with each venue (category) or the particular techniques or steps taken or used in each venue (category) is not exact however, similar on a number of levels.

The remainder of this chapter is a presentation of the findings using the narratives of the participants as evidence. Each finding is extensively supported by the narratives and listed within each communication venue category.

Research Findings

Governmental Category

Finding one: Available literature on governing boards in public organizations surrounds school boards in California (Grissom, 2009), and Hospital boards of directors Pfeffer (2000). This is significant as boards control the actions of managers, this is done primarily through limitations or parameters placed on the manager (Dasqupta, 2003). Further, it is incumbent on the manager to understand the interactions of group management as well as the development stages. Eight of the 10 managers interviewed worked for a body sanctioned via enabling legislation to function as law and policy making entities. Although not all airports had an enabled authority, they had an advisory

body that was/is consulted on matters concerning the airport. The various airport management and or advisory body composition varied from five members, seven members, to nine members; one body had 10 members. Varying combinations centered on ex-official nonvoting members, to members in public positions automatically being on the board because of their position. For example, Manager White noted:

A company called XXX County Economic Development Corp. who is funded by the City and the County looks at what kind of businesses can come in and what type of incentives to give. The president of XXX County Economic Development Corp. is an automatic member of the Airport Authority.

Company XXX's president routinely becomes a member of the authority with voting privileges; yet in other situations appointed officials are on some boards in an advisory capacity as Manager Orange (indicated:

The city manager and the county manager are two of the non-voting ex-official members, meaning it's by position and not person.

This is somewhat confusing as he further noted:

They [managers] appoint my board members. The city council appoints three of the members; the county commissioners appoint three members, and alternately, the city and the county, appoint the chairman.

As varied and vast as these arrangements can be it becomes incumbent on the manager to be thoroughly versed in group dynamics, particularly in the public setting to guarantee success in managing the public facility (Burriss et al., 2009; Dasgupta, 2003). Other group arrangements lending credence to this argument are several other forms of

management in these facilities. Manager Orange typically gets guidance from one member of his board:

I work directly for the chairman of the airport authority [whom] gives me tasks.

The rest are advisory and [they] vote, but don't give me tasks. I suppose if I disagree with [other board members] what they want me to do, then I can take that to my chairman and get guidance from him. But the only one that should be giving me direct tasking is the chairman. The board would go through the chairman to me. Sometimes, the authority through the chairman is delegated. For example, I might work on a specific project with the knowledge of the full board with a specific member of the board, so we have more of a linear relationship where it's not just going to the chairman, but the chairman has authorized him to work directly with me on a specific project. I am never surprised about who I am working with.

Manager Beige insists to key is total understanding of what is expected by noting:

We are very transparent. One of my main themes in managing the airport here is that there are no surprises with my authority. They know everything that's supposed to be going on. They meet monthly. But I am very active telephonically and keep up with what's posted and going on here at the airport.

His understanding of managing his group is that there is no room for misunderstandings of the guidance and where it is coming from. Although the arrangement is apparently "transparent" for Manager Beige, the arrangement appears somewhat ambiguous for Manager Tan:

There are ten members; has an airport council who act as an advisory board to the Airport Manager and City Council. The advisory Board has no budgetary control; only makes recommendations to the Airport Manager, Town Manager and makes subsequent recommendations to the City Council... As the Airport Manager, attends partnership meetings, has a relationship with the County Commissioners and City Council when needed.... I have full authority to make decisions without consulting anyone as long as they are correct. I make sensible decisions with priorities for projects (signs, lights, gate, executive). I feel free to make quasi-decision. I always go to the Airport Commission to get feedback on any pending decisions prior to going to the council.

Manager Tan's arrangement appears sporadic, this could be because the advisory board has not policy-making authority, this situation is similar to the arrangement of Manager Green's facility that works directly for the County Manager indicates his management arrangement is:

Basically, me and then County Commissioners. Does have an Airport Authority Advisory Board consisting of eight members. Due to funding issues, the advisory board only meets quarterly, and they answer directly to the County Board of Commissioners.

This is significant as indicated in these cases, the arrangements can and do appear somewhat unorthodox or perhaps nontraditional. Other airport managers (Brown, Red, Blue, and Black) fall in line with more traditional arrangements as they all work for an airport authority without any special appointments or special circumstances surrounding

decision making or group dynamics. However, because of the staff make up for two Managers, White and Yellow, as their working relationships and management functions are primarily based on their ability to work with and manage groups. Manager White is actually a contracted manager who retained by the authority to perform the management function, accordingly, is not an employee as the airport is run by a:

Governing body called an Airport Authority consisting of seven members.

Airport itself has no employees. XXX has a contract with the Airport Authority for his company (XXX Aircraft Services) to manage the airport; employees are employed by XXX Aircraft Services.

This arrangement cases Manager White to take on a different perspective as he typically does not have to deal with other government entities within and functioning around his facility. For example, county or city commissioners or managers, he simply has to report to and work with the airport authority. Manager Yellow on the other hand serves more as an orchestrator or conductor of groups as he has no employees, is an employee of the airport authority and county as well. This is evident as he elaborates:

“I am in a unique position. The Airport Authority has one staff person and that is me. There are 13 businesses located on our campus who are all tenants of the Airport Authority, and there are a total of about 150 people on the campus working for those independent businesses. I am the only employee of the Authority.”

Obviously, this arrangement presents a challenge for Manager Yellow; he points this out in different parts of his narrative throughout the interview. Much more of this unique

situation will be elaborated on throughout the presentation of the findings. Nonetheless, from an aggregate perspective there are differences and idiosyncratic characteristics with each of these managers and their facilities. The findings presented in this area fall within two of the aggregate meaning and codes listed in Appendix L, Echelon; Overall management arrangement governing the airport, prevailing organization's legal authority to carry out business of facility and manager's role/place in arrangement, and Communication; Frequency of and requirement for when manager interacts with prevailing authority or supervision (Burriss et al., 2009; Diermeier et al., 2008; Dasgupta, 2003). More managerial perspectives and processes are expounded on further in finding two, manager's propensity for proactive versus reactive change implementation.

Finding two: The propensity of whether an airport is reactive versus proactive regarding change is relative to where the direction or mandate to change is from (Pfeffer, 2000; Buchanan, 2003; Anderson, 2003; Balla, 2001); in some cases it is simply impossible to be proactive as directives, procedures and equipment becomes antiquated or outdated; it is impossible to be proactive in these cases.

There is also the use of customer feedback as a measure for being proactive to change implementation and management.

This finding is extracted from two sources; one, manager's intuition derived via experience of the manager; two, various sources of change in the industry coupled with the manager's creativity and methods used to implement those changes. Manager Orange notes:

“I think we’re very proactive. I think [you define change as] a departure from status quo, good or bad. It doesn’t really matter. We are not here and my board is not resistant to change. I think one of their strongest suits is that we want to change for the better and we look for opportunities to grow and to do something more efficiently, or provide a better service for our customers and you’re not going to do that unless you’re willing to change..”

This is done by soliciting input from the most important people in the process the customer (Stich & Eagle, 2005).

“Feedback from customers is probably the most important. I think feedback from customers is going to drive change, good or bad feedback, it doesn’t matter. But, I want to know if we’re doing a good job, I want to know if we’re doing a poor job. I want to know what’s most important to my customers so that I can make sure that I provide that service. That is probably the most important “

Similar in mindset is Manager Beige who accounts:

“I’d say we’re very proactive. I’m adamant with not only the authority, but with all the members of my staff and the team that we have here. We actively solicit feedback. We ask for improvements, problems. Everyone responds with emails that we pass back and forth because everyone is not here. We are very active in asking for inputs.”

As these managers seek the interest and desires of customers, they by default are staying ahead of the curve by implementing change. These views are also in alignment with the views of Manager Tan whose focus is on improvement are far as economic development

and simultaneously maintain high-level operational equipment. Manager Tan also sees the aviation industry as not having an option, in that he indicates change is born out of necessity:

“Proactive in that we are always looking for ways to improve the airfield, enhance economic development. We are always looking for private investment and for someone to come in and start a business to create jobs... Necessity. The unemployment rate is high in E, NC which forces us to look at new ways of bringing in business.”

In addition to viewing proactive change management from the customer perspective Manager Tan, views it through the lens of economic growth in the local community. Another similar view on this is that of Manager Yellow who cites a specific economic growth opportunity for the airport and local government:

“My organization is extremely proactive to change. I don’t know how familiar you are with Honda Aero coming to B Airport. It is the Honda jet engine facility. We have quite a project going on to bring them in and also do runway extensions project at the same time. It was a 21 million dollar project. We needed 11 million dollars to jump start this thing prior to FAA getting involved with our funding. So my Authority called in banks from around the community and put together a banking consortium and got those 11 banks to loan us an amount of money to jump-start this project. I think we wound up with about 11 million dollars ahead of FAA so that we could get going on this thing.”

This view demonstrates the manager's propensity to be fiscally cognizant the community as well as for their own facility. This is an aspect reviewed on throughout this work.

Delving further into this finding, managers reveal that the ability to be proactive to change is based on several other items to include the availability of funding (Rodriquez & Bijotat, 2003) as Manager Green indicates they are reactive to change, however:

Reactive. Based on my experience a lot of the ability to be proactive come down to dollars. The measures that are currently in place are completely reactive so far as maintenance. As it breaks, we fix it. Other than that, there is no real forward looking ability to create a maintenance system.

Withstanding the fiscal issue, there are other factors that place a different spin on change management in general, and that is simply the mindset of the prevailing authority as far as willingness to accept and deal with change (Brinkerhoff & Brinkerhoff, 2002; Dasgupta, 2003; Grissom, 2009).

The leadership has to be receptive to change. Typically, what you see in county government is a mix of new commissioners or new people in leadership positions who typically come in and try to implement what they feel is necessary. That balanced against the people who have there a long time and are very use to seeing things done the same way year after year or decade after decade in many cases.

There is a great resistance to change even for simple things.

The issues expounded on by Manager Green lend themselves to the group dynamics and management areas mention in finding one (Grissom, 2009; Pfeffer, 2000) it is also

touched on in Finding 14. Manager Yellow touches on this area as well as he specifically discusses the makeup of his authority to the end of managing and implementing change:

Forward thinking. Our board is very diversified. Probably only 50% of our Board are actually aircraft pilots, which is done on purpose because all of our board members are very business oriented, very involved in business. Having representatives of the non-flying community are very involved in business worldwide actually brings a lot to the table and gives us a lot of thoughts in planning for the airport and how it serves the community as a whole.

It for the most part falls to the managers own ability to recognize the limitations and characteristics of the groups involved and approach them in an appropriate manner for advancement of whatever the cause might be (Grissom, 2009; Pfeffer, 2000). The issue of being proactive to change did not always present itself as a clear topic for some of the managers to address. For example, Manager Brown indicated:

I would say in general when it comes to that particular type of question, I don't think that it is a black and white issue. For the most part, in general we are proactive. There are always things that are going to come up that are going to cause you to react, because of something that maybe you haven't had to deal with before. But in general, I think we are pretty proactive.

Manager Brown's overall assessment was that you are proactive to what you can control and reactive to what you cannot. Nonetheless, he, like other managers based much of the ability to be proactive to change on economic issues:

I would say...; the economy is a major driving force in change. Sometimes you have to ask yourself maybe the thing you are doing, the practices that you have in place just may not be working at this point. It could be largely due to the economy; it could be due to trends in aviation... That is one kind of a narrow aspect, but I think again, we are in a market, this is a business here. It is not just a piece of government. We have to run this, we have to make a profit here in order to, we are self-sustaining, we pay all of our bills and we don't rely on the County.

The opinion among the managers that economics drives the propensity for change management ability was consensus among several of the managers, as well as the makeup of the board members they serve, this is further supported by Manager Red's assertions on both items as he expounds on both in the same context:

Proactive. The reason they are proactive is that we have successful businessmen on our board. They are not all aviators; there are maybe only two aviators and four military. For example, Colonel G, he was in the Pentagon and he was involved with contracting for building airports; now what an asset he is; this guy knows all the questions. We have a former head of finance for AT&T, and we have an electrical engineer on the board. So they are all successful business people and they like to stay ahead of the curve. They see a thing coming they prepare for it. They are very proactive, but we run a business, and they understand that.

As Manager Red's commentary was interesting, during this interview I sought clarification from him on this point by asking him if he saw the backgrounds of board

members as significant in fostering a proactive to change culture (Pfeffer, 2000); his response was:

Absolutely, but the thing to remember is the key point here, successful business people. They understand we have to run this like a business. They also understand that we're in the customer service business. We are not in the refueling airplane business. That is a task that we have to do while we are performing our customer service.

Another point noted by Manager Red is that change “is an ongoing process,” one that cannot be stopped. He also alluded to the fact that there are times that you can only be reactive to change and this depends on where the change comes from as Manager Blue alludes:

More reactive – may be a little pro-active, but more re-active. What changes come in aviation usually comes slowly and is usually a reactive change from whatever has caused you to react to it.

Manager Blue's point is interesting as he indicates, the speed with which (or perhaps lack thereof) policy is develop then, implementation delegated stifles the ability to be proactive. It is not clear what entities Manager Blue is referring to, however thought provoking as it is common knowledge, public organizations function in a deliberate, time consuming fashion unlike its private and nonprofit counterparts (Milakovich & Gordon, 2004; Starling, 2011). Manager Blue's perspective on the matter tends to focus on policy development, and subsequent implementation. However, as indicated earlier in this finding, the consensus on being proactive to change is proactive rather than not and the

mindset of the members of the respective convening authorities contributes to the ability to be proactive. This point is further solidified by the narratives of Managers Black and White. Manager White indicated that his facility is proactive to change and to continue to be proactive, a willingness to do so must exist:

As a whole very proactive. The Airport Authority is very clear on the importance on growing the airport. They are very ambitious on making sure we are prepared for that growth before it gets here. And, the willingness to change. To always be looking for improvement even when everything is going well.

Manager Black on the other hand offers more of a personal accountability edit:

Proactive, but there have been occasions in the past over the last 27 years where they have been reactive. Usually when I have painted myself in a corner with a policy.

Clearly, Manager Black takes personal stake in determining when change is necessary and possible sources. Managing change is clearly an item high on the priority list of these managers.

The sources of change or the competence associated with the ability to be proactive in managing it are primarily economic consciousness and having a cooperative, knowledgeable governing authority. Others include the source of the change, timeliness of development and subsequent implementation processes, and possibly the competence of the manager (Anderson, 2003; Griffin, 2008; Starling, 2011). The ideal situation would be for the manager to be proactive visionaries when it comes to change

management however, as indicated by one of the manager, they can only be proactive to what they control and reactive to what they cannot.

Change management is a very interesting topic in public organization management, as indicated it draws from managing group dynamics, policy development, and implementation, communication. For the purposes of this work, it supports the aggregate code and categories of change management, communication, and defining change. The next finding reviewed is that of funding and subsidy sources for the managers and their facilities.

Finding three: All are funded/subsidized via federal grants administered by the NCDOT/A. Variations exist in where local matches to those grants are funded. At several airports the local match was split by the two local prevailing governments i.e., county and city governments. Funding/activities and capital projects seem to get prioritized based on the occurrence of various high level events. Earmarks or political influence plays a significant role in project funding at some airports.

Rodriquez and Bijotat (2003) found that strategic planning, performance measurement are used at both local and regional airports in the state of Illinois. Further, they discovered that budget allocations are not based on performance. As airport facilities must adhere to specific requirements to maintain various certifications; they are financially subsidized by the FAA through the state level aviation management organization, in this case it is North Carolina Division of Aviation (NCDOT/A). The FAA delegates this process to the NCDOT/A via the block grant process. These facilities

are offered grants for maintaining certification; however, local fund matches are required for the facilities to get the grant. For example, airport gold is offered a grant of \$100,000.00 in most cases the local match to get the \$100,000.00 would be \$10,000.00, if the required match was 10%. Who provides the match depends on the arrangement the airport has with the local government(s).

This research revealed that there are differences between the airports with not only local match arrangements, but with financial management arrangements as well. For example, Manager Orange indicated:

I get a stipend from the city and the county, meaning that they provide revenue for me to use to run the airport. But, it's not directed to a first specific purpose. It is income in my revenue line but it's not specifically for this. Although, I will tell you that typically I use it to match it to grants.

Although Manager Orange did not indicate what percentage either the city or county contributes, they receive compensation from both. In a more transparent response when asked whether his facility is subsidized for grants Manager Beige laments:

We are, and its ten percent. [It is provided] normally by the county. There are some small exceptions to that. We have a great working case with the county commissioners. The projects that we're forecasting here for the airport are pretty expensive. If we get everything that we want done it will be close to 10-million dollars. So that's a pretty big match for the county to come up with. They're getting creative with how to fund that. We went at length to each and every commissioner to bring them up on the airport, how it operates, how we're funded,

however we don't take tax payer dollars from day to day operations because the FBO funds all of that. Grant monies are always an issue for us but we are very fortunate with our county commissioners. They understand the economic impact that this airport has on the community.

Significant for Manager Beige is that the airport is located in a town where a major international level sporting is held every 3 years. According the 10-million dollar project is getting priority placed on it by organizations for the various level of government charged with oversight of the facility (Burriss et al., 2009). This is one example of where funding priority is place on one facility over another. Arrangements such as these can make for uncertainty for other facilities when they need funding for various projects for example Manager Yellow notes the inconsistency with local match requirements over his tenure:

We of course get federal grants, which is usually a 90% grant on a project. We get some state grants, which again are usually 90%; sometimes it can be 80%, and there have even been a few times that they were 50%. Uses to all the State grants were 50–50. What we use to do in the early days, we got 80% federal money, that left 20% to come up with local matching share and the states would do a 50–50 on that. So it would be 80, 10, and 10...Local match share – We usually use money from A County and the City of B.

Inconsistency with match requirements can cause an airport to lose the grant (Burriss et al., 2009; Rodriquez & Bijotat, 2003) this is particularly true if the grant is classified as state versus federal as Manager Black notes:

Wouldn't call it being subsidized. Because being subsidized implies that they are helping operationally, which they don't. Only gets grants for capital improvement projects. Receives grants from the FAA at a ratio of 90/10. Seldom gets a state grant, but typically, when it is there it is 50/50.

As indicated, there might be times local government entity might not be able to provide their share of the required match. On a positive note, the system allows for airport managers and their managing authorities to be creative in their funding of grant matches and other requirements, a unique situation regarding one facility is recounted on by Manager Red:

To do development we get the grants from the state and the matching funds come from the County. But, we were lucky in a big respect to help us, some very wealthy land owner likes aviation and has airplanes, none of which are based at our airport, donated 25 acres of land to us. That helped us with matching funds immensely. So it was an in kind donation. But if we have to match funds the county matches the funds. The county gets it. The County Commissioners come out here. We are not a county airport but the county is like our independent sponsor. They have no requirements to do anything for us. There is nothing in the regulations that say they have to. It is what they want to do. They realize that the airport is a tremendous economic engine.

Manager Red's commentary touches on a salient point. Airport for the most part are stand alone organizations, sanctioned via enabling legislation to function as a decision and policy making, revenue generating entity. Conversely, when they are offered grants,

they are and typically need to be subsidized by the local government to match those funds. This fact is why revenue generation is paramount to the survival of these organizations.

Revenue sources and generation are imperative to the survival of the general aviation facility, this is evidenced by the varying arrangements for grant matching and issues listed throughout this work. Accordingly, profit-producing venues are comparatively germane to each airport. There are several typical revenue producing functions for the general aviation facility, they include but are not limited to hangar leasing and rental, aviation gas and jet fuel sale, aircraft landing and parking, operating licenses, outside fence property rental, and office space rental.

There are other unique revenue producing entities and activities on several facilities as well (Rodwell et al., 2010). For example, Airport orange is engaged in a land use agreement with the United States Coast Guard where a land use fee is paid to the city and county by the Coast Guard; Airport Yellow: rents property to families; Airport Red has a “bait and tackle” shop operating on the premises. Other sources of revenue generated by the airports contribute to the local and state economies as well. For example, aircraft ad valorem taxes are generated for the state; any organizations operating on the airport will have employees and other functions whose contribution to their respective economies fall outside the scope of this work.

The airports internal contribution is measured and monitored through its budgetary process; via normal budget cycles, its tendency to generate revenues and expenditures is realized and published. However, its real contribution to the external

community is often times immeasurable. These airports serve as the hum hub for businesses that employ citizens, provide staging for medical entities, cargo carriers and the like that cannot be accurately quantified. Acknowledging these contributions are significant particularly when addressing local matches for subsidies regardless to where they originate. This area of the work falls within the code/category of budget development/execution and revenue sources. The next finding expounded on is subjectivity to policy developing organizations.

Finding four: because airports are subject to a vast number of governing bodies, it is difficult to nearly impossible to be in compliance with the requirements of all at any given time. Six of 10 participants noted this as a problem.

Figure 1 (Aviation Entity Flow) offers a snap shot depiction of the matrix within which the airport manager is the center. Steeped in the interchanges of federalism, the manager is constantly orchestrating and implementing the policies developed from different entities (Grissom, 2009; Pfeffer, 2007; Dasgupta, 2003; Diermeier et al., 2008). This is interesting as those entities are somewhat in conflict with each other. For example, the FAA requires an airport to maintain a fair competition on any facility to which it subsidizes. Conversely, many of the lease and operating agreements set up at these facilities facilitates monopolistic behavior (public records of airports). Couple this with the other directives the manager needs to be not only cognizant of but need to enforce and the lines could get blurred.

For example, Manager Orange muses concerning distinguishing between public and private organizations and managing security issues at his facility:

Generally, I would say yes. In our unique case, I'm going to say no because while we are a public organization, I provide a commercial service. I try to make money. I'm running a business. I'm a public organization that's running a commercial business. So, there's a distinction there as well because I am concerned with the bottom line in turning a profit... The TSA has us sign off on that so we know that they're doing their job properly. As far as security, our joint use agreement requires not that we meet the TSA security requirements, but that we meet the same level of security required of the Coast Guard on a military base.

From this narrative, it is clear to see how the directives from competing entities can get crossed or perhaps be in conflict with each other. This is point is more glaring revealed in the next finding. Considering that most of the managers and their facilities fall under local government local government management on some levels, several examples of how each manager acknowledges their particular arrangement are presented over the next several paragraphs. Manager Tan notes that not only are airports subject to policy enforcement, they (airport authorities) are in fact policy developers as well, when asked where policy directed towards his facility is from he replied:

From the City Council through the City Manager. We developed a Policy and Procedures Manual which was approved by the Council and City Manager. We also operate under the NCAA and also get guidance from the USDOT Aviation Manual. We also have a consulting engineer who is an invaluable source of information. We also are in touch with the G Flight Standards District Office.

Manager Tan presents a blurred picture of policy development, implementation and compliance, nonetheless, a manageable one as has been proven by his long tenure.

Another scenario developing from the various arrangements at these facilities is that the airport itself can have unwritten, unofficial yet understood policies in place. This situation tends to surface in situations where the airport's leadership is not an enabled body. Manager Green indicated that his facility has a lot of unwritten policy in place and acknowledges that it is because the authority is merely an advisory body:

I would say...not a lot of written policy although it was verbal and long standing operating procedure, nothing formalized has been one of my challenges. Coming in creating standard operating procedures giving guidance to the line man, creating documents such as a storm-water management plan, and spill prevention plan, etc.; things that they did on an ad hoc basis but nothing has been formalized.

I am in the process of doing that.

Manager Green reveals a great point in that many non-formalized, understood procedures might be because the advisory board is not an authority. Other views on this topic center on the airport authority having complete autonomy to develop its own policy as well as adhere to those from other sources. Manager Brown discusses this as his facility is free to develop and implement its own policies and procedures:

Typically in terms of policy with the way we run the airport, the Airport Authority is fairly autonomous there. Hardly any interference at all from the County. So it is autonomous from the Airport Authority or from myself in terms of, in other words if we have a situation where we need to modify or change our

policy or add something to our policy it is brought up in a board meeting with the Airport Authority and voted on and made so or not with very little interface from outside.

Another such arrangement of perceived total autonomy is that of Manager White who indicates that there is no interference or outside direction with regards to policy implementation and development as well as the implications for other genre of policy as well, particularly commerce:

Don't have too much of that. We have had things over the years where an issue has come up where we have looked at policy regarding the sale of fuel. We use to have a company that did the fuel on the fields and some other companies were making noise with want to sell fuel on the airport as well. So we changed that and the airport took over fuel. If you take federal money for your airport you have to agree to all the sponsor assurances, and abide by those. You can't give anyone exclusive rights to anything. You can come up with minimum standards.

Manager White's assessment neatly and conveniently packages the implications for airports as far as compliance, remaining eligible for federal funding and other legal matters that could surface if these policies are not adhered to. There are other areas where managers are subject to the policy whims of the local governmental entities, one such case is that of managing human resources. As Manager Black indicates, policy is delegated for implementation as required:

As needed. The only policy that impacts the airport would be the County Personnel Policy. My employees are county employees. I am subject to the

County personnel policy, but I am also an employee of the Authority. The airport makes their own policy.

Manager Black touches on another item that is expounded on at length later in Finding 8, human resource management and employee arrangements. Overall, after revisiting Figure 1 and reviewing the musings and narratives of some of the managers it is easy to see how the lines of policy compliance can possibly become crossed or confused. The items addressed in this finding fall under the aggregated code or category of policy development and communication. It is further reviewed in another area in the next finding, security enforcement at general aviation facilities.

Finding five: security enforcement is a common problem in the General Aviation industry, this is because of the geographical location prevents them from being fully fenced in. Other security problems are several of the airports use prison inmates to perform various tasks on airport property that could be a violation of FAA and TSA personnel screening procedures. Other issues continue to be a high priority of the federal level organizations (FAA, TSA) charged with improving security practices at these facilities; as such they continue to be highly susceptible to drug trafficking, illegal immigration, and smuggling. Eight of 10 participants noted this problem. The issues surrounding security are of paramount interest, a consciousness that started since the infamous 9/11 incident. Since then, there have been intense efforts to regulate and control security at aviation facilities. This is particularly true of major, international airports (Rodwell et al., 2010; Howard & Sawyer, 2006). However, this mindset and action is somewhat lacking at general aviation facilities. The research in this work

revealed that most of the facilities are not completely fenced in. In fact, of the 10 managers interviewed only two of the facilities, Orange and Black were completely fenced in. It is important to note that both airports Orange and Black are heavily intertwined with the military (further expounded on in Finding 10), Airport Orange with the United States Coast Guard, and Airport Black who noted:

Completely fenced in. I have access control at a several points even to the military. Gates are access controlled. All of the gates stay closed except the one at the terminal building, but you have to come to the terminal building to get to it. We have signage up everywhere that restricts access to the airside unless you are a pilot. You don't go anywhere without being challenged. If you look out of place you are going to be challenged. TSA is happy with what we have done. We have recording cameras around. *The military has their threat conditions posted everywhere as well.* Security system has the capability of supporting 64 high definition cameras. Whereas in the past we have allowed people to come up with a four digit code that they felt they could remember to grant them access. Our computer is going to generate access codes for people; we will take their picture at the same time and will go into the computer with them. Every access point that requires a code will have a camera. If we notice a code that is being used at odd hours a multiple of time then we will be able to go back and pull up the history on the camera and look at that date and time that that code was being used and if the picture that its taking there does not match the picture that is in the

computer then somebody is going to answer some questions. The whole system is a web based system.

This is significant as will be further expounded on in Finding 10 facilities with large military contingents appear to get preferential treatment on some levels. Despite the limitations in the security systems as a whole, measures are being taken to improve security systems and practices throughout these facilities as Manager Beige notes:

We've got a great security system and are in the process of spending \$30,000 to improve it. We currently have cameras in place and are adding five more. We are putting in infrared cameras on the runways. We have a security fob; you cannot get in without the security fob or into the gate. You have to be issued one of these entry devices and we can control them from at home.

As Manager Beige indicated, some are taking measures to improve security by upgrading their facilities. Other, measures include using specific procedures that all employees and personnel are aware of to enhance situational awareness in the event of any negative occurrences. Take for example Manager Red's procedures for covertly alarming personnel on the airport in the event a breach of some sort had taken place:

We have a distress code that everybody knows about, and we change it as we think it is necessary. We have a card gate for people to go through the gate. Our policy is if we don't know you we want to find out who you are. That is what we are interested in, who are you and what are your needs for getting on the airport. We allow our airplanes to come in and we allow transportation to go right out to the airplane. I am going to continue to do that as long as I can. But we make sure

we know who the driver is, what is going on, what they are doing. I have the local law enforcement (O I Police Department) they come in intermittingly. They know the gate code. I want them to put their lights on at night. I want people to see them that are driving by the airport because that is a visual deterrent. We have the sheriff's department that does the same thing. I also have an intermittent security forces that works with me at the airport and they come out and do the same thing.

As Manager Red notes security is a collaborative effort involving coordination and cooperation between local law enforcement agencies as well as airport staff and tenants. The key is not to be lethargic in the efforts to protect facilities because of the inherent characteristics of most of the facilities often times makes it impossible to completely secure the areas. Manager Yellow brings up a good point on this subject while simultaneously acknowledging possible lapses in diligence regarding security at his facility:

We are [re]laxed. More so than we should be; in fact that has been a topic to date. It is hard to have good security at an uncontrolled GA airport. Especially with a campus that is spread out like ours. There are as many operations and hangars on one side of the runway as there are on the other side of the runway. It means access from different highway locations all the way around the campus. It is very, very hard to have a good security control with a one-person staff; it is impossible. We have electric gates, we have card readers that are constantly failing and we are

looking at what we can do to change that. If I had one thing that weighs heavily on me that I feel like that I am not adequately doing it is in the security side.

Manager Yellow's assertions and concessions make salient the issues of security as it relates to topography and relating it to general aviation facilities. Manager Brown also lends credence to existence of this dilemma as he discusses the characteristics of his facility:

We have basically two gates to get you into the ramp area. One is on the south end and one is right here at the terminal building and those are key pad. So if you have the code you can open the gate, that is not a real sure fire security system, but it is something. We also have, and this is a big help too, I have surveillance cameras on this gate and the south end and several in between so we can monitor that when we are here and after hours and we suspect something has happened I can go back and play it back which that has helped us on a few occasions...The entire perimeter is not fenced in. What you see along S C Road and along 70 is fenced in. But the entire eastern side which is nothing but a swamp on that side, there is no fence over there. *Eventually there probably will be, but since we are not Part 139 it is not really a requirement.* But I would like to see us to continually improve with that.

As Manager Brown indicates, the security requirements for the type of operations performed there, the security requirements are not the same; however, the possible threats still exist. Several of the other managers take other measures in an attempt to control and mitigate security problems they include, issuing badges, challenging procedures and

increased awareness. A recent policy development has surfaced in the interest of increased security consciousness termed “through-the-fence” operations.

Advisory Circular 150/6190-7 (8-28-06) terms these operations as “those activities permitted by an airport sponsor through an agreement that permits access to the public landing area by independent entities or operations offering an aeronautical activity or to owners of aircraft based on land adjacent to but not part of, the airport property...” This initiative has been placed on the agenda of the newly developed GAAC as one that requires intense oversight as the mandates of the circular call for possible forfeiting of funding at some point for failure to comply. This dilemma effects only one facility researched during this project as Manager Green indicates:

The west side of our air park has their own gate that they utilize. There are published procedures both in the homeowners’ handbook as well as we have a copy of that over here so everybody is aware of what the procedures are. The biggest part of it is meeting the FAA requirements that when they open the gate and taxi through that they remain in position and don’t continue taxiing until that gate is fully closed. We have the same procedures on this side for gate access.

The one unfortunate thing at this time is that the whole north side of the airport is currently unfenced. Brush and swamp cover most of that, but there are some places where there is free access to the airport that is not currently gated.

According to Manager Green’s assertions, the “through-the-fence situations do not present problems for him or his facility at this time. However, as this situation gets increased attention from various organizations, it will require more oversight and tangent

direction on what are acceptable practices and what are not. This is an item that will require further research, to determining whether there is any correlation between the arrangement and the commission of security breaches, crime facilitation, and unsafe aviation practices.

The significance of security on aviation facilities cannot be over emphasized, we all remember the impact 911 had on the country; economy and momentous to this work the aviation industry in general. On other item mentioned by several of the managers is that on occasion, they have access to and use local prisoners to perform various function at their airports, this is another item that might warrant further investigation and consideration as general aviation security consciousness increases (Howard & Sawyer, 2006). Security concerns for the purposes of this work falls under the code and categories of security, community involvement and interaction as well as operational management issues. The next finding addresses manager budget limitations and concerns.

Finding six: Managers are typically constrained by tight budget controls i.e., line item limitations. Budgets are also tied into decision making (i.e., dollar value determines the autonomy of the manager). Of the 10 participants, 10 noted this as an issue.

Contemporary literature and academic texts acknowledge that public administrators are subject to tighter constraints, micro management, and intense oversight. This is because of the public nature of the environments within which they operate (Dasgupta, 2003; Grissom, 2009; Milakovich & Gordon, 2004). Further, Rodriquez and Bijotat (2003) discovered there are no consistencies in budget allocations

and allotments as far as airports in Illinois; it is not known whether there is transfer of applicableness to North Carolina airports. This heavy oversight and scrutiny fails to avoid the airport manager, particularly those studied here. With the exception of one (nine of 10), they are all limited in scope of spending and decision making within the monetary established limits. Manager Red indicates there is “No ceiling or anything like that. A budget to us is a target. We are an independent municipality for nonprofit. We receive very few funds from the County and the local community.” Accordingly, the remainder of the managers is restrained based on specific amounts, they are listed as follows:

- Manager Yellow is very frugal with everything; seems to have that reputation, a great relationship with all of the powers that be. We do receive some allocations each year from the City of B and A County to help us. It is usually with our capital projects. When we need that 10% local matching share it usually comes from the city and the county. Whatever a request is taken to the city or the county it is a good package, it is a good request.
- Manager Tan develops and executes budget with oversight of city staff. The finance manager for the city watches very closely and works with manager very closely. The manager puts together and operates the budget.
- Manager Brown published based on ability to maintain a self-sustaining economy here at the airport. In other words, they don't receive anything from the General fund from the County; fortunate that they produce enough revenue.

- Manager Green inherited a county wide 5% reduction in funding; that 5% reduction could not come out of salaries or fuel purchases, which was about half of the budget of about \$417,000. Thus, the 5% budget cut resulted in approximately a 50%–60% budget cut for discretionary spending. All budget manipulation is required to go through the Board of Commissioners for approval and amendment.
- Manager Beige has a \$5,000 limit of what can be allocate or moved between budget line items without board approval. Rarely does any spending without notifying the authority, as it is a good practice to let them know exactly what monies are being spent and have to live within the confines of that budget. It's a very strict budget.
- Manager White airport authority process accordingly, manager does not get involved in the process. Not able to commit funds in any way with expressed written consent.
- Manager Blue has limit of \$1,000 per line item, above that he has to seek permission for – Also if we need to do some type of capital improvement, manager presents the item to the City and the County who both have to approve because they both have to fund it. Funding on capital items is 50% County and 50% City. If either cannot provide funding the project is wiped out.

All of these limitations are indicative of the extremely controlled fiscal environment these managers function in. As noted earlier these limitations by default spill into the decision

making realm as if any action, requirement or the like exceeds the established amount in the budget, that decision must be approved by the prevailing authority (Burriss et al., 2009). Also important to note here is the actual budget process.

Since the budget is public document, its development must meet the requirements of public notice, hearing and publication before it can be enacted into law. Easily inferred is that the budget development process is a micromanaged, heavily scrutinized one that manager is central to. This area is derived from the codes and categories of budget development and execution, decision making, and communication. The next six findings fall under the operational venue category. They address and explore operational management concerns that confront the manager.

Operational Category

Finding seven. General aviation facilities are perfect alternate use facilities with various types of operations. All 10 of the airport managers offered at least one example of where their airport was the host of a political, military, or governmental dignitary. Arriving at GA facilities offers a low profile, low security facility that dignitaries can avoid many public nuances associated with traveling to larger facilities.

General aviation is the catchall aviation venue outside of commercial and military. Accordingly, it includes operations that are equally unique and dangerous. Further, general aviation provides an opportunity to participate in aviation activities that other venues limit as Manager Tan asserted, “It is a general aviation airport and you can’t restrict the use. It has to be open to the general public and you can’t discriminate from

one user to another user.” Withstanding this assertion, the facilities studied in this work

have aviation operations that include:

- Helicopter Operations
- Emergency Medical Service (EMS)
- Parachutist Jump Operations
- Private Causal Flying
- Banner Towing
- Flight Instruction
- Local Air Tours
- Corporate Jet Traffic
- Military Operations
- Forestry/Marine Monitoring
- Sea Planes

In addition to all of the possible flight activity at these facilities, they still are conducive to hassle free travel for dignitaries, high-level political figures, and business people. As air operations are the primary use for these facilities, they also serve to assist in other capacities as well. As Manager Red indicates at his facility:

It is real mixed. I just heard that there is a bunch of military helicopters that just went over. We have mixed military; small private airplanes, executive jets up to Gulfstream’s, and regional jets. We have banner tow, helicopters with floats on them with photography taking pictures of the big boats and things of that nature. We have two air tours, skydivers, executive jets coming in and out.

Other uses include some of those indicated by Manager White:

Training and the Boy Scouts camp to earn eagle badges. We have everything from light sport training for private pilots and sport pilot license. We have the flying club that does a lot of training, we have the avionic shop so we have airplanes coming and going for maintenance work. We have quite a few corporate airplanes.

These uses are indicative of the fact that airports can and do have varying impacts and effects on the local communities they reside in. These arrangements often extent to other formal arrangements as far as training and preparation for more advanced courses as well. An example of this arrangement is a relative flight training preparation course housed at Manager Yellow's facility:

Medi-vac and prep course for P [formal military training location]. Medical specialist flight, which again takes about 20 flights over a 24-hour period. The largest percentage of our air traffic is corporate pilots, corporate aircraft flying into B or out of B. Most are flying into B to conduct a business meeting and get out of here. Everyday there are medium sized corporate jets in here, people off and gone to meetings and then back in their airplane through the course of a day.

In addition to these flights and special arrangements, still other facilities serve as the primary staging location for military operations. General aviation facilities are also known for being back up or alternate locations for various functions during emergencies and unplanned events. Perhaps these characteristics draw the professionals to it that it does. This is relevant as the next finding covered addresses the various employee and

employment arrangements with the managers and their staffs in this study. This code and category covered in this area are safety and operational management issues.

Finding eight: Employment/employee arrangements: Varying arrangements exist for employees/employment situations within the population community. They range from contractual, full and part time, and employees being part of the governmental entity where the airport is located. Nine out of 10 of the managers and their staff's have served in the military or are still affiliated in some capacity.

Human resource (HR) management takes public management into a completely different direction, it requires a visit in to the legal realm today as never before realized in the past. HR becomes further complicated as the idiosyncrasies surrounding airports draw on characteristics common in both public and private organizations. Simply put, this research reveals that the managers studied and their staffs are as unique as their operations. Some of the unusual circumstances revealed include: Airport orange; has five full time employees, two part time and often has the access to interns from the local university's aviation management program. He is insistent that there are not HR issues because of the typical background of each employee, when asked whether he experienced HR problems, he noted:

No, fortunately we have a small staff. We have just four full time employees and currently three part time employees. Interestingly, of my full time staff, three of the four have a military background. In my part time staff, two of the three also have a military background. We can use the same terms and we speak the same language so that works for us. It's not to say that I target that when I'm hiring,

but we go for a personality fit. There is really nothing that we do on the airport that we can't teach someone.

Contained in Manager Orange's answer is that military affiliation plays a positive role in the ability to properly fit in with his team. This assertion is mentioned numerous times within this finding. Not exempt from the fiscal knife and dissection, airports have had to be creative with staffing, while attempting to maintain and manage the business of the airport.

Airport Beige's arrangement is the result of major downsizing and includes an entire staff of part time employees and two part time co-managers; this arrangement is in place to insure coverage of a major sporting event in the area a year from the time of the interview. It should remain in place until the primary manager (one who the interview was conducted with) retires, in fact he was brought back in for the purpose of managing the airport's activities leading up to the event. Withstanding this arrangement, Manager Beige's is aware of how fortunate he is and he still acknowledges that there are issues with which he must contend:

I've really been blessed in that; in this downsizing, we have been able to maintain and keep our best employees. The management issues that we've had sometimes are pay issues maybe getting miscalculated. A bigger issue would be communication with our employees. Making sure [we have good] attendance; I need to know that they're going to be there and if not give an advancement if at all possible. That's probably one of the bigger issues that we deal with. I have mature people working here and they are reliable. It's the normal day to day

issues that we're dealing with here: making up duties, getting tasks assigned so they know what they need to do that day... We base the pay scales and rewards basically on their performance.

Unique in that the entire staff is considered part time, with the economic status today people appear to be willing to accept what they can simply to stay employed. This fact is confirmed by the entire employee staff at airport Tan.

Airport tan has 4 employees, including the manager, all of whom are legally senior citizens (the manager is 69, other staff members' ages are 87, 82 & 79), none of which are full time Manager Tan indicated:

We at this airport are all part-time and get paid little money. All are retired, ranging in age from 76 years to 84 years. I work six days a week (two days paid and four days for free). Budget is about \$327,000 per year. Doesn't generate enough revenue to have a full-time staff. When it comes to the physical plant and keeping it looking nice we are innovated. I may ride the mower, may get an inmate or community service worker to help out. Would be nice to have a secretary. But we all love the job and put in a lot of effort.

Revealing the ages of employees might be inappropriate for this work however, I found it astonishing how this arrangement continues to persist. Most certainly, these are dedicated professionals who love their work. Incidentally, three of the four are or have been affiliated with the military. Although this might be the extreme situation on some levels Airport Green presents a completely different arrangement and challenge.

Manager Green stated that he is confronted with an unconventional problem in that he has to monitor the work hours and pay of his employees

The big challenge specific to this airport is I am on a non-exempt full-time hire. I have three part-time linemen. One is retired from law enforcement so he battles not working over \$14,100 per year. The other two part-time linemen, which he is not affected by, is the 1,000-hour rule for part-time employees. Between those three, I have to constantly monitor how much they are working so that they don't exceed their limits.

It is obvious that these circumstances can take the focus of the manager away from managing the facility. As there are few part time employees at the preceding airports, the next airport, yellow has no employees. In fact Manager Yellow is the sole county (employed by the airport authority) employee at the airport. Manager Yellow noted:

I am in a unique position. The Airport Authority has one staff person and that is me. There are 13 businesses located on our campus who are all tenants of the Airport Authority, and there are a total of about 150 people on the campus working for those independent businesses. I am the only employee of the Authority.

With limited employees, Manager Yellow is on a virtual island when it comes to handling the facility. He has to rely solely on the various contracted entities located on the airfield. This can present a problem, as it is often difficult to get contracted organizations to perform outside of the terms of their agreements or contracts. This

situation warrants further investigation. Although Manager Yellow is the only employee, Airport White has no employees at all.

Manager White is a self-contractor who is under contract with airport authority to perform the tasks of managing the airport. Accordingly, all employees are his rather than government entity employees under which the airport functions. An interesting note regarding Manager White is that he often uses prisoners from within the county to perform menial tasks. This point was mentioned in the facility security finding (Finding Five) as possible violations of TSA and FAA rules and laws. However, he is a contractor and not a government entity accordingly; therefore, his use of prisoners might be an even deeper violation of ethical principles, and human and civil rights laws and statutes, as the work the prisoners are performing is for his personal gain (Johnson, 2005). It is not known whether the prisoners are being compensated for their work; again, here is another issue for possible further investigation. Nonetheless, there are facilities with other tamer employee circumstances to ponder.

Reverting back to organizations with more than one employee, Airport Brown has several employees that are part time. Manager Brown relies heavily on the guidance provided by the local government and notes that he is rarely confronted with human resources matters:

Luckily hardly any. We are very, very fortunate here in that the Airport Authority, myself the County HR Department they do provide services for us. So if there are any issues with technicalities in terms of pay or benefits or any of those kinds of things. Even with disciplinary action which we have had very little

of that we do have support from them, but it is strictly the action the decision to either do something or not do something pretty much rest here with the Airport Authority Board.

Manager Brown's reliance on the directives from the county assists in keeping in compliance with various employee laws. Interestingly, there are arrangements at other facilities that are outside local governmental statutes. One such example is where employees are paid incentives to perform at the highest level of customer service. Airport Red's staff is employed by or considered local government employee however; they get a monetary incentive in addition to their salaries. This incentive is .04 per gallon of fuel pumped or sold to customers. This is a very interesting arrangement as this is not normally an acceptable arrangement for government employees; Manager Red is not entitled to the incentive. Nonetheless, he is in favor of this arrangement as employees have and take a personal stake in the closure and completion of sales and transactions. Again, this matter could be investigated or researched to determine whether there are ethical implications and the like (Johnson, 2005). The next several paragraphs will focus on the managers themselves.

As indicated earlier, there is a noticeable relationship of the managers and their personnel to the military in most of the cases (see Table 4). Manager Orange recently retired from the United States Coast Guard; Manger Beige manager served eight years in the United States Air Force, Manager Tan manager retired from the United States Army; Manager Green retired from the United States Coast Guard; Manager Brown retired from the United States Army; Manager Red retired from the United States Air Force; Manager

Blue retired from the Navy National Guard; Airport Black manager served in the Army.

The military affiliation of the managers does not appear to be indicative of anything only a common experience among several of them. This too could be the basis for further research to determine whether there are personality traits common in aviation professionals who served in the military and are drawn to the aviation profession. The remainder of this section addresses the overall management of HR for the managers.

The seven of the 10 participants use and refer to the prevailing government's human resources handbook for managing employee issues. None reported any unusual circumstances as far as disciplinary problems are concerned. Overall there appears to be glaring disparities among the employment practices in the research population, this is most certainly an area of concern for the managers (Burriss et al., 2009). Managing, instituting and implementing change on this level might prove difficult as simply determining a "best practice" for implementation would be nearly impossible due to the varying nature of the overall arrangements in the population, this a point that is exasperated considering the several steps or "layers" involved (Buchanan, 2003). The code and category this area covered is Human Resources and Communication, the next finding covered in this area surrounds information technology.

Finding nine: Information Technology: the facilities were in possession of and using the most current information technology in regards to operational capability (aircraft operations); this was because the FAA is primarily responsible for maintaining navigational aids at these and all aviation facilities.

Information technology is of significant importance as it is clearly influencing the communicative interchanges of not only federalism as it relates to IGR, but deeper still it influences on the international level as well as aviation is a worldwide activity.

Information Technology (IT) as it relates to the aviation industry particularly in general aviation is to be examined from two perspectives. Analogous to airside issues versus landside issues IT is examined accordingly (Rodwell et al., 2010). From the airside perspective, IT is concerned with having and being able to maintain specific equipment designed to assist managers, their staff and aviators in maintaining safe flight. Examples are navigational aids, to include:

- Runway Lighting Systems
- Automated Weather Observing System (AWOS)
- Beacons
- Various Distance Measuring Equipment

As indicated by the participants, this list represents a sample of the various navigational aids and equipment needed for safe flight, aircraft flying in and out of these facilities should be equipped to use the latest IT innovations as well. The IT perspective from the landside offers a somewhat different spin. For the most part, the key issue surrounding IT in general aviation centers on having or having access to the latest version of computers and the accompanying software. There are some cases where managers use the latest software specifically designed for functioning in general, an example is Manager Beige's use of the latest FBO software:

We do. As a matter of fact this next year's budget we're going to upgrade all of our computers. We're going to Windows 7. We update total FBO every year as its updated. We're replacing all of our computer systems. The customer service representatives will have touch screens. The computers will be wireless so that's going to be a plus.

The finding in this area is not necessarily only whether or not the facilities possess the latest in IT, rather where assistance is sought to correct, replace or procure needed equipment. For example, Manager Brown leans on the local government for his landside IT issues and equipment:

I am very proud of the fact that we are able to sustain ourselves out here with our budget, with our revenue. But we do rely on . . . IT specifically, and that has a value... They manage it for us and to a little lesser degree, IT does the same thing . . . is something that is ongoing all the time and so there is, and I recognize and fully appreciate the fact that they give us that support and I am not "paying for it".

This is significant as internal to the airport itself, as a separate branch of the local government entity; they were subject to budgetary constraints when it came to possession the latest computers, computer software and the like. This is because each local government has its own IT section, and managing and serving the airport was not always on the priority. This did not appear to be a major problem as the managers, tended to have access to email and various other internet and information technology intensive communicative devices and software. As far as airside IT equipment is concerned, its focus and request for upgrades were at higher levels of government.

The Managers appeared to be resigned to the fact the major upgrades to navigational and weather equipment were incumbent on the state and national level organization to ensure was in place. This included runway extension projects as well in fact, this issue serves as a transition into the next finding, affiliation with military leading to receiving maintain the latest and accommodating facilities. Overall, the facilities appeared to be in position of the latest IT accouterments however, only two of them actually housed an ATC tower facility. This finding falls under the category and code of Information Technology, the next finding reviewed is military affiliation.

Finding 10: Military use of or affiliation with facility tends to generate a different level of qualification for facilities. This presents an issue as GA aircraft use cannot be restricted. Airport management forms manifest itself in several different ways: Two of the 10 participants share facilities with military entities. Military affiliation on the part of the managers has been addressed at length earlier in this work. What has not been fully addressed is the specific relationship the facility or authority has with the military that appears to lead to benefits in the way of improvements in IT (Diermeier et al., 2008), facilities and other positive perks. There are associations with other government organizations however, they do not appear to garner the airport any special consideration. For example, Airport Tan shares a building with a regional branch of the Department of Transportation, yet they are no more vested with additional facilities than other airports. In fact, there are two airports to which this finding pertains.

Finding nine revealed that there are two airports in this study that have ATC towers and accordingly control air traffic. The finding here is that both of those facilities either share a facility with the military or supports them as part of their primary mission. One airport shares tenancy with the US Coast Guard and another airport supports the United States Air Force and Army. This is significant as both managers identify minimal deficiencies of any kind throughout this work. For example, they both have state of the art security systems; both possesses ATC towers and top navigational aids however, it is not clear that either fall under the Military Airport Program

The military airport program (MAP) only allows for a specific amount of facilities to participate in the program that allows “sponsors to convert former airfields to civilian airfields” (Century of Aviation Reauthorization Act). As one of these facilities is already a civilian airfield, it is not known whether they are according to law and statute entitled to the funding for improved projects and the like. As Manager Black noted they are “currently undergoing a runways overlay project at a cost of approximately 7–8 million dollars. The military is picking up 60% of the cost for that project.”

This is another area where continued investigation and research will reveal a more transparent arrangement between the facility sponsor and the military. The relationship is clear for the airport who shares tenancy with the United States Coast Guard however, not the other.

Finding 11: Safety practices primarily surround fuel operations (management of fuel and its nuances are beyond the scope of this work) however, all employees and the

manager are required to take and maintain currency in the selling fuel agency's safety training and certification. Nine of 10 participants confirmed this arrangement.

Flight safety issues clearly surround the safe operation of aircraft. Additional safety issues surround aircraft operation, parking, take off and landing. The operating of aircraft is a combined effort between the airport staff and the aircraft operator, and manager is responsible for ensuring that the airport is safe per applicable FAA mandates.

Nonaircraft-related safety issues concern those practiced by tenants on the airport property, as indicated earlier they range from aircraft maintenance, hangar rental and use, vending, cargo loading and off loading, all of which the prevailing entity is responsible for training and maintaining appropriate documentation for safe practices (Brunacini, 2003). As noted in the revenue generation finding (Finding 3), aircraft-refueling operations are possibly the most dangerous function performed by the staff. It is important to note that each manager takes safety seriously and has it as a top priority in training and uses various techniques to periodically meet with and train their personnel. A few of the noteworthy practices are summarized below:

- Manger Beige holds monthly safety meetings where all employees come together and talk about different safety issues; For example, ear protection; never approach an airplane with a prop turning; being aware of jet blast. In addition to monthly meeting, they continue to perform periodic one-on-one training as well.
- Manager Brown notes that the most important thing done there is refuel aircraft. In those particular practices that involve aircraft refueling, there is

place in terms of properly trained aircraft refuelers. Not just somebody you pull off the street. All refueling is done by staff as such everything by truck which again that involves a certain amount of danger itself; Uses fuel carrier's quality control program which is top notch; provide us with a training program on CD and as you go through each one my primary trainer monitors.

- Manager Red notes how at least once a week we have a safety meeting. We do a Foreign Object Device (FOD) check every day. My chief of maintenance has an actual inventory of things that he looks at every day. I have to sign off on it. We are very proactive when it comes to safety. We are also realistic as far as our customers are concerned.
- Manager White uses a set of airport rules and regulations (developed by airport authority) that anyone who bases an airplane here is obligated to read and agree to. We really don't have any issues. Biggest operational challenge: often difficult to know how to handle is fixing safely the big airplanes and small airplanes.
- Manager Black's safety training covers a litany of items: noise abatement – supply earplugs/mugs for the employees, protective clothing provided for employees, eyewash stations, First Aid kits available, fire extinguishers, spill kits, flight line qualifications, safety briefings and meetings anytime we have anything unusual that we are going to be doing.

These procedures speak to the manager's ability to communicate and articulate the importance of safety and applicable practices for a productive environment. The

managers' ability to communicate with and convey pertinent information might in fact be the most important task they have as a leader and manager. Their ability to do so might be a direct reflection on their education and qualifications in the field. The next area covers this item at length.

Finding 12: Inconsistency exists in the levels of educational qualifications among the participants. There was no consistency among them as far as various other professional qualifications or certifications and organizational affiliations either. This is an issue because all participants are subject to the same levels or requirements which call for high levels of competence, insight and knowledge as it relates to, managing aviation operations and facilities, intergovernmental relations, and basic management principles (Rodwell et al., 2010; Scholtes et al., 2003). Table 3 lists participant data, Table 4 also lists participant data specific to this finding.

As this study is on airport managers and how they function in the environment of managing the general aviation facility in the state of North Carolina, it would be remiss had it not sought to determine a professional profile of the participants. Data used to meet those ends and establish this finding was gathered from the research survey referred to throughout this work and listed in Appendix J (Airport Managers' General Information), as well as from the in-depth interviews.

Only seven of the 10 participants responded to the preliminary survey; although all did not complete the survey, a relative professional profile can be developed based on the results gathered. It is not known why the three participants did not complete the survey; they were given ample time and opportunity to do so. The profile can be

developed based on education level, professional affiliations and qualifications (see Table 4). Of the respondents, one has completed a master's degree, another has done some graduate level work, three have completed bachelor's degrees, two with associates and one is a high school graduate. Interestingly, all but two of the managers has either retired from, served in or remains committed to a branch of the United States Armed Forces in some capacity. Professional affiliations gathered from the seven surveyed include membership in the NCAA, Aircraft Owners and Pilots Association (AOPA) and the AAAE. The AAAE organization not only offers affiliation but accreditation as well.

The AAAEs accreditation includes being a certified member and the total qualification that entitles members to carry the initials of CM or AAAE respectively after their name. Only two of the members acknowledged AAAE affiliation, the researcher offers a recommendation for participants on this in chapter five. The AOPA is becoming one of the leading professional organizations in the industry as well. It was initially started for pilots and aircraft owners however, it has expanded its membership to all in the industry to include airport management personnel; three of those survey listed AOPA as an affiliation. The other area used to develop a professional profile of the participants was that of qualifications.

Of the 10 participants, five of them are qualified pilots; four of those five flew in the military, and are retired. One pilot actually flew for American Airlines, after a stint in the United States Air Force. Other qualifications include, fire and rescue certifications and the fuels management certifications required by all fuel carriers. Other than these, there is not a hard and fast set of specific qualifications that characterize these managers.

Table 4 below list these qualifications, it includes only the seven participants who completed the survey.

Table 4

Participant Professional Data

Color Code	Nick Name	AAAE	AOPA	Military	NCAA	Pilot
Red	4 cents	N	N	Y	X	N
Blue	Barely Fen	N	N	Y	X	N
Green	New Guy	N	Y	Y	X	Y
Orange	Pilot S	Y	Y	Y	X	Y
Brown	Grass n Gas	Y	Y	Y	X	Y
White	Contractor	N	N	N	X	N
Beige	Golf Bud	Y	N	Y	X	Y

As indicated earlier, the qualifications, characteristics, and demographical data collected on the participants do not appear to have any impact on any of the findings presented in this study. The questions listed in the survey (Appendix J) or those asked during the in-depth interview (Appendix K) did not probe to ascertain the perceptions or opinions of the participants on education or their qualifications. Accordingly, no assumptions can be made regarding their (participants') position on or their constituency's effectiveness as it relates to qualifications. Nonetheless, the data collected can serve as a foundation for further research. Additionally, the qualifications of the participants could assist in dealing with the community abroad, the next category and corresponding findings explore this area.

Community Category

Finding 13: For the most part the managers reported conflicts with their local communities. There were minor, rare complaints of noise generated from aircraft operations, none of which caused legal action. Of the 10 participants, 10 identified this as an issue.

Arguably, controlling public outrage from disgruntled citizen might be the most important job the airport manager has. Further, many citizens and their affiliations are underrepresented during processes and are scantily involved in the process of developing policy directed toward them or being afforded the opportunity to participate (Gugerty & Kremer, 2008). Couple this with simply getting the word to the local community about the good to airport is for not only the economy, but commerce and the travel industry alike, the manager retrieves benefit from the time he spends informing the community. The findings in this work reveal that all have and continue to speak at local citizen group organizational meetings such as the Rotary. Several of the managers serve on local community boards, this is not a requirement, but a choice, and, as Airport Red manager stated, “An interesting area concerning the job of all managers [interviewed] is that they all see themselves as a positive person in the community.” Other managers share their experiences in this regard as follows:

- Manager Yellow’s assessment is that the community as a whole sees the airport as its one true economic development tool. 10–15 years ago, they did not see that. Our Chamber of Commerce folks could go to Washington and

lobby for the airport. There is great support all the way around in the business community for the airport.

- Manager Beige involves himself as much as possible in the public to maintain a presence. He speaks to civic organizations, rotary clubs, schools; this facilitates a proactive approach to educating the community and gathering support for the many functions performed at the facility. Issue: The community is receptive to the airport's development however; those who vocally support are in the minority as the silent majority use other means to voice complaints for example; letters to the owner or less than positive phone calls or newsletters that go out that can be of some truth but not all truth.
- Manager Tan attends partnership meetings, has a relationship with the County Commissioners and City Council when needed.
- Manager Green consults surveys conducted 4–5 years ago. They are able to build hangars and keep their plane in their backyard and have access to the airport. Some of the framers and the people who own the land adjacent to the airport obviously are not in favor of having their land condemned and perhaps not getting top dollar, or not being able to do with their land what they want to do which is their right.
- Manager Red believes that generally they have good support, because the manager is actively involved with educating the public. He goes to and provides briefings to the Rotary Club, Lions Club, churches, and county

commissioners. There was also a big event for community schools at the airport, as well as an outing called Waves for Kids.

- Manager White sees them as very receptive. As the airport was being built, there was a lot of negative feeling towards the airport thinking that it was a waste of money or we were putting money into a facility for the rich guy's toys. There was a lot of feeling at the beginning that the airport would never go anywhere.
- Manager Black is certain that in this is economy specific as, being in an economic depressed area anything that hints at potential growth and jobs the community supports.
- Manager Brown sees that in general the County Commissioners, County Manager, the general populous is in support of airport growth. Doesn't get any real push back or negative feelings on that. Accordingly, it is a pretty good environment.

Manager Brown's assessment calls on the government organizations and how imperative it is to have their support as well. This is equally important as far as the makeup of and professions of the members of those boards. This concept is reviewed in the next finding that specifically addresses board member professions, and the possible willingness to support or stand in the way of projects and other initiatives of the airport.

Finding 14: Board member profession has impact on effectiveness, cooperativeness in process or carrying out business of organization. New Board member agenda can

hamper effective business management and decision making. Four of 10 participants identified this as a concern.

Earlier musings in this work noted how managers in public organizations are subject to micromanagement and in some cases intense oversight. Considering this, having the proper mix of personally for various professions is of paramount importance (Pfeffer, 2000; Grissom, 2009). If the proper mix is not ambient within these organizations, hidden agendas become apparent; conflicts of interest can serve to stagnate and stifle the efforts of the organization or board (Scholtes et al., 2003). On a few occasions the managers in this study comment on this particular point. Manager Red confirmed this in defining change and determining whether his organization was being proactive (Finding 2), Manager Orange alluded to this when discussing the decision making process at his facility (Finding Six) and Manager Yellow indicated “Having representatives of the nonflying community are very involved in business world-wide actually brings a lot to the table and gives us a lot of thoughts in planning for the airport and how it serves the community as a whole.” As indicated earlier, these items were discussed and reviewed in Findings 2 and 6 in regards to change management, budget controls and decision making.

Armed with a clear understanding that board member diversity is essential to effective management and decision making this work shifts its focus to addressing proper communication techniques with in these organizations and board members as spelled out in finding 15.

Finding 15: Communicating with board or authority members outside of the normal meeting times can possibly create a problem if more than half of the members are present; this constitutes a quorum, accordingly all communication should be made public.

In the management of public organizations, their meetings and other rules and regulations must follow guidance as listed in the public organization ordinance in Appendix E (Burriss et al., 2009). Withstanding the limitations on meetings and communication among board member, there are still occasions where managers need to meet and converse with members of their organizations outside the normal meeting times. When the need surfaces, managers and board members become creative and in some cases conduct themselves as normal to meet these ends. The following is a summation of the techniques used by three of the mangers (Beige, Green, & Brown):

- Manager Beige communicates often with the authority as one of authority members has an airplane located on the premises. The chairman is physically there normally a couple times a week; this is to sign any documents, etc., but more importantly for presence and improved communication.
- Manager Green normally communicates with the authority at their monthly scheduled meeting or on case-by-case bases as needed. If there is a need, and we have done this in the past, we would call the Advisory Board to a special meeting.
- Manager Brown and Authority communicate as often as necessary. It may be a phone call; an e-mail or an occasional visit to their place of business or they

will come by there informally. It is never as a group outside of our meeting, but it may be some one on one. Doesn't happen very often, but more so with the Chairman.

As indicated the managers and board members are careful not to violate any ordinances or law to the point of conducting themselves in an unethical or illegal manner (Johnson, 2005). However, at times depending on the circumstances there might be a need to meet with them individually. In addition, in extreme situations a meeting requiring all members might need to be scheduled in accordance with public laws regarding public meetings. Each of the 15 findings within the three categories represents relevant discoveries to the general aviation industry. They were derived from the three sources identified for this study: survey, in-depth interview, and review of public records (information collected via this source is sparingly revealed to maintain confidentiality of the participants and their facilities). As they are categorized here as either governmental, operational and community, they further address the four research question in this study as well. The next chapter will review how each of these findings and the experience of managing the general aviation facility in North Carolina relates to the research questions that are the foundation of this work.

Summary and Reflection on Research Questions

Through a recursive process of phenomenological reduction and imaginative variation with the 10 participants who experience the phenomena of managing the general aviation facility in the state of North Carolina the nature of the experience of the research participants is summarized in relationship to the research questions.

Table 3 (Finding Category and Research Question Application) lists each of the 15 findings and associates it with the category it falls under and the research question it answers. The verbiage in this paragraph lists the questions and the corresponding findings. Research question one: what are the major obstacles to change in North Carolina airport is answered by seven findings: Findings 1, 2, 3, 4, 5, 6 and 7 address this area. Similar to question one, Question 2, what influences implementation of operational policy at North Carolina airports seven findings: Findings 1, 3, 4, 5, 6 and 10 respond to it as well. Research question three, how do North Carolina airports respond to demands for change, whether from government or private sources garners data and linkage from is addressed by Findings 2, 3, 4, 7, 9, 11, 13, and 14. Finally, research Question 4, what primary factors drive change in North Carolina airport you are associated with draws from eight findings: Findings 5, 8, 9, 11, 12, 13, 14 and 15 for linkage and answering. The quality of the evidence is confirmed in the phenomenological method of breaking the experience into constituent elements or codes and categories via phenomenological reduction, and through imaginative variation, evaluating and assigning meaning (Appendix L) to the experience. In regards to this study, meanings and intentions were confirmed with the participants.

These common elements, as revealed in the findings, as well as the venues (categories) through which they were experienced, and linking them to the research questions were presented in this chapter. Chapter five sums this project up by further linking the findings to the research questions via an extensive interpretation, identifying

limitations of the study, offering recommendations for action and further research or study, a personal reflection and implications for positive social change.

Chapter 5: Discussion and Conclusion

Introduction and Review of Phenomenon

The results of this study can be used to help establish literature related and relative to managing general aviation facilities in the state of North Carolina; it also identifies challenges associated with managing them as well. As group dynamics and the management of various entities (Scholtes et al., 2003) are essential to managing the GA facility, this study has included descriptions about how the interactions between airport managers, boards of directors, authorities, advisory boards, businesses, special interest groups, government municipalities and their elected officials as well as government organizations from all levels are carried out. Accordingly, it also expands to a degree on the literature that address governing public boards (Grissom, 2009; Pfeffer, 2000; Dasgupta, 2003) as well as coalition formulation. Managing organizational change or implementing mandates from appropriate regulatory entities, implementing and using modern technology and remaining cognizant of demographic differences serve as the foundation for this study. This study was developed in the qualitative practice of phenomenology to enlighten the phenomena of managing the general aviation airport.

As a qualitative study, this research was primarily conducted via in-depth interviews with the manager of selected facilities, the use of a preliminary survey, and the review of public records as needed. Public records were reviewed to confirm or clarify some of the information presented by the participants; their identifies are not revealed in this document to protect the confidentiality of the participants; Appendix E, North Carolina General Statue is an example of a public record I reviewed. A recruitment

process for soliciting research participants involving the NCAA was used to prevent researcher bias and invalidation of data. NCAA were asked to assist with the project because I wanted to guard against potential conflicts of interest and the possibility of researcher bias. Additionally, the NCAA had aggregate communication capability with proposed (at the time) participants of the research. They were asked and agreed merely to contact the population to determine whether they were interested in participating; the potential participants were asked to reply to me; I determined which volunteers to take part in the project. The NCAA contacted potential participants via e-mail and sent them a copy of the participation invitation (see Appendix G). Accordingly, the NCAA had no part in or knowledge of the actual research population. As indicated earlier, they have no coercive authority whatsoever. Additionally, they took no other part in or participation in the research. Other items such as number of participants and procedures for conducting interviews were taken under advisement by me from suggestions made by members of the dissertation committee. The NCAA point of contact who communicated with potential participants is their executive secretary; the executive secretary was given permission to work with me on their behalf. This project fosters positive social change (PSC) in the aviation industry in general and the state of North Carolina; this point is further expounded on later in this chapter; the existence and development of the NCAA is in itself the result of PSC. I believe that their participation was essential to preventing coercion, conflicts of interest, and possible researcher bias.

The intent of the study was to examine the experiences and environments of the managers, and how those facilitate or perhaps inhibit change implementation. Therefore, the four guiding and interrelated research questions for the study are as follows.

1. What are the major obstacles to change in North Carolina airport organizations?
2. What process influences implementation of operational policy at North Carolina airports?
3. How do North Carolina airports respond to demands for change, whether from government or private sources?
4. What primary factors drive change in North Carolina airports you are associated with?

Interviewing the managers or the participants revealed what the researcher determined were a total of 15 findings, these findings typically, though not mutually exclusive fell within one of three major areas, venues or what was termed as categories (see Table 3) in which the manager of these facilities operate: *governmental*, *operational* and *community*. The next section will elaborate on and link them to the four research questions.

Accordingly, findings are discussed in this chapter, followed by recommendations for action, recommendations for further study, implications for positive social change, and conclusion. Discussion of the findings is organized according to each research question and the participants' experiences and how they function within the three primary venues (categories) of interaction: (a) how these participants function with regards to

group dynamics regarding policy implementation delegated from their governing boards, and policy making entities from various level of government (federal, state and local), (b) how they interact, manage, oversee and control the various personnel, operations, functions and entities operating internal to their facility, these entities are normally under their control, and (c) how they manage to interact with the local community to communicate the intentions of the policy developers influencing their facility.

Interpretation of the Findings

Research Question one: Obstacles to Change in North Carolina Airports

Findings one, three, four, five, six and 10, reveal that the fundamental nature of leading the general aviation facility in North Carolina is fraught with the implications managers of public organization are confronted with regularly (Anderson, 2003; Milakovich & Gordon, 2004; Starling, 2011). Some of implications are simply intense oversight, which manifested itself in two primary ways, control over decision-making and budgetary limitations and controls. The control in the area is primarily exerted from organizations to which they are subordinate to or controlled by. This is indicative of the budgetary controls imposed on the population in the form of line item limits for spending, and how those spending limitations were coexistent with decision making (Dasqupta, 2003; Grissom, 2009); for example, if a decision required the spending of funds to bring to closure, the actual cost of the action was the deciding factor. However, this question (research question one) addresses airports in the state of North Carolina in general; and accordingly, working with governmental bodies in this area extends to the tenets of federalism and more appropriate intergovernmental relations (IGR).

As Starling (2011) alluded this phenomena can be quite ambiguous or perhaps complicated. Most national programs are typically implemented through an echelon of governments from the federal, state, and local levels. This is indicative that United States comprises a federal system where accountability and liability is shared by the three primary levels of government with legal standing to do so (Starling, 2011). In addition, contributing to the cluster are the existence and influences exuded by the professional associations these organizations form from interstate interactions as well (Balla, 2001). Withstanding the federalism or echelon within the North Carolina general aviation facility operates, easily inferred is that these arrangements can by default be obstacles to effective change implementation. Numerous examples were identified in the findings of the difficulty the manager of these facilities faced when juggling the requirements of various agencies, local, state, and national. Interestingly, the mandates binding on airports appeared to be primarily federal (i.e., FAA, TSA whereas state and local organization existed and simultaneously exerted influence and regulatory pull as well). As this discussion reveals potential hindrances, it is important to note that this arrangement can serve to have things implemented as well.

Although it might appear redundant to refer continuously to the events of 9/11, it and the resultant legislation and actions continues to serve as a perfect example of both expedited as well as stagnant change implementation as it relates to policy. As this work is on the general aviation facility in the state of North Carolina, one of the findings surrounding security was that not all facilities were adequately equipped to maintain a secure facility. However, two were and those two were supported and fortified by

military organizations, this is a perfect example of federalism and IGR serving as a change obstacles for some and facilitation for others.

As IGR refers to the interaction or relationships between governmental agencies regardless of the level, or subject matter, federalism simply is a layer of like organizations exerting their influence over and interaction with each other. Applying this to the two facilities with advanced security functions, they both are on the positive end of IGR as well as federalism. Whereas the facilities without the IGR assistance from the military, they are not privy to the perks of influence on the aviation specific organizations to bring these facilities up to standard afforded the other two via IGR. In summation, this researcher examined only general aviation facilities in the state, accordingly, it is not known or can be inferred how these two phenomena (federalism and IGR) relate to or affect other types of aviation facilities in the state. The next question discussed as it relates to the findings is process influences as it relates to policy implementation (change).

Research Question two: Processes Influencing Change Implementation

Similar to the concepts discussed pertaining to Question 1, findings one, three, four, five, six, 10 and 11; IGR and federalism are key components that influence operational policy implementation at North Carolina airports. However, there are specific procedures organization must follow to implement policy and perhaps legitimately participate in IGR and federalism. Recall from the research conducted that two of the 10 managers interviewed indicated that the airport they managed were not established governmental bodies able to function independently. For the organizations

that are considered fully functioning governmental entities, they must follow procedures for implementing policy established in their enabling legislation (Pfeffer, 2000) and other matters they state as their procedures (Anderson, 2003; Starling, 2011). I stopped reviewing here. Please go through the rest of your chapter and look for the patterns I pointed out to you.

Enabling legislation is the act or law that a legislative body grants an entity to take certain actions, or, in this case, most of the airports studied carry out the business of running the airport in accordance applicable various level laws. Once these entities are enabled by the convening governmental organization, which in the case of the facilities studied are either counties or cities they are legally authorized to establish their own procedures for functioning. Research of public records further revealed that these authorities use the parameters set in the enabling legislation to establish constitutions, bylaws, rules, and regulations. These procedures influence the implementation of operational policy.

Relevant to note at this point is operational policy takes form in many ways and is typically generated from the layers of federalism (i.e., national, state, and local levels). Further, depending on the legal standing of the organization, they develop their own policy. Withstanding the aforementioned policy for these organizations is any document, law, or procedure for which they must comply. Mandates from the federal level are basic requirements for maintaining the facility and maintaining it in a safe environment, adhering to requirements for safety and security (FAA, 2004; Anderson, 2003; Howard & Sawyer, 2003). State-level mandates might surface in way of labor laws and tax

liabilities; finally, at the local level, the organizations might be subject to more than one entity. As local governments include county and city government (Milakovich & Gordon, 2004; Starling, 2011) each of them might hold aviation facilities and authorities accountable to their ordinances or laws, examples of these laws tend to center around environmental issues such as noise abatement as wildlife limitations (Rodwell et al. 2010). Regardless of the source of policy, the managers of these organizations must adhere to the established procedure of implementing policy.

Policy implementation for these organizations tends to be simply delegated to the manager. This is normally done in a public forum where the governing body directs the manager to spearhead the implementation (Starling, 2011; Anderson, 2003; Milakovich & Gordon, 2004). Although every implementation does not require a specific public action directing the manager to act, there is an underlying mandate for the manager to handle such tasks (Anderson, 2003). This mandate is communicated through established procedures in the manager's job description, the aforementioned rules and regulations, by-laws and other documented procedures. Another point to note regarding this area is as public organizations these procedures, legitimate communications between members (governing bodies) of the organizations are to be made and held in public, and unless specifically stated available to the public (Starling, 2011; Anderson, 2003; Milakovich & Gordon, 2004). This specific issue is addressed in (addition to those mentioned earlier) findings two, and 15.

In summation, the process by which North Carolina general aviation managers implement policy is dependent upon the procedures of the organization governing the

activities of the facility the manager operates. The research reveals that arrangement varies from fully enabled body to being under the control of a local governmental entity. Either way, implementation is delegated to the manager via the varying levels of federalism and influenced by IGR. The next research question discussed in relationship to the findings surrounds responding to demands for change.

Research Question three: Respond to demands for change

Findings 2, 3, 3, 7, 9, 11, 13, and 14 attached to this question as, the narrative of the managers and review of public records reveal that collectively much of the managers' job is simply about policy and procedure implementation. This is not unusual, as noted throughout the literature and publications (Starling, 2011 & Milakovich and Gordon, 2004), elected officials and hired public officials live on the opposite side of the policy development versus implementation dichotomy. Elected officials in this case are those on the boards running the airports in which the manager works and the manager is a hired employee charged with implementing policies developed by them. Another pertinent issue surrounding this particular section is that one of the assertions made by the researcher is that policy was one of the sources for change in public organizations. This is particularly true of airports, as it has been pointed out that airports through the musings in chapter1, presented in Figure 1 and confirmed through the research findings. As noted, airports must comply with the mandates of organizations from federal levels and those influenced via IGR. Thus, they respond to change via the processes indicated throughout. Essentially, depending on where the demand for change originates,

managers and their governing bodies must comply with mandates and do not have the discretion to discern with which mandates they should comply.

This fact is validated as two of the 10 manager indicated the propensity of whether an airport is reactive or proactive to change is dependent on where the change originates. The aggregate code concerning this concept was change management or the manager's ability to recognize legitimate sources of and to implement change effectively. This is of paramount importance as the managers in this study are typically first line of communication for all entities regarding their particular organization. The research conducted here confirms that the policy is in fact developed by and forwarded to managers for implementation; however, other, alternate sources of change in these facilities varies from organization to organization. These phenomena are revealed and discussed further in the next section when addressing research question four.

Research Question four: Factors that drive change at individual facilities

As this research and its findings revealed findings specific to the research community as a whole, it was not deficient in discovering idiosyncrasies specific to the organizations individually. This phenomenon was illuminated and magnified in findings 5, 6, 9, 11, 12, 13, 14, and 15. This is significant as these findings address the areas of employee/employment arrangements, community involvement, conflict and change management as it relates to being proactive versus being reactive. Several of these areas are addressed and elaborated on as they relate to this question below.

The narratives of the managers revealed that they are being as creative as possible when it comes to staying ahead of the curve on managing change. One such initiative

this researcher found productive was the intense focus of some of them on customer satisfaction, tailoring their services to meeting the needs and demands of them.

Interestingly, the manager's customer in a fashion similar to federalism and IGR appears from the outside in as well as inside out. This means that his customers are not only those who patronize the airport for travel and other services but, aviators who use the facility for mission planning, fueling services and flying related supplies; the governmental organization to which they serve, and how those organizations' participation in IGR demands service and actions from the manager and their staff; and local community involvement to (as needed) facilitate conflict resolution, information sharing and education; and as indicated by Diermeier et al. (2008) pitfalls tend to engage for coalitions in some cases. One very effective measure for gathering data related to these and supplemental action is using customer and constituent surveys.

According to the managers who used them, surveys provided first hand, primary information against which to gauge change initiatives. This gave the managers the opportunity to stay out in front of their customers need and wants (proactive). They are all able to accomplish this within the parameters established in applicable governing documents i.e., enabling legislation, by-laws and rules and regulations. This according to them allowed them to be proactive as well as served as a source for change at their particular facility. In addition to customer surveys, managers take on, seek, and use the information from their local communities to drive change as needed.

The narratives of the managers revealed several differences among the local managers and their facilities in the form of topography, politics, community interactions,

and staff arrangements. Most of the managers found it incumbent on themselves to reach out to their local communities to not only share information, but gather it as well. The information sharing also includes communicating with the press, and other information sharing entities for instance public affairs personnel from the local governments (either county or city as applicable). Information sharing, educating, and acting or implementing procedures post these communications serves as a legitimate source of or demand for change, or any action. Included in this area was the mention of employee and employment arrangements, as noted in finding eight varied on different levels at several facilities throughout the state.

The manager narratives described interchangeable arrangements for employees to include several that appeared questionable on some levels. However, arguable is that they might have in fact been simply responding to the demands of the economic market and other factors influencing their ability to maintain staff appropriate to manage and perform the duties of their facilities. These are some of the local driven mandates driving change in the facilities of the managers interviewed.

Relating the findings of this study to the research questions essentially surrounds the central question of the study “*are there obstacles to effective change implementation?*” Fortunately, there is no resounding affirmation or declination to any of the four questions. Rather, they (the findings) all serve as a basis for further study, analysis, and perhaps litmus for future operational planning and research. A discussion on the limitations of this study follows.

Limitations of the Study

The study performed was in the traditions and tenants of qualitative phenomenology to understand the essence and meaning of managing the general aviation facility in the state of North Carolina as perceived by the managers of North Carolina general aviation airports. As a phenomenology, the number of participants and the essences of the phenomena as experienced by this group exist as parameters to this study and its findings. Accordingly, it should not be held as the expected experiences of the total population throughout the state. As this study is useful, the findings are not statistically sound to extend beyond the participants of this study. Additionally, because the aviation industry (particularly general aviation) is very convoluted and compiles the efforts of several entities from all levels of government, and is an attraction for IGR, the findings here should not be recommended to apply to all public organizations in general. The narratives of the participants and the findings should serve as constructive basics for subsequent investigations in the aviation industry. However, care should be taken to prevent using them as an overarching premise for much larger populations. Nonetheless, these results can serve as informative in the study of organizational leadership. The experiences of the managers of this study can serve as informative reference material for potential scenarios for planning and acting in the profession of general aviation airport management.

Recommendations for Actions

Although this work does not study the behavior of a population following a particular event or phenomena, it is an examination of the life experiences of a population

in its natural setting devoid of treatments to induce a specific response or action. Accordingly, it is difficult to recommend a particular action in relationship to the findings. This study, its findings and conclusions are useful in what I believe are four ways. First, insights for other aviation managers or perhaps managers from other professions can be gained from the experiences of others; this is particularly true recognizing the need for understanding the importance of group dynamics, in particular boards of public organizations. Studying the actions of the participants in this regard can prove helpful for the aspiring general aviation manager. This is of particular importance considering the lack of literature on the subject matter.

Second, any manager of a local government (county or city) entity would benefit by understanding the dynamics of federalism and IGR, particularly as it relates to the general aviation manager, their position in both processes and their need for interaction with local level government officials. Also within this realm, it is recommended that the participants acquire the certification offered by AAAE (see finding 12 in chapter four); this will offer them industry basic information that will facilitate competence in not only aviation specific practices but general management as well. This is of paramount importance as developing ways of knowing in regards to policy issues and collaboration between public entities can fall short of the intended mark (Feldman et al., 2006). This work does not purport to present the catchall scenario management techniques rather; there are specific examples that should be reviewed and retained for certain public level interaction (IGR) with the participants of this study or like personnel in their geographic area.

Third, students and researchers who wish to research an untapped profession, devoid of literature and foundational research should use the canvassing, qualitative, phenomenological approach employing in-depth interviews to establish a framework for further, future research as this project does. Examining the real life experiences of airport managers now is interesting as two significant professional organizations emerged that could possibly accomplish some of the recommendations offered in later in this chapter.

This research takes place at an interesting time in the aviation industry both statewide and nationally. This is so because there appears to be little to no consensus for some aspects of management of these facilities and a consensus on some practices. Nonetheless, there are efforts in place to consolidate these organizations and their practices centers around the existence and development of two professional organizations, the NCAA at the state level, and the recently chartered General Aviation Airport Coalition (GAAC) at the national level.

NCAA is a nongovernmental organization (NGO) professional aviation entity in the state of North Carolina. Its membership is comprised of aviation professionals from the state; membership is optional; accordingly, they have no authoritative or coercive power over any aviation entity in the state. They are nonetheless, respected, recognized and sanctioned by the North Carolina Department of Transportation, Division of Aviation (NCDOT/A) as competent, knowledgeable and influential on various levels. They are consulted and have input on various areas in aviation to include policy development, educational programs, and funding from various sources. Evidence of their established confidence and competency in the state include awarding a scholarship and the

development and distribution of a state, airport management handbook. The NCAA functions at the state level for all airports whereas the GAAC specifically addresses general aviation however, on a national level.

The GAAC's mission is to "preserve and promote our nation's general aviation airports"; this is done as they:

- Educate local communities and the federal government on the significant impact that GA airports have on the economy.
- Monitor issues that affect general aviation airports.
- Launch an advocacy campaign in Washington.
- Create the tools and materials to make GA airports an effective voice in their local communities, as well as with Members of Congress and the Administration in Washington and at home.
- Provide an open forum for GA airport stakeholders to share best practices and other helpful information.
- Establish a library of references to help in the management, operations, and promotion of GA airports.
- Increase the profile of GA airports within the FAA.
- Unify the voice of GA airports.

As these organizations exist, they fall short of directly affecting the plight of the managers in this study. This is because the NCAA addresses all airports in the state rather than general aviation facilities, and the GAAC is a national organization rather than a state one. Accordingly, it behooves North Carolina airports in general to use the

services and avail themselves to these potential boons for information and technique consolidation venues.

Finally, it is my recommendation that this work be forwarded to academic institutions whose primary field of study is aviation management. This is because of the lack of literature and primary data on the subject matter. This process could start in the state of North Carolina then disseminate abroad. I recommend the same propagation practice for professional organizations as well, start with the state with the NCAA (as is planned for them to get a copy of the report), then the national industry organizations in general. This is significant as indicated in earlier research, including the public in matters involving implementation of policy developed by public organizations fosters a shared ownership with all concern leading to increased cooperation (Stich & Eagle, 2005). This would be a perfect document for the new national level organization, General Aviation Airport Coalition (GAAC) to use to establish or base future research on. This interaction, collaboration and cooperation would also fall within the tenants of “decentralized cooperation or DC,” or the fusion of ideas (Hafteck, 2003).

Recommendations for Further Study

The results of this study, in my opinion left me with more questions than answers; it also missed the mark on providing clear, succinct points in some cases. It did on the other hand; offer some revelations on some matters. The narratives revealed there are glaring differences and variations in the practice of managing employees, this manifests itself in the way employees are remunerated, unorthodox management of demographic issues as far as age, possible contracting conflict of interest, sparse employees with vast

amounts of responsibility and the use in some cases of prisoners to perform functions in security sensitive areas. Another demographic characteristic (found via online survey noted in Table 2) common among the participants is that they are all white males. Accordingly, further study to determine how gender and race issues might change dynamics for managers is also recommended. Others interested in the topic might find interest on which to base future research.

From the phenomenological view, this research has only investigated the managers of or leaders of the facilities. In this case, the term leader can prove counter intuitive information in that the managers are relative subordinates to the board (in most cases) or to other leaders to which they must report. Accordingly, the general aviation airport can be viewed through the lenses of other in the matrix that runs or has a role in the facility. For example, operators visiting the facility, tenant operators on the facility, employees, contractors, and board members could all be subject to the process of research to study their life experiences in the general aviation airport environment. Further, the results of those participants could be used as a comparison to the findings presented here. Countless numbers of passengers, operators, governmental officials, and others would benefit from the knowledge derived from further study. Additionally, the world of academia (instructors and students) would undoubtedly benefit from this knowledge as well. The recommendations listed thus far represent a general call for further study; therefore, there are more specific recommendations germane to this study.

This study produced 15 findings; accordingly, it would be unreasonable to suggest further study surrounding all of them. This is because of the inaugural nature of this

study and there is no research to which one can compare or add it to. However, sound academic musing calls for specific understating and recommendations for action.

Accordingly, I recommend that similar studies be conducted in each of the other 49 United States, this would cast a net to determine the relevant issues ambient in each, and it would further determine whether the findings presented here are only occurring in the state of North Carolina. Possible techniques to use for future research in the state of North Carolina is to study the use of allegory as an interpretive device specifically directed to the study of change; this is a technique proposed by Grubbs (2001) in the study of public organizations in Delaware. The other recommendations are to conduct further study surrounding the findings in the state of North Carolina.

Based on the finding eight (employee/employment arrangements), issues to study in the state of North Carolina are employee or human resource management concerns to determine whether there are in fact problems with applicable labor laws, and possible ethical violations in offering incentives to government employees if they are in fact government employees. Another area that warrants further exploration is the problem with inadequate security facilities, and practices as indicated via finding five (security enforcement) several times throughout this work, 911 and the mandates derived after it are not being maintained at several of the facilities. Further study should also be directed to military organizations and their role and influence in IGR as it relates to these facilities in regards to funding, security and other perks because of the manager's facility affiliation with them, a point noted in Finding 10, military use or affiliation. It is recommended that further study be performed to probe deeper into the professional

qualifications of the managers to determine if success levels are based on those qualifications, or to simply recommend specific educational backgrounds or levels. Also within this genera an attempt to determine whether manager tenure has any impact of his effective or success with the governing bodied should be studied as well, finding 12, manager professional qualifications. Finally it is recommended that the actual makeup of boards based on professional qualifications be researched to determine whether there are in fact agendas of members that either preclude the completions of tasks, policy develop or implementation, or if some of them are there to push a particular agenda, this item was mused on in Finding 14, board member composition. Further study into these topics will add to the literature and knowledge foundation established by this work.

In First Person: My Personal Reflections

My bracketing discussion in Chapter 4 outlined my experience in the industry as well as the fact that I am a member of the research population, an airport manager of a general aviation facility in the state of North Carolina. I have been in this position for slightly more than three and a half years. Some of the participants have been incumbents for decades while at least one other has been place for less than a year. For the obvious reasons of research bias avoidance and results validity, my facility and any of my employees could not be included in the research. Although my facility is one of the fully enabled via appropriate legislation to function as a separate entity vested with the ability to enact law, policy and govern themselves; there are too many issues occurring at my facility that I feel strongly about that I could not possibly reflect consensus views as the other participants. In fact, some of the personal experiences I have encountered inspired

me to conduct this study, thus measures to prevent personal influence were of paramount importance.

Failing to acknowledge the possibility of researcher bias in this or any other research would be deficient and pretentious on the part of the writer. Conversely, I took deliberate action and care to ensure that I personally did not influence or persuade participants to cooperate or attempt to cajole specific responses from them to the particular questions, offer solicited opinions or simply agree with any predetermined mindset. Thus, the characterization of and the meaning of the experiences started with a clean slate upon which the individual experiences of the 10 participants were imbued, those were subsequently transcribed to an aggregate set of meanings for the participants as a whole (Appendix L).

Within the lines, limit and parameters of phenomenology, the nature of these findings is informative and to a degree instructive however, insufficient to be determined consensus to the entire population of airport managers in the state of North Carolina. This is primarily for two reasons one, because the experiences in some cases are so varied and inconsistent it is difficult consolidate them into one universal meaning; two, in the interest of future research they might serve as litmus for testing or comparing future results against. Consistent with the intent of phenomenology, the underlying mission and goal of this work was to understand the essence of the experience of managing the general aviation airport in the state of North Carolina.

As this research was not conducted around a single event or treatment, it merely focused on the life experiences of the managers interviewed. As the researcher and data

collector, I was in awe of participants, not only by their willingness to participate, but also by their knowledge, experience, and commitment to not only those within their circle to include those superior as well as those subordinate to them, but to the industry as a whole. Accordingly, I have no doubt about the persistent zest, zeal and fervor with which they will continue to carry out the business of managing the facilities to which they are charged with implementing policy, procedures and change.

An interesting study over time would be to ascertain whether the professionalism of these managers would lead to increased, improved opportunities and growth for their facilities. Another curiosity would be the identity affects of the facilities if any of these managers were to resign, retire, or seek advancement opportunities that almost inevitably occurs in the all industries as improvements are made. This study is instructive as it teaches us that it takes dedication, flexibility, professionalism, and knowledge to function in an environment where there is simultaneously intense oversight with little established procedure. As these participants have demonstrated, this profession requires an unprecedented level of orchestration, juggling and keen oversight not realized in many professions.

Implications for Social Change

Understanding the intricacies of managing the general aviation facility in the state of North Carolina most certainly has positive social change implications. To date the literature that exists on aviation centers on the topics covered in chapter 2. Based on the review none of it specifically addresses the general aviation facility or the managers of these facilities. There are tacit connections to some of the topics as some of the

operations have implication for the facilities and the managers, withstanding this deficiency this research fosters positive social change (PSC) in several ways. As there is a deficiency in applicable subject matter literature, this research will establish a foundational base for not only further literature, but also more extensive research on the findings presented here as well as the recommendations for further research. Using the information and findings presented here will lead to a well-informed industry, and lead to competent professionals as well as provide knowledge that will add to academia for the use in textbooks, lectures, and continuing education units. Further, acting to improve or perhaps eliminate the potential problems identified in findings five (security enforcement), eight (employee/employment arrangements), 10 (military use or affiliation), 12 (manager professional qualifications) and 14 (board member composition) will engender PSC as well. Additionally this data will assist two prevailing NGOs mention throughout this work. As advocated for earlier in this work the NCAA and GAAC are the two NGOs with the potential for direct impact and influence on the research population and their facilities. Providing this information to them will offer them real primary data to continue with their efforts to develop manuals, present cases and arguments to applicable governmental bodies to use their influence to further the cause of aviation, particularly in general aviation.

Conclusion

The experience of managing the general aviation facility viewed through the lenses of the managers of these facilities calls for understanding the three venues or categories through which the manager operates, governmental, operational and

community. The governmental organizations to which they report to are the same entities for which they implement policy; the organizations that reports to them which are typically operational in nature and the communities in which they operate are all part of the puzzle that monopolizes their time. Conclusively the managers in this study are challenged by the complexity of the environments in which they function.

The aviation environment on its face is potentially the most dangerous professional setting known to man. This is because of the catastrophe associated with the accidents and incidents occurring on these facilities. The physical environment does not exclude the managers from the typical vulnerabilities associated with the normal public manager. Although similar in the public management respect, these managers are confronted with countless idiosyncratic issues, unlike any other public manager. This research has hopefully laid the foundation for understanding and further, future research to enlighten the profession and academic interest.

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Appendix A

North Carolina Airports

CITY/TOWN	AIRPORT NAME	ICOA	Class	Dis	T
Hickory	Hickory Regional Airport	HKY	CS/GA		
Pinehurst/Southern Pines	Moore County Airport	SOP	CS/GA		
Winston-Salem	Smith Reynolds Airport	INT	CS/GA	Y	
Ahoskie	Tri-Co	ASJ	GA		
Albemarle	Stanly Co	VUJ	GA		
Andrews-Murphy	Andrews-Murphy	RHP	GA		
Asheboro RGNL	Asheboro RGNL	HBI	GA		
Beaufort	Michael J. Smith Field	MRH	GA	Y	
Burlington	Burlington-Alamance Regional Airport	BUY	GA		
Clinton	Sampson County Airport	CTZ	GA		
Currituck	Currituck County Regional Airport	ONX	GA		
Edenton	Northeastern Regional Airport	EDE	GA		
Elizabeth City	Elizabeth City CGAS/Regional Airport	ECG	GA	Y	
Elizabethtown	Curtis L. Brown, Jr. Field	EYF	GA		
Elkin	Elkin Municipal Airport	ZEF	GA		
Englehard	Hyde County Airport	7W6	GA		
Erwin	Harnett Regional Jetport	HRJ	GA		
Franklin	Macon County Airport	1A5	GA		
Gastonia	Gastonia Municipal Airport	AKH	GA		
Goldsboro	Goldsboro-Wayne Municipal Airport	GWW	GA		
Hatteras	Billy Mitchell Airport	HSE	GA		
Kenansville	Duplin county Airport	DPL	GA		
Kill Devil Hills	First Flight Airport	FFA	GA		
Lexington	Davidson County Airport	EXX	GA		
Louisburg	Franklin County Regional	LHZ	GA		
Lumberton	Lumberton Regional Airport	LBT	GA	Y	
Manteo	Dare County Regional Airport	MQI	GA	Y	
Maxton	Laurinburg-Maxton Airport	MEB	GA	Y	
Morganton	Foothills Regional Airport	MRN	GA		
Mount Airy	Mount Airy/Surry County Airport	MWK	GA	Y	

CITY/TOWN	AIRPORT NAME	ICOA	Class	Dis	T
Mount Olive	Mount Olive Municipal Airport	W40	GA		Y
Ocean Isle Beach	Odell Williamson Municipal Airport	60J	GA		Y
Ocracoke	Ocracoe Island Airport	W95	GA		
Oxford	Henderson-Oxford Airport	HNZ	GA		
Plymouth	Plymouth Municipal Airport	PMZ	GA		
Reidsville	Rockingham County-NC Shiloh Airport	SIF	GA		
Rockingham	Richmond County Airport	RCZ	GA		Y
Rutherfordton	Rutherford County-Marchmand Field	FQD	GA		
Salisbury	Rowan County Airport	RUQ	GA		
Shelby	Shelby-Cleveland County Regional Airport	EHO	GA		
Siler City	Siler City Municipal Airport	5W8	GA		
Smithfield	Johnston County Airport	JNX	GA		
Spruce Pine	Avery County/Morrison Field	7A8	GA		
Star	Montgomery County Airport	43A	GA		Y
Statesville	Statesville Regional Airport	SVH	GA		Y
Sylva	Jackson County Airport	24A	GA		Y
Tarboro	Tarboro-Edgecombe Airport	ETC	GA		Y
Wadesboro	Anson County Airport	AFP	GA		
Wallace	Henderson Field	ACZ	GA		
Washington	Warren Field	OCW	GA		Y
Whiteville	Columbus County Municipal Airport	CPC	GA		
Williamston	Martin County Airport	MCZ	GA		
Asheville RGNL	Asheville Regional	AVL	PR		
Charlotte	Charlotte/Douglas International Airport	CLT	PR		
Fayetteville	Fayetteville Regional/Grannis Field	FAY	PR		Y
Greensboro	Piedmont Triad International Airport	GSO	PR		
Greenville	Pitt-Greenville Airport	PGV	PR		Y
Kinston	Kingston Regional Jetport @ Stallings Field	ISO	PR		
New Bern	Costal Carolina Regional Airport	EWN	PR		
Raleigh	Raleigh-Durham International Airport	RDU	PR		
Wilmington	Wilmington International Airport	ILM	PR		
Concord	Concord Regional Airport	JQF	RL		Y
Lincolnton	Lincolnton-Lincoln County Regional Airport	IPJ	RL		Y

CITY/TOWN	AIRPORT NAME	ICOA	Class	Dis	T
Monroe	Charlotte-Monroe Executive Airport	EQY	RL		
Roxboro	Person County Airport	TDF	RL	Y	
Sanford	Sanford-Lee County Regional Airport	TTA	RL		
Bladenboro	Bladenboro Airport	3W6	PPUA		
Brevard	Transylvania County Airport	22W	PPUA	Y	
Chapel Hill	Horace Williams Airport	IGX	PPUA	Y	
Charlotte	Wilgrove Air Park	8A6	PPUA		
Clarkton	Elkins Field	1.00E+06	PPUA		
Farmville	Flanagan Field	N08	PPUA	Y	
Fayetteville	Grays Creek Airport	2CG	PPUA	Y	
Greensboro	Air Harbor	W88	PPUA		
Greensboro	Southeast Greensboro	3A4	PPUA		
Halifax	Halifax-Northampton Co. Regional Airport	IXIA	PPUA		
Hendersonville	Hendersonville Airport	0A7	PPUA	Y	
Hickory	Wilson Airport	E40	PPUA		
Holly Ridge	Holly Ridge/Topsail Island Airport	N21	PPUA	Y	
Hurdle Mills	Whitfield Farms Airport	4W4	PPUA	Y	
Indian Trail	Goose Creek Airport	28A	PPUA	Y	
Jacksonville	Albert J. Ellis	OAJ	PPUA		
Jacksonville	Sky Manner Airport	N22	PPUA		
Jefferson	Ashe County Airport	GEV	PPUA		
Jonesville	Swan Creek Airport	78A	PPUA		
Liberty	Causey Airport	2A5	PPUA		
Liberty	Hinshaw (Greenacres) Airport	N61	PPUA		
Maiden	Laneys Airport	N92	PPUA		
Marion	Shiflet Field	9A9	PPUA		
Mebane	Hurdle Field	4W7	PPUA		
Mocksville	Sugar Valley Airport	31A	PPUA		
Mocksville	Twin Lakes Airport	8A7	PPUA	Y	
Mooresville	Lake Norman Airpark	14A	PPUA	Y	
North Wilkesboro	Wilkes County Airport	UKF	PPUA		
Oak Island	Brunswick County Airport	SUT	PPUA	Y	
Oak Ridge	DS Butler Farm and Airfield	N83	PPUA		

CITY/TOWN	AIRPORT NAME	ICOA	Class	Dis	T
Pink Hill	Pink Hill Airport	4W9	PPUA	Y	
Plymouth	Donald's Air Park	7NC	PPUA	Y	
Potters Hill	Eagles Nest Airport	6N9	PPUA		
Raleigh	Tripple W Airport	5W5	PPUA	Y	
Reaford	PK Airpark	5W4	PPUA		
Reidsville	Warf Airport	6A5	PPUA	Y	
Rocky Mount	Rocky Mount-Wilson Regional Airport	RWI	PPUA		
Thomasville	Hiatt Airport	N97	PPUA		
Walnut Cove	Meadow Brook Field	N63	PPUA		
Waxhaw	JAARS-Townsend Airport	N52	PPUA	Y	
Wilson	Wilson Industrial Air Center	W03	PPUA		
Yadkinville	Lone Hickory Airport	80C	PPUA		
Yanceyville	Caswell Airport	6W4	PPUA		

Appendix B

North Carolina General Aviation Airports

CITY/TOWN	AIRPORT NAME	ICOA	Class	Dis T
Hickory	Hickory Regional Airport	HKY	CS/GA	
Pinehurst/Southern Pines	Moore County Airport	SOP	CS/GA	
Winston-Salem	Smith Reynolds Airport	INT	CS/GA	Y
Ahoskie	Tri-Co	ASJ	GA	
Albemarle	Stanly Co	VUJ	GA	
Andrews-Murphy	Andrews-Murphy	RHP	GA	
Asheboro RGNL	Asheboro RGNL	HBI	GA	
Beaufort	Michael J. Smith Field	MRH	GA	Y
Burlington	Burlington-Alamance Regional Airport	BUY	GA	
Clinton	Sampson County Airport	CTZ	GA	
Currituck	Currituck County Regional Airport	ONX	GA	
Edenton	Northeastern Regional Airport	EDE	GA	
Elizabeth City	Elizabeth City CGAS/Regional Airport	ECG	GA	Y
Elizabethtown	Curtis L. Brown, Jr. Field	EYF	GA	
Elkin	Elkin Municipal Airport	ZEF	GA	
Englehard	Hyde County Airport	7W6	GA	
Erwin	Harnett Regional Jetport	HRJ	GA	
Franklin	Macon County Airport	1A5	GA	
Gastonia	Gastonia Municipal Airport	AKH	GA	
Goldsboro	Goldsboro-Wayne Municipal Airport	GWW	GA	
Hatteras	Billy Mitchell Airport	HSE	GA	
Kenansville	Duplin county Airport	DPL	GA	
Kill Devil Hills	First Flight Airport	FFA	GA	
Lexington	Davidson County Airport	EXX	GA	
Louisburg	Franklin County Regional	LHZ	GA	
Lumberton	Lumberton Regional Airport	LBT	GA	Y
Manteo	Dare County Regional Airport	MQI	GA	Y
Maxton	Laurinburg-Maxton Airport	MEB	GA	Y
Morganton	Foothills Regional Airport	MRN	GA	
Mount Airy	Mount Airy/Surry County Airport	MWK	GA	Y
Mount Olive	Mount Olive Municipal Airport	W40	GA	Y
Ocean Isle Beach	Odell Williamson Municipal Airport	60J	GA	Y
Ocracoke	Ocracoe Island Airport	W95	GA	
Oxford	Henderson-Oxford Airport	HNZ	GA	
Plymouth	Plymouth Municipal Airport	PMZ	GA	
Reidsville	Rockingham County-NC Shiloh Airport	SIF	GA	
Rockingham	Richmond County Airport	RCZ	GA	Y
Rutherfordton	Rutherford County-Marchmand Field	FQD	GA	
Salisbury	Rowan County Airport	RUQ	GA	
Shelby	Shelby-Cleveland County Regional	EHO	GA	

	Airport			
Siler City	Siler City Municipal Airport	5W8	GA	
Smithfield	Johnston County Airport	JNX	GA	
Spruce Pine	Avery County/Morrison Field	7A8	GA	
Star	Montgomery County Airport	43A	GA	Y
Statesville	Statesville Regional Airport	SVH	GA	Y
Sylva	Jackson County Airport	24A	GA	Y
Tarboro	Tarboro-Edgecombe Airport	ETC	GA	Y
Wadesboro	Anson County Airport	AFP	GA	
Wallace	Henderson Field	ACZ	GA	
Washington	Warren Field	OCW	GA	Y
Whiteville	Columbus County Municipal Airport	CPC	GA	
Williamston	Martin County Airport	MCZ	GA	

Appendix C

Aircraft Operating Areas

Movement Areas

The runways, taxiways, and other areas of an airport that aircraft use for taxiing, takeoff, and landing, exclusive of loading ramps and parking areas and that are under the control of tower

Taxiway Juliet (Terminal F & Gate V01) is included as part of the defined movement area during RAMP Tower hours of operation (6am – 12am)

Ramp Tower operation hours are subject to change pending on inclement weather, seasonal airline operation changes, and other factor adversely affecting aircraft operations.

The outer service road serves as the border between movement area and nonmovement area

NonMovement Areas

Taxiways, aprons, and other areas not under the control of air traffic or at airports without an operating airport traffic control tower

Items in the movement area include:

Runways

Runways are always designated by a number such as 17, 35, 8, and 26. The number indicates the compass heading of the runway. When two or more runways are parallel (i.e., having the same compass heading), there is a letter designation added to indicate either the right, center or left runway (e.g., 9L-27R, 9R-27L).

Runways classifications (VVFR, Nonprecision, & Precision) depend on geographic layout of airfield, approach light system, airfield light configuration, pavement markings, and operation rates of the above airfield configuration areas.

Taxiways

Taxiways are generally designated by letters or by letter/number combination. Taxiways follow a logical identification methodology, from East to West (or) North to South

Taxiways are categorized into groups based upon aircraft types using them. PHL maintains Group III & V standards. Group III taxiways are generally 50ft. wide blue edge lights in the grass. Group V taxiways are at least 75ft wide with either / both blue edge lights and green centerline lights and have hardened shoulders

To improve “SITUATIONAL AWARENESS”, it is important for vehicle operators in movement area to be aware aircraft approach operations. Vehicle operators should remain clear of exit taxiways (high-speed exits), in which aircraft are exiting the active runway at higher speeds than those simply taxiing on a regular taxiways.

Aircraft Parking Areas

These are generally referred to as remote aircraft parking aprons or ramps. At PHL, there are five remote aircraft parking aprons:

5. West Apron (or Cargo Apron)
6. East Apron
7. North Apron (or Old Overseas Terminal)
8. South Apron

9. Deicing Apron

Vehicle Operators need to exercise caution in the vicinity of East, West, and Deicing Aprons during snow operations, where aircraft utilize these areas for deicing & defrosting operations.

Items in the movement areas runways, taxiway aprons and other items must be in compliance CFR FAR 139.11 requirements for markings, signage and lighting:

General Requirements for Markings are:

Airfield paint markings are applied at 18 – 30 mils in thickness. Runway Markings are generally white, exception of lead-on and lead-off lines. Taxiway markings are generally yellow, exception other markings as engine run-up lines

Physically removing paint marking by means of sand blasting, chemical removal, pressure washing, or grinding is required, “Not Painting Over.” Painting over old markings merely preserves the old markings that can be misleading to pilots.

Black Outlining – the contrast of a marking on concrete pavement surfaces and light colored pavements can be increased by outlining all edges of the marking with black boarder that is 6 inches or greater in width. Markings requiring black outline:

- All Hold Position Markings
- All SMGCS Taxiway Markings
- Enhance Taxiway Centerlines
- Intermediate Hold Position Markings
- Surface Painted Hold Position Signs
- Geographic Position Markings

- Glass Beads – effective means of highlighting pavement markings for operations occurring at night, during low visibility conditions, or during periods when pavement surface may be wet. Excessive bead application on required yellow paint markings should be avoided in preventing the pavement markings illuminating white during the above conditions. Glass beads are required on the following markings:
 - All Runway and Taxiway Hold Position Markings
 - Runway Threshold Markings
 - Runway Threshold Bar
 - Runway Aiming Point Markings
 - Runway Designated Markings
 - Runway Touchdown Zone Markings
 - Runway Centerlines
 - Taxiway Centerline Markings
 - Geographic Position Markings
 - Surface Painted Signs
 - Nonmovement Area Boundary Markings

Mandatory Hold Markings

R/W Hold Position Marking

- Located across each taxiway that leads directly onto a runway.
- 4 yellow lines and 3 spaces, 12” wide
- Always adjacent to R/W Hold Sign

- Need ATC Clearance to Cross Solid Line

ILS Critical Area Hold Position Marking

Identifies location on taxiway where vehicle does not have clearance to enter the ILS critical area.

Vehicle operator must remain clear during inclement weather, or it might interfere with the transmitted signal to the landing aircraft.

NonMovement Area Boundary Markings

The solid line is located on the nonmovement area side, while the dashed is located on the movement area side.

All vehicle operators must contact Airport Operations before entering the movement area

Apron Entrance Point Markings

Also called Ramp Spots) are the locations marking the jurisdiction between Ramp Tower and FAA ATC. Nonmovement Area is under control of Ramp Tower whereas Movement Area is under control of FAA ATCT

Geographic Position Markings

Markings are installed when points are necessary to identify the location of taxiing aircraft during low visibility operations.

Low visibility operations are that occur when the runway visual range is below 1200 feet.

Runway Markings

Designation Marking -identifies a runway by its magnetic azimuth

Centerline—identifies the physical center of runway that provides alignment guidance upon takeoff and landing

Threshold Bar –identifies the beginning of the runway that is available for landing

Threshold Markings – delineates the beginning of the runway that is available for landing when pavement aligns the runway on the approach side of threshold

Aiming Point – serves as a visual aiming point for landing operations

Touchdown Zone Marks – identify the touchdown zone for landing operations, which are coded to provide distance information. TDZ marks consists of groups of one, two, and three rectangular bars symmetrically arranged in pairs about runway centerline

Side Stripe Marking – provides a visual contrast between the runway and the surrounding terrain and delineate the width of the paved area that is intended to be used as a runway

Taxiway Centerlines

- Centerline – provide visual cue to permit taxiing along a designated path.
Consists continuous solid 12-inch line.
- Enhanced Taxiway Centerline Marks are to be installed by June 30, 2008 for airports with annual passenger enplanements of 1.5 million.. The taxiway centerlines are enhanced 150 feet prior to runway hold line
- Taxiway Edge Marking
- Continuous Marking – delineate the taxiway edge from the shoulder or some other contiguous paved surface not intended for use by aircraft

- Dashed Marking – are used when there is an operational need to define the edge of a taxiway or taxi lane on a paved surface where the pavement contiguous to the taxiway edge is intended for use by aircraft. Consist of double edge line at least 6 inches wide, spaced 6 inches apart. The lines are 15 feet long with 25-foot gaps.

Intermediate Taxiway Hold Line identifies location on a taxiway or apron where aircraft are suppose to stop when told to hold short of another taxiway or apron

Taxiway hold position markings are located for the most demanding aircraft, PHL–Group V Aircraft

Yellow markings consists of 1 foot wide, 3 foot long dashes and spaces, with 6-12 inch separation from taxiway centerline

Other Airport Markings

- Closed Pavement “X”
- Engine Run-up Line
- Aircraft Release Line
- Aircraft Parking Line
- Service Road Markings

Airfield Lighting Requirements include:

General Airfield Lighting Requirements

PHL must ensure that all lighting on the airport, including that for aprons, vehicle parking areas, and buildings is adequately adjusted or shielded to prevent interference with air traffic control and aircraft operations

PHL must maintain operational and color standards for runway lighting systems that meet specifications for takeoff and landing minimums.

10. Runway Edge Lights
11. Runway Touchdown Zone Lights
12. Runway Centerline Lights
13. Taxiway Lead-off & Lead-On Lights
14. Surface Movement Guidance Control System (SMGCS)

PHL must maintain operational standards of taxiway lighting systems that meet compliance of runway approach categories. Prompt notification (NOTAM) of all air carriers are required when PHL fails to meet one or combination of following taxiway lighting systems:

15. Taxiway Centerline Lights
16. Taxiway Edge Lights
17. Taxiway Centerline Reflectors
18. Taxiway Edge Reflectors

Runways

R/W Edge Lights – white, last 2000 feet yellow, with 200 spaces

R/W Centerline Lights – white, except for last 3000 feet of runway where they begin to alternate red and white. The last 1000 feet of runway are solid red. Centerlines are 50-foot spaces

R/W Touchdown Zone Lights (TDZL) – groups of 3 white lights spaced symmetrically perpendicular to runway centerline at 100 foot intervals, extending up to 3000' on landing runway, e.g., PHL – Runway 9R

R/W Threshold Lights – consists of red and green split lenses, emitting green light outward from the runway, and emitting red light toward the runway to mark end of the runway

Taxiways Edge Lights – are blue (sometimes replaced by reflectors) spaced symmetrically along taxiway edge line not less than 2 feet not more than 10 foot of define taxiway edge line

Taxiway Centerlines – are visible to persons exiting the runway (lead off lights) are color coded to warn pilots and vehicles drivers that they are within the RSA or ILS critical area, whichever is more restrictive. Alternate green and yellow lights are installed (beginning with green) from the runway centerline and continuous one light past the runway hold position line or ILS critical area, whichever is more critical

AC 120-57A (SMGCS) (normally not applicable to NIAP GA Airports)

Surface Movement Guidance Control System

Provide visual guidance in expedite aircraft off active runway to primary / designated taxi route to parking aprons or gate when visibility conditions are <1200' RVR.

When visibility is <600' RVR, vehicles will be restricted to those taxiway s which are illuminated and designated as a low visibility taxi route for a R/W 9R arrival or departure, unless an emergency situation otherwise dictates

Primary taxiways routes are enhance by reducing the special separation between taxiway centerlines.

- Primary – Juliet, Kilo, November Sierra, Zulu
- 9R APCH – Sierra, November, Juliet, Terminal
- 9L APCH – Kilo, Juliet
- DEICE – Juliet, Zulu, Sierra, Whiskey
- 27R & 27L – Fallow Vehicle Requests

Active runways safety areas (RSA) are defined by elevated and in pavement guard lights.

Minimum Operation Rates:

- No more than (3) lights @ location
- No (2) consecutive Lights
- No More (1) bulb out on elevated guard light unit
- No more than (2) consecutive edge reflectors

Conduct Visual Inspection (2) hours before expected inclement weather

Signage is the last component of airfield operational designations:

General Requirements

Airfield Signs are classified into five major groups

Mandatory Hold Signs – denote an entrance to runway or ILS critical area, red signs with white letter resemble colors of a standardized “STOP” sign.

Direction & Information Signs – provide directional information on yellow signs with black letters

Location Signs – provide location information on black signs with yellow letters

Exit Signs – provide taxiway intersection information for aircraft exiting runways on yellow signs with black letters

Distant Remain Signs – provide runway distance remain information on black signs with white numbers for takeoff and landing aircraft.

AD 150 / 5345-44G Compliance requirements

- Airfield lighted signs need are to provide continuous illumination across the sign array
- Sign readily visible up to 800' during day (or) lighted at night
- Sign modules (None Lighted Signs) visible up to 200' during day (or) night
- Sign surfaces need to appear smooth and free of abrasions.
- Direction and Information signs arrays need to be separated by a 2" black message divider
- PHL Airfield is standardize with size 3 signage that are mounted on 2 inch frangible points above ground, and contains minimum of 1 tie down points (tethers)

Other components of an aviation facility depend on which landing system is used on the property. Typically, certificated airfields have some sort of instrument landing system or (ILS). The ILS can be either one of or three components:

19. Localizer

- Provides azimuth (horizontal) guidance for landing aircraft
- Critical area extends in general 1000 ft. past runway end and radius out 250 ft. past unit structure.

- Glide Slope
- Provides height guidance for approaching aircraft
- Critical area extends 1000 ft. down runway, 250 ft. abeam runway centerline, extends an additional 175ft from outside edge glide slope building
- RVR
- Touchdown
- Rollout
- Midpoint
- Markers
- Outer Marker
- Middle Marker

Appendix D

Object Free Zone (OFZ)

- a) Depends on Aircraft Size and Approach Speed
- b) 400' (wide) x 200' (long) x 150' (high)
- c) Not Acceptable
 - 1. Taxing aircraft
 - 2. Parked aircraft
 - 3. NAVAIDS that are not mounted on frangible couplings
- d) Consists (3) Dimensional Planes
 - a) Runway Protected Zone (RPZ)
 - 1. Trapezoid shape centered on extended centerline
 - 2. Depends on type of aircraft and approach visibility minimums
 - 3. $\geq \frac{3}{4}$ mile: 2500' (length) x 1000' (width 1) x 1750' (width 2)
 - b) Inner Approach Zone
 - 1. Volume airspace center on extended centerline in the approach area
 - 2. 400' (wide), starts 200' before runway threshold, and extends 200' past last light unit
 - 3. VFR – slopes 20-1
 - 4. IFR – slopes 50-1
 - c) Inner Transition Zone
 - 1. Volume airspace along side of OFZ, RPZ, & Inner Approach Zone
 - 2. VFR – slopes 5-1

3. IFR (CAT II & III) – slopes 7-1
4. Object Free Zone (OFZ)
 - e) Depends on Aircraft Size and Approach Speed
 - f) 400' (wide) x 200' (long) x 150' (high)
 - g) Not Acceptable
 1. Taxing aircraft
 2. Parked aircraft
 3. NAVAIDS that are not mounted on frangible couplings
 - h) Consists (3) Dimensional Planes
 - a) Runway Protected Zone (RPZ)
 1. Trapezoid shape centered on extended centerline
 2. Depends on type of aircraft and approach visibility minimums
 3. $\geq \frac{3}{4}$ mile: 2500' (length) x 1000' (width 1) x 1750' (width 2)

Inner Approach Zone

4. Volume airspace center on extended centerline in the approach area
5. 400' (wide), starts 200' before runway threshold, and extends 200' past last light unit
6. VFR – slopes 20-1
7. IFR – slopes 50-1
- b) Inner Transition Zone
 1. Volume airspace along side of OFZ, RPZ, & Inner Approach Zone
 2. VFR – slopes 5-1

3. IFR (CAT II & III) – slopes 7-1

Runway Safety Area (RSA)

i) Runway Safety Areas (RSA) are defined ground surfaces areas around runways that are prepared and suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

j) RSA Determinants

1. Aircraft approach category
2. Runway instrument type
3. Aircraft design group
4. Airport elevation
5. RSA Dimensions Object Free Zone (OFZ)

k) Depends on Aircraft Size and Approach Speed

l) 400' (wide) x 200' (long) x 150' (high)

m) Not Acceptable

1. Taxing aircraft
2. Parked aircraft
3. NAVAIDS that are not mounted on frangible couplings

n) Consists (3) Dimensional Planes

a) Runway Protected Zone (RPZ)

1. Trapezoid shape centered on extended centerline
2. Depends on type of aircraft and approach visibility minimums
3. $\geq \frac{3}{4}$ mile: 2500' (length) x 1000' (width 1) x 1750' (width 2)

b) Inner Approach Zone

Volume airspace center on extended centerline in the approach area

c) Inner Transition Zone

1. Volume airspace along side of OFZ, RPZ, & Inner Approach Zone
2. VFR – slopes 5-1
3. IFR (CAT II & III) – slopes 7-1
4. Standard RSA 's - 120'-500' (wide) x 240' – 1000' (past each runway end)
5. CAT III Approaches – 280' (wide)
6. PHL Airfield Standardized – 280' (wide)

PHL Airfield Area \geq 280' (wide)

1. 9R-27L @ Yankee
2. 9R-27L @ Zulu
3. 8-26 @ A2

PHL Airfield Area \geq 1000' (long)

4. 9R Approach
 5. 26 Approach
- o) Part 139.309 Compliance Requirements

Cleared of all potential hazardous ruts, humps, depressions, and other surface variations

1. Drained by grading storm sewers to prevent water accumulation
1. Under dry conditions able to support
2. Emergency response equipment
3. Snow removal equipment

4. Occasional passage of aircraft without causing

Free of all objects except NAVAIDS, functional objects, and operation need objects
GROUND VEHICLES ARE NOT PERMITTED INSIDE THE RSA WITHOUT THE
AUTHORIZATION OF FAA ATCT (See Figure 2).

Nonmovement areas consist of taxiway and aprons not under the control of an ACTT.

General requirements for maintaining aviation pavement facilities include:

General Requirement

- p) PHL must maintain, and promptly repair the pavement of each runway, taxiway, loading ramp, and parking area that are available for aircraft usage.
- q) Pavement must have no hole exceeding 3 inches in depth nor any hole the slope of which from any point at the lip of the hole exceeds 45 degrees or greater.

Not exceed 3 inches in depth

Be covered by 5-inch diameter hole

Exceed a 45 degrees slope from any point in the hole

The pavement must be free of cracks and surface variations that could impair the directional control of an aircraft operation

Any chemical solvent used to clean any pavement area must be removed as soon as possible.

Appendix E**Carolina General Statute § 143-318.12**

Accordingly, North Carolina General Statute § 143-318.12. Public notice of official meetings list the requirements for conducting meetings as follows:

(a) If a public body has established, by ordinance, resolution, or otherwise, a schedule of regular meetings, it shall cause a current copy of that schedule, showing the time and place of regular meetings, to be kept on file as follows:

- (1) For public bodies that are part of State government, with the Secretary of State;
- (2) For the governing board and each other public body that is part of a county government, with the clerk to the board of county commissioners;
- (3) For the governing board and each other public body that is part of a city government, with the city clerk;
- (4) For each other public body, with its clerk or secretary, or, if the public body does not have a clerk or secretary, with the clerk to the board of county commissioners in the county in which the public body normally holds its meetings.

If a public body changes its schedule of regular meetings, it shall cause the revised schedule to be filed as provided in subdivisions (1) through (4) of this

subsection at least seven calendar days before the day of the first meeting held pursuant to the revised schedule.

(b) If a public body holds an official meeting at any time or place other than a time or place shown on the schedule filed pursuant to subsection (a) of this section, it shall give public notice of the time and place of that meeting as provided in this subsection.

(1) If a public body recesses a regular, special, or emergency meeting held pursuant to public notice given in compliance with this subsection, and the time and place at which the meeting is to be continued is announced in open session, no further notice shall be required.

(2) For any other meeting, except an emergency meeting, the public body shall cause written notice of the meeting stating its purpose (i) to be posted on the principal bulletin board of the public body or, if the public body has no such bulletin board, at the door of its usual meeting room, and (ii) to be mailed or delivered to each newspaper, wire service, radio station, and television station, which has filed a written request for notice with the clerk or secretary of the public body or with some other person designated by the public body. The public body shall also cause notice to be mailed or delivered to any person, in addition to the representatives of the media listed above, who has filed a written request with the clerk, secretary, or other person designated by the public body. This notice shall

be posted and mailed or delivered at least 48 hours before the time of the meeting. The public body may require each newspaper, wire service, radio station, and television station submitting a written request for notice to renew the request annually. The public body shall charge a fee to persons other than the media, who request notice, of ten dollars (\$10.00) per calendar year, and may require them to renew their requests quarterly.

(3) For an emergency meeting, the public body shall cause notice of the meeting to be given to each local newspaper, local wire service, local radio station, and local television station that has filed a written request, which includes the newspaper's, wire service's, or station's telephone number, for emergency notice with the clerk or secretary of the public body or with some other person designated by the public body. This notice shall be given either by telephone or by the same method used to notify the members of the public body and shall be given immediately after notice has been given to those members. This notice shall be given at the expense of the party notified. An "emergency meeting" is one called because of generally unexpected circumstances that require immediate consideration by the public body. Only business connected with the emergency may be considered at a meeting to which notice is given pursuant to this paragraph.

(c) Repealed by Session Laws 1991, c.694, s.6. (1979, c.655, s.1; 1991, c.694, ss.5, 6.)

Appendix F

Airfield Familiarization

Airfield Familiarization

- a) Movement vs. Nonmovement Areas
- b) Runways
- c) Taxiways
- d) Aircraft Parking Areas

PART 139 Compliance

- a) Pavement Markings
- b) Airfield Lighting
- c) Airfield Signage
- d) ILS Components
- e) Safety Areas
- f) Surface Movement Guidance Control System
- g) Pavement Maintenance

Minimum Access Requirements

- a) Individual / Employee
- b) Vehicle Incursions
- c) Unauthorized Movement
- d) Type of Incursion

Common Incursion Locations

Access & Movement Procedures

- a) Individual Requirements
- b) Vehicle Requirements
- c) Movement Area Access
- d) Runway Crossing
- e) Pavement Closures
- f) Right-of-Way Regulations

Snow Operations

- a) Snow Alert Levels
- b) Type of Precipitation
- c) Primary Taxiway Routes
- d) Secondary Taxiway Routes
- e) Emergency Gates & Service Roads

Airport Communications

- a) Communication Steps
- b) Phonetic Aviation Alphabet
- c) Common Phrases
- d) Frequencies
- e) Light Gun Signals
- f) Radio Dead Spots

Emergency Response

Airfield Enforcement Program

Training required under CFR FAR 139. (Annual Airfield Familiarization Training)

Appendix G

Participant Consent Form

Airport Manager
GA NC Airport
Address

Dear Airport Manager

The purpose of this letter is to request and affirm your participation in a doctoral research study focusing on the experiences of general aviation facility managers in North Carolina regarding, change implementation and public organizational management. Definitively, your involvement will contribute to and establish a body of knowledge for future aviation management professionals charged with the responsibility of managing in this unique environment.

To acquaint you, I am an airport director at a general aviation facility in northeast North Carolina, pursuing a Ph.D. in Public Policy and Administration from Walden University, under the direction of Dr. Mark Gordon. This research will complete my dissertation requirement in this program. Other members of my committee are Dr. Karel Kurts-Swanger (chair) and Dr. Elizabeth Wilson is a participating member.

The study proposed is qualitative in nature and will require your participation via internet survey to collect basic data, which will take approximately one half hour to complete, and one tape recorded in-depth interview which should last roughly 2-3 hours. The interview will be scheduled at your convenience and will be held at your facility or other mutually agreeable location. Follow-up interviews via telephone or inquiries via electronic mail may be necessary for clarification accordingly; your review of drafts of the study will be required to ensure validity of the study. Your participation is completely voluntary, and you may withdraw from the study anytime you desire. Your confidentiality and the confidentiality of your facility will be protected. It is my plan to conduct the interview as soon as possible, preferably during the month of May or June.

I would most certainly value your participation and will contact you next week via telephone to discuss this further and answer any questions you may have. Thank you for your time and consideration.

Sincerely,
Robert A. Benson

Appendix H

Participant Invitation Letter

You are invited to take part in a research study of general aviation industry via airports in the state of North Carolina. You were chosen for the study because you are a manager or director of a general aviation facility in the state of North Carolina. Please read this form and make any inquiries you have before agreeing to take part in the study.

This study is being conducted by a researcher named Robert A. Benson, who is a doctoral candidate at Walden University. Mr. Benson is also an airport director at Dare County Regional Airport in Manteo, North Carolina.

Background Information:

The basic purpose of this research is to discover nuances and meanings associated with managing the public general aviation facility in the state of North Carolina. It is a qualitative study designed to examine the experiences of aviation leaders and contribute to and establish a body of knowledge for future aviation management professionals charged with the responsibility of managing in this unique environment.

Procedures:

If you agree to take part in this study, you will be asked to:

1. Complete a preliminary information seeking internet survey which should take a half of an hour to complete.
2. Participate in one tape recorded in-depth interview which should last roughly 2-3 hours. The interview will be scheduled at your convenience and will be held at your facility or other mutually agreeable location.
3. Possibly perform a follow-up interview(s) via telephone or inquiries via electronic mail which may be necessary for clarification.
4. Review and comment upon data analysis and conclusions via email to ensure accuracy and study validity.

Voluntary Nature of the Study:

Your participation in this study is voluntary. Accordingly, your decision not to participate will be respected. If you decide to participate and later change your decision that will not be a problem. Anytime you are made to feel uncomfortable or compromised or subject to conflict of interest you may stop. Additionally, you are not obligated to answer any or all of the questions.

Risks and Benefits of Being in the Study:

It is common knowledge that all studies have a certain risk associated with them; as well you should be aware. Given the nature of this study, there is possible risk that sensitive data about your organization could be inadvertently revealed. While confidentiality is provided in the study, the population of airports in the study is only 10 and the ability for

readers to attempt to draw conclusions on identity from the results should be taken into consideration. Additionally, the study seeks in-depth interviews as its primary source of data collection. While the nature of these interviews does not predict discussions in area of psychological and emotional difficulty, a risk of emotional trauma from extensive reflection is present. This study is not meant to investigate or expound on your decisions or choices, nor will it serve as a venue for political commentary or advocacy. Instead, the study is set up to explore leadership dilemmas and scenarios to facilitate data and litmus for future leaders to garner from your experiences. The advantage of participation in this study is that it offers you a venue to reflect on your experiences and perhaps offer new or different introspection. Additionally, you will be a part of the first such research on aviation facilities in North Carolina as such; your efforts will establish a body of data and set a foundation for future research.

Compensation:

There will be no remuneration for participating in this study.

Confidentiality:

Any information you provide will be kept confidential and the confidentiality of your facility will be assured in the reporting of the research. Aliases will be used in references to you and your facility in all forms of data reporting. The researcher will not use any of your information for any purpose other than those meant for the study. Also, the researcher will not include your name or anything else that could identify you or your facility in any report of the study.

Contacts and Questions:

The researcher's name is Robert Anthony Benson. The researcher's faculty advisor is Dr. Karel Kurst-Swanger. You may ask any questions you have now. Or if you have questions later, you may contact the researcher via (910) 988-6234 or Robert.benson@waldenu.edu or the advisor at (910) 988-6234 or kurts-swanger@waldenu.edu. If you want to discuss your rights as a participant with Walden University's administration, please contact Dr. Leilani Endicott, Director of the Research Center at Walden University. She can be reached at 1-800-925-3368 extension 1210.

You will be provided a copy of this form.

Statement of Consent:

___ I have read the above information. I have received answers to any questions I have at this time. I am 18 years of age or older, and consent to participate in the study.

Printed Name of

Participant _____

Participant's Written or

Electronic * Signature _____

Researcher's Written or

Electronic* Signature _____

Appendix I

College Aviation Curriculum Programs

School	Department	Location
Aims Community College	Aviation Department	Greeley, CO 60832
Arizona State University East	Department of Aeronautical Mgt Tech	Mesa, AZ 85212
Auburn University	Aerospace Engineering	Auburn University, AL 36849
Averett College	Aviation Department	Danville, VA 24541
Baylor University	Aviation Department	Waco, TX 7679-7413
Bridgewater State College	Management & Aviation Science Dept.	Bridgewater, MA 02325
Central Missouri State University	Dept of Power & Transportation	Warrensburg, MO 64093
Central Washington University	Industrial & Engineering	Ellensburg, WA 98926-7584
Chadron State College	Div. Of Voc & Engineering Edu.	Chadron, NE 69337
College of Aeronautics	Airway Science	Flushing, NY 11371
Daniel Webster College	Airway Science	Nashua, NH 03063
Delaware State University	Airway Science Department	Dover, DE 19901
Delta State University	Commercial Aviation	Cleveland, MS 38733
Dowling College	Aviation & Transportation	Oakdale, NY 11769
Edward Waters College	Business Admin Division	Jacksonville, FL 32209
Elizabeth City State University	Airway Science Program	Elizabeth City, NC 27909
Embry-Riddle Aero University, Prescott	Aeronautical Science	Prescott, AZ 86301
Embry-Riddle Aero. University, FL	Airway Science	Daytona Beach, FL 32114-3900
Enterprise-Ozark Community College	Technical Education	Ozark, Alabama 36360
Florida Institute of Technology	School of Aeronautics	Melbourne, FL 32901-6988
Florida Memorial College	Airway & Computer Science	Miami, FL 33054
Hampton University	Department of Airway Science	Hampton, VA 23669
Henderson State University	Aviation Programs	Arkadelphia, AR
Honolulu Community College	Aeronautics	Honolulu, HI 96819
InterAmerican University of Puerto Rico	School of Aeronautics	Bayamon, PR 00959
Jackson State University	Dept of Technical & Industrial Arts	Jackson, MS 39217
Kent State University	Kent State Airport	Stow, OH 44224
Langston University	AWS Program	Langston, OK 73050
Langston University	AWS Program	Langston, OK 73050

Lewis University	Aviation	Romeoville, IL 60441
Louisiana Tech University	Department of Professional Aviation	Ruston, LA 71272-9989
Metropolitan St. College of Denver	Aerospace Science Department	Denver, CO 80217-3362
Middle Tennessee State University	Department of Aerospace	Murfreesboro, TN 37132
Morris Brown College	Department of Computer Science	Atlanta, GA 30314
Norfolk State University	Computer Science Department	Norfolk, VA 23504
Northeast Louisiana University	Department of Aviation	Monroe, LA 71209
Ohio University	Airway Science	Athens, OH 45701
Oklahoma State University	Aviation Education	Stillwater, OK 74078-0422
Oklahoma State University	Aviation Education	Stillwater, OK 74078-0422
Parks College of St. Louis University	Aviation Education	Cahokia, IL 62206
Purdue University	Department of Aviation Technology	West Lafayette, IN 47906
Rocky Mountain College	Aviation	Billings, MT 59102
San Jose State University	Airway Science	San Jose, CA 95192-0081
So. Illinois University at Carbondale	Aviation Management & Flight	Carbondale, IL 62901
St. Cloud State University	Department of Technology	St. Cloud, MN 56301
St. Francis College	Aviation Management	Brooklyn, NY 11201
Suffolk University	Aviation Programs	Boston, MA 02108
Tennessee State University	Aviation Management	Nashville, TN 37209-1561
Texas Southern University	Aviation Management	Houston, TX 77004
Texas State Technical College	Aviation Management	Waco, TX 76705
The Ohio State University	Department of Aviation	Columbus, OH 43210
University of Alaska, Anchorage	Aviation Programs	Anchorage, AK 99508
University of Maryland, Eastern Shore	Airway Science Program	Princess Anne, MD 21853
University of Nebraska at Kearney	Airway Science Program	Kearney, NE 68849
University of Nebraska at Omaha	Aviation Institute	Omaha, NE 68182-0508
University of North Dakota	Airway Science	Grand Forks, ND 58202-9007
University of the District of Columbia	Aerospace Technology	Washington, DC 20008
Utah State University	Industry & Technology Education	Logan, UT 84322-6000
Western Michigan University	AWS	Kalamazoo, MI 49008
Winona State University	Physics/Aviation	Winona, MN 55987

Appendix J

Airport Managers General Information Survey

Airport Managers General Information

Any future publication, and or communication of this study will not be performed without the expressed written permission of all involved to include, the participants, NCAA and the NCDOA. In the possible event the findings of this study are published, the identity of the participants will remain anonymous

1. Default Section

Add Question Here

Edit Question Move Copy Delete

*

1. Please provide basic identification information.

Name:

Airport:

Address:

Address 2:

City/Town:

State:

ZIP:

Country:

Email Address:

Phone Number:

Add Question Here Split Page Here

Edit Question Move Copy Delete

*

2. What are your qualifications:

Education Level:

School Attended:

Address:

Address 2:

City/Town:

State:

ZIP:

Certifications:

Professional Affiliations:

Qualifications:

Add Question Here Split Page Here

Edit Question Move Copy Delete

*

3. Tell us about your airport.

	Managem ent Form	Manager' s Super visor	ATC C o n t r o l l e d	Com me rci al Op era tio ns	Com m u t e r s	Emerg enc y Ma nag em ent	Communi cation Venue	Securi ty Me as ure s	Carg o O pe rat io ns
2	Manager								

Other (please specify)

Add Question Here Split Page Here

Edit Question Move Copy Delete

*

4. Tell us about your airport.

	Number of Runways	Number of Employees	Number Fixed Base Operators	Type of Fuel Operation
10	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Other (please specify)

Appendix K

Research Questions and Themes:

Theme 1: Organizational structure:

20. How many members are on our governing body?
21. What is the management echelon at your aviation facility?
22. Are you accountable to other supervisors (is so who, and where are they)?
23. Who do you report to directly?
24. Is your facility in a partner relationship with any local organization?
25. Does your facility have full time dedicated legal representation?

Theme 2: Defining Change:

26. Is your organization proactive or reactive to change?
27. State what you believe are main, major contributors of change in organizations.
28. How often is policy developed directed toward your facility?
29. Does your facility possess the current information technology hardware?
30. What human resource issues are you confronted with as a manager?

Theme 3: Process Obstacles:

31. Are there any deficiencies in your facilities ability to function properly i.e., displaced runway, closed facilities, etc?
32. What if any budgetary constraints are levied on you as a manager of this facility?
33. How often does your governing body meet?
34. Are there limitations for aircraft entering or exiting you facility?

35. What additional duties do you perform other than airport management (example property management)?

Theme 4: Decision Making:

36. How are decisions made at your airport?
37. What obstacles exist that inhibit decision making in your organization?
38. How often do you meet with your governing body?
39. What are the parameters of decision making for you as a manager?

Theme 5: Income/revenue sources:

40. Is your facility subsidized with federal and or state grants (what is the local match)?
41. What are the other revenue producing entities at your facility?
42. Is your facility involved in the purchasing of property?
43. Does your airport own any surrounding property?

Theme 6: Managerial perspective:

44. Do public organizations function differently than private and nonprofit organizations, why or why not?
45. How many personnel are under your control?
46. What do you spend to most of your time on, and how is it allocated over the timeframe between when your authority meets?
47. How do you implement policy at your facility?
48. What process is in place to acquire and use current information technology equipment?

49. How do you manage human resource issues as the manager of your facility?
50. Are there any changes you would make to the managerial arrangement of your organization?

Theme 7: Future perspective:

51. Where do you see your facility heading?
52. How receptive is the local community to your organization's growth?
53. Is your organization the subject of any litigation or law suits?
54. Are there any plans for expansion of your facility? If so what if the time frame?

Theme 8: Operational management concerns:

55. What are your safety practices?
56. Is there an aircraft maintenance function at your facility? If so, what quality control measures are in place?
57. Is there an air traffic control function at your facility? If so, how do you acquire the latest equipment and technology?
58. How do you ensure your personnel are qualified and appropriately educated?
59. What types of flight activity take place at your facility and how are you ensuring the environment is as safe as possible?
60. What are the major environmental issues at your facility?
61. What security procedures are in place?
62. What wildlife hazards are present and what procedures are you using to mitigate them?

Appendix L

Aggregate Codes and Classifications

CODE	MEANING
Echelon	Overall management arrangement governing the airport, prevailing organization's legal authority to carry out business of facility and manager's role/place in arrangement.
Budget Development Execution	Manager's spending allocations, limitations and authority on execution of financial functions.
Change Management	Manager's ability to recognize legitimate sources of and to effectively implement change.
Communication	Frequency of and requirement for when manager interacts with prevailing authority or supervision.
Community Involvement and Interaction	Manager's propensity to and need for participation in community functions and information sharing.
Decision Making	Decision making in terms of procedure, limitations and timeliness for carrying out all functions of the facility.
Environmental	All concerns and actions emanating from the facility that can cause damage to the environment, concerns from citizens and flight operations.
Future Vision	Manager's perspective on future of airport to include expansion of facility and operations, negotiations with businesses and other growth.
Human Resources (HR)	Manager's limitations and authority over employees and their specific characteristics and arrangement(s) with prevailing authority.
Information Technology (IT)	Manager's limitations, authority and ability to procure, maintain and ensure current information technology equipment and software are accessible and in use.
Legal Counsel	Does manager or prevailing authority have access to dedicated legal counsel, is facility the subject of or party to litigation.

Perspective (public versus private)	Manager's perspective on public organizations in general and if they function similarly to or differently from private organizations.
Policy Development	Manager's limitations, authority and ability to develop policy for the facility, employees and other tenants on facility property and procedures for implementing policy.
Property Management	Does the airport own surrounding property or is involved in purchasing property and if so what management practices are in place.
Revenue Sources	What revenue generation activities are in place; is the facility subsidized with funds from various levels of government.
Safety	Manager's procedures that are in place for complying with various operational safety practices.
Security	Broad area encompassing procedures, facility geographic characteristics, land accommodations, personnel validation and verification designed to protect the facility from unauthorized entry and the possibility of illegal and terrorist activity occurring on the premises.
Defining Change	Manager's perception of the definition, sources, necessity for, procedures, influences requiring action or implementation.
Process Obstacles	Any procedures, deficiencies, policies, lack of current equipment or communication that limits the ability of the manager to make decisions, equipment to function inadequately or prevents the ability to perform a function.
Managerial Perspective	Manager's overall perspective and vision on their facility and the industry in general.
Operational Management Issues	The various operations, vendors, tenants and other activities functioning at the facility and the techniques used to orchestrate by the manager.
Time Use	Manager's allocation of time spent and prioritized on various issues and functions.

Appendix M

Consolidated Codes and Meaning Statements

Manager	Code	Meaning
Blue	Budget	Manager has limit of \$1,000 per line item, above that he has to seek permission for – Also if we need to do some type of capital improvement, manager presents the item to the City and the County who both have to approve because they both have to fund it. Funding on capital items is 50% County and 50% City. If either cannot provide funding the project is wiped out.
White	Budget	Airport authority process accordingly, manager does not get involved in the process. Not sure where checks and balances exist.
Orange	Budget	Has limited number of line items to manipulate as manager; all spending must be approved; authority actually develops budget, limits spending to \$2,000.00 per item, any more than that requires authority approval. Budget is reflective of the small scale portion of the operation in relationship to the military component.
Beige	Budget	Manager has a \$5,000 limit of what can be allocate or moved between budget line items without board approval. Rarely does any spending without notifying the authority as it is a good practice to let them know exactly what monies are being spent and have to live within the confines of that budget. It's a very strict budget.
Green	Budget	Manager inherited a county wide 5% reduction in funding; that 5% reduction could not come out of salaries or fuel purchases, which was about half of the budget of about \$417,000. Thus the 5% budget cut resulted in approximately a 50% - 60% budget cut for discretionary spending. All budget manipulation is required to go through the Board of Commissioners for approval and amendment.
Brown	Budget	Budget published based on ability to maintain a self-sustaining economy here at the airport. In other words, they don't receive anything from the General fund from the County; fortunate that they produce enough revenue. Not hampered with any constraints.
Red	Budget	Nothing special or different simply outlined the public hearing process of passing the budget (due public notice).
Black	Budget	Airport Authority/manager informs County what it is going to take to operate on an annual basis. The airport rarely operates in the black. The manager estimates revenues and

		expenditures and the difference is allotted through a general fund balance contribution from the County. In the event a line item is exceeded it is handled at the end of the fiscal year because line items are categorized in groups. As long as those items are not exceeded the county gives the airport the balance at the end of the budget year.
Tan	Budget	Manager develops and executes budget with oversight of city staff. The finance manager for the city watches very closely and works with manager very closely. The manager puts together and operates the budget.
Yellow	Budget	Manager is very frugal with everything; seems to have that reputation, a great relationship with all of the powers that be. We do receive some allocations each year from the City of B and A County to help us. It is usually with our capital projects. When we need that 10% local matching share it usually comes from the city and the county. Whatever a request is taken to the city or the county it is a good package, it is a good request.
Beige	Change Management	Very proactive, they seek feedback as a measure of managing change. Also noted the changes and updates in IT force change,
Tan	Change Management	Proactive in that we are always looking for ways to improve the airfield, enhance economic development; necessity.
Yellow	Change Management	Extremely proactive another example of economic insight: Ex: I don't know how familiar you are with Honda Aero coming to B Airport. It is the Honda jet engine facility. We have quite a project going on to bring them in and also do runway extensions project at the same time. It was a 21 million dollar project. We needed 11 million dollars to jump start this thing prior to FAA getting involved with our funding. So my Authority called in banks from around the community and put together a banking consortium and got those 11 banks to loan us an amount of money to jump-start this project. I think we wound up with about 11 million dollars ahead of FAA so that we could get going on this thing.
Brown	Change Management	Not a black and white issue; proactive to what you can control and reactive to what you can't. Sees economics as a major contributor to change.
Red	Change Management	Proactive in that there are successful businessmen on the board. They are not all aviators; there are maybe only two aviators and four military. For example, Colonel "G", he was in the Pentagon and he was involved with contracting for building airports; now what an asset he is; this guy knows all the questions. We have a former head of finance for AT&T, and we have an electrical engineer on the board.
Blue	Change Management	What changes come in aviation usually comes slowly and is usually a reactive change from

		whatever has caused you to react to it. Sources, financial and safety (industry specific).
White	Change Management	As a whole very proactive. The Airport Authority is very clear on the importance on growing the airport. They are very ambitious on making sure we are prepared for that growth before it gets here.
Green	Change Management	Ability to be proactive depends on dollars and ability to get funds.
Green	Change Management	Manager sees new member of board/commission as a source of change. County government is a mix of new commissioners or new people in leadership positions who typically come in and try to implement what they feel is necessary. This causes tension between the two factions and accordingly there is a great resistance to change even for simple things.
Beige	Communication	Manager communicates often with the authority as one of authority members has an airplane located on the premises. The chairman is physically there normally a couple times a week; this is to sign any documents, etc., but more importantly for presence and improved communication.
Green	Communication	Manager normally communicates with the authority at their monthly scheduled meeting or on case-by-case bases as needed. If there is a need, and we have done this in the past, we would call the Advisory Board to a special meeting.
Brown	Communication	Manager and Authority communicate as often as necessary. It may be a phone call; an e-mail or an occasional visit to their place of business or they will come by here informally. It is never as a group outside of our meeting, but it may be some one on one. Doesn't happen very often, but more so with the Chairman.
Yellow	Community	The community as a whole sees the airport as its one true economic development tool. 10-15 years ago they did not see that. Our Chamber of Commerce folks could go to Washington and lobby for the airport. There is great support all the way around in the business community for the airport.
Beige	Community	Manager involves himself as much as possible in the public to maintain a presence. He speaks to civic organizations, rotary clubs, schools; this facilitates a proactive approach to educating the community and gathering support for the many functions performed at the facility. Issue: The community is receptive to the airport's development however; those who vocally support are in the minority as the silent majority use other means to voice complaints for example; letters to the owner or less than positive phone calls or newsletters that go out that can be of some truth but not all truth.
Tan	Community	As the Airport Manager, attends partnership meetings, has a relationship with the County

		Commissioners and City Council when needed.
Green	Community	Manager consults surveys conducted 4–5 years ago. They are able to build hangars and keep their plane in their backyard and have access to the airport. Some of the framers and the people who own the land adjacent to the airport obviously are not in favor of having their land condemned and perhaps not getting top dollar, or not being able to do with their land what they want to do which is their right.
Red	Community	Generally, we have good support, because the manager is actively involved with educating the public. He goes to and provides briefings to the Rotary Club, Lions Club, Churches and County Commissioners. There was also a big event for community schools at the airport, as well as an outing called Waves for Kids.
White	Community	They are very receptive. As the airport was being built there was a lot of negative feeling towards the airport thinking that it was a waste of money or we were putting money into a facility for the rich guy's toys. There was a lot of feeling at the beginning that the airport would never go anywhere.
Black	Community	This is economy specific as, being in an economic depressed area anything that hints at potential growth and jobs the community supports.
Brown	Community	In general, the County Commissioners, County Manager, the general populous is in support of airport growth. Doesn't get any real push back or negative feelings on that. Accordingly, it is a pretty good environment.
Beige	Decision Making	As executive director he is ultimately responsible for the decisions that are made at the managerial level. Common practice is he and his assistant to agree upon course of action, include and inform anyone that decision might affect. If a significant issue forward to the authority, normally the chairman first, then if still a significant matter they decide if the entire authority should be involved.
Tan	Decision Making	Manager has full authority to make decisions without consulting anyone as long as they are correct. He does make sensible decisions with priorities for projects (signs, lights, gate, and executive). Normally consults Airport Commission to get feedback on any pending decisions prior to going to the council.
Yellow	Decision Making	Ideas formulate in with the manager and attorney who is in private practice, they converse regularly. So it is sort of a package deal where we are all constantly thinking of ways to enhance, or what can we do to do things better. It comes right down to if it is a serious

		decision; the board has the final call.
Brown	Decision Making	The Airport Authority and manager operate autonomously. If something needs to be changed we can change it. It doesn't take an act of congress so to speak. It is very little red tape involved. The checks and balances would be to have the governing body involved if it involves a considerable amount of money; for example, the runway safety area was a multi-million dollar project that we took before the County Commissioners and laid all of that out because it is going require significant matching funds.
Blue	Decision Making	Manager has the discretion to make decisions; anything with costs outside of the limits has to be taken before the commission. Decisions about the day-to-day operations can be made without having to go to anybody else; for the most part everything has to go through the City and the County. The Airport Commission is an advisory board to the City and the county; manager and employees of the Airport Commission and meets with them and the County Commissions every month; The city handles all of our financial processing.
Red	Decision Making	The board can make the decisions. That is a good and a bad thing. The good news is that they own the airport. The bad news is that since they own the airport that means that they are responsible for the airport and can be held responsible. No obstacles, but the MO is to keep the board informed. Will not go out there and stick their neck out without bringing them into the loop.
Black	Decision Making	The manager and board are in an extremely trusting relationship; he has the trust of the Board to make decisions that sometimes feels should be made by a Board. The autonomy invested in the manager is because of his extended tenure of 27 years on the job, and he has more experience that many of the Board members combined. It is a matter of mutual trust and respect
Orange	Defining Change	Airport Orange manager believes change is derived from customer feedback, as he is in the service business, it is constantly determining what the customer wants and adjusting to those wants and needs that drives change.
Yellow	Defining Change	Forward thinking. Our board is very diversified. Probably only 50% of our Board are actually aircraft pilots, which is done on purpose because all of our board members are very business oriented, very involved in business.
Red	Defining Change	The thing is to look to what successful people are doing and do it. To be able to get out and go to different places and see how they are operating, you will find that the people who don't realize that we are in the customer service business are the people who make guys like you and

		me look good
Beige	Echelon	Airport Manager sees the management as very transparent, the authority is a completely autonomous body made up of five members who doesn't answer to anyone. The airport is owned by the county
Tan	Echelon	Board serves only in an advisory capacity to the Airport Manager and City Council. The 10 member advisory board has no budgetary control; only makes recommendations to the Airport Manager, Town Manager and subsequent recommendations to the City Council. Airport manager accountable to City Manager who reports to Town Council, airport is under control of the city; also in a relative partnership with county commissioners.
Green	Echelon	Does have an Airport Advisory Board consisting of eight members. Due to funding issues the advisory board only meets quarterly, and they answer directly to the County Board of Commissioners. Manager reports to County Manager, authority not separate entity.
Yellow	Echelon	Seven member fully functional body, manager reports directly to the chairman that has been set up to function as a government entity via enabling legislation.
Brown	Echelon	Airport Director, four full-time employees that work a staggered shift; open seven days a week. Manager is accountable to the Airport Authority Chairman and also works very closely with and at liaison with the County Manager. The Authority has legislation enabling them to function as a separate government body.
Red	Echelon	Airport functions as an independent municipality like any town or municipality (via enabling legislation).
Blue	Echelon	9 members on governing body, which is only an advisory board; manager works for commission which is set up by the City and County.
Black	Echelon	Five member enabled authority; manager works directly for the authority, heavy military use and interaction
Orange	Echelon	Airport Orange shares the property with the United States Coast Guard, also located on the premises is a large cargo aircraft maintenance depot. The management structure consists of a seven voting member with three nonvoting members, the three nonvoting are elected government officials from the city and county. The airport authority is a government organization enacted via enabling legislation, the manager reports directly to the chairman of the authority.
White	Echelon	Governing body called an Airport Authority consisting of seven members. Airport itself has no employees. Manager has a contract with the Airport Authority for his company (XXXX

		Aircraft Services, LLC) to manage the airport; an Economic Development Corp. who is funded by the City and the County looks at what kind of businesses can come in and what type of incentives to give. The president of the Economic Development Corp. is a sitting/voting member of the Airport Authority
Green	Environment	The biggest issue here is with the lake. There are a lot of Canadian geese that have set up shop here. We do have authorization to addle the eggs through an electronic permit from the Fish & Wildlife. I am in the process or applying for a degradation permit. We need that in the future. Second biggest issue is with vultures.
Black	Environment	The deer are the biggest concern, coyotes are secondary. There are some bear occasionally in the area. Waterfowl, migratory birds, seagulls, pretty much year-round turkey vultures which are the biggest air hazards. Organized and sanctioned deer hunts, USDA under contract with the National Guard to provided services.
Red	Environmental	There are plenty of birds for which they use pyrotechnics. They also have a chocolate lab that is trained to go out and run the ditches, a border collie that goes out every day. There is also a firing range at the airport. Only aviators are authorized to use it; they are allowed to intermittently fire weapons off. Interestingly there are four Department of Wildlife sanctioned hunters who hunt on the airport 24 hours a day.
White	Environmental	Wildlife issues include birds, wild coyote, and deer. They use pyrotechnics for scaring birds away. Use approved hunters who enter the airport at night to look for deer and coyote. Recently we had some problems with beavers. We had two places on the field where beavers had dammed up some streams and they were backing up so we got the US Department of Agricultural to come and get rid of the beavers and blow up the dams.
Beige	Environmental	Recently the storm water prevention plans because it has become a hot topic in the state. We have a deer and coyote problem here. We have to be careful because there are neighborhoods close by. Rabbits can get in and out and coyotes like that a lot. Our fencing needed some repairing; geese are an issue too.
Green	Future Vision	To see where it is heading you really have to look at the past. Basically, this airport has experienced slow incremental growth. I expect that process to continue. We have an approximately 30 million dollars in requested project including a school facility.
Yellow	Future Vision	I see us growing. We have grown a lot in the last 25 – 30 years and I see us continuing to grow.

Beige	Future Vision	Commercial air service is a real issue for us. It's a real high priority for us. I see us expanding our hanger capacity. I'd like to see the terminal renovation.
White	Future Vision	Don't really don't have too many issues, but certainly as they grow forward the feeling is that it would be nice to attract more corporate activity; people who are going to build their own hangars and bring in more employees and that sort of thing to the airport. The authority is always looking for that great service facility, avionics shop or an engine shop that kind of thing that is going to bring in employees.
Tan	Human Resources	All employees at the airport are all part-time and get paid little money. They are retired, ranging in age from 76 years to 84 years. Manager works six days a week (two days paid and four days for free). Annual budget is about \$327,000 per year. Doesn't generate enough revenue to have a full-time staff. Manager must be flexible I may ride the mower, may get an inmate or community service worker to help out. All are retired, not dependent on \$10 per hour salary.
Green	Human Resources	The big challenge specific to this airport is the manager is a non-exempt full-time hire with three part-time linemen. One is retired from law enforcement and tries not to earn over \$14,100 per year. They manage and monitor employees using the county personnel manual; they would like to see more and would like to have a combination of full and part time personnel.
Yellow	Human Resources	Unique in the manager is only staff member/employee of the authority; the Airport Authority has one staff person. There are 13 businesses located on our campus who are all tenants of the Airport Authority, and there are a total of about 150 people on the campus working for those independent businesses.
Brown	Human Resources	County HR Department provides services for us; any issues with technicalities in terms of pay or benefits or any of those kinds of things, as well as disciplinary action they handle. Manager has experienced zero turn over, and has been in place for seven years. Has mature employees who are in their 40's for the most part, they are not looking to go anywhere. Manager uses a county employee handbook.
Red	Human Resources	Uses a unique profit sharing incentive that helps to maintain a very low turnover rate. Additionally, most of the employees are former military and the majority of them are former retired personnel and we like to mix it with young people also, and they are rewarded. We pay our people four (.04) cents a gallon. So that means they have ownership. Manager is the only one that doesn't get it.

Blue	Human Resources	We are under the City's personnel policy as well as on their payroll. The manager has the same authority over the airport that the City Manager has over the city. "I can hire and fire."
White	Human Resources	Very unique, civilian contractor versus public company accordingly, not subject to same vigorous rules and such in regards to managing HR. Staff consist of 3 line guys, 1 secretary, 5 operations technicians, and occasionally use prison inmates to mow grass (access to government resources...). Uses own policy manual the manager purchased; nothing official. This manual is used to get ideas on things to watch out for.
Black	Human Resources	Hiring/firing; manager is usually involved in issues where employees have personal issues to deal with. County Human Resources is a great source for the proper resources for handling HR matters. The Airport Authority does the hiring and firing, most other HR areas are handled by county personnel policy to include disciplinary actions as well. The youngest person working on staff is 56 years old. Most of the employees here are military veterans and are working because they want to and not because they have to. They are intelligent and trusted to make appropriate decisions on day to day operations.
Orange	Human Resources	Manager is confronted with very little HR management issues. Has small staff of four fulltime employees and three part-time. Three of four fulltime have a military background; two of three part-time have military background. While this is not arranged by design, it helps with jargon and training; uses City Human Resources management handbook to assist with human resources issues.
Beige	Human Resources	The manager has had to manage major cut back in employees, he and his assistant are part-time. They have been able to retain their best employees; county HR manual is referred to for all HR functions.
Orange	Information Technology	Manager has taken steps to go completely paperless in most transactions; his facility provides wireless internet access to terminal customers. Airfield equipment is maintained by the Coast Guard and accordingly is on the leading edge as military facilities must have and maintain current equipment.
Beige	Information Technology	As a matter of fact this next year's budget we're going to upgrade all of our computers. We're going to Windows 7. We update "Total FBO" (start of the art aviation management software) every year with its annual update versions. We're replacing all of our computer systems.
Brown	Information Technology	Relies heavily on the county IT office in terms of actual hardware and software with what we do here, I rely quite a bit on our IT section in the county. They are very good, and every time

		we have an issue, they are Johnnie on the spot. So that is a major benefit that we have here.
White	Information Technology	Civilian company with access to all they can afford, still get various perks from FAA/NCDOT/A as an aviation entity.
Yellow	Legal Counsel	We have a dedicated legal representative, but he is not solely for the Airport Authority. He is in private practice, but we communicate more than once every day.
Yellow	Legal Counsel	Not now, but there was a lawsuit about a month ago. A gentleman who had a 10-year contract on a unit in the terminal building. The contract ran its 10-year course and he wanted to renew. The Airport Authority decided to put it up for public offering which was the proper thing to do and we put it out for RTP's. He was one of those responding, but he didn't receive the new contract.
Red	Legal Counsel	Yes, they do have full time legal counsel
Blue	Legal Counsel	No an attorney who attends meetings, on retainer
Brown	Legal Counsel	We have part-time legal representation. Legal representation is actually a part-time County Attorney; he may become full-time at some point.
Yellow	Managerial Perspective	The manager believes he is very fortunate, the community supports this airport, a local governing body that supports us, and the Chamber of Commerce supports us. He has the best Airport Authority to work for. He is very blessed with what is going on here and enjoys going to work. Accordingly, he has no plans to retire; he loves what he does and plans to continue to work.
Brown	Managerial Perspective	In seven years of management that in speaking with different authorities and folks that run airports, from people that are on boards, County Managers, City Managers and just in general I have found that honestly, this of course is just my opinion, that there are as many ways of running airports as there are airports. Because every little government entity whether it is city or county combined or just county, they have found their own little niche in terms of how to make it work. Sometimes it is work, and sometimes it is not working. But there are just that many differences in terms of funding or management or oversight or whatever.
Red	Managerial Perspective	Like to reiterate that you and I are in the customer service business.
Black	Managerial Perspective	The manager is very proud of what they have there; he is insistent on having the right to be proud. They certainly would like to see the overall economy turn around so that they could get operations and business back up to what it was before the economy went into the tank. They

		still have the same type of issues that everybody else has.
Yellow	Operational Management Issues	Medi-vac and prep course for Pensacola. Medical specialist flight, which again takes about 20 flights over a 24-hour period. The largest percentage of our air traffic is corporate pilots, corporate aircraft flying into or out of the facility.
Blue	Operational Management Issues	There are two aircraft maintenance functions here. Separate businesses that manage their own programs and are inspected occasionally by the FAA & FISA. Parachutists
Black	Operational Management Issues	Operations include military training, flight training, and private flying. There can be problem as you cannot restrict someone flying an ultra-light if he has a radio and a transponder and is legal he can come in here, but has to understand that they will be operating around large aircraft which usually doesn't mix too well. Other traffic includes private flight instruction, corporate traffic as well as military personnel and cargo drops at our survey drop zone.
Red	Operations Management Issues	It is real mixed. As the interview with Manager Red was conducted, a flight of military helicopters flew over. There is a mix of military; small private airplanes, executive jets up to Gulfstream's, and regional jets. There is also a banner tow operation, helicopters with floats on them with photography taking pictures of the big boats and things of that nature. Additionally there are two air tours, skydivers, executive jets coming in and out.
Beige	Perspective (public versus private)	Manager sees being a public organization you don't have privacy. It's time consuming, it's sensitive; my customers are involved. The other thing is we are publicly funded in our grant process. There are people that don't understand the value of the airport or maybe have different priorities and can be very vocal about it. You're much more visible and vulnerable to public opinion than you would be if you were a private business.
Yellow	Perspective (public versus private)	As a government entity, there are so many very strict parameters that a governmental body has to follow that private enterprise does not. It can make things a little hard.
Brown	Perspective (public versus private)	Manager thinks they do, public organizations have to be much more sensitive to all of the governmental rules and regulations that govern HR issues. Whereas on the private sector it is driven much more from an entrepreneurial perspective
Red	Perspective (public versus private)	It depends on the public organization. The manager constantly alluded to the fact that this is a true business, and it should be run as a business. People are hamstrung when they are in government. We were up at the round table discussion at P-town, and their big concern was, and it is a true concern if you are in government that is a Town run airport, a County airport that county employees or whatever, and they are not allowed to accept tips.
Black	Perspective (public	In the case of this facility, it is an enterprise fund. The goal is to operate on a property the

	versus private)	same way any other business would. Even as an enterprise fund they don't generate enough revenue to cover all operations and that is why there ends up being a general fund contribution from the County to the airports fund balance. Oddly, the airport does not get credit for ad volorem taxes generated by aircraft that are based here or property taxes and business taxes that are generated by businesses that are located here on the airport.
Green	Perspective (public versus private)	Manager's perspective is that government organizations have probably a little more leeway that the federal non-profit organizations in that their bottom line isn't producing a profit. A lot of the determining factors for pricing certain things don't have to meet a rigid requirement for those operations that are required to be in the business of making money.
Orange	Policy Development	Airport Orange manager has autonomy to develop policy, that will not change unless he makes a bad decision. The manager and authority makes limited decisions regarding the facility as the military component handles them, and takes care of most of the logistical matters as well. The manager believes the authority is please with his performance.
Beige	Policy Development	The authority is the sole developer of policy, the manager suggests input however, is relegated to implementation; have the airport rules and regulations, it's a formal document that everyone goes by and the authority has its set of laws. Those are the kind of governing documents used there.
Tan	Policy Development	Developed by City Council through the City Manager. Manager developed a Policy and Procedures Manual which was approved by the Council and City Manager. Get guidance from the USDOT Aviation manual; It is a general aviation airport and you can't restrict the use; job descriptions and the manager is constantly present; fuel pricing, oil pricing, and hangar pricing there is a procedure on how to collect the money and how to remind people that forget when to pay, manager monitors. There is a procedure manual on safety (how to inspect the runway, check the fuel samples, service airplane, etc).
Green	Policy Development	Manager notes that there is no written policy and, as a new manager, this presents major challenges. Coming in and creating standard operating procedures giving guidance to the line man, creating documents such as a storm-water management plan, and spill prevention plan, etc.; things that they did on an ad hoc basis but nothing has been formalized; nothing ever being formally developed could be because airport only has an advisory board.
Brown	Policy Development	Typically in terms of policy with the way we run the airport, the Airport Authority is fairly autonomous there. Hardly any interference at all from the County.
Red	Policy Development	It is an ongoing process. We are not afraid to make a mistake. We learn from our mistakes.

Blue	Policy Development	We don't have a whole lot of change in policy. We are a small airport and not a lot goes on here unless it concerns safety or is through the FAA or State where it is a requirement. We usually don't have a lot of policy change and have very little local policy influence.
Black	Policy Development	As needed. The only policy that impacts the airport would be the County Personnel Policy. My employees are county employees. Manager is subject to the County personnel policy, but also an employee of the Authority. The airport makes their own policy; they have a set of rules and regulations along with minimum operating standards. If it is a matter of policy that is going to be incorporated by updates to those minimum operating standards, rules and regulations the manager will do that. When it comes to height ordinances and zoning issues that are in the vicinity of the airport, the manager and authority depends on the Zoning and Planning Board (other county level entities) and their policies.
Beige	Process Obstacles	Exist "in a very big way"; there's a piece of property about twenty acres off runway five that they are in the process of negotiating with owners to purchase. Obstructions on the property make it necessary to raise FAA landing minimums, an ongoing issue for many years.
Green	Property Management	There is property management responsibility. The facility is approximately 550 acres. Abutting to the East is an industrial complex developed. There is no clear separation between the airport property because it is all county property. This area is a small area planned development
Brown	Property Management	No, we are fairly spread out. We have over 540 acres total. It especially goes out on a fair distance on the south end across Swift Creek and on to some land on the other side of the creek. Everything is not contiguous; on the south end it is separated by a fairly major creek through this area. On the north end, it goes up to highway 70 and stops which that is fairly easy to envision. On the south end, it is pretty broad. It is the precision approach so it requires more land or at least an aviation easement to keep that clear.
Black	Property Management	Did a major land acquisition in 2001 and relocated approx. 25- 35 families off of one end of one of the runways. Those areas were cleared and the land was grubbed. Houses were removed as well so there is room to do the runway expansion. Approximately 1000 -1500 feet can be added. We have room to expand without purchasing additional property. Military installations nearby are Fort Bragg Army Reservation and Pope Air Force Base.
White	Revenue Sources	Typical aviation revenue sources, fuel sales hangar rental and landing/operational fees.
Tan	Revenue Sources	Private investors lease land to build hangars on; leased for 30 years and after 30 years the hangars revert back to the City of E. Other sources include Fuel Sales, Hangar rentals,

		Blackwater (military contractor) driving course, Martin Air; Charter planes pay a landing fee of \$25 if they do not buy fuel on site.
Beige	Revenue Sources	Outsource maintenance so that's a source of income and one of the reasons, was two-fold; it's hard to find good managers of maintenance. Maintenance is a challenging field to earn a profit and there was never any profit realized in that area; tenants in Hertz rental car, who pays an annual lease agreement. Hangers; a very active flight training department and plan to bring on another. Office space is rented as well.
Green	Revenue Sources	Typical: tenant rents for the hangars, tie downs, air park – fee charged based on tie down rate, fuel purchases, and sales.
Brown	Revenue Sources	Two items as is probably the case with most airports, hangar leases and fuel. Between those two items right now it probably constitutes at least 95% of our total revenue
Red	Revenue Sources	We have an interior shop, and we have a paint shop. We are the only airport in the United States of America with a “bait and tackle” shop at our main terminal building. All those people pay us an operating fee, and so that is another revenue producing.
Black	Revenue Sources	Typical: fuel sales, tie downs, hangar rentals and lease arrangements that we have on other buildings owned.
Beige	Safety	Manager holds monthly safety meetings where all employees come together and talk about different safety issues; For example, ear protection; never approach an airplane with a prop turning; being aware of jet blast. In addition to monthly meeting, they continue to perform periodic one-on-one training as well.
Brown	Safety	The most important thing done there is refuel aircraft. In those particular practices that involve aircraft refueling there in place in terms of properly trained aircraft refuelers. Not just somebody you pull off the street. All refueling is done by staff as such everything by truck which again that involves a certain amount of danger itself; Uses fuel carrier's quality control program which is top notch; provide us with a training program on CD and as you go through each one my primary trainer monitors.
Red	Safety	At least once a week we have a safety meeting. We do a Foreign Object Device (FOD) check every day. My chief of maintenance has an actual inventory of things that he looks at every day. I have to sign off on it. We are very proactive when it comes to safety. We are also realistic as far as our customers are concerned.
White	Safety	Manager uses set of airport rules and regulations (developed by airport authority) that anyone who bases an airplane here is obligated to read and agree to. We really don't have any issues.

		Biggest operational challenge: often difficult to know to handle is fixing safely the big airplanes and small airplanes.
Black	Safety	Safety training covers a litany of items: noise abatement – supply earplugs/mugs for the employees, protective clothing provided for employees, eyewash stations, First Aid kits available, fire extinguishers, spill kits, flight line qualifications, safety briefings and meetings anytime we have anything unusual that we are going to be doing.
Beige	Security	We've got a great security system and are in the process of spending \$30,000 to improve it. We currently have cameras in place and are adding five more. We are putting in infrared cameras on the runways.
Yellow	Security	It is hard to have good security at an uncontrolled GA airport. Especially with a campus that is spread out like ours. There are as many operations and hangars on one side of the runway as there are on the other side of the runway. It means access from different highway locations all the way around the campus. It is very, very hard to have a good security control with a one-person staff; it is impossible.
Red	Security	The airport has a distress code; we are fenced about 60% and the area that is not fenced is a big woods that you would have to use a suppressed, jacked up vehicle to get through it. They also have a three security cameras, one in front of the terminal, one on the fuel pump and one on the gate. They can monitor that from home, the Sheriff can monitor it, and they can go in go back and look at tapes
Blue	Security	Gated facilities – the airport is about 40% fenced. Where we don't have fence is ditches. We have the City Police Department on a regular 24-hour patrol.
White	Security	Our airport is fully fenced. Recently replaced fencing and gates around our terminal building with 8 ft. fencing with barbwire on top. Facility not manned 24 hours a day. There is a good relationship with the Sheriff's Department who patrol here multiple times every night. Are in the process of pricing video surveillance and recording equipment to improve security for the airport, plan is for equipment to be implemented within the next couple of months.
Black	Security	The facility is completely fenced in as being affiliated with the military engenders a more stringent security requirement.
Green	Security	Some operators have access to airport through own property, major security issue; this is a security issue on the agenda of NCDOT/A & TSA.
Brown	Security	The entire perimeter is not fenced in. What you see along Swift Creef Road and along 70 is fenced in. But the entire eastern side which is nothing but a swamp on that side, there is no

		fence over there. Eventually there probably will be, but since we are not Part 139 it is not really a requirement.
Beige	Time Use	Manager spends a great deal of time communicating with customers on a day-to-day basis. There he is able to address day to day problems and issues that come up, firm believer in not being isolated with or from his personnel. Not behind my desk, he prefers to be on the line a little bit everyday to talk the staff to see if there is anything going on that they want to voice their opinions about.
Tan	Time Use	As Airport Manager, I have a full-time concern with the airport. I do lean over a little bit to the industrial part simply because it is contiguous to the airport, and anything that goes on there may have a positive impact on the airport and the airport might have a positive impact on the industrial part.
Green	Time Use	Time use for this manager is spread over two primary functions; that of an airport manager and an economic developer, that time is split 90/10. The managers understanding of this phenomenon helps him to help identify potential commercial properties to market. Other items include overseeing contractors and engineers, maintenance of the airport, maintenance of the taxiway, maintenance of the equipment, maintenance of the fuel receipts and paying bills.
Yellow	Time Use	Large portion of time spent on being a landlord, the airport possesses: rental houses, offices, hangars and the like which rent is paid to the authority. Also spend a great deal of time lobbying: recently spent time in Washington, DC in a meeting with our Senators and House of Representatives, perform lobbying function at state level as well asking for support for the overall FAA funding. Essentially time use for this manager takes on a different spin as he functions as a one-man entity who serves primarily as a liaison for the airport authority between the tenants on the airport, the local community, governmental agencies, and civic organizations.
Brown	Time Use	The property management in our office takes care of all of the hangar leases; there are 99 hangars on the airport and 67 of those are T-hangars which is a large part. Most of time involved with day-to-day operations. Constantly aware of what is going on; sometimes there may be a problem that crops up that needs my attention; typically, full-time guys especially are able to handle those kinds of situations.
Blue	Time Use	60% on administrative functions, the remainder on airfield management; I meet with the City staff once a month at the City staff meeting.
white	Time Use	Manager very active with other stuff; has another company on the airfield to run as well. Has

		technical knowledge and ability to perform various tasks on airfield, this accounts for the majority of his time.
Black	Time Use	Heavy interaction with military; Acts as a military liaison between the County and the military; the manager spends most time dealing with projects, grants, talking and meeting with individual board members. The manager also meets with federal and state politicians to promote whatever issues are going on. Additionally the manager promotes the gathering of grants in Washington, Atlanta, and Raleigh, NC. The majority of the operational duties are handled by the manager's assistant.
Red	Time Use	I see as one of my biggest additional duties is to educate the public in what the airport is doing for them. We all do everything here. I clean up; I take care of the bathrooms just like everybody else. We pick up trash on the front of the highway; we have people that do that. Every day we police the front of the airport on both sides of the road. The first thing I do when I go in is I check how much fuel we have.