

AFRICAN AMERICAN PERCEPTIONS REGARDING  
INVOLVEMENT OF THEIR RACE IN THE FIELD  
OF AVIATION/AEROSPACE

By

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## CHAPTER I

### INTRODUCTION TO THE STUDY

African Americans have a distinguished history in the field of aviation ranging from the achievements of the Tuskegee Airmen, the first African American men trained as single and multi-engine pilots in the military, to individual achievements of aviators like Bessie Coleman the first Black female pilot; Guion Bluford the first African American to travel into space; and such contemporary African Americans as a female Brigadier General, corporate executives, pilots and others interviewed for this study. Are they as heavily involved today in the ever changing field of aerospace as they have been in the past; and what recommendations can be made by African Americans to encourage future participation? This study explored and described perceptions of members of the African American community regarding involvement in the field of aviation/aerospace. The findings could provide valuable data related to motivation of African Americans to become more involved in the field.

A review of the proud history of African American aviation pioneers provides a rich source of data related to their accomplishments in the field of aviation. It is important that their legacy to the industry be continued for generations to come. The opportunities they generated and their achievements can serve as inspiration to future generations. Thus, it is important that future generations not only understand past accomplishments but be prepared to continue that momentum by monitoring and encouraging continued African-American participation in the industry.

### *Statement of the Problem*

Information is somewhat limited related to the participation of African Americans in the aerospace/aviation industry. A study of perceptions of African Americans regarding the involvement of African Americans in the aviation/aerospace industry could provide valuable insight into the motivation, and interest historically exhibited by African Americans. This study could identify possible methods that could be used in the future to generate more interest from African Americans in pursuit of aviation/aerospace careers. It could encourage further research leading to improved understanding of the unique opportunities available to African Americans in the field and possibly lead to a paradigm shift for African Americans related to perceptions that may be limiting.

### *Purpose of the Study*

The purpose of this qualitative study was to describe perceptions of African Americans regarding involvement of African Americans in the aviation/aerospace industry. Detailed personal interviews with African Americans who have worked in the aerospace industry from both the private and military sectors provided data regarding those perceptions and the impact of those perceptions on future participation in the ever changing field of aviation/aerospace. Although the interviewees were selected primarily from aerospace industry employees of the state of Oklahoma, and the findings cannot be generalized to a larger population, the findings may provide valuable insight not only for the state but for future research.

### *Research Questions*

This study was guided by the following research questions:

1. What is the historical level of participation of African Americans in the Aerospace industry? How does the current level of African American participation in the Aerospace industry compare to the past?
2. What are the perceptions or attitudes of African Americans toward the aerospace industry?
3. What are the perceptions involving opportunities for African American involvement and success in the aerospace industry?
4. What are the specific obstacles and barriers that are hindering African Americans from involvement and success in the aerospace industry?
5. What recommendations do African Americans currently in the field have to encourage future participation in aerospace?

### *Definitions of Key Terms*

Operational Definitions (as defined by the researcher for purposes of this study).

*African Americans:* Descendants of African slaves in the United States.

*Aerospace Industry:* The industry which consists of people who are directly or indirectly involved with the education, manufacturing, testing, support and use of aircraft technology.

*Government:* any military, federal, or state governmental agency within the state of Oklahoma.

*Higher Education:* any four-year university or college within the state of Oklahoma.

### *Limitations and Assumptions of the Study*

The limitations of this study are described as follow:

- Data was based on self-report; therefore, the honesty and accuracy of answers from the interviews must be taken into consideration when evaluating the results.
- The focus of this study was limited due to the number, race, and background of participants involved in the study. The experiences may differ due to different points of views. Findings based upon this data cannot be generalized to the population as a whole.
- Busy schedules and time constraints of the individuals interviewed could possibly have created issues.

### *Significance of the Study*

This study is significant because it provides an opportunity to explore and understand the perceptions of African Americans in the aerospace industry. Also it provides insight into the current involvement of African Americans in the aerospace industry and possible recommendations for future participation of African Americans in this industry.

### *Theoretical Framework: Critical Theory*

This research was guided by critical theory. The framework provided a lens that examined culture, knowledge, and actions of African American involvement in the aerospace industry. Critical theory does not just state the obvious facts but it identifies underlying themes as to why certain groups in society may feel a sense of oppression. Interviews of African Americans and improved understanding of the culture in the aerospace industry could provide knowledge by analyzing experiences to see if hidden themes or assumptions are present.

According to Bloomberg and Volpe (2008) “The goal of critical theory research is to create political debate and discussion to empower people to take action, to bring about change in existing social structures and processes, and to reconceptualize the entire research process.” (p. 9). This framework provided appropriate insight to the perceptions that African Americans have toward the aerospace industry and whether or not they are impacted by their life experiences in America. This theory also provided another view of reality in our society. Critical theory provides a general understanding of social constructs which are products of human nature rather than laws. According to Freire (1970) “To achieve critical consciousness of the fact that it is necessary to be the owner of one’s own labor, that labor constitutes part of the human person, and that a human being can neither be so sold or nor can he sell himself is to go a step beyond the deception of palliative solutions.” (p. 183).

Through interviews each interviewee constructed their own personal meaning based on the list of open-ended questions facilitated by the researcher. The experience and knowledge garnered from this research study was created through the detailed personal interviews with current and retired African Americans pilots, members of black pilot organizations, and African Americans in the aerospace business sector who are currently involved directly or indirectly with the aerospace industry, members of the of the local Tuskegee Airmen chapters, African American educators and African American college students in the state of Oklahoma. According to Creswell (1998) “A critical researcher will discover current themes that explore the scientific study of social institutions and their transformations through interpreting the meanings of social life, the historical problems of domination, alienation, and the social struggles; and a critique of society and the envisioning of new possibilities.” (p.80) As a result of the interviews in this study, constant themes and patterns provided recommendations and understanding as to African

American involvement in the aerospace industry. In this study, the research was interpreted and measured through the interviewee's personal experience within the aerospace industry. The reality of the study is the perception of African American involvement in the aerospace industry, past and present.

## CHAPTER II

### REVIEW OF THE LITERATURE

#### History of African American Involvement in Aviation

Nearly a century ago the invention of the airplane ignited a revolution of technology, adventure and discovery. During the beginning of this phenomenon and during subsequent years, this dream seemed to be out of reach or off limits to African Americans possibly because of racial and educational restrictions.

During this time many African Americans were intrigued with many opportunities and experiences that the air age had to offer. After much struggle and change in society in the 1920s these barriers were broken by courageous pioneers who laid the ground work for future African Americans to build upon their works and dreams. One of the first African Americans to fly was Eugene Bullard. A native of Georgia, Bullard immigrated to France, where he joined the French infantry in World War I. He then flew briefly with the French in 1917, the same year the United States entered the war. (Hardesty, 2008, p. 7) This great feat and others have allowed African Americans to do things in the present that were impossible in the past.

Opportunities made possible by pioneers are a source of pride to the African American community, and leave us to question: “What are the perceptions of African Americans today regarding the involvement of their race in the aerospace industry?” Through past African American pioneer determination and the United States judicial system African Americans have gotten more exposure to an industry that once seemed unattainable.

It should be understood that it has been a very long, slow and strenuous process in the past for African Americans to obtain jobs in the aerospace industry. It took much litigation, time and money for many African Americans to obtain employment in this industry.

In an influential book, Gubert, Sawyer, and Fannin (2002) discussed in depth the various achievements of one hundred distinguished African Americans in Aviation and Space Science. The most prominent of these African Americans was Bessie (Elizabeth) Coleman. Coleman was born in Atlanta, Texas in 1892; she was the 12<sup>th</sup> of 13 children, and they earned a living doing domestic work and picking cotton. As Coleman got older she attended the Colored Agriculture and Normal University known today as Langston University where she left after a semester to attend Burnham's School of Beauty Culture in 1915. During this time Coleman developed a passion for flight. She was not content in her current work setting so she decided to take action on her dream. Although Coleman made a living working at a beauty shop it was not enough to satisfy her curiosity with the sky, so she left the United States and set forth to train as a pilot in France from 1920-1922.

In France, Coleman became the first ever African American woman or man to earn a *pilot license*, now officially called a *pilot certificate*. After Coleman received her *pilot license* she then flew all over the United States putting her talents on display for people of all ages and races with her stunt flying and barnstorming abilities. At a routine barnstorming event Coleman at the early age of 34 lost her life in an airplane accident that was surrounded with much controversy because of the discovery of a wrench being jammed between the plane's gears. (Fisher, 1995, p. 68)

Through Coleman's desire and works, not only did she break barriers and make history but after her tragic death, her exploits were known and celebrated throughout the African



American press, marking her legacy not only as a hero but as a role model for future African American aviators. Although her death stopped her from flying, it did not end her dream of opening a flying school for colored people.

William J. Powell, another early black flyer and promoter, organized the Bessie Coleman Club in the early 1930s (Fisher, 1995, p. 69). Powell was a person who took a keen interest in attracting black youth for the air age. During this time he gave the Los Angeles flying club a dynamic program of aeronautical instruction, flying lessons, with public outreach to all races. (Hardesty, 2008, p. 24)

Numerous African American aviators made African American firsts in the aerospace industry continuing the Legacy of Eugene Ballard and Coleman. In 1932 James Herman Banning and Thomas Cox Allen, forever established themselves in history by completing the first transcontinental flight by black aviators (Tolman, Jones, Gregory & Moore, 2004, p. 63).

In 1933 Dr. Albert Forsythe and Charles Anderson became the first black aviators to complete the transcontinental roundtrip in their own plane. According to Sir Sidney Viet, Albert Forsyth is the “The Wilbur Wright of Negro Aviation” (Forsyth, 2001, pp 198-199).

In 1937 the pioneering aviator Willa Beatrice Brown Chappell, earned her pilot certificate, making her the first African-American woman to be licensed to fly in the United States. In 1939, she received a commercial pilot certificate. She was the first black woman to make a career of aviation; and according to her biographer, Betty K. Gubert, was the person most responsible for preparing black pilots for World War II (Aviation Museum of Kentucky, 2010).

Another first occurred when Ensign Jesse L. Brown became the first black pilot in the United States Navy. Brown flew strafing missions in support of the United Nations troops retreating from the invading North Korean communist forces. On December 4, 1950, Brown died

in a crash behind enemy lines after a withering round of anti aircraft fire took his plane down. Posthumously Brown received the Distinguished Flying Cross and the United States Navy named a frigate the U.S.S. Jesse L. Brown in his honor.

Captain Lloyd Newton in 1974 became the first black pilot selected for the elite Air Force demonstration team, the Thunderbirds. In 1975 Daniel “Chappie” James became the first African American to attain four stars or the rank of full general. His greatest achievement was when he took command of the North American Air Defense Command (NORAD). (Hardesty, 2008, pp.130, 136-137)

Another influential group that aided in the development and breakthrough of barriers in the Aerospace field were the Tuskegee Airmen. The Tuskegee Airmen were the first African American men trained as single-engine and multi-engine pilots in the military at the Tuskegee Army Air Field in Tuskegee, Alabama in 1942. The first class at the institute began with 13 cadets who were dedicated and determined young men. At the end of this rigorous process there were only five cadets out of the 13 applicants that completed the process. These five men went on to have successful careers in the aerospace industry notably about the same time as Captain Benjamin O. Davis who was a WestPoint Graduate and whose father was a General in the Army. The Tuskegee Airmen went through many trials and tribulations to achieve their dreams. The field where they were training did not have an airfield so they had to travel 40 miles to Montgomery to actually fly. During this time these men were constantly harassed by law enforcement, with written tickets and other forms of mistreatment but their perseverance paid off. From 1941 to 1946 the Tuskegee Army Air field produced 994 pilots who received commissions and their pilot wings. (Haskins, 1995, pp 114-116)

## The Level of African American Participation in the Aerospace Industry

From a historical perspective the aviation industry has been dominated by white males. Through this dominance the aviation industry has experienced a brilliant legacy of flight and innovation but also discrimination.

During World War II many of the barriers that African Americans faced in trying to break into the aerospace industry were alleviated because it was a time of war.

The decision to admit blacks to the Air Corps became known as the 'experiment' ---cheered by civil rights advocates and greeted by the army as an unwelcome departure from established tradition. The army however, made it clear that the new program of flight training for blacks would be conducted on a segregated basis. In March 1941 the first black cadets were accepted into the unprecedented flight training program. Tuskegee Army Air Base was formally established in July 1941. (Hardesty, 2008, p. 65-69)

Even though African Americans were provided more opportunities to grasp their aerospace dreams in World War II they still faced blatant and outright discrimination even after the postwar years. After the War, African Americans had much difficulty in finding jobs in the civilian Aerospace Industry. During this time none of the African American aviators who flew and sacrificed their lives in the war had been hired by any major airlines in their return to civilian life. Instead African American aviators were only given blue-collar service jobs that consisted of skycaps and ground handlers in the aerospace industry. During this period not once were African Americans given the opportunity to fill key managerial and administrative positions for any type of airline in the industry. (Haskins, 1995, pp 135-136)

“It was not until a court battle in the 1960’s that they were given these opportunities.” (Haskins, 1995, pp 136-137) The first outcome of this decision was when Continental Airlines hired Marlon Green in 1965 only after he won a case that had begun six years earlier which had been argued all the way to the Supreme Court. In 1964 American Airlines was the first major airline to voluntarily hire a black male pilot.

Also during this time Dave Harris became the first African American in the cockpit for a major passenger airline. Harris joined American Airlines in 1964 flying the DC-6 aircraft. After rejections from several other major airlines at the time, Harris wanted to avoid any misunderstanding down the road. Following his interview with American, Harris recalls, “I felt compelled to tell [the interviewer] I was black.” The chief pilot who conducted the interview responded, “This is American Airlines and we don’t care if you’re black, white or chartreuse, we only want to know, can you fly the plane?” He retired from American in 1994 as a captain, flying American's largest airplane at that time, the wide body MD-11. (Blackhistoryinaviation.com, 2010)

Following this achievement Jill E. Brown became the first African American woman to be selected for the United States military pilot training program and fly for a major U.S. airline as well. (Gubert, Sawyer & Fannin, 2002, p. 42) Mohawk airlines contributed to the diversity of the field by being the first airline in the United States to break through another barrier by hiring the first black flight attendant in 1957. In 1983 Guion Bluford became the first African American to travel into space. (Bilstein, 1989, p. 132) On September 12, 1992 Dr. Mae Jemison became the first African American woman to travel into space on the eight day mission “Endeavor.” Jemison stated, “People, don’t see women, particularly black women, in science

and technology ...My participation in the space shuttle mission helps to say that all peoples of the world have astronomers, physicists, and explorers.”(Briggs, 2005, pp.57-58)

### Obstacles and Barriers Affecting African American Participation

African Americans have faced obstacles and barriers as they have strived to break into the aerospace industry.

Current scholarship on the history of aviation makes it clear that minorities---particularly blacks on whom the most have been written---and women were just as fascinated as white men were with flying and airplanes from the earliest days. This scholarship also makes it clear that for many years roadblocks were placed in the way of blacks and women that curbed their interest or made it much harder for them to turn this interest into an action. (Hansen & Oster Jr., 1999, p. 115)

This statement also makes it clear that because of past barriers, African Americans in the current aerospace industry are underrepresented. In order to make changes or understand the present state of an industry we must understand the past so that we can make the proper adjustments to get a lost group of representation more interested in an industry that needs continuous change and more diversity as it grows. According to Bilstein, “Over time, it has been more common place to find members of minority groups and women as pilots and astronauts. Moreover, such individuals have become important figures in highly visible management role.” (Bilstein, 2001, p. 368)

Other barriers perceived by high school students to contribute to the low African American representation in the industry is the lack of higher education, economics, hope and intimidation as shown in Figure 1. “African American students in inner city schools are often

focused on making money. They need to have income immediately after high school instead of postponing earning wages for four more years. (Freeman, 1997, p.536)

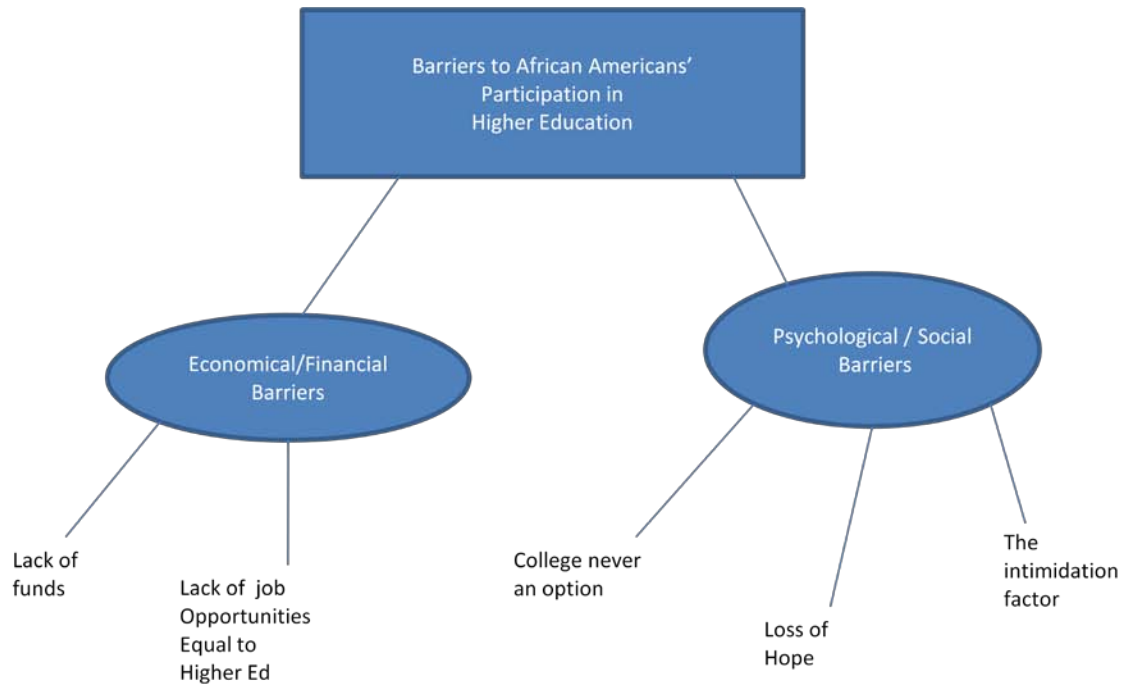


Fig. 1 African American High-School Students ' Perceptions and Barriers to African Americans' Participation in Higher Education

Source: The Journal of Higher Education (1997) p. 535 (Copyright 1997 The Ohio State University. Reproduced with permission.)

Social and cultural stereotypes have also raised barriers to African Americans perceptions in the aviation industry. In the past African Americans abilities were often stereotyped and perceived as if they lacked intelligence, skill, courage and patriotism to participate in this industry. African Americans came from every section of the country to try and overcome these assumptions. As it has been in the past, cultural and societal issues continue to play a significant role for African Americans in the aerospace industry. Tuskegee Airman Roy Lagrone said, “There were people in the War Department who actually believed that blacks couldn’t fly. A paper written in 1925 dubbed ‘The Bible’ stereotyped Negro soldiers as childlike, always fighting, and that they couldn’t be trusted—in spite of their efforts and history in World War I

and all of the wars in which they had served. What the ‘study’ didn’t address was the courage, the capabilities, and the determination of those blacks who were to become Tuskegee Airmen.”(Cooper, 1996, p. 43) Each one of these men possessed a strong personal desire to serve the United States of America at the best of his ability as well as understanding that they were not only trailblazers in this field but also role models for other African Americans. According to the Tuskegee Airmen History website,

No standards were lowered for the pilots or any of the others who trained in operations, meteorology, intelligence, engineering, medicine or any of the other officer fields. Enlisted members were trained to be aircraft and engine mechanics, armament specialists, radio repairmen, parachute riggers, control tower operators, policemen, administrative clerks and all of the other skills necessary to fully function as an Army Air Corps flying squadron or ground support unit. (Tuskegee Airman.com, 2009)

Today, after the many rigors and societal difficulties that African Americans have gone through to participate in this industry, there are still some attitudes within the culture that are encouraging different behaviors in the African American culture. Alexander states, “Young black men across the United States are more likely to go to prison than to college” (Alexander, 2010, p.185). In order for the African American community to prosper there has to be a shift in the cultural mindset or it will continue on its current course. To change this cultural mindset it is up to adults and parents to teach the youth about other options that are positive that can make young African Americans successful in their community. “Adults teach the younger generations through direct instruction, and indirectly through advice, proverbs, and maxims, and by example. The younger generation learns from the former by imitation, observation, socialization and enculturation.” (Larkin, Friedlander, Newman & Goff, 2004, p. 31) So if the African American

culture is not teaching or putting an emphasis on learning about aerospace in its community, this could be a contributing factor to African American participation. According to author Kitwana, “The African American community at this time is dealing with the Hip Hop Generation which celebrates celebrity, popular culture through music, and film that embraces poverty, anti-intellectualism, ignorance, irresponsible parenthood and criminal lifestyles” (Kitwana, 2002, pp. x-xxii). If this culture continues to remain the dominant mindset within the African American culture then it will be hard for youth to venture out into many industries, not just aerospace.

### Opportunities for African Americans in Aviation and Aerospace

As far as opportunities are concerned, there have been programs and scholarships made available to create a more diverse aerospace industry, and continue the legacy of past African American aerospace pioneers. Brown stated, “The opportunity to learn is a privilege, one that allows us to make a contribution to uplifting our people” (2003, p. 37). So according to Brown, opportunities are available; African Americans just have to pursue them. In order to increase African American participation in this industry there has to be an increase in the number of African Americans participating in higher education. There have been programs and models that high school students believe address this concern as shown in Figure 2. According to Freeman, “The idea of instilling at an early age an awareness of the possibilities of attending college, affirms the need for providing students with information on possibilities, requirements, and outcomes earlier than in high school” (1997, p. 543). It is important that African Americans are involved in the aviation industry, and that they take advantage of education as one of the most important opportunities. Through innovative thinking, increased collaboration, and understanding, perhaps more African Americans will find interest as well as opportunities in the



aerospace industry. Cose stated that, “for all of the well documented success stories and for all of the heartwarming statistics, African Americans remain a race apart in America, a race admired, even emulated, yet held at arm’s length” (Hale, 2001, p.31). Some studies show that diversity not only benefits African Americans but it benefits industry as well. According to Hooks, “Diversity is a fact in modern life---especially in America,” (2003, p.47). By attracting more African Americans to the aerospace industry not only will this open up more creative quality career opportunities but continue the past legacy of others in the industry. Turney stated, “Although broad diversity and cultural balance is a future goal, it is only when more diverse populations are participating in the aviation industry that they will begin to influence behavior and organizational culture” (2004, p.9). As shown in Figure 2 if there are programs available to African Americans in higher education the possibilities of instilling success in the industry can be achieved, while also making the African American culture aware of the opportunities available to them.

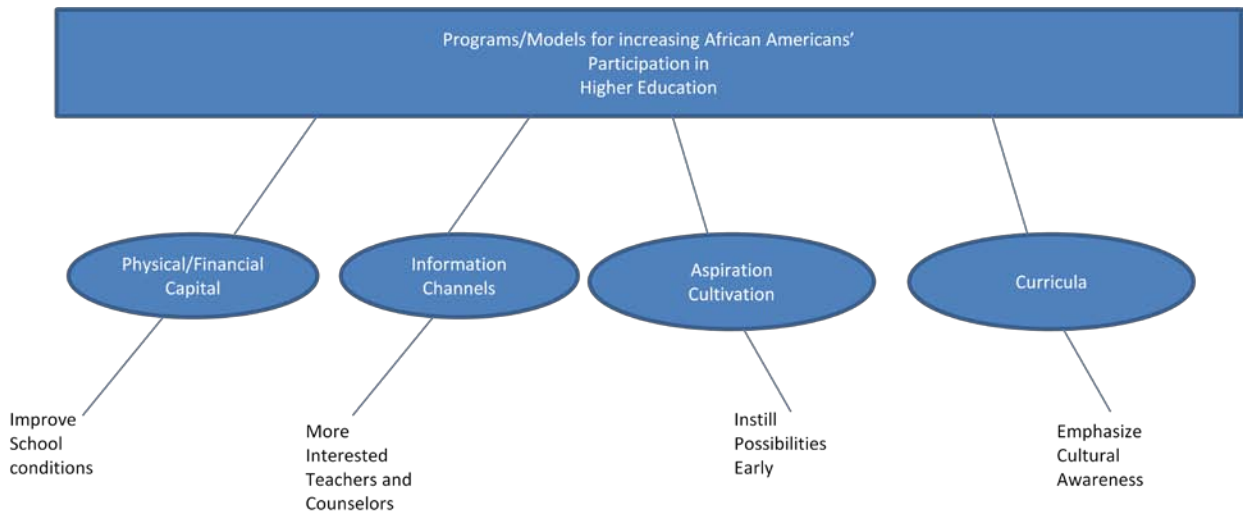


Fig. 2 African American High-School Students ‘ Suggestions for Programs/ Models to increase African Americans’ Participation in Higher Education

Source: The Journal of Higher Education (1997) p.541 (Copyright 1997 The Ohio State University. Reproduced with permission.)

## Opportunity, Education, and Mentorship

For African Americans during the past and present, education has been another contributing factor related to why their participation has not been as prevalent as it should have been in the aerospace industry. Nogeura stated that, “despite their relative privilege, middle-class Black students typically lag behind White and Asian students of similar and even lower socioeconomic status. Similar patterns can be seen among Black and Latino students who attend well financed, integrated schools in affluent communities” (2008, p.131). African Americans have fallen behind in the math and science fields which are essential elements for success in the aerospace industry. Shown in Table 1, African Americans in 2007 had the second highest dropout rates among public high schools in the United States.

Table 1

Percentage of Public High School Dropouts by Ethnicity in the United States 2007

Ethnic Group	Percent of Total Dropouts
White	3.0
Black	6.8
Asian/Pacific Islander	2.6
American Indian/Alaska Native	7.6
Hispanic	6.5

*Source:* US Department of Education, National Center for Educational Statistics

Most of the schools that African Americans attend today and in the past have not had the same level of emphasis in math and science as those attended by other ethnic groups. “Research

has determined that minorities have fewer opportunities to gain exposure to math and science skills. Some of the reasons include interest, time devoted to math and science instruction in predominantly minority schools, teacher treatment or encouragement, and the impact of programs designed to develop interest and competencies” (Hansen & Oster Jr., 1997, pp.114-151). This lack of focus has set some African Americans back and typically it is very difficult to try and catch-up to a group of people when they are already ahead in education by at least a couple of years.

In the field of aerospace it is important that education is followed up by mentoring. Henley stated,

Traditional instruction in the aviation context usually follows an apprenticeship or coaching model and, in so doing, aspires to provide students with insight, skills, attitudes, procedures and techniques derived from the pre-existing body of knowledge and from the practical experience gained by instructors as practitioners in the aviation industry.

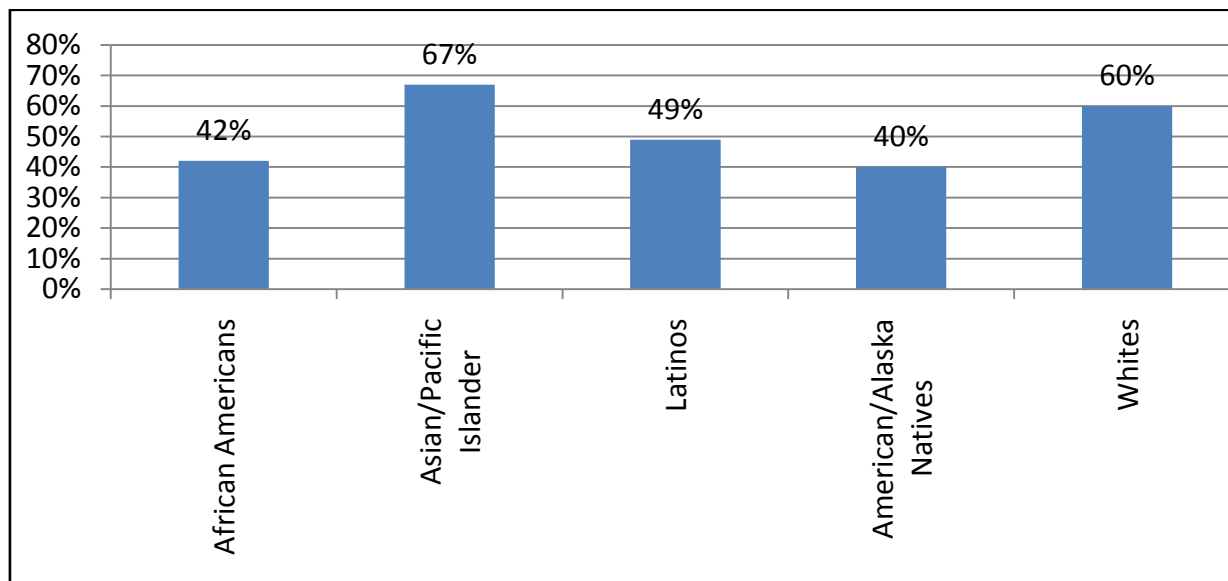
(2003, p. 208)

Mentors in the educational institutions also can aid in the participation of African Americans in the aerospace community. Gailbraith stated that, “The aim of affective mentorship, then, is to promote the development of the learner,” (2004, p.452). With a mentor and supportive educational structure in place, participation in aviation and aerospace could perhaps grow.

Another educational factor that plays a role in African American participation is a lack of college graduates. As shown in Table 2, African Americans have the second lowest college graduation rate among other ethnic groups. Higher education is an important aspect to entry in the aviation/aerospace industry, and if it is not obtained it is very difficult to gain access into any job within this aerospace industry.

Table 2

2007 College Graduation Rates by Race/Ethnicity



Source: US Department of Education, National Center for Educational Statistics, Integrated Postsecondary Education Data System

Although some small airlines hire high school graduates, most airlines require at least two years of college and prefer to hire college graduates. In fact, most entrants to this occupation have a college degree. Because the number of college-educated applicants continues to increase, many employers are making a college degree an educational requirement. Preferred courses in preparation for a career as an airline pilot include English, mathematics, physics, and aeronautical engineering. (US Bureau of Labor Statistics, 2010) Based on the numbers above, since there is a low college graduation rate among African Americans, this could be one of the contributing factors to their low representation in the aerospace industry.

## Current African American Participation and Role Models

Currently there is no projected data available to determine the future participation of African Americans in the aerospace industry. As for current participants, the percentages are listed in Tables 3 to 6. Several outstanding African American aviators are currently serving as role models in the industry. One young African American who is making strides in today's society is Barrington Irving. On March 23, 2007, at Opa Locka Airport, at 10:30 a.m. EDT, "Barrington Irving, a 23-year old senior majoring in aerospace at Florida Memorial University, traded his cap and gown for a brown flight suit, climbed into a single-engine plane he calls "Inspiration," and embarked on a round the world flight that will make him the first person of African descent and the youngest person ever to fly solo around the globe. Irving is the youngest person to pilot a plane around the world solo. He is also the first Black person and first Jamaican to accomplish this feat." (AvStop.com, 2007) In 2005, Jeanine McIntosh Menze became the first female African American aviator in the history of the United States Coast Guard. As the first African-American woman to successfully complete flight training and be assigned as a pilot in the U.S. Coast Guard, Lt. Jeanine McIntosh Menze flies the C-130 Hercules aircraft for service related missions. She flew one of the first military aircraft involved with mission work following the earthquake in Haiti (Blackhistoryinaviation.com, 2010). On Feb, 12, 2009 Atlantic South Airlines (ASA) had the first African American female flight crew to fly a CRJ700 aircraft from Atlanta, Georgia to Nashville, Tennessee. The crew was Captain Rachelle Jones, First Officer Stephanie Grant and flight attendants Diana Galloway and Robin Rogers. "It seems fitting that this historic flight happened to take place during Black History month," said ASA President and COO Brad Holt (TheDailyvoice.com, 2007).

As the aerospace industry continues to grow, it is important that more and more African American be encouraged to participate in this field. The aerospace industry is expected to continue to grow at a steady pace, and it is important that African Americans keep up with the pace and continue to grow with the industry. According to the United States Department of Labor the aerospace industry is considered a high growth industry. Former Aerospace Industries Association President and CEO John Douglass stated that “U.S. aerospace is a strategic industry in the nation's economy, homeland security and national defense” ([www.doleta.gov](http://www.doleta.gov), 2010).

Table 3

Percentage of Pilots and Flight Engineers by Minority Group in the United States

Minority Group	Percent of Total Employed
Women	2.6
African-American	1.8
Asian	2.4
Hispanic/Latino	2.5

Source: US Bureau of Labor Statistics Current Population Survey

Table 4

Percentage of Aircraft Mechanics and Technicians by Minority Group in the United States

Minority Group	Percent of Total Employed
Women	1.7
African-American	5.5
Asian	6.4
Hispanic/Latino	13.8

Source: US Bureau of Labor Statistics Current Population Survey

Table 5

Percentage of Aircraft Structures, Surfaces, Rigging, and System Assemblers by Minority Group in the United States

Minority Group	Percent of Total Employed
Women	(1)
African-American	(1)
Asian	(1)
Hispanic/Latino	(1)

Source: US Bureau of Labor Statistics Current Population Survey  
 Data not shown where base is less than 50,000.

Table 6

Percentage of Air Traffic Controllers and Airfield Operations Specialists by Minority Group in the United States

Minority Group	Percent of Total Employed
Women	(1)
African-American	(1)
Asian	(1)
Hispanic/Latino	(1)

*Source:* US Bureau of Labor Statistics Current Population Survey  
Data not shown where base is less than 50,000.

The statistical data presented in these tables represents the reality of the current level of participation in four different aerospace careers. This data raises the question of why the participation levels are lower for African Americans even though they are one of largest minority groups. Although there was data available in the literature on current participation, there was none available on the perceptions that African Americans have toward the industry. This situation provided the impetus for the present study.



## CHAPTER III

### METHODOLOGY

For the purpose of this research, which examined the perceptions of African American involvement in the aerospace industry, qualitative research was the most suitable. According to Berg (2007) “Qualitative research tends to assess the quality of things using words, images, and descriptions whereas most of quantitative research relies chiefly on numbers; many people erroneously regard quantitative research as more scientific than those employed in qualitative research” (p. 4). While quantitative research is valuable, qualitative research provides the researcher the ability to view real world situations as they naturally unfold.

In qualitative research the opportunity for flexible and creative research takes place within its natural context. According to Bloomberg and Volpe (2008) “Qualitative research reports include detailed descriptions of the study and clearly express the participants’ voice.” (p. 12).

Detailed interviews were used in this research to gather data that addressed the personal experiences and knowledge of the interviewee. According to Creswell (1998) “The important point of an interview is to describe the meaning of a small number of individuals who have experienced the same phenomenon”(p. 122). Furthermore an interview places importance on the interviewee’s views and understanding of the issue. It also fosters interactivity with the interviewee as well as eliciting in-depth, context rich, personal accounts, perceptions, and perspectives in regard to the issue. As a result, this data is gathered in its natural environment

where it could be possibly used for informational and recruiting purposes for the aerospace industry. The goal of the qualitative interviews in this study was to make sure that all the participants were fully understood and that their recommendations and experiences were preserved for future use. Data gathered through this method should provide insight using a phenomenological approach, in which African Americans and the aerospace industry can address possible recommendations and solutions to participation in the industry.

The general methodology of this study was qualitative. Bloomberg and Volpe (2008) stated “Qualitative researchers are concerned about the validity of their communication. To reduce the likelihood of misinterpretation, we employ various procedures, including redundancy of data gathering and procedural challenges to explanation. These procedures, called triangulation, are considered a process of using multiple perceptions to clarify meaning”(p. 72).

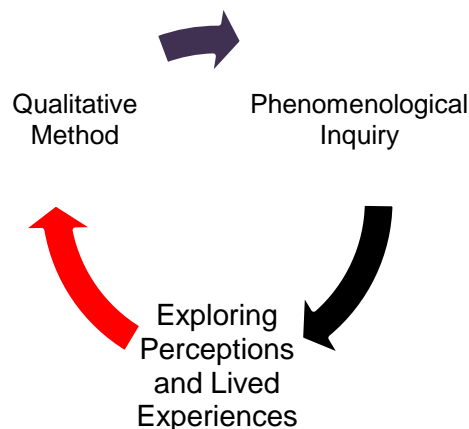
A sample of 12 African Americans in the aerospace industry were interviewed and asked a specific set of open-ended questions to achieve the outcome of triangulation. Due to the nature of the study and its methodology, it was critical that accurate documentation was recorded for identifying perceptions and recommendations of African American involvement in the aerospace industry.

### *Phenomenological Inquiry*

Critical theory was used to guide this study. The strategy of inquiry or quest for knowledge was based upon the foundation of phenomenological inquiry. Creswell (1998) states “Whereas a biography reports the life of a single individual, a phenomenological study describes the meaning of the lived experiences for several individuals about a concept or phenomenon.” (p. 51). “Phenomenology’s approach is to suspend all judgments about what is real—the “natural attitude”—until they are founded on a more certain basis,” (p. 52). Bloomberg and Volpe

(2008) point out that “The purpose of phenomenological research is to investigate the meaning of the lived experience of people to identify the core essence of human experience as described by research participants. Rooted in the philosophical perspectives of Edmund Husserl (1859-1938) and subsequent discussions by Heidegger (1889-1976) and Merleau-Ponty (1908-1961), phenomenological research involves studying a small number of subjects through extensive and prolonged engagement to develop patterns and relationships of meaning (Moustakas, 1994). In this process the researcher “brackets” her own experiences to understand the participants’ experiences (Van Manen, 1990 (p. 10-11).

According to Creswell “The challenges that a researcher may face with the use of phenomenological inquiry is that it requires a solid grounding in the philosophical precepts of phenomenology” (1998, p. 15). Participants in the study were carefully selected due to various experiences in this phenomenon. A challenge on the ability to bracket personal experiences of these individuals did not arise. The researcher had to decide how and in what way interviewee personal experiences would be introduced into the study.



### *Population and Sample*

The 12 interviewees in this study were selected from various organizations within the aerospace population primarily in the state of Oklahoma, to include aerospace companies, academia and other professional and aviation/aerospace organizations. The state of Oklahoma was viewed as a primary source of rich data due to the prominence of the industry as it is the largest industry in the state. However participants in the study were not limited to Oklahoma, but frequently had ties to Oklahoma aerospace either from their previous careers or by relationships with Oklahoma participants. Snowball sampling was used to tap valuable sources of data recommended by participants themselves.

The purposive sample of interviewees was selected based on their achievements in a variety of aerospace specializations. The pool of participants was derived from (1) current and retired African American pilots who are members of the Organization of Black Pilot Associations; (2) African Americans in the aerospace private and public sector currently involved directly or indirectly with the aerospace industry, predominantly in Oklahoma; (3) members of the Tuskegee Airmen chapter in Oklahoma; (4) African American educators; and (5) African American college students with current involvement in the aerospace industry. Participants were engaged in a variety of careers in the aerospace industry that included aerospace engineers, aircraft mechanics, pilots, navigators, and organizational managers or leaders. Their experience spanned a number of organizations ranging from minority aviation professional organizations to the United States military, government and academia.

All of the participants were African Americans currently involved in the aerospace industry or retired from the industry. All were high achievers as reflected in their position titles

ranging from Brigadier General in the military to Airline Transport Pilot, engineer, manager, and a variety of other leadership positions in aerospace organizations.

Participants were purposively recruited through personal contacts of the researcher with a variety of professional organizations and through snowball selection based on recommendations of participants themselves.

### *Instrumentation*

The Interview Guide (Appendix C) was selected as the primary method for data collection in this research because it has the potential to elicit rich, thick descriptions. An interview guide was developed by the researcher with specific questions that addressed each of the broad research questions dealing with the perceptions of African American involvement in the industry. The guide was vetted by the researcher's advisor, research committee and institutional IRB. It contained 15 unrestricted or open ended questions as a means to elicit the beliefs, experiences, perceptions, or attitudes of the interviewees. The questions were designed to glean specific information from interviewees in the aerospace/aviation industry.

In qualitative research the instruments used to gather data is flexible while quantitative research is specified in advance and is more rigid and detailed. Thus, the Interview Guide was intended to be used as a guide but provided some flexibility if the interview evolved into a need for further explanation of the data.

### *Procedures*

The 12 participants were initially contacted via email which described the study and requested their voluntary participation. A formal letter of participation (Appendix B ) and

interview questions (Appendix A ) were provided to each participant outlining the request for the interview, the purpose of the research, the amount of time required for participation in the study, and what questions would be asked. Participants wishing to participate responded back via e-mail or by phone.

In addition, to ensure the confidentiality of the participants they were each asked to sign a consent form (Appendix C) authorizing interviews to be audio recorded and explaining the steps for protecting their confidentiality. Those steps included protecting their identity as well as procedures for destructions of the voice recordings.

After each interview a transcript of the interview was manually created and assigned a number to protect the identity of the interviewee. Names were not used in the final data or published in the document. Interview tapes and transcripts were destroyed upon completion of the study to further protect the confidentiality of the interviewee.

Transcripts were manually analyzed by checking for common themes and patterns and discrepancies. Data was reorganized and analyzed again as common themes emerged across the data.

### Demographics

The participants in this research consisted of four females and eight males. All of the participants in this study were African Americans that are either currently involved or have retired from the aerospace industry. The eight males and four females who participated in the study were involved in a variety of careers in the aerospace/aviation industry.

Table 7 provides a graphic illustration of their demographics and broad career categories. Their careers in the industry included aerospace engineers, aircraft mechanics, aviators, navigators and, management/leadership positions. Their experience spanned a numbers of

organizations ranging from minority aviation organizations, to United States military/government to academia. All of these participants had attained a significantly high level of achievement as reflected in their titles which included a Brigadier General, two Colonels, a Commodore, an airline transport pilot, an engineer, two Airframe and Power plant certified maintenance personnel engaged in aircraft design, an aviation and government administrator, an aviation management and leadership educator, an Officer in the Tuskegee Airman Inc organization, and three Air Force Pilots. Also some of these participants were involved in professional aerospace organizations such as Organization of Black Aerospace Professionals (OBAP), Black Wings, Tuskegee Airmen Inc., and National Society of Black Engineers (NSBE), National Naval Officer Association (NNOA).

Table 7

Participant Demographics						
Male	Female	Pilot	Senior Leadership	Aircraft Mechanic/Engineer	Member of African American Aerospace Organization	Educator
	X		X			
X			X			
X					X	X
	X			X		
X		X				
X		X	X		X	
X		X				
	X			X		
X		X				X
	X	X	X		X	
X					X	
	X			X		

Because of their experience in the aerospace industry, participants were believed to offer a rich source of data for the study. Their experience brought unique perspectives and backgrounds from their past and present experiences in the aerospace industry that could translate into valuable insights for the African American community. Their detailed comments

related to the broad research goals and questions from the interviews are provided in the following transcriptions.

### *Data Analysis*

Baseline data for this study was gathered by transcribing each participant's interview manually. The researcher mined the data for themes utilizing thematic analysis. In theme analysis the researcher identifies all data that relates to the already classified patterns. In order to find these themes, interviews were analyzed for common themes.

Coding themes and categories were established based on the research questions in the study. The research data from the interviewees was then compared across questions to find themes.

New themes that were discovered in the study were categorized and listed. Interviewee data was then further compared and synthesized and new connections were made to support new insight. Insights gained from this research were then incorporated into specific conclusions and recommendations.

### *Validity and Reliability of Data*

Validity and reliability in this study was established by a combination of methods. Triangulation occurred in this qualitative study by the use of methods, theories, sources, data collection, recordings and notes.

Validity deals with measurements and is often associated more with quantitative research. Qualitative research's stance on validity deals with the reliability of the data. The validity and reliability of this study's data was established by the accurate reflection of interview data through



transcription. Gay describes validity as the “degree to which observations accurately reflect feelings, opinions and so forth of those interviews” (p.242)

## CHAPTER IV

### FINDINGS OF THE STUDY

#### Introduction

This study was designed to elicit the perceptions of African Americans related to the participation of other African Americans in the aerospace industry. A purposive sample was selected of African Americans currently in the industry to participate in a series of interviews. The interviews questions were detailed in the interview guide (Appendix A). Those interview questions were used to address the broad research questions listed below.

1. What is the historical level of participation of African Americans in the Aerospace industry? How does the current level of African American participation in the Aerospace industry compare to the past? (Addressed by interview questions 1-5)
2. What are the perceptions or attitudes of African Americans toward the aerospace industry? (Addressed by interview questions 6-8)
3. What are the perceptions involving opportunities for African American involvement and success in the aerospace industry? (Addressed by interview questions 9-10)
4. What are the specific obstacles and barriers that are hindering African Americans from involvement and success in the aerospace industry? (Addressed by interview question 11)
5. What recommendations do African Americans currently in the field have to encourage future participation in aerospace? (Addressed by interview questions 12-15)

The following narrative provides the responses of the participants to questions from the Interview Guide (Appendix A).

Interview Question 1: What roles have African Americans played in the history of the aviation/aerospace industry?

Participant 1 believed that African Americans have played several roles especially when you consider what the Tuskegee airmen have done, their history, and what they bring to the picture. On the military side they opened doors especially for officers who are now able to serve in a capacity that probably would not have been possible had it not been for people like the Tuskegee Airmen. Some of the early black aviators really did a lot for the military as a whole.

Participant 2 expressed the belief that African Americans have had a significant role in the history of the aerospace industry. Most people know what the Tuskegee Airmen have done but the big thing that the Tuskegee Airmen did, according to Participant 2, was to help Americans get past the perceptions that African Americans are not capable of certain things such as intelligence and physical ability. They showed very clearly that, given the right resources and training, African Americans can excel at anything. The Tuskegee Airmen were the biggest contributors to changing that image. Over time if you review the history of African Americans in aviation, certainly in military and commercial aviation, there are many very distinguished African Americans. One of those referenced by Participant 2 was Dr. Mae Jemison. Dr. Jemison was the first African American female to travel into space. Dr. Mae Jemison and many others have demonstrated that African Americans, when given the opportunity and resources, can excel.

Participant 3 suggested that African Americans have played a major role throughout history in the aviation industry. “Besides the obvious answer of the Tuskegee Airmen, we have had pioneers like Bessie Coleman who were fearless during a time when aviation was at its highest risk. Coleman’s cross country and cross Atlantic flights began to show the possibilities of aviation. Her contributions, as well as that of other African Americans, have had a direct contribution on what we see in the aerospace industry today. There are countless others including William Powell, who organized the Bessie Coleman Aero Club to promote awareness in the African American community; and Guion S. Bluford Jr., one of the first African American astronauts. Many more are involved in the industry today through flight and/or administration.”

Participant 4 spoke to the vital role that African Americans have played in design, production, and management in the aerospace industry. “They helped collaborate on the designs of some of the planes created during the 1940s; Ozzie Williams was one of these famous engineers. Blacks have played an important role, but the evidence of their contributions is not always widely known because people would have to have a love for the industry and do the research on their own. The aviation industry that was taught to us growing up is filled with people of European descent.”

Participant 5 also believed African Americans have played an important role in aviation/aerospace history, but expressed the concern that we do not hear about it. African Americans, as astronauts and pilots, have been able to prove that they are able to excel in any category equally with other races.

Participant 6 stated that African Americans have played an essential role in the development of the aviation industry. The contributions to the aviation industry are known because of the actions of General Daniel “Chappie” James Jr. who was the first African

American to earn the rank of Four Star General in the United States Air Force as well as the Tuskegee Airman during World War II; and Mrs. Elizabeth “Bessie” Coleman, who was credited as the first African American to become a licensed pilot.

Participant 7 expressed the belief that African Americans have played a huge role in the history of the aviation/aerospace industry. In the early days of aviation African Americans were among the first barnstormers who raised the level of interest among other African Americans around the country who saw them perform. During that time period African Americans had not been able to play a huge role in the business side of the industry.

Participant 8 suggested that African-Americans have played an integral role in aviation history as pioneers, educators and innovators. They paved the way for African Americans from Bessie Coleman to Lewis A. Jackson and the famous Tuskegee Airmen.

Participant 9 commented that “African Americans would not be where we are today without the contributions and sacrifices the Tuskegee Airman made to the industry. If you look at their combat record, it speaks for itself. Jesse Brown was the first Black Navy carrier pilot and was killed in a plane crash in the Korean War. Also the first Black Astronaut, Robert Lawrence, was killed in a plane crash as well. Then you have others such as Colonel Guion Bluford and Dr. Mae Jameson who all made significant contributions. Also there is a Black female Reserve General who is also a pilot [for a major airline]. There are a number of foundations such as the Bessie Coleman Foundation which encourages black youth to participate in the aerospace industry. The problem with Black history in aviation is that even though it is there, you do not always hear about it.”

Participant 10 mentioned the role of African Americans in all aspects of the aviation/aerospace industry from early pioneers like Bessie Coleman to African Americans in corporate senior leadership roles.

Participant 11 indicated that African Americans have actually played a large role in the aviation industry by diversifying among the many fields of the industry. The pioneers of the past opened doors which have enabled many of the leaders we see today.

Participant 12 also stated that African Americans have played a vital role in the aviation/aerospace industry dating back to the success of the Tuskegee Airmen who inspired many other African Americans to pursue careers as mechanics, technicians, pilots, and astronauts.

Interview Question 2: In your perception, what is the level of African American participation in the aerospace industry? Do you believe the trends indicate that there is an increase or decrease in the number of African American participants in the industry?

Participant 1 commented as follows: “Since I am in the Air Force, I know many Black pilots, Black navigators, and a lot of African Americans on the civilian side that do work in aerospace especially supporting the government. I would have to give it a decent number in the sense that it’s probably not as high as it could be but I would say that it’s a lot better than it has been in the past. I guess because I am in the Air Force I have met a lot of Black aviators that were in the military and other services throughout the Navy. Even here at this particular location we have one of the Black senior officers who is a pilot for one of our major organizations here. So I would have to give it a ‘thumbs up’ in that we are starting to see a lot more in the armed services. I think that participation is on the increase because organizations like the Tuskegee

Airmen and others are actually targeting some of our younger personnel to try to get them involved in aviation. So I would say that it's definitely on the increase from what it was years ago. A lot of young people are seeing the opportunities that are available in the aerospace industry. Also as a female in the Air Force the Reserves have made strides with a Black female General who is the Wing Commander. This is a very high position in the Air Force. The fact that we have had a Black female in this position, and she's now a Brigadier General, says a lot about the possibilities of women serving in aviation and being able to move up as well."

Participant 2 was convinced that the level of African American participation in the aviation/aerospace industry is lower than it should be. "... It's still a head turner to see an African American aviator and it shouldn't be because we have been doing this for a long time. Even depending on the type aviation job you're in, it's still a head turner to see an African American. You still don't really see them as much in the fighter community. Purely antidotal but from my observation most African Americans are in the business of flying the heavy aircraft such as cargo planes and re-fuelers. I think participation is lower than it should be. The Air Force has struggled to recruit qualified African American aviation candidates. In order to turn the trend, the Air Force has been doing research on how to bring the numbers up. I believe there is still a decrease in the number of African Americans participating in the industry."

Participant 3 believed the level of African American participation in aviation has increased dramatically compared to what it was years ago. "Just the fact that doors of opportunity are open more to African Americans has contributed to the increase. However, I feel that we are disproportionately represented. The lack of aviation and aerospace programs in our schools has been a factor. Sadly, I have to say our schools and institutions that are predominately African American shoulder some of the blame. I think that we do not educate our

children to the advantages available to them through this industry. If you look at the whole thing in perspective, with the African American population increasing, I think the number of participants has increased. We have more avionic workers, sheet metal mechanics and individuals acquiring their Airframe and Power plant Certificates. Some of this is through the military, but quite a bit is due to the fact that we have more young African American men and women who are challenged to look toward the future. They realize that this industry is not only flying, but other areas as well.”

Participant 4 commented that there is nothing right now that stands out in respect to the level of participation of African Americans in the aerospace industry. “I don't think there's been an increase; and I wouldn't know if there's a decrease in the level of participation; but I think about all the heads of major companies that buy PR time from the media such as your Boeings, Northrop Grumman's, Lockheed's etc. they are all run by white men. Also you have to look at geographic regions...”

Participant 5 does not meet too many African Americans involved with the aerospace industry. “In my personal experience, I have known/met maybe 10-15 pilots and maybe 15 aviators on the officer side. In terms as a whole, a very small percentage of African Americans are involved in the aerospace industry. Based on my personal experience, I would say that it's maintained. I don't believe that the trends have shown a significant increase.”

Participant 6 expressed the belief that currently the level of participation of African Americans in the aerospace industry is low and continuing to fall. “Being an African American aviator in the military I see the results each day, and honestly there are not enough Black aviators around anymore. I do believe that, as a whole, we are huge in numbers; but throughout the entire aerospace industry, we are a small percentage. I believe that there is a clear indication that there



is a decrease in the number of African Americans in the aviation industry. Being an aviator is really not advertised in Black communities as much as high profile athletes and entertainers. You are more likely to run into an African American doctor than an African American pilot.”

Participant 7 believed there has been an increase in the level of African American participation in the aviation industry. “...I have had a chance to see the next generation of Air Force pilots come into the military; and I can say that there are more African Americans going through training and flying airplanes now than ever before. When I entered the Air Force years ago I was one of eight African Americans going through training at my base. There were roughly 375 students total with only eight African Americans and no African American instructors. When I returned to training five years later there were at least 20 students and four instructors.”

Participant 8 concluded that “the level of African American participation in aviation seems to be declining. In the past, it seemed as though there was a call for action. African-Americans were interested in making their mark in this sector; making sure it was integrated; and they banded together to make sure it happened. There was excitement for exploring the unknown and enthusiasm in succeeding in the industry. There are probably more African-American pilots than before, but still it seems as though our progress has slowed. Trends may show an increase in African-American participation in the industry. However I think African American participation is scarce. I also think the fervor for the business that the pioneers once shared is even more disappearing.”

Participant 9 also suggested that the participation level is low. “I think it is potentially increasing in some aspects but overall it is decreasing. Because of cultural challenges, especially Black males going to school, we have a 40% dropout rate or some crazy number like that. The

aerospace industry is one that is based upon having an education. Just about every aspect of the aerospace industry is a learned field so you have to go to school. If you are not getting college graduates in a field that is predominantly college graduates then you are not participating in the aerospace industry. This industry is a very science based industry. So that is one of the challenges that we have as far as Black males are concerned. As for Black females they are graduating from college; but the question remains, are they interested in aerospace? Aerospace is perceived to be all about flying and a male dominated industry. Females most certainly can do it and even better...I am not sure a lot of folks encourage their daughters to fly airplanes or tell them that they can go to the moon. In Naval aviation we struggle to get Black females; but we have a few; then it becomes a struggle to keep them. That is one of my significant challenges. One of the things I think needs to be addressed are the opportunities that are out there. You do not have to be an Aerospace Engineer to participate in aviation. You could be involved in many different fields and still be a part of the aerospace industry but you have to have an education. I also think the problems that we are having with the economy and dropout rates are contributing to the low participation levels.”

Participant 10 believed the percentage of African American participation in the aerospace industry is lower compared to other ethnic/racial groups and that the trend is increasing as initiatives to promote STEM (Science, Technology, Engineering, and Math) in all levels of education will steer more African Americans toward aviation/aerospace career fields.

Participant 11 asserted that the participation of African Americans in aerospace today is far too small. As a percentage it is estimated in the low teens and the trend seems to be decreasing as more African Americans are lured to more financially lucrative jobs in the computer industry.

Participant 12 described African American participation as .marginal in mid-level management positions throughout the aviation/aerospace industry. This was based on limited opportunities and not the lack of knowledge or experience. It was believed that increased advertisement regarding the aerospace/aviation field and the education levels required to obtain an entry level position within those fields, could help increase the participation level of African Americans in the aviation/aerospace industry.

Interview Question 3: Do you believe African Americans have equal opportunity to compete in the aerospace Industry? What indicators support your belief?

Participant 1 suggested that equal opportunity to compete in the aerospace industry has improved because of “what our forefathers have done in aviation, the records that they set and the recognition that they have earned over the years which are priceless. There was a movie that came out years ago about the Tuskegee Airmen and there were a lot of people who were exposed to what these men brought to the picture and the past that they would have not known about. I think that bringing that history to light enabled a lot more people to understand the contributions and to see the contributions that were made by them way back then. I think this has opened the door for a lot more opportunities but I would be the first one to say that I would love to see those opportunities increase. Also I would have to say that being in the Air Force and the fact that I have met people at various locations where I have been assigned, the numbers have increased compared to what I saw when I first came into the military. I would also say there are a lot more programs targeted toward trying to make opportunities available for our young people to learn more and more about serving in aviation and the contributions that can be made. I would venture to say that there are more opportunities available today...a lot of things are available today that

were not even thought of in the past. I think that the opportunities are there for whomever would like to participate. There are programs today that young people can enroll in to learn more about aerospace engineering. I would say that those opportunities probably were not there years ago but I think that those opportunities are increasing for people to be able to participate if they choose to do so. I think in order for them to do that they have to be exposed to a lot of the advantages and the opportunities that are available in aviation. I think that having role models like the African American female who had achieved the rank of Brigadier General as well as other successful general officers obviously sends a positive signal to our young men and women that there are other opportunities out there that you can really pursue and make work for you if choose to do so.”

Participant 2 could not speak for the commercial side of the business but for the military side. “I think there are equal opportunities. I think the toughest challenge for us is to get qualified African American officers. Then there is another level of qualification to be an aviator. I believe that it’s a fairly fair process to be an officer in the Air Force. I believe that it’s a fairly fair process to be an aviator if you can meet those standards and you have people who want to do the work. I believe it to be fair, I think there is equal opportunity.”

Participant 3 responded “Absolutely. I’m a firm believer that we create our opportunities and position ourselves for success. Educational opportunities are out there for anyone to grab. It’s a matter of knowing what they are and what they can do for you. Within the State of Oklahoma, any high school student can attend career tech free while in school, and work toward an A&P license. Another career tech school offers sheet metal training free of charge at this time because of grants received. These are available to anyone. State universities have engineering courses and aviation classes. The FAA offers Air Traffic Control training to qualified

individuals. Yes, the opportunity is there. If you asked if we have equal access to information that would be a different story.”

Participant 4 commented that “to a certain extent, we have opportunities. More Blacks have the opportunity to go to college due to scholarships and other government aid. So we can get the training to get into the industry, but competing and moving up can be a different story. Racism and racial/social perceptions of Blacks still must be overcome for many Blacks to break into the ‘white man's club.”

Participant 5 remarked that “in the industry we have an equal opportunity to excel. I believe we have it but it’s highly competitive. In my personal experience I have seen African American officers excel in key leadership positions. If you can do the job you will get the job”.

Participant 6 commented that “African Americans have equal opportunity to compete in the aviation industry; however, the road is not easy. What are my indications that support my theory; well for example, take me and other African Americans that are aviators in the military; we are given the same opportunities as the next individual and also are afforded the opportunity to progress and get promoted.”

Participant 7 responded, “Yes, African Americans do have equal opportunity to participate. In my experience in the military I have been given every opportunity to excel in my chosen field. I have not noticed a difference between the chances I have received and anyone else.”

Participant 8 asserted that African Americans do not have equal opportunity to compete in this industry. “From firsthand experience,” this participant stated, “we still have to fight for what is rightfully ours. My opportunities, compared to that of a non-Black, are not going to come as easy. I’ve had a chance to speak to some of our senior leaders at my job. Even they

admit as non-Blacks, they've seen discrimination in one way or another. Although we've progressed somewhat, there is still much work to be done."

Participant 9 believed African Americans definitely have equal opportunity to compete. "The Navy in particular recently had the largest diverse class of graduates from the Academy that it's ever had. The Navy and other services have been looking at diversity and it is a big issue. So we are actively going out recruiting minorities, and women. Based on that the opportunities are out there; we just need to have something to be able to recruit from. So if African Americans are interested, there are opportunities out there."

Participant 10 stated "yes, the industries are desperately seeking Science, Technology, Engineering and Math (STEM) educated professionals as there are not enough graduates for the demand. Most corporations have diversity policies that encourage and promote upward mobility for all its employees. This is in part a reaction to a systemic problem that the "good ole boy" network still exists."

Participant 11 believed that "African Americans have equal opportunity in the aerospace industry thanks to federal laws that make discrimination illegal. Also there are many African Americans that are in influential positions that aid others in aerospace job opportunities."

Participant 12 concluded that African Americans do not have an equal opportunity to compete in the aerospace industry based on personal experience working in the industry performing maintenance at various levels including: flight-line troubleshooting, back-shop repair, and depot level repair and overhaul. "During these years, from different locations and duty assignments, the names may change but the key principals still seem to apply; the people who get promoted are the ones that share the same common interest. Whether it's, hunting, fishing, restoring cars, or grandfathered by association, most promotion selections almost never

seem to be truly merit based. In my current flight organization, we have approximately 100 employees in which seven are African American, 15 are Work Leaders in which zero are African American and five supervisors in which zero are African American.”

Interview Question 4: What programs are currently available that encourage African Americans to get involved in the aerospace industry?

Participant 1 mentioned a documentary a couple of years ago where this particular pilot, a former Tuskegee Airman, was actually involved in trying to recruit young African American children to participate in the aerospace industry. “I thought it was a very good documentary in which they were actually trying to get the young people to participate. They had some very good numbers; but I would also say that programs in our different colleges in which aerospace and aviation is a part of the curriculum, are important as well. I think if we continue to see our role models, as I said before, it would send the signal. We are actually starting to see a lot more even on the civilian pilot side of the house. I venture to say having traveled extensively around this country and around the world that I am seeing more and more Black pilots and that’s both male and female. So I would have to say that there is something going on that is encouraging our men and women to engage in those opportunities that we may have said years ago were not available to us.”

Participant 2 suggested that in the military, the commissioning sources currently have programs available to recruit young African American aviators into the Air Force Academy that are pushed to aviation. “I think by virtual numbers if you had more Africans Americans in the Academy, you would have more African Americans that would get into the aviation business. This result could be similar within (Reserve Officer Training Corps (ROTC) programs. ROTC

has a set amount of slots that they maintain. I believe if you had more African American cadets, you would have more African Americans going into aviation. My unscientific observation: most African American officers go into fields other than direct aviation such as support functions and maintenance for aircraft. I think that programs are there to recruit those kinds of officers if they have the qualifications.”

Participant 3 reiterated his previous comments that the career tech programs of Airframe and Power mechanic (A&P), sheet metal, machinist, and avionic/electronics, as well as university engineering and other aviation programs encourage African American participation in the industry. Of course, Federal Aviation Administration (FAA) and other schools offer specialized training as well.

Participant 4 only knew of one: the National Society of Black Engineers (NSBE). It is specifically geared toward African Americans in the science and engineering fields.

Participant 5 believed there are not any programs that are focused on getting African Americans involved in the aviation industry and had not even seen a minority scholarship that encouraged participation in aviation.

Participant 6 mentioned the Tuskegee Airmen organization in Atlanta, Georgia offers the Young Eagles program. Also the Tuskegee Airmen Inc (TAI) program teaches young Black youth about the aviation industry.

Participant 7 referenced the Tuskegee Airmen Association and the Association of Black Airline Pilots which encourage African Americans to participate.

Participant 8 does not know of any programs designed specifically to encourage African Americans to delve into the industry. “The Organization of Black Aerospace Professionals (OBAP) has been in existence for a long time. They promote education in the aviation field



among African Americans.” Even after knowing that this avenue existed, Participant 8 never really thought about taking part in it and until recently, “had never really considered myself an integral part of the industry and I am an aircraft mechanic.”

Participant 9 stated “there are a lot of programs but the most significant one to me is the Aviation Career Education Academy (ACE) which is run through the Organization of Black Airline Pilots (OBAP). Recently at Tinker we had about 25 kids and we took them flying in a simulator; we also rented a Cessna and took them flying. This exposes them to aviation at a young age. If we can plant the seed early at 12, 13 and 14, this will encourage our youth to want to become pilots, engineers, astronauts, or want to fly or build planes. Also to name some other organizations we have the Tuskegee Airman Inc., Negro Airman International (NAI), National Black Coalition of FAA Employees, Black Pilots of America, United States Army Black Aviation Association (USABAA), Black wings, National Naval Officer Association (NNOA), Less Morris Summer Flight Academy, Claude Platt's Future Pilots and the Bessie Coleman Foundation. All of these organizations are designed to mentor, encourage and retain Black youth in the aviation industry.”

Participant 10 identified science; technology, engineering, and math (STEM) related conferences as well as National Society of Black Engineers (NSBE) and Black Engineers of the Year Awards (BEYA) programs currently available to encourage African Americans in the industry

Participant 11 commented that there are currently only a few programs to encourage African Americans to get involved in aerospace. One is the Young Eagles sponsored by the Tuskegee Airmen Inc. Through scholarships they encourage youth to pursue aviation and engineering career fields. The Organization of Black Airline Pilots regularly has programs to

encourage African Americans to seek aerospace careers. In many of the Black public high schools there are Vo-Tech programs teaching skills in aerospace electronics and maintenance and offering job placement to graduates.

Participant 12 commented that the Air National Guard and Reserves offer college tuition assistance for members in various aerospace/aviation career fields. Also the DOD promotes programs like Copper Cap and Palace Acquire that are designed to give college graduates an opportunity to pursue a long term career in rewarding careers such as contracting officer or budget analyst within the aerospace industry.

Interview Question 5: In your perception has education played a role in providing more opportunities for African Americans in the aerospace industry?

Participant 1 firmly believed that education is the stepping stone to allow people to do a lot of things. Participant 1 stated, “Having started out in the Reserve Officer Training Core (ROTC) program, I learned about the aerospace industry. Being enrolled in the ROTC program encouraged me to want really to pursue a career in the Air Force itself and to learn more about flight. A lot of my classmates from...years ago are still on active duty. So something has served us well that has encouraged us to stay a part of the aerospace industry in terms of our participation in the Air Force, which as you know, is primarily about flying. So across the board it has really been a wonderful experience being a part of aerospace.”

Participant 2 said “Absolutely. To be an officer you have to have a bachelor's degree. So right off the bat if you don't have that bachelor's degree in the military, you don't have that option to be a pilot or a navigator. You might be able to participate in enlisted or back of the jet

type operations such as crew chief and maintenance and those kinds of things. Education is huge. As more African Americans go to college and get degrees, their opportunities are naturally going to be better to participate in the aviation industry. I suspect it's the same on the commercial side.”

Participant 3 believed our kids are smarter than ever before; but focused on the fact that there is more information out there and our children are finding out about the opportunities available. “Once they know what is out there, they can focus their academic track in a direction that leads to more opportunity and ultimately, more success.”

Participant 4 affirmed that education has played a role in providing more opportunities for African Americans in the aerospace industry.

Participant 5 commented that “outside military aviation, I don't recall being really encouraged in school to be involved in the aerospace industry. It has always been associated with the military in my opinion. I think my encouragement, if any, would probably be my father because he was an aviation helicopter mechanic for both the Army and the private sector.”

Participant 6 believed education may have played a small role but not a sufficient role in African American choices to go into the aviation industry.

Participant 7 believed education has played a role for African Americans in the aviation industry. “The industry is a highly technical one and does require a high level of education to succeed in it. As the education opportunities for African Americans have improved then so have the chances to get hired by companies in the field.”

Participant 8 agreed that education plays a role in providing more opportunities in any industry—aerospace included. Participant 8 did not believe there is mainstream appeal to

African Americans as far as the aerospace industry is concerned. She believed, in the eyes of many, it is still considered a “white industry.”

Participant 9 thought education had played a role in providing more opportunities in aerospace. “There are a lot of university programs sponsored through the airlines and you can earn a degree and become a commercial airline pilot. In the Black community there are millions of dollars and grants that go unused that are for aviation programs. There is no reason if you want to go to college that you can’t. Having the grades is another challenge. That is something that needs to be addressed.”

Participant 10 commented that education has played a role in providing more opportunities for African Americans in the aerospace industry.

Participant 11 stated that education has played a major role in providing opportunities for African Americans because it levels the playing field for everyone seeking careers in aerospace. Today African Americans have the same access to universities that offer studies in aerospace engineering and science.

Participant 12 believed “education has played a major role in providing better opportunities for African Americans in the aerospace industry. Over the years as higher education has become more obtainable in regard to degrees and trade skill certifications, African Americans are able to qualify and compete for aerospace jobs in a variety of career fields.”

Interview Question 6: Describe your experience in the aerospace industry.

Participant 1 stated that “being in the Air Force our training tenants are what we have to remain cognizant of. From an aerospace perspective because we serve on a base for the most

part, they want you to be familiar with the aircraft, the base you're supporting, and the missions of that aircraft. Also we have to understand from a joint perspective. For the most part our mission is to fly, fight and win. So we have to understand the limitations and the opportunities that we have with our aircraft. It's always important for us to know the part that the Air Force in this particular case plays in the joint community because that is the competency that we have and what we bring in terms of being able to succeed on behalf of the Department of Defense. So it's important for us that even as we are planning our aircraft, maintaining our aircraft, that we work with our aviation industry partners to ensure that we have the most current aircraft that is out there. The joint community expects us to be able to articulate and know and understand when we are planning joint operations or any kind of activity whether it's humanitarian or crisis so that we can help fly in and strategize what is required in terms of flight and support from that perspective because that is what we as airmen do and are expected to do."

Participant 2 The experiences of Participant 2 stem from being a support officer. "My job has primarily been in the security and protection arena particularly protecting the flying resources that the Air Force utilizes. I have not flown personally. I have been around the flying business long enough to have an appreciation for what they go through and what they expect of an aviator."

Participant 3 is heavily involved in the education aspect of the current industry and has had the chance to provide the needed information about several career fields to those who have shown an interest in this industry and has made available resources that allow individuals to understand the possibilities of the aerospace industry.

Participant 4 only had experience with the government. Most of that experience was in the acquisition of capital equipment to support programmed depot maintenance on numerous weapon systems, but currently assists with strategic planning for new workload.

Participant 5 has had years of experience in the United States Air Force (USAF).and holds a private pilot certificate. As an Air Force aviator for several years with 1400 flying hours, 550 of which were combat hours, Participant 5 was involved in Operation Iraqi Freedom and Operation Southern Watch and has seen what careers aviation provides as far as mechanics, pilots are concerned.

Participant 6 described experience in the aerospace industry as “great! Having the opportunity to be an aviator in the military has opened up many doors in my career and the chance to travel. I am still young in my career however; the future is very bright for me and my family.”

Participant 7 described years of experience in the aerospace industry as an Air Force pilot, many of which were spent as an Airborne Warning and Control System (AWACS) pilot and as an instructor pilot at basic pilot training.

Participant 8 stated “my experience in this industry has been a rewarding but challenging one, not only as an African-American, but also as a young female. I have a hard time getting the seasoned employee or supervisor to accept me as a serious aircraft mechanic; although, they themselves may not be serious. I have made numerous process improvements which have saved our Air Force millions of dollars. I find joy in working with our elite airmen. What I do, helps keep the war fighter in the skies. In a small way, I help protect my country.”

Participant 9 described years of United States naval aviation experience including Commodore for the Take Charge and Move out (TACAMO) Air Wing and thousands of hours of

flying time in the P-3 Orion and P-6 Hawk, as well as a couple of hundred hours with C-130 Hercules, and a few hours with the Helicopter low-level operations (HELO). In the role of Commodore Participant 9 works with numerous aerospace organizations including Boeing, Lockheed, and L-3. Participant 9 is a life member of the National Naval Officers Association (NNOA), a member of the Tuskegee Airmen Inc., and Organization of Black Aerospace Professionals (OBAP) as well as member and mentor for several other organizations and believes that is the key to getting more African Americans involved.

Participant 10 was hired as an engineer after graduation from college and before going on active duty with the Air Force. Participant 10 was then hired by a major airline as a pilot after leaving active duty Air Force.

Participant 11 stated “My experience in aerospace spans nearly my entire life. As a youth I was a member of Civil Air Patrol; a U.S. Air Force auxiliary which performs search and rescue for downed pilots. In high school I was enrolled in the aviation vocational technical courses which taught aviation mechanics. After graduation from high school, I entered the Air Force and was an aircraft technician on fighters and later a flight engineer on the C-5 Galaxy.” After retiring from the military, Participant 11 has since worked as an airframe and power plant mechanic for a major airline, a general aviation mechanic at an airpark and an Equipment Specialist for the government troubleshooting aircraft problems and aiding in writing the maintenance manuals for mechanics.

Participant 12 stated “my overall experience in the aerospace industry has been successful and fulfilling regarding duty, country, and personal growth. However, at times it has been one of frustration regarding opportunities for promotion and advancement. It has been troubling over the years watching someone get a promotion, knowing that you were clearly the

better qualified applicant, but common interest and color were somehow the determining factors of selection. The most common cultural shock, if you will, or adjustment that I've had to embrace from the age of 19, was that I found myself often in training or performing the day-to-day job being the youngest and only African American out of a usual group of 20-30 white males with the average age being between 25-55 years old. At times, I have been second guessed by pilots, engineers and even my senior leadership regarding mechanical decisions when my less qualified white counterparts were taken by their word alone. Often I feel as I have to prove myself daily, but that's okay with me;, because the way I see it, I am making it easier for the next generation of African American aerospace techs that come along like the Tuskegee Airman did for me. Since this industry can be very tough at times. I can only imagine what they had to go through to gain their respect on a daily basis.”

Interview Question 7: What inspired you to enter the aerospace industry?

Participant 1 offered the following comments. “To be honest with you I was on campus one day; some kids were out recruiting. I went to college on a chemistry scholarship and I was supposed to go to work for Dell Chemicals. When these kids were out recruiting and talking about the Air Force and aircraft, it really got me interested in learning more and more about the Air Force and the role that the Air Force and aviation plays in supporting our Department of Defense. So I really got fascinated. I became fascinated with what the young people were saying. So it made me go all aboard. I decided to sit down and talk with the Professor of Aerospace Studies (PAS) and I always tell this story because it true. This is how I joined the Air Force. I never thought I would be around 28 years later but we had some kids recruiting and they convinced me to talk with the Professor of Aerospace Studies, and that's exactly what I did. He



sat down with me and really sold aviation to me as a young cadet in college. I will always be indebted to him because I would not have ever thought about joining the air force if it had not been for the Professor in Aerospace Studies talking to me about the industry. He actually talked to me about the contributions the Tuskegee Airmen made and the role they played and the role that airmen play in supporting our country. It really got me fascinated about learning more about aircraft and the previous flight history of airmen for setting the stage for what we have today in the aerospace industry.”

Participant 2 was looking for an opportunity to do something bigger and commented: “I was working for a state governmental agency. I felt I was working for people who weren’t qualified to be leaders or supervisors in the positions they occupied. I was also looking for an opportunity to do something different. I wanted to travel to see the world to experience different things. The military offered all of those opportunities. I had some friends in the Air Force and I decided to try them and it’s worked out well for me.”

Participant 3 knows and understands that change is inevitable and technology has a place in this world. Initially, Participant 3 wanted to be a navigator on an aircraft, but researched it and found that there were so many other ways to contribute to the industry. “I had always been an advocate for education, and found that I could contribute that way. It’s funny that people normally think that this industry is all about being a pilot and flying. There is so much more.”

Participant 4 commented that “the money inspired me. When I look for a job I think it's important to do something you enjoy, but you also have to look for an industry that's going to be around even during bad economic times.”

Participant 5 stated “it was the space shuttle launches in the early eighties that inspired me. My dad was really into flying as well. I thought that I wanted to be an astronaut. I liked

movies like “Top Gun and Iron Eagle.” I said when I was growing up ‘that’s what I want to be.’ I have always had a thing for aviation.”

Participant 6 stated that his dad is a retired United States Air Force Aircraft Mechanic/Crew Chief. He was around aviation at a very young age and fell in love with airplanes and always wanted to fly them.

Participant 7 had always been interested in flying; and while in college on an ROTC scholarship, was awarded a chance to go to pilot training.

Participant 8 was part of an Air Force legacy with both parents. “As the rite of passage approached to finally become a ‘grown-up’ and decide on a career, the Air Force intrigued me. However, there were some obstacles that prevented me from enlisting active duty. As years passed, I’ve traveled and tried my hand at many different occupations and have studied many different subjects. But full circle, I returned to the Air Force as an aircraft mechanic. It seemed like the next best thing.”

Participant 9 became interested while a marketing student at a University in another state. “There was a recruiting day at the University and a Navy Lieutenant Commander was there and he had a picture of an F-14 on his desk. As I was walking by, I was looking at it and he saw me and said, ‘hey, come here; you can fly this.’ I didn’t even have an idea on how to become a pilot. He sent me a booklet and I filled it out. I was interested in not just flying but other aspects of aviation. This gave me the opportunity to fly and learn more. I also was paid \$20,000 while going to flight school and the marketing companies just couldn’t match that for me. I really don’t consider this work; since I like what I do, this is more play for me. If you like what you do, then it’s not work. That’s what inspired me.

Participant 10 entered the industry because of the opportunities for aerospace engineers in Los Angeles.”

Participant 11 stated “I was inspired to enter the aerospace industry by my father who when I was young would take me to the airport to watch air shows and airplanes flying.”

Participant 12 was inspired to enter the aerospace industry by the high demand for aircraft mechanics in 1993. “Also the financial benefits I could receive to make a better life for himself after graduating from high school was a factor. So, I decided to join the US Air Force and see the world while learning a valuable skill and trade as an aircraft electrician.”

Interview Question 8: What do you know about the history of African American involvement in the aerospace industry?

Participant 1 associated knowledge of African American history in the aerospace industry with an understanding of the Tuskegee Airmen in terms of their role and what happened. “I have gone to a lot of their conventions and read a lot of their books. I have also met some of them and really love their story. I would say that was really the basis for learning the history of African Americans in aviation. Prior to that there wasn’t a whole lot that people knew about this history. Even when I was in school I don’t remember a lot of the history being taught. So it was getting to know those individuals especially a lot of them before they passed away. I really learned about them by studying their books that they had written over the past years. That was totally eye opening and an introduction for me into African Americans participating in the aerospace industry.”

Participant 2 attributed knowledge of African American history in aviation to the Tuskegee Airmen. “Since I have been in college, I have read and learned a lot about what the

Tuskegee Airmen accomplished under some very tough circumstances. There were a lot of private and government entities that did not want to see them succeed. Fortunately there were enough enlightened people that gave them the resources that they needed to be successful and they went out and proved what they could do. An interesting part of history was that a lot of white military flying organizations that were supporting them had no idea that there were African Americans in support of them in the air. They didn't know until they got back on the ground. They would say to themselves 'these guys can fly.' They had no clue; they just knew that these men were squared away aviators. All that matters in the sky is 'can a person help you get your mission done? And that's what the Tuskegee airmen did. I am experienced with some commercial successes with National Aeronautics and Space Administration (NASA) especially a lot of the distinguished African Americans that came out of the NASA programs."

Participant 3 knew a little about African Americans in aviation history and some of the individuals who influenced the industry as well as a few of the events that have taken place. But Participant 3 is still learning about the different areas that have been affected throughout history

Participant 4 does not know much about the history of African American involvement in the aerospace industry.

Participant 5 knew a few people in African American aviation history and mentioned Elizabeth Coleman, the first African American female pilot; Benjamin Davis, Jr. of the Tuskegee Airmen; Dr. Mae Jameson, NASA astronaut; General Daniel "Chappie" James, Tuskegee Airmen Fighter Pilot and first USAF African American Four-Star General; as well as Guion Bluford, the first African American Astronaut. "There are a lot more African American astronauts out there than people think about. We are out there, the problem is you just don't hear about us that much. It seems as if no one knows that we are here in this field."

Participant 6 did not have all the answers but had a good understanding of the success and failures of African American history in the aerospace industry.

Participant 7 was a history major and studied the history of the Tuskegee Airmen and their incredible World War II record.

Participant 8 did not know a lot about African American aviation history. “In school we mostly heard about Amelia Earhart. We never heard about Bessie Coleman. If we leave it up to the public school to teach it [history of African-Americans in aviation], it will never be brought to light. The Tuskegee Airmen probably set the standard. They showed the world that the African-American pilot could protect our skies and our country. I read about people like Lewis Jackson who started innovating at an early age. I read that he toyed with installing motorcycle engines into airplanes. Also, who can forget the 2009 headlines when for the first time in history; we had an all female, African American crew to fly a commercial flight.

Participant 9 used the Tuskegee Airmen, as a knowledge base about African Americans in aviation. Participant 9 recent visited with the senior living Tuskegee Airman Colonel Clarence Jamerson and stated: “these were great men. Col. Jamerson flew with Chappie James, O. Davis and his plane was named Night Train. He was one of the guys that was featured in the “Tuskegee Airmen” movie. The history that I know about is the Tuskegee Airman and Jesse Brown in the Navy, and the history of first Black astronauts.”

Participant 10 knew a fair amount about the history of African American involvement in the aerospace industry.

Participant 11’s knowledge of the history of African Americans in aerospace came from the many books purchased over the many years about pioneers like Eugene J. Bullard, Bessie Coleman and the Tuskegee Airmen.

Participant 12 believed the history of African American involvement in the aerospace industry started with the Tuskegee Airmen also citing “the history of the combat missions they completed during World War II with General Chappie James who flew 101 combat missions during the Korean War. These and countless other stories that were passed down to me by Senior Non Commissioned Officers (NCOs) over the years who expressed how, despite being unfairly treated, they still served with honor and dignity to be accounted as a credit to their race and heritage.”

Interview Question 9: What opportunities for success have been available to you in the aerospace industry?

Participant 1 was amazed by the fact that we have had airmen who served in times that were probably very difficult. “They laid the foundation for me to serve in the position that I have today because I am quite sure that the opportunities that I have today wouldn’t have been available to me back then. So because I did join the Air Force, I attribute a lot of my success to the Tuskegee airmen who served in the Air Force. They showed that they had the stamina and ability to perform the mission. Some of them went on to become Colonels and some went on to become Lieutenant Generals. So I think that they really proved that we are not only capable but we are able to perform at whatever level is required. So they really set the stage for me. What I am able to do today I owe all to those guys.”

Participant 2 suggested that opportunities have been very good. “Being on the support side of aviation and not the flying side, the opportunities have been tremendous. Since the Air Force has a very fair system, it allows you to do various jobs and get promoted with the understanding that you are doing all the things expected of you. The single key to success in the

military is education. At every level in your career there is a certain level of expectations for education and a certain level of professional military education. If you do those things there is a good opportunity for promotion and I have taken advantage of those opportunities.”

Participant 3 stated “the aerospace industry has done a lot for me, both personally and professionally. Because this industry places such high demand on technology and education, it has afforded me the opportunity to complete academic degrees. I have obtained several certifications that have allowed me to facilitate classroom instruction in the soft skills that are required by aerospace professionals. Professionally, I have advanced to a managerial position that has allowed me to be an advocate for the importance of the aviation industry.”

Participant 4 stated “I have been able to do a lot of networking. I've been fortunate enough to meet a lot of engineers that have taken me under their wing and taught me about many topics from structural engineering on the B-1 to new workload resource accommodations. This network is sure to be my friend in the future for any future endeavors in the aerospace industry.”

Participant 5 stated “getting my private pilot license was easy. It was a delight to do. I had great instructors who encouraged me to fly as much as possible. In the Air Force, their focus is on aviation. If you want to fly, they will help you get there.”

Participant 6 believed that aviation offered opportunities to travel to different countries and experience their way of life. Also it a chance to lead important projects with the understanding that the project will either ‘sink or swim,’ depending on how much time put into it. “The best opportunity is having the chance to be promoted to the next rank in succession.”

Participant 7 stated the industry has provided the opportunity to be an instructor pilot and aircraft commander of an airplane worth \$300 million and fly missions in combat zones all over the world.

Participant 8 believed there are several opportunities one can take advantage of in the aerospace industry such as the Civilian Tuition Assistance Program (CTAP); a program which is designed to pay for a portion of secondary education. In addition, the aerospace industry has offered a rare opportunity to engage in face time with many senior leaders through the Junior Force Council.

Participant 9's success was achieved through mentoring programs with such prestigious airmen as Vice Admirals, Inspectors General, the Secretary of the Navy and a Top Gun pilot.

Participant 10 did not stay in the aerospace industry long enough to look for upward mobility. Senior leadership progression in the aviation industry tends toward peaking at the Captain level and at management level in the piloting areas of the corporation as most CEO's of commercial airlines have CEO backgrounds vice piloting backgrounds.

Participant 11's opportunities for success have come from showing enthusiasm and hard work for aerospace. "My people have given many opportunities because they see my love of aerospace and how I am willing to go the extra mile to be a part of it."

Participant 12 stated "through my experience of serving on active duty in the United States Air Force, I earned the best opportunity for continued success in the aerospace industry completing a Bachelor's degree which is required to qualify for professional career fields within the DOD in today's job market."

Interview Question 10: What opportunities for success do you see for future generations?

Participant 1 stated "if we take advantages of the opportunities from past pioneers, future generations can learn from these experiences and can continue the legacy. Opportunities will open up and be made available to generations as a whole So if we continue to build on this for



future generations and let our young men and women know that there are golden opportunities... they will have to seek those opportunities in order to continue to progress. In my opinion all the great ideas have not been discovered or developed. There are even other opportunities for our young people if they want to engage in aviation to be able to explore the things that have not been developed yet. I hope that there will continue to be careers, opportunities, training and recruiting of our young men and women into aerospace and we make it a viable option for our young African Americans.”

Participant 2 stated that “there are tremendous opportunities for success for future generations. I call this ‘the video game generation;’ and if you look at what the military is doing, we are going to a lot of remote controlled flying unmanned vehicles. If young people are very good at doing the types of things that video games require them to do, then they can be extremely successful in the aviation business. I think war is going to go remote. I think everything will be done thousands of miles away via a satellite and an uplink. If they can work a joystick, they will be able to participate in the aviation arena, assuming they have met the educational requirements.”

Participant 3 suggests that “there will be a great deal of opportunity available to future generations. The industry is so vast and broad. There are so many jobs. There are engineering, manufacturing, programmers, information technology, planning, supply chain management, sheet metal, painters, and the list goes on. Opportunities abound.”

Participant 4 believed African Americans will have as much success as they are willing to work hard for and commented that “nothing will just be handed to them.”

Participant 5 commented that “in the future, we will have even more opportunities to excel; however, if we do not encourage our people to seek aerospace as an optional life style then

we can expect the numbers to never change. They actually have a lot of schools that offer aviation and aerospace programs and careers. One in particular I was actually thinking about enrolling in was Air Transport Pilot School. They take you from zero to hero to be an Air Transport Pilot in a couple of months. I believe things will change but we have to encourage our people to get out there and pursue them.”

Participant 6 believes that “opportunities for the future success will be even greater than what they are currently. The aerospace industry is continually growing and is a major contributor to the world economy; aviation will be around for a very long time to include countless opportunities for generations to come. As far as the African American community, they will have to go and grab those opportunities by the ‘horns’ because it will not be given to them freely.”

Participant 7 believed there is no limit for future generations in the industry as evidenced by experience with the military where there are no known restrictions for African Americans in the future.

Participant 8 believed we have to continue to set a precedent so that future generations will succeed in this industry and that African Americans will be Commanders, Vice Commanders, Executive Directors, Deputy Directors and CEOs in the very near future. “Anything is possible as long as we as a people don’t let the passion for this industry die, and our presence in it decline.”

Participant 9 stated that “the opportunities to succeed in any part of America will be predicated on education. Back during the civil rights movement we were trying to get everyone to go to school and go to college. Now we have started digressing. When things such as steel mill jobs go away, we are going to need to have an education. If you look at our rates in prison and

the high school graduation rate, it is scary. So we are going to have to do something about it. So if you have an education you have a great chance for success in the industry.”

Participant 10 commented there are many opportunities for African Americans especially if African American educational backgrounds are in science, technology, engineering and math (STEM) and business.

Participant 11 believed the future generations have so much available to them. “There is a push to have more [African] Americans in the aerospace industry and the industry and universities are making these more easily accessible.”

Participant 12 believed there are many opportunities for future generations to be successful in the aerospace industry and the demand for bright young minds will always be there; but questioned whether the bright young minds would be ready to step up to the challenges and expectations of an ever changing industry.

Interview Question 11: What barriers or obstacles do you see that are hindering African American involvement and success in the aerospace industry?

Participant 1 stated that “we have made a lot of progress, but I think that if we were to see a lot more African Americans in aviation on TV for example in leadership capacities, I think those role models would be of huge interest to our young women and men today. Unfortunately we don’t see the kind of numbers that we would like to see so that people consider the possibilities of going into aviation. A lot of times some of our young men and women choose other routes because they may consider it easier. We should encourage them in college making sure they study the right kinds of courses, such as the math and science and engineering disciplines to make sure that they have the background to be able to sustain their studies to

continue to grow and develop. I think that if this does not become a norm, our young people will decide to shy away from going into those kinds of fields. In terms of making sure that they are prepared for the field of aviation it is important that they understand technical disciplines and the dynamics in working in this industry. If not, it might limit opportunities for growth and success. You have to have the technical ‘know how’ to remain competitive in the aviation industry.”

Participant 2 stated that “the only thing that would hold back African Americans in the aerospace industry would be their unwillingness to get an education which is needed to be successful in the aerospace industry. For the military in particular you have to be willing to conform yourself to the standards that a military organization expects from you. If a person can do that, I believe that there are no barriers for African Americans to have success in the aerospace industry. I think any African American will run into roadblocks because that’s the way it sometimes [is]...you have people who aren’t as progressive thinking as they should be. But if you are willing to work hard and get the education , then I believe that you can rise to the highest levels of achievement in any industry and not just aerospace.”

Participant 3 stated that lack of knowledge is the main barrier. “I think the fact that African Americans do not totally understand that when we say aerospace industry, we are talking about such a wide range of opportunities. I think most African Americans believe that it is only flying. The obstacle is the paradigm that has told us for so many years that the opportunities are limited. Lack of education and lack of knowledge hinders African Americans from pursuing what can truly be a successful career.”

Participant 4 believed [lack of]” information or knowledge about aerospace jobs, racial, and social barriers are still obstacles.”

Participant 5 identified the lack of education and information as an obstacle and barrier. “We just don’t know that the information is out there about us in the industry. As a people we really don’t focus on the aviation industry as a viable career.”

Participant 6 did not believe there were many barriers or obstacles hindering African Americans from aviation or the industry. “The only hindrance is knowledge and the understanding of the aerospace workplace. Everyone in the aerospace industry does not have to be a pilot or have to fly to be a part of the industry. There are so many (non-flying) jobs out there that an individual could just pick exactly based on what their heart desires.”

Participant 7 suggested that one of the major obstacles is the lack of role models in the African American community. “I have known several pilots that have talked to various youth organizations or college classes and they have all told me that many of those they talked to did not know anything about the industry. Those of us in the industry have to do a better job of making sure our communities know that there are many great jobs in the field and that they have the means to get those jobs.”

Participant 8 also suggested that the “lack of information is one of the barriers that we face in the African American community. African Americans in the industry must do a better job of informing the youth of the many opportunities that the aerospace industry offers.”

Participant 9 emphasized education and exposure. “If you come from the inner city of Cleveland and Detroit, you’re not going to get a lot of exposure compared to growing up in Seattle where Boeing is or a base such as Tinker where you can see planes flying over. I think we also need Black teachers and role models in education, especially males.”

Participant 10 indicated that biases and discrimination do exist but having a solid educational and professional background and foundation will help to level the playing field.

Participant 11 stated the barriers are primarily personal. Many are opting for careers that pay more or have more entertainment value.

Participant 12 commented that “acquiring stronger math and problem solving skills are two of the main obstacles that I see personally that hinder African Americans in the aerospace industry...one of the biggest barriers that tends to deter involvement in the aerospace industry for African Americans is not being open minded, to adapt to or deal with the cooperate culture that is centered around the industry.”

Interview Question 12: What steps have been taken in the past and what are your recommendations related to encouraging further participation by African Americans in aerospace?

Participant 1 observed that “over the past years there has been a great emphasis in trying to get younger people involved. There was a young man who recently flew around the country. He was in magazines for his accomplishments. I was very proud of him.”

Participant 1 elaborated further, “There are programs that are out there that are targeting our young people about the opportunities for flight such as visits to bases and aviation sites. This really exposes them to some dynamic stuff. I think that there are still some programs that are still valid around the country. I just wish that there were more. As I stated before as long as we push our young men and women to the right technical disciplines in the field of aviation, I think it will always be a positive outcome. If we can get some of our role models out in the public, such as astronauts, to promote the industry to the youth, that will go far. A lot of times these people will go visit a school which sends a positive message that this is a possibility. I think if we have this same thing with Black aviators to go visit and become more public...we need more

public figures to attract more and more young men and women into the career field. I think that this would really help a lot. To be honest with you if I had not have joined the United States Air Force, I probably wouldn't have learned about Black aviation. Had I just stayed at home in my state, I really believe that I wouldn't have gotten the exposure to the knowledge that I have obtained by participating and joining the Air Force. That's where I learned about the Tuskegee Airmen ...was when I was exposed to their history for what they have done for us.”

Participant 2 believed “steps have been taken to encourage African American participation in the aerospace industry. Some of the Air Force commissioning sources at times have put a focus on how we recruit more African Americans and minorities into the aviation industry. It's been of limited success. Everybody including African Americans have choices as in the past where they don't have to go into the military. They have options to do other things. My recommendation is that the military and commercial industry must continue to seek out qualified aviation candidates. You have to work with colleges and universities. I believe at a freshmen level you have to get in there and get them in mentoring programs encouraging diversity. Internships are good sources. Anything that can get a young potential aviation candidate into the United States Air Force, Boeing, or pick a company, I believe they have to continue to do those things. The United States is shifting in terms of its cultural makeup and its organizations and businesses have to shift with that. I think if they don't make the effort to recruit those kinds of candidates, then they are going to be left behind.”

Participant 3 thought that taking the time to mentor and provide information would encourage participation. “We need to get into all schools and communities and preach the word of aviation. We need to provide realistic goals and let our young African Americans see success in aerospace. We must battle the negative stereotypes about this field and show how one can be

involved and be able to achieve their goals. No longer do African American youth need to only think they are limited in their career paths. They need to not only know there are plenty of chances to achieve an aviation career, but how to go about doing so.”

Participant 4 suggested that “for the younger generation to have an impact on the aerospace industry, more Blacks that are currently in the aerospace industry will have to become a prominent presence in the Black community. This way those children will see someone like them doing well and want to strive to be like them.”

Participant 5 stated “when I meet African American pilots, if I see one; I go and talk to them. We have to seek out our people and tell them about the opportunities out there for them in the aerospace industry. First we need to organize and find African Americans in the aerospace industry. Next, [we need to] form African American aerospace foundations/organizations. Finally we need to inform the African American community about aerospace. Our focus should be on elementary, middle school, high school, and college students.”

Participant 6 stated that “there are currently groups and programs designed to bring African Americans to the field of aviation. One recommendation I would offer would be to advertise those important programs more frequently. For example, Will Rogers Airport, along with Tinker Air Force Base, has a program with Langston University (a historically Black College/University) on providing jobs for graduating seniors. However, many students are not aware of this program as they are entering college as freshman. I believe that if the students were more aware of the opportunity then many would grasp the chance to enter into the aerospace industry.”



Participant 7 also commented that “those of us that are involved in the industry have to do a better job of making sure our communities know that there are many great jobs in the field and that they have the means to get those jobs.”

Participant 8 suggested that “we have to take it upon ourselves to inform the African-American population, letting them know this is not solely a white industry. In the past, African Americans had a passion to innovate and prove that they could compete with their Caucasian counterparts. They weren’t afraid of this challenge. When they were denied opportunities, they searched for another solution.”

Participant 9 believed that it goes back to the organizations to encourage participation by African Americans, organizations such as ACE, OBAP, and Tuskegee Airmen. It is “about getting out there and getting more exposure and mentoring to the youth.”

Participant 10 offered the admonition that “you must stay educationally current and involved in your career. Seek out upward mobility opportunities and don’t wait for someone to present them to you. Also network through professional organizations and start your own business and have complete responsibility and control.”

Participant 11 Believed that “mentoring that is being done by elders in aerospace and more job opportunities are making many strides.”

Participant 12 stated that “encouraging African Americans to be more open minded about or willing to step outside the corporate norm is the best way to get our people involved and /or participating in the aerospace industry.”

Interview Question 13: What impact does culture have on the involvement or non-involvement of African Americans in the aerospace industry?

Participant 1 stated “that you see what goes on in our country today. A lot of times what we see on Facebook, Twitter, YouTube and etc. are not the kind of images that we want to portray. We need to try to get our people to do some more positive things. I honestly believe that you set the tone for what it is that you want to do. If we had more positive role models and show what they have proven in working in the aviation and aerospace industry would be phenomenal. I think that having those role models would really help to convince a lot more people that you can do things that will enable our country to grow and develop from a more positive standpoint. “

Participant 1 further commented that “It’s really unfortunate because you see a lot of things that makes you shake your head and you wish that there were a lot more positive role models. We need to let our young people know that there is a positive way to make money instead of trying to make a quick buck. If you want to truly contribute, you should learn from a positive perspective that our forefathers made available to us; and we have to take advantage of those things and quit trying to make the quick buck and take the quick pass. This will require role models to show successes. I think that if more people knew about the Tuskegee Airmen's success and accomplishments that more people would be interested in pursuing the path based off of what they did for us. As Black Americans, they really gained a lot of our respect that we really need to have today especially on the part of our young people.”

Participant 2 believed that “culture is a tremendous factor when it comes to the aerospace industry. There is still a significant part of the African American community that does not trust the government in general. They tend to associate the government with the aviation industry as one entity. In turn they believe the military is not a good place for their son or daughter. They don’t want their son or daughter to be killed overseas. I come back with the scenario that your

son or daughter can be easily killed in downtown Oklahoma City. I think there is really some level of distrust about the military or anything construed as governmental. We have to work hard to get past some of these barriers. That's just an ongoing thing we have to deal with."

Participant 3 also believed that "culture plays quite a bit of a role. Unfortunately, our culture is not geared toward showing this area. We have, what we consider, far too many other concerns to worry about. Culturally, we battle the negativity of not setting goals that seem unachievable. These goals are achievable; and we, as a culture, need to change to a culture that reflects 'the sky is the limit'."

Participant 4 believed "younger African Americans especially are influenced by what they see on TV, hear on the radio, or pick up on the streets. If it's not the hot track by Drake, or the new Kobe Adidas, some kids aren't interested. On the other hand, children that are surrounded by good influences, whether this is of family or friends that are involved in the aerospace industry might be more inclined to express their interest to their children.

Participant 5 stated that "culture has a substantial impact on us doing something. How many children say they want to grow up and be a rapper, football star, basketball star, or some R & B artist? That is what the African American communities' culture revolves around. We don't see the African American community investing in aerospace; it's pretty much nonexistent. If we could take that effort and energy, we could have more African Americans involved in the industry. I actually read a Black enterprise magazine a couple of years ago and it had an African American male who started his own aviation charter company. You really don't see us promoting people like this guy out there as a role model like we do Jay Z, Tiger Woods, etc. I think our culture has to change."

Participant 6 also believed that “culture plays an important role because a lot of times whatever job or career that is advertised in the media more than likely children will be drawn toward it. As far as the African American culture, the things we see the most are “Rappers”, with their cool cars and pretty women. You cannot forget about the super star athletes with their multi-billion dollar salaries. Until this mindset is changed it will continue to be an uphill battle.”

Participant 7 believed “the majority of African Americans do not believe that they can be a pilot. Also the industry is not glamorized in the African American community like it is in others.”

Participant 8 did not believe that culture has an impact on African American involvement in the aerospace industry. “We have African Americans employed in this industry now from many different backgrounds. However, if a person is raised in an area where aviation is prevalent, they may be more apt to settle into this industry.”

Participant 9 believed “culture has a lot of impact. It is about exposing the African American culture to the industry and it is also about perception.”

Participant 10 suggested that exposure is the key. “If one is exposed to or knows opportunities are available, one can make more informed choices.”

Participant 11 commented “I think culture plays a large part because if African Americans are not exposed to the aerospace industry and individuals in it, there is a perception that they don’t have the opportunity in that field.”

Participant 12 believed culture has a lot to do with African American involvement in the aerospace industry. “From the stand point we really need to start looking at economics and social surroundings as focal separations of race and class systems. In 2010, we still have a large number of African Americans who have yet to experience their first flight, whether it is due to lack of

finance or social myths and taboos related to flying. As a whole we have to venture outside the norm and embrace the world around us and try to understand it better as we explore it. This will encourage African Americans to dare more and this will pass to the next generation instead of myths and fears.”

Interview Question 14: What role does education play in stimulating African American participation in aerospace?

Participant 1 observed that “we have a lot of aviation programs and aerospace programs currently out there in terms of the different colleges as a part of their curriculum. I think that like any other program, if they were to focus and target toward our minority population, it would increase participation. Also, if we were able to have more minorities out there teaching, I think you would be able to attract a lot more students. It is truly a lot more interesting when you see someone that looks like you that is advocating in this type of career field since it is very dynamic and interesting. I think if you have the right people out there and young people have the education, you can recruit and convince them to stay in for the long haul. I think if we were to see a lot more African Americans in senior leadership in this industry, then people will see it as a viable and valid option for them to pursue. I think that would open up a lot of doors and show the youth that there are a lot more opportunities out. I think if we see a lot more Black CEOs in the aerospace industry it would have a positive effect as well.”

Participant 2 suggested that “the number one factor in stimulating African American participation is education. If you can give a young man a basketball at five years old and tell him that he can be the next LeBron James he or she will work hard to achieve that goal. I think somehow we have to go out and figure out how to tell our youth that they can be a future bomber

pilot in the Air Force. If you start with them at a young age giving them programs and resources to encourage that kind of thought and participation....sadly, a lot of these schools today just don't have the resources to encourage a young man or woman to go in that direction.”

Participant 3 emphasized that “you must have the right education to be successful in any venture. But to answer the question, education is a vital aspect. The proper education is the way to be prepared. Being prepared is the key to victory. It is so difficult to work towards a goal if you are unprepared. That leads to pitfalls that inevitably lead to a person giving up. They think it is too hard or too difficult. Definitely, education plays a big role.”

Participant 4 candidly stated “plain and simple, if you aren't educated to the standard of the aviation industry you'll have a hard time entering and moving up in it.”

Participant 5 advocated that “math, science, and physics are vital subject areas. African Americans who show an interest in these subjects should be encouraged to consider a career in the aerospace industry.”

Participant 6 stated “I do not believe education plays any role in stimulating African Americans participation into the aerospace industry. I do believe the education system could have a huge impact however.”

Participant 7 thought that “the more education that people have that they tend to broaden their horizons and open themselves up to new jobs and careers.”

Participant 8 commented that “my formal education hasn't been in the aviation arena. I have had to educate myself on the presence of African Americans in aviation. I feel if this history was somehow integrated into our curriculum, there'd be an increase in interest. I also believe education is vital to the success of anyone trying to gain entry and excel in this industry.”

Participant 9 asserted that “education is the foundation of the aerospace industry. You have to be degreed to be successful in this industry. If you want to build airplanes or fly them you’re going to need a degree or a certificate. If you don’t have education, you won’t be able to participate in the industry.”

Participant 10 said “education is paramount to success.

Participant 11 stated that “education, to me, is significant in that if we stimulate the mind in the science and engineering of aerospace and provide more aerospace education earlier in the school system, I believe more African American youth would become more involved.”

Participant 12 also stressed that “education is the key component in stimulating African American participation in the aerospace industry. The more we learn and grow, the more opportunities we will seek to explore. Education is the key element to opening opportunities in any industry and the lack of education limits one’s ability to succeed in any field or career path.”

Interview Question 15: From your perspective, what, if any, social change may have affected the interest and participation of African Americans in the aerospace industry?

Participant 1 observed that all answers seem to point back to the Tuskegee Airmen. “The role that they played in the Air Force has really prompted a lot more participation in the aerospace industry more than anything else. I think that they really set the stage for us. They opened up the doors for a lot of people to pursue careers today. I will be the first to say that if it had not been for them that a lot of people probably would have not pursued the flying industry as a career path. The Tuskegee Airmen proved that they had the stamina and capability to learn and perform in areas in cases where many people thought they weren’t able to. They really set the bar and showed people that we could succeed. I think that the example that they set is the reason

why we have a lot more people working in the aerospace industry. If it had not been for them we would not have seen an increase in the aerospace industry. I would also say that the conventions that they hold continue to draw big crowds and get young people exposed to, not what happened way back then, but to opportunities that are available today.”

Participant 2 believed “the Tuskegee Airmen clearly brought about social change that affected interest in the industry. When you think of African Americans and aviation you automatically think Tuskegee Airmen. Unfortunately there really haven’t been any historical events involving African Americans that I know of. Their impact was so powerful that we still talk about it and celebrate them. The problem is that they, as a population, are dying off at a rapid rate. Somehow we are going to have to keep fighting to recapture that interest and tell that history and get people excited about the aviation industry.”

Participant 3 commented that “we now have so many successful African American figures: Barack Obama, Colin Powell, and Clara Luper. We also have people right in our own communities. All of these people talk about unlimited opportunity. They talk about overcoming obstacles and barriers through education. They talk about how you achieve anything you put your mind to. I believe this has opened up minds to look outside the box and into other areas, particularly aerospace. African Americans now show an interest. Now they need the tools to be a successful participant.”

Participant 4 does not think any current social changes have affected African Americans in the aerospace industry.

Participant 5 stated that “before the war there were Jim Crow laws that were in place and other oppressions that we had to overcome. During WWII African Americans wanted to prove something. They desired the same opportunities given to other races. Today and in the past we



have shown that we can excel in any industry given that we have the passion and desire to do so. I believe that our people do not seek out this because they do not know /care about the significance of the aerospace industry.”

Participant 6 believed that “African Americans in aerospace’ has just lost its appeal to the ‘Black’ communities. In the beginning we were a huge force and word was out about African Americans in the aviation field. Over the years it has just lost its glamour appeal to African Americans. It is not ‘cool’ anymore to walk around with ‘Aviator’ shades on with your ‘Bomber’ leather jacket.”

Participant 7 suggested that “the record and the impact of the Tuskegee Airmen cannot be measured. In a time that many thought African Americans could not do certain jobs because of their race, they proved that given a fair chance we could do the job just as well as the next man.”

Participant 8 believed that “if we continue to see African Americans involved in the industry and making history, it should spark an interest in our young people.”

Participant 9 commented that “the war, the economy, cost of education and the decline in the airlines has affected interest and participation in the aerospace industry. Also there are more options now in other fields.”

Participant 10 believed that “African American astronauts and scientists are highly visible to the public and draw attention to the career fields. We need to celebrate those that excel in these career fields.”

Participant 11 observed that “the biggest social change would have been the era after the seventies when African Americans were more widely accepted as equals in the industry. Many of those individuals were products of the military, which offered more opportunities in aerospace than the civilian industry.”

Participant 12 commented that “African Americans have begun to participate or inquire more about the aerospace industry due to social change in declining job markets, for example, in traditional industries like automobile manufacturing and customer service call centers. The aerospace industry still remains one of the higher demand job markets in our rough economy yielding higher wages and benefits for its employees.”

### Summary of Findings

The findings in this study involved an examination of African Americans perceptions related to the research questions identified in Chapter One. The five primary areas of concern dealt with perceptions about the current industry, attitudes toward the industry, opportunities for success, obstacles and barriers, and recommendations to encourage further participation. Those findings are addressed in the following summary.

Research Question 1: What is the historical level of participation of African Americans in the Aerospace industry? How does the current level of African American participation in the Aerospace industry compare to the past?

Findings Related to Roles That African American’s have played In History. When asked to describe what roles that African Americans have played in the history of the Aviation/Aerospace Industry, 12 of the participants or 100% said that African Americans have played a significant role in the industry. Six of the participants or 50% mentioned the importance and impact of Tuskegee Airman when discussing the history of African Americans in the industry. They specifically cited the importance of their military service in dispelling the idea

that African Americans were not capable, lacked physical ability or were fearful. Also mentioned in that regard were the barnstormers, Bessie Coleman for her fearlessness, Jessie Brown the first black navy carrier pilot, and Ozzie Williams for his in role engineering and design, production and management. Some contemporary African Americans were also mentioned including a Black General, an airline pilot for United Airlines and historical aviators such as the first black astronaut, Robert Lawrence and others including Guion Bluford, Jr. and Dr. Mae Jemison. Two of the participants commented on the fact that these achievements are not always widely known unless people have a love for the industry and have done some research.

Findings related to Perceived Level of Participation When asked to describe the level of participation of African Americans in the aerospace industry only one or 8.3% of participants perceived that the level of participation had increased. Eight or 66.7% of participants said that the level of participation has decreased. Three or 25% of participants said they believed the level of participation had neither increased nor had it decreased. Some saw fewer Blacks in their field; others saw an improvement; all had unique explanations. The range of sometimes conflicting perceptions could be explained by some of the participant comments related to their personal experience and observations. Even though military achievements were cited including a black female who had been a Wing Commander and is now a Brigadier General, one of the participants commented that it is still a “head turner” to see an African American in aviation but the Air Force is struggling to turn the trend on the numbers. Another who thought African American participation was on decline mentioned a disappearing fervor from the days of the pioneers. Some cited a lack of aerospace programs in schools, variances in levels related to geographic area, the dominance of Caucasian companies buying media time, and more lucrative

opportunities available to African Americans in other fields such as computers. One commented that the promotion of STEM could steer more African Americans toward aviation.

Findings related to Equal Opportunity to Compete. When asked if African Americans have equal opportunities to compete in the aerospace industry 10 or 83% of participants believed that African Americans have equal opportunity to compete in the aerospace industry. Two or 17% of participants believed that African Americans do not have an equal opportunity to compete in the aerospace industry. In spite of the fact that the majority of participants who responded to the previous question perceived that African American participation was declining, responses to the question regarding prevalence of equal opportunity to compete indicated a majority believed African Americans do have equal opportunity. Some explanation may be found in their observations and comments about the importance of history related to increased recognition of forefathers' accomplishments. Others cited an increasing number of programs making opportunities available for young people such as in the military and in education even in fields like aerospace engineering. One participant cited an increasing number of role models. Others cited examples of scholarships, grants, and Oklahoma programs for free education in career techs for an A&P certificate or sheet metal training; engineering and aviation classes in universities and FAAs offer for Air traffic Control training. In spite of all those opportunities there was still a majority perception in responses to the previous question of a decreasing African American participation in the aerospace industry.

Findings Related To Programs That Encourage Participation When asked what programs are currently available to get involved in the aerospace industry two or 17% of participants said that they did not know of any programs that encourage African American participation in the

aerospace industry. Nine or 75% of participants named at least three programs and organizations that were geared to encouraging African American participation. One or 8% of participants said there are some programs available but not many that encourage African American participation in the aerospace industry.

Although there was a small percentage of participants who had no knowledge of programs that were geared to encourage African American participation, a majority of the participants referenced organizations and programs such as Tuskegee Airmen Incorporated, National Society of Black Engineers, Organization of Black Airline Professionals, Aviation Career Education academy, Black wings, Claude Platt's Future Pilots, the Bessie Coleman Foundation, and the Les Morris Summer Flight Academy. The participants referenced some programs that encourage youth to participate in the aerospace industry. For example one of the participants mentioned his membership in one of these organizations that took about 25 children to fly in a simulator, and a Cessna aircraft to stimulate interest and motivate their involvement in the industry.

Findings related to Roles that Education Plays When asked if education has played a role in providing more opportunities for African Americans in the aerospace industry, nine or 75% of participants said emphatically that education has played a role in providing more opportunities. One or 8.3% of participants said education plays a role but a lack of information on opportunities is more of a factor. One or 8.3% of participants said the education plays a small role in providing more opportunities in the aerospace industry. One or 8.3% of participants stated that they had only been encouraged to participate through military aviation education but stated that education is important to garner opportunities

A strong percentage of individuals believed that education is the stepping stone to allow

people to do a lot of things. One participant commented, there is no reason why one cannot go to college if he or she wants to. Another participant elaborated that in the black community there are millions of dollars in unused grants and scholarships for aviation programs. Because aerospace is a highly technical field it is a requirement that one should achieve a certain level of higher education to succeed in it. Also in this response there is a belief that African American children are smarter than before, but there is a need for more visible information about the industry to be readily available to these individuals. It was mentioned that the focus on better academic achievement as well as encouragement was addressed as a factor in education. One participant commented, “The industry is a highly technical one and does require a high level of education to succeed in it. As the education opportunities for African American have improved, then so have the chances to get hired by companies in the field.” In spite all of the benefits that education can provide to African Americans if achieved, it will not be meaningful to this industry until the mindset of African Americans is changed from the perception that the aerospace industry is a “white industry.” This statement provides a key finding that the need for a major paradigm shift involving education is necessary to the participation of African Americans in the industry.

Research Question 2: What are the perceptions or attitudes of African Americans toward the aerospace industry?

Findings Related to Experience in the Industry. When asked to describe their experience in the aerospace industry six or 50% of participants said their experience with the aerospace industry has been all military related. One or 8.3 % of participants said their experience was a combination of military and government experience. One or 8.3% of

participants said their experience was a combination of military and academia experience. Two or 16.6% of participants said their experience in the industry consisted of military and private sector experiences. Two or 16.6 of participants said their experience in the industry only consisted of government.

One of the reoccurring attributes with the participants was that most of the participants' experience was derived from the military. One participant has nearly 30 years of United States naval aviation experience. He also has over 5000 flying hours in a variety aircraft and is the Commodore of the Wing at his facility. From an aerospace perspective the military typically serves on a base for the most part and they must be familiar with the aircraft that they are operating. Their mission is to fly, fight, and win.

There are others who began their career in the military but transitioned either to education to provide information on career paths in the industry or to work for private industry aerospace companies as either an engineer or a commercial pilot. One participant's experience ranged from membership to the Civil Air Patrol to being a Flight Engineer on the C-5 Galaxy.

Findings related to Inspiration to enter the Industry When asked what inspired them to enter the aerospace industry, there were various things that inspired the participants. There was not one thing in particular that drew these individuals to the aerospace industry. A couple of the participants were recruited by military recruiters; a couple of participants were inspired by their parents. Then you have others who were inspired by a shuttle launch or movies like "Top Gun." There were a couple of participants who entered the field because of monetary needs and easier entrance into their career field such as engineering. Finally there were two participants who entered the field because of the opportunity to educate others and have the opportunity to do

something greater for themselves.

One participant acknowledged and understood that change is inevitable. By understanding this climate this individual who intended on first becoming a Navigator deferred his dream to focus on becoming an advocate in another arena. In other cases some of these individuals fell in love with the idea of flying at a young age due to being inspired by role models such as parents or public figures.

Findings related to Knowledge of African American History When asked what history they knew about African Americans in the aerospace industry, nine or 75% of participants said they had knowledge of African Americans in the aerospace industry; and eight or 66.7% of the nine mentioned the Tuskegee airmen when referring to African American history in the aerospace industry. One of the participants said she went to many of their conventions and read many of their books and their story intrigued her. Others were inspired by the Tuskegee Airmen's tenacity and endurance to accomplish numerous things through very tough times and circumstances. Two or 16.6% of the participants said they had no knowledge of African American history in the aerospace industry. One participant attributed their lack of knowledge to what they learned in school. In particular in one case all this individual learned about in school as far as aviation is concerned was Amelia Earhart. One or 8.3% of the participants said they had some or little knowledge of the history of African Americans in the aerospace industry.

Research Question 3: What are the perceptions involving opportunities for African American involvement and success in the aerospace industry?

Findings related to Personal Opportunities for Success When asked what opportunities for success have been available to them in the aerospace industry, 12 or 100% of the participants



said that they have had many opportunities to be successful in the industry. Some of these opportunities include promotions, becoming a mentor to younger people, and a chance to travel and learn more things about the industry. The successes from the opportunities that have been earned by these participants included achieving the rank of Colonel, and General in the United States Air Force and also a Commodore in the United States Navy. Many of these individuals believed that aviation offered them the opportunity to travel and experience different countries. Also it opened up other opportunities for these individuals to achieve personal pilot's certificates, mentor others and instruct courses in this field.

Findings related to Future Generations Opportunities for Success When asked what opportunities for success they see for future generations, 12 or 100% of participants said the future generations have many opportunities to be successful. All of the participants did caveat this answer with various variables necessary to claim these opportunities such as seeking higher education, seeking out the opportunities available in the industry, and mentoring.

One participant in particular stated that “the opportunities to succeed in any part of America will be predicated on education.” According to another participant if African American youth take advantage of the opportunities from past pioneers, future generations can learn from these experiences and they can continue the legacy. Another participant suggested that there will be a great deal of opportunities available to future generations because the industry is so vast and broad; but they will have to have an educational background within the science, math, technology and engineering arenas in order to compete. According to some there will be many jobs available such as engineering, manufacturing, programmers, and supply chain management positions. Although these opportunities are available it is up to the African American community to seize them in the end because they will not be handed to them.

Research Question 4: What are the specific obstacles and barriers that are hindering African Americans from involvement and success in the aerospace industry?

Findings related to Barriers or Obstacles that Hindering Involvement and Success When asked what barriers or obstacles hinder African American involvement and success in the aerospace industry, one or 8.3% of the participants said that there are no barriers or obstacles that hold back African Americans in the aerospace industry. Eleven or 91.6% of the participants stated there are barriers and obstacles that hinder African American involvement in the aerospace industry.

Some of the obstacles stated by the participants were education, a lack of public figures and roles models in the industry, mentoring and a lack of knowledge and understanding of the aerospace industry. One participant stated, “The obstacle is the paradigm that has told us for so many years that the opportunities are limited.” According to some there has been a lot of progress made in alleviating some of the barriers for African Americans in this industry. Based on the responses there needs to be many more African Americans in aviation on television, for example, in leadership capacities. Also information about the field needs to become more readily available. In order for this industry to become a viable option to African Americans many of the respondents believed that African Americans would have to do a better job of obtaining a post high school level education. One participant mentioned that the biggest barrier that deters African American involvement in the industry is the unwillingness to be open minded and adapt to a corporate culture that is centered around the industry.

Research Question 5: What recommendations do African Americans currently in the field have to encourage future participation in aerospace?

Findings related to Recommendations for Encouraging Participation When asked what steps have been taken in the past and what recommendations they had to encourage future participation in the industry, 12 or 100% of participants stated that steps have been made to encourage African American participation. Although all the participants agreed that steps had been taken, they had a few recommendations for increasing participation including more mentors and visible public figures from the aerospace industry. Also putting an emphasis on education to the youth was recommended as well as encouraging them to become more active in the science, technology, engineering and math fields. Lastly, the participants emphasized informing the African American community about the many opportunities in the industry and encouraging them to participate.

In one case particularly if this individual had not entered the military then they would not have had any knowledge of African American participation in the industry. Many believed that taking the time to mentor and provide information would encourage participation. According to some, Africans Americans need to organize and find African Americans in the Aerospace industry. Then there is a belief that all African American communities and all schools from elementary to high school need to preach the word of aviation. Also a realistic goals need to be established in getting African American's established in the industry. The most important thing that was pointed out was the need to adjust and address the negative stereotypes that African Americans may have towards the industry. One participant suggested that African Americans have to take it upon themselves to become involved in the aerospace industry and that the stereotypes surrounding the industry need to be addressed by African American professionals.

Findings related to Culture and Impact on Involvement and Noninvolvement When asked if

culture had an impact on the involvement or noninvolvement of African Americans in the aerospace industry, 10 or 83.3% of the participants believed that culture does have an impact. One or 8.3% of participants was not sure that culture plays a role in the involvement or noninvolvement of African Americans in the industry. One or 8.3% of participants believed culture does play a role but more along the lines of lack of exposure of African Americans to the industry. Some believed that if African American's lived in better demographical areas and had more positive role models, these role models could demonstrate proven successes in working in the industry. Other participants believed that many African Americans are influenced by Rappers, athletes, cars, pretty women, and what they see on television, hear on the radio, and what they pick up on the streets. Until this mindset is changed it will continue to be an uphill battle to get African American youth interested in aviation.

Findings Related to Role that Education Plays in Stimulating Participation When asked what role education plays in stimulating participation in the aerospace industry 11 or 91.6% of participants believed that education is essential in stimulating African American participation in the aerospace industry. One or 8.3% of participants believed that education is not a factor in stimulating African American participation in the aerospace industry. Most believe that the number one factor in stimulating African American participation is education.

It was emphasized by participants that in order to be successful you must have the right education. Because the aerospace industry is an industry which is founded on education, it is of the utmost importance that African Americans become engaged in areas of education such as science, technology, engineering and math. One participant commented that it is the belief of many that the more education people have that they tend to broaden their horizons and open themselves up to new jobs and careers. Education is the key element to opening opportunities in

any industry and the lack of education limits one's ability to succeed in any career path especially aerospace. One participant emphasized that it is important that schools and parents provide the support and education necessary to succeed in this industry. If a child can be encouraged to be a great athlete or entertainer, why can not the same be done for the aerospace industry?

Findings Related to the Effect of Social Change On Interest and Participation When asked what if any social change may have affected the interest and participation of African Americans in the aerospace industry, the participants did not identify one single event. Some of the events that were mentioned ranged from the end of Jim Crow laws to the Tuskegee Airmen. So in essence there was not one single major social event that may have affected interest but instead a multitude of events that shaped interest as well as participation in the aerospace industry. Socially some thought that the lure of African Americans in aerospace has just lost its appeal to the African American community and it will be a difficult thing to revive. Although most of the participants believed that the Tuskegee Airmen clearly brought about social change that affected the industry, the problem with this is that their population is dying off at a rapid rate and somehow it is up to other African Americans in the industry to recapture the interest of the youth and encourage them to enter this industry.

#### Themes Noted In the Study

In analyzing the interviewee's data several themes were recognized from the study. The first theme that recognized was the constant acknowledgement of the Tuskegee Airman. In this study participants were asked about their knowledge of African American history in the

aerospace industry. A majority of the responses referenced the Tuskegee Airmen. Also a majority of the respondents mentioned the Airmen in discussing their significance to African American history in the aerospace industry.

The second theme that was recognized in the study was the need for more African Americans to become a presence in the industry through mentoring and informing the community about opportunities. A majority of the respondents repeatedly brought up the need for more African Americans in the industry to become role models and public figures. The participants believed that if there were more of these types of figures that it would aid in the recruitment of more African Americans.

The third theme that was recognized in this study was shifting the paradigms of education and stereotypes. Many participants believe that in order for African Americans to be successful in this industry that a major change in the perceptions held by the African American community needs to be addressed. The participants also believed that the role of obtaining higher education as well as having visible African American figures would be the key to addressing this issue.

The fourth theme is the reality of the equal opportunities that are available to African Americans in the industry, but the perception by most is that the aerospace industry is viewed as “white industry.” This theme reflects the need for a complete a paradigm shift. This is consist with Freire views on oppression related to the two types of oppression one being physical and the other being mental.

The final theme recognized by the participants was the need for education. The majority of the responses to many of the questions in this study placed a high significance on the value of education. The respondents in this study felt that education was the key to providing opportunities as well as staying and becoming involved in the aerospace industry.

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

#### Introduction

The purpose of this study was to identify perceptions of African Americans regarding involvement of their race in the aviation/aerospace industry. It was based upon the assumption that data would be based on self-report; therefore, the honesty and accuracy of answers from the interviewees should be taken into consideration when evaluating the results. The quality of the responses is directly related to the participant's level of experience and education in the industry. Although these statements cannot be generalized to a larger population, they do provide valuable insights into the perceptions of African American participants. Their input to the study was perceived to be a rich study of data in proportion to their accomplishments.

#### Conclusions

The findings of this qualitative study of African Americans perceptions of their race in the aerospace industry resulted in the following conclusions as related to the broad questions outlined in the first chapter.

##### Research Question # 1: Perceptions related to the level of participation

The first research question was designed to identify the perceptions that African American have of the level of involvement of their race in the aerospace industry. The perceptions were mixed. The participants in this study believed that African Americans have played a significant role in the aerospace industry's history. On the other hand they perceived

that they had low representation of their race in the industry. Although they felt that they were underrepresented in the industry, there was a strong consensus that there was equal opportunity to enter the industry. The participants thought there were programs available to African Americans if they were interested in the industry, but they believed that the knowledge and opportunities that these organizations bring are not being publicized to the African American community. The most significant factor affecting participation in the aerospace industry was perceived to be education. Repeatedly the participants emphasized that education was vital to changing the paradigm of African American regarding their involvement.

#### Research Question # 2: Attitudes towards the aerospace industry

The second research question was designed to document the attitudes of African Americans toward the aerospace industry. The participants in this study described their experience in the aerospace industry as a positive one. As far as inspiration is concerned many of the participants became involved in the field because of their parents, a recruiter, or a significant movie or event that was related to the aerospace industry. A majority of the participants in this study had some past and present knowledge of the history of African Americans involvement in the industry. Although the participants had positive experiences in their own careers they all believed that more of a focus needs to be placed on more visible African American figures and mentors in the industry.

Research Question # 3: Opportunities for success. The third research question was designed to see if African Americans believed that there were opportunities for success in the aerospace industry. A strong majority of the participants said that they personally had received and accepted many opportunities that the industry had provided. The participants also had a very positive view of the successes that they were able to achieve in the industry. As far as the future



generations are concerned, the participants believed that there were many opportunities available for future African American generations if they were interested in the field and earned a college education.

Research Question # 4: Obstacles and barriers. The fourth research question was designed to determine whether or not barriers or obstacles exist that may hinder African Americans from entering the aerospace industry. The majority of participants in the study believed that there were no barriers or obstacles that hindered African Americans from entering the aerospace industry. Although they all agreed there were no barriers or obstacles, it was pointed out many times that the lack of education, the lack of knowledge, and the lack of public figures and mentors played a role in African American participation in the aerospace industry.

Research Question # 5: Recommendations to encourage future participation. The fifth research question was designed to determine the recommendations that African Americans have for encouraging African American participation in the aerospace industry. The participants in this study named various things that African Americans could do to encourage participation. The first recommendation was to introduce African Americans to the industry at a young age. Also another recommendation was to have more public figures and mentors who advocate to the African American community the opportunities the aerospace industry has to offer. Education was repeatedly referenced by the participants when mentioning what needed improvement. The improvement in this area is based on the need that more African Americans must be encouraged to take more science, technology, engineering and math based courses during their educational careers.

## Recommendations

Because the study was limited to only one ethnic group and a number of participants, the findings of the study cannot be generalized to the whole population. The following recommendations surfaced from the findings of the study.

### Recommendations for Practice

1. Improved emphasis and expanded outreach on the role of African Americans in aviation/aerospace history as well as improved curriculum in aviation/aerospace studies for K-12 teachers could offer African American students more opportunities to begin learning at an early age and possibly motivate them to pursue careers in that field.

2. Implementation of mentoring programs by educational institutions that utilizes the talents of African Americans currently in the aviation industry to work with students of all ages in improving their understanding of the opportunities available.

3. Publicize how African Americans can obtain advice and assistance for grants and other special programs that support the industry.

4. Engage in collaborative efforts between industry and academia to develop creative programs and market educational and career opportunities for African Americans in the field of education and aerospace.

### Recommendations for further Research

5. Conduct a study on creative ways to motivate African Americans to participate in science, technology, engineering, and math fields.

6. Perform additional studies of the perceptions of other ethnic groups involved in the aerospace industry. The findings could be helpful in understanding the areas of improvement needed to tap valuable resources not currently be utilized in the aviation/aerospace industry.

7. Perform a career path study with ethnic groups to determine why a particular group may enter a certain profession or industry opposed to another one. The findings could be utilized to better market careers in the aviation/aerospace industry.

8. Perform a study on why there is a perceived decline of African American participation in the aerospace industry even though there are no barriers.

### Conclusion

One of the puzzling outcomes of this study was that all the participants believed that there were many opportunities for African Americans to succeed. The striking finding of this study was that all of the participants agreed that the opportunities are there for the African American community. Yet the perception prevails that aerospace is a “white industry” which leads to the urgency of a paradigm shift to address the inaccurate perceptions. The participants repeatedly stressed the importance of the role of education in making that shift by placing a renewed interest on aviation heroes instead of the pop culture idols of today. According to Paulo Freire, “It is essential for the oppressed to realize that when they accept the struggle for humanization they also accept, from that moment, their total responsibility for the struggle” (Freire 1970). In “Pedagogy of the Oppressed” Freire refers to two types of oppression: the first is physical and the second one mental. Data does not support the perception that there is physical oppression in the industry. So in order for African American to make strides in this field they

have to overcome the mental block that is telling them that they cannot succeed and change their paradigm because the opportunity is there it is just a matter of taking advantage of it.

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## APPENDICES

APPENDIX A

INTERVIEW GUIDE  
RESEARCH QUESTIONS

INTERVIEW GUIDE  
RESEARCH QUESTIONS

Research Question 1: What are the perceptions of African Americans currently working in the aerospace industry related to the level of participation in the industry by other African Americans and what factors have contributed and will contribute to future participation?

1. What roles have African American's played in the history of the aviation/aerospace industry?
2. In your perception, what is the level of participation of African Americans in the aerospace industry? Do you believe the trends indicate that there is an increase or decrease in the number of African American participants in the industry?
3. Do you believe African Americans have equal opportunity to compete in the aerospace industry? What indicators support your belief?
4. What programs are currently available that encourage African Americans to get involved in the Aerospace industry?
5. In your perception, has education played a role in providing more opportunities for African Americans in the aerospace industry?

Research Question 2: What are the perceptions or attitudes of African Americans towards the aerospace industry?

6. Describe your experience in the aerospace industry.
7. What inspired you to enter the aerospace industry?
8. What do you know about the history of African American involvement in the aerospace industry?

Research Question 3: What are the opportunities for success in the aerospace industry?

9. What opportunities for success have been available to you in the aerospace industry?
10. What opportunities for success do you see for future generations?

Research Question 4: What are the specific obstacles and barriers that are hindering African Americans from involvement and success in the aerospace industry?

11. What barriers or obstacles do you see that are hindering African Americans from involvement and success in the aerospace industry?

Research Question 5: What recommendations can be made by African Americans currently in the field to encourage future participation in aerospace?

12. What steps have been taken in the past and what are your recommendations related to encouraging further participation by African Americans in the aerospace field?
13. What impact does culture have on the involvement or non-involvement of African Americans in the aerospace industry?
14. What role does education play in stimulating African American participation in aerospace?
15. From your perspective, what, if any, social change may have affected the interest and participation of African Americans in the aerospace industry?

APPENDIX B  
PARTICIPATION LETTER

**CONSENT TO PARTICIPATE IN A RESEARCH STUDY  
OKLAHOMA STATE UNIVERSITY**

**PROJECT TITLE:** African Americas Perceptions Regarding African American Involvement in the Field of Aviation/Aerospace.

**INVESTIGATORS:** Keith Hardiman, MA, Oklahoma State University  
Mary Kutz, Ed.D, Oklahoma State University

**PURPOSE:**

This study, which is research conducted for a doctoral dissertation is being conducted through Oklahoma State University. The purpose of this qualitative study is to identify perceptions of African Americans regarding involvement of African Americans in the aviation/aerospace industry. As a participant in this research you have been identified as an African American who has been involved with the Aviation/Aerospace industry.

**PROCEDURES:**

The project will involve a short interview containing open-ended questions that will be used to gather information in identifying the perceptions of African Americans regarding the involvement of African Americans in the aviation/aerospace industry. The interviews will be audio recorded and transcribed by the primary investigator for this research. You may be contacted following the interview if needed to clarify any answers. Qualitative data for the research shall be extracted from the interviewee's transcripts through direct quotes.

The interview is designed to last approximately 45-60 minutes.

**RISKS OF PARTICIPATION:**

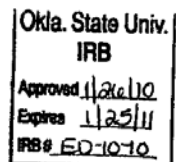
There are no risks associated with this project, including stress, psychological, social, physical, or legal risk which are greater, considering probability and magnitude, than those ordinarily encountered in daily life. If, however, you begin to experience discomfort or stress in this project, you may end your participation at any time.

**BENEFITS OF PARTICIPATION:**

Although there may be no direct benefit to you, a possible benefit of your participation is that you will have the opportunity to contribute to the body of knowledge by providing aggregated data on the perceptions of African American involvement in the aerospace/aviation field.

**CONFIDENTIALITY:**

All information about you will be kept confidential and will not be released. Interview transcripts and recordings will have identification numbers, rather than names, on them. Research records will be stored securely and only researchers and individuals responsible for research oversight will have access to the records. This information will be saved as long as it is scientifically useful; typically, such information is kept for five years after publication of the results. Results from this study may be presented at professional meetings or in publications.



You will not be identified individually; we will be looking at the group as a whole. Although quotes from the interviews may be used, they will not be attributed to an individual. It is possible that the consent process and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research.

**COMPENSATION:**

There will not be any compensation for participating in this study.

**CONTACTS:**

You may contact any of the researchers at the following addresses and phone numbers, should you desire to discuss your participation in the study and/or request information about the results of the study: Keith Hardiman, M.A, 7020 Eagles Landing, Oklahoma City, OK 73135, 405-229-3507. Mary Kutz Ed.D, 319 Willard Hall, Dept. of Aviation and Aerospace Oklahoma State University, Stillwater, OK 74078, (405) 733-7940. If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or [irb@okstate.edu](mailto:irb@okstate.edu)

**PARTICIPANT RIGHTS:**

Your participation in this research is voluntary. There is no penalty for refusal to participate, and that you are free to withdraw your consent and participation in this project at any time, without penalty

**CONSENT DOCUMENTATION:**

I have been fully informed about the procedures listed here. I am aware of what I will be asked to do and the benefits of my participation. I also understand the following statements:

I affirm that I am 18 years of age or older.

I have read and fully understand this consent form. I sign it freely and voluntarily. A copy of this form will be given to me. I hereby give permission for my participation in the study.

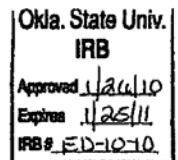
\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

I certify that I have personally explained this document before requesting that the participant sign it.

\_\_\_\_\_  
Signature of Researcher

\_\_\_\_\_  
Date





APPENDIX C  
PARTICIPATION SCRIPT

Introductory Conversation with participants to identify perceptions of African Americans  
involvement of African Americans in the aviation/aerospace industry

Date:

African American Aviation Participant:

Script:

Hello. My name is Keith L. Hardiman. I am a doctoral student at Oklahoma State University.  
The purpose of my dissertation is to identify perceptions of African Americans regarding involvement of African Americans in the aviation/aerospace industry. I am hoping that you will provide assistance by participating in a short interview. Should you be willing to offer your assistance, I will send an informed consent form and the interview questions. Please return the informed consent form and the best time to conduct the interview. Would you be willing to participate in my study?



APPENDIX D  
INSTITUTIONAL REVIEW BOARD FORM

## Oklahoma State University Institutional Review Board

Date: Tuesday, January 26, 2010  
IRB Application No ED1010  
Proposal Title: African American Perceptions Regarding Involvement of Their Race in the Field of Aviation/Aerospace

Reviewed and Processed as: Exempt

**Status Recommended by Reviewer(s): Approved Protocol Expires: 1/25/2011**

Principal Investigator(s):

Keith L. Hardiman	Mary Kutz
7020 Eagles Landing	6108 Winfield Dr.
Oklahoma City, OK 73135	Okla. City, OK 73162

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The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,



Shelia Kennison, Chair  
Institutional Review Board

APPENDIX E

COPYRIGHT PERMISSION FOR HIGHER EDUCATION- FIGURE 1 AND FIGURE 2

Fwd: Request for permission to use Figure 1 and Figure 2 from attached Journal

From: **Jason Gray** (jason@osupress.org)  
Sent: Thu 2/25/10 3:24 PM  
To: keith\_hardiman@hotmail.com  
Attachments:  
JHE.pdf (1651.1 KB)

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Dear Mr. Hardiman,  
You can reprint the figures in your dissertation provided the following copyright notice appears with each:  
Copyright 1997 The Ohio State University. Reproduced with permission.

Yours,  
Jason Gray

----- Forwarded message -----

From: **baird, leonard** <baird.62@osu.edu>  
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Subject: Fwd: Request for permission to use Figure 1 and Figure 2 from attached Journal  
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Jason: Here is a request to use copyrighted material. Can you take care of it?

Thanks, Len

Original-recipient: [rfc822;baird.62@osu.edu](mailto:rfc822;baird.62@osu.edu)  
X-Originating-IP: [68.12.189.21]  
From: Keith Hardiman <[keith\\_hardiman@hotmail.com](mailto:keith_hardiman@hotmail.com)>  
To: baird.62@osu.edu  
Subject: Request for permission to use Figure 1 and Figure 2 from attached Journal  
Date: Wed, 24 Feb 2010 17:51:22 -0600  
X-CanIt-Geo: ip=65.55.116.38; country=US; latitude=38.0000; longitude=-97.0000;  
<http://maps.google.com/maps?q=38.0000,-97.0000&z=6>  
X-CanItPRO-Stream: 11\_tagonly\_no\_subject (inherits from default)

Good evening Mr. Baird,

My name is Keith Hardiman and I am a doctoral student at Oklahoma State University. I am not sure if you are the correct person to contact but I wanted to know if I could have the Journal of Higher Education's permission to use Figure 1 and Figure 2 in the attached document for my dissertation? If so I would greatly appreciate it.

V/r

Keith L. Hardiman

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