



**SENIOR LEADER PERSPECTIVE ON THE AIR FORCE NUCLEAR
ENTERPRISE: TODAY'S ISSUES AND THE FUTURE**

GRADUATE RESEARCH PAPER

Matthew D. Boone, Major, USAF

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**DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY**

AIR FORCE INSTITUTE OF TECHNOLOGY

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Matthew D. Boone, BS, MA

Major, USAF

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Matthew D. Boone, BS, MA

Major, USAF

Committee Membership:

Robert E. Overstreet, Lt Col, USAF, PhD
Chair

Abstract

The Air Force Nuclear Enterprise has undergone a period of great turmoil following the end of the Cold War. Failures within the Nuclear Enterprise necessitated a number of changes to manpower, funding, and core mission. In the wake of these incidents, senior leaders in the nuclear enterprise have reaffirmed its importance and have instituted changes to strengthen the enterprise. Some of the changes were more successful than others. In an attempt to better understand the current and future state of the nuclear enterprise, this research sought to answer the overarching research question "How do senior leaders perceive the challenges facing the nuclear enterprise today and in the future?"

This study consists of semi-structured interviews with senior leaders in the nuclear enterprise, to include leaders from Headquarters Air Force, United States Strategic Command, Air Force Global Strike Command, National Nuclear Security Administration, Air Force Nuclear Weapon Center, and national laboratories. Through these interviews, each senior leader offers what they think are the issues facing the nuclear enterprise and what the Air Force can do to correct the identified issues. Each leader's ideas are compared and contrasted to the others to determine commonalities.

To my wife and kids, thanks for providing the motivation and encouragement

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I thank my research advisor, Lt Col Overstreet, for his overall support of this effort, and for helping me overcome my academic barriers. Thank you too all of the senior leaders who took the time to participate in the interviews. To Dr. Lowther, thank you for the support throughout the year. I would like to give special thanks to Ross Navarro, Jeff Fugate, Carey Eichhorst, Dave Franklin, Justin Gamel, Angelo Bonavita, and Jennifer Boone for lending their vast experience, and support. To my classmates, I would like to say, “Ay-yo”.

Matthew D. Boone

Table of Contents

	Page
Acknowledgments.....	vi
Table of Contents	vii
List of Figures	ix
List of Tables	x
I. Introduction	1
Background	1
Problem Statement	4
Research Objectives and Investigative Questions	5
Assumptions/Limitations	5
Organization of paper.....	6
II. Literature Review	7
Chapter Overview	7
Cashing in the Peace Dividend	7
Decay of the Nuclear Enterprise – Post 9/11	10
Rebuilding the Nuclear Enterprise.....	15
Summary	21
III. Methodology	23
Chapter Overview	23
Participant Selection.....	23
Interview Question selection.....	25
Interview Methods	26
Summary	27
IV. Analysis and Results.....	28
Chapter Overview	28
Data Analysis	28
Results	29
<i>Issues affecting operations</i>	29
<i>Issues affecting modernization</i>	35
<i>Issues affecting personnel</i>	37
<i>Issues affecting organization</i>	39
Summary	41

V. Conclusions and Recommendations	42
Chapter Overview	42
Conclusions of Research	42
Recommendations for Action	43
Recommendations for Future Research	44
Summary	45
Appendix A. Interview Questions.....	46
Appendix B. IRB Exemption Approval.....	47
Appendix C. Consent to Participate.....	48
Appendix D. Graduate Research Project Storyboard	49
Bibliography	50
Vita	55

List of Figures

	Page
Figure 1: U.S. State Department Warhead Numbers	8
Figure 2: New Triad.....	11
Figure 3: Senior Leader’s Thoughts on Issues in the Nuclear Enterprise.....	30
Figure 4: Where do Senior Leaders Currently see the Nuclear Enterprise.....	33
Figure 5: What are Senior Leader’s Vision of the Nuclear Enterprise in the Future.....	34
Figure 6: Immediate Actions to Get Us to the Future.....	36
Figure 7: What is Preventing an Effective Nuclear Enterprise.....	37
Figure 8: What Senior Leaders Think the Nuclear Enterprise is Lacking.....	38
Figure 9: How Senior Leaders Judge Successes and Failures	39
Figure 10: Nuclear Enterprise Organization.....	40

List of Tables

	Page
Table 1: Change in Level of Primary Focus	12
Table 2: Generals Disciplined.....	14

NUCLEAR ENTERPRISE SENIOR LEADER IDEALS

I. Introduction

I state clearly and with conviction America's commitment to seek the peace and security of a world without nuclear weapons... Make no mistake: As long as these weapons exist, the United States will maintain a safe, secure and effective arsenal to deter any adversary, and guarantee that defense to our allies.

-Barack Obama, President of the United States of America

Background

In order to ensure that the nuclear enterprise is safe, secure, and effective, senior leaders must identify any existing issues and enact measures to address them. Through a series of interviews, historical research, and current events, this paper examines how senior leaders in the Nuclear Enterprise address existing issues and whether they remain confident in the nuclear enterprise's task of maintaining a "safe, secure, and effective nuclear arsenal" (NPR 2010).

On April 5, 2009, early in his first term, President Barack Obama delivered a landmark foreign policy speech to announce his vision of a nuclear-free world (Obama 2009). In awarding the Nobel Peace Prize for 2009, the Norwegian Nobel Committee attached "special importance" to President Obama's vision of, and work for, a world without nuclear weapons (The Nobel Foundation 2009). While, the Nobel Committee focused on the idea of a world without nuclear weapons, President Obama gave no indication that the U.S. would voluntarily disarm themselves. Multiple countries continue efforts to modernize their nuclear weapons, and there is no sign these modernization efforts will slow for the foreseeable future. As a result, the U.S. continues to maintain a safe, secure, and effective arsenal for ourselves and our allies.

As roughly 30 allied countries fall under America's nuclear umbrella, there is a real need for a strong nuclear deterrent (Schlesinger 2008b). Through treaties, our allies' security is dependent on a strong nuclear deterrent. The United States' nuclear deterrent is fundamentally tied to its ability to carry out nuclear operations and other states' perception that the U.S. can credibly deliver its arsenal. The U.S. needs a strong nuclear deterrent, but fiscal requirements can affect its capability, and therefore its credibility.

Severe budget cuts required by law in Fiscal Year 2014 reduced nuclear capabilities and manpower and increased the security risks accepted by the nuclear enterprise. With USAF manning at an all-time low the nuclear force faces particular challenges. As of December 31, 2015, there were 307,001 active duty members in the United States Air Force (USAF) (AFPC 2016). In December 2015, the Chief of Staff of the USAF, General Mark A. Welsh III, stated "virtually every mission area" faces critical manning shortages (Losey 2015). These shortages of money and personnel attribute to the atrophy of the nuclear enterprise.

However, events in the past decade hinted at a nuclear enterprise in decay. Beyond the need to modernize our forces, a lack of focus has led to embarrassment. These events lowered public faith in the U.S. nuclear deterrent. Years of inattention put a spotlight on the USAF nuclear mission. Two events that occurred in 2006 and 2007 alerted senior Department of Defense (DoD) officials to unacceptable practices within the USAF. The mishandling of nuclear weapons in 2007 and discovery of a 2006 shipment of sensitive missile components in 2008 began a closer look at the nuclear enterprise (Schlesinger 2008a). The aging equipment, low morale, and national lack of stewardship

preceded the misconduct of Intercontinental Ballistic Missiles (ICBM) operators cheating on monthly proficiency tests in 2014 (Welch and Harvey 2014).

Failures within the nuclear enterprise were particularly hurtful, as the general public's view is generally negative towards nuclear weapons. These incidents revealed a critical need to reinvigorate the public perception of the nuclear enterprise. Both the Secretary of Defense (SECDEF) and Secretary of the Air Force (SECAF) reinforced the nuclear enterprise being the Number 1 priority of the DoD (James 2014). This statement was made to clarify the importance of the nuclear mission and its role in defending the American people (Hagel 2014). Addressing these issues immediately, and publicly, allowed the DoD to regain American confidence.

The DoD strove to get to the heart of the problem by conducting several reviews to determine what went wrong. After the events of 2007-08, James Schlesinger chaired two reports, and Larry Welch chaired a Defense Science Board (DSB) on the nuclear enterprise. The cheating incident led to SECDEF Chuck Hagel commissioning an internal DoD review chaired by Madelyn Creedon and Peter Fanta (Creedon 2015), and an external, independent review of the DoD nuclear enterprise, chaired by Larry Welch and John Harvey (Welch and Harvey 2014). Concurrently, Air Force Global Strike Command (AFGSC) started an internal review called the "Force Improvement Program" (FIP) (Raatz 2014). These reviews resulted in thousands of interviews with officers, enlisted personnel, civilians, and family members from the ICBM, and bomber communities (Pampe 2014) in an attempt to diagnose problems within the nuclear enterprise. These reviews made several recommendations to recover the nuclear enterprise.

The DoD, reiterating the nuclear enterprise as its highest priority, implemented massive programs to refocus, and reinvigorate the nuclear mission. The USAF stood up a new Major Command (MAJCOM) with AFGSC, a new directorate of Strategic Deterrence and Integration (AF/A10) at Headquarters, and reorganized the Nuclear Weapons Center (Schlesinger 2008b). For this study, senior leaders of the newly reinvigorated nuclear enterprise were interviewed to ascertain if the changes had the desired effect, and what challenges remain to be overcome.

Problem Statement

After the unauthorized transfer of nuclear weapons in 2007, the shipment of fuzes to Taiwan in 2008, and the cheating incident of 2014, many reports and reviews offered recommendations on how to improve the USAF nuclear enterprise. Did these reports do what was intended, and did their recommendations fix major issues in the nuclear enterprise? Do the senior leaders of today have a unified message on issues in the nuclear enterprise? Understanding their perspectives on the issues within the nuclear enterprise will provide a framework to guide decisions pertaining to them. Motivation for these interviews is based on findings from the multiple internal and external reviews of the nuclear enterprise (Welch and Harvey 2014). By interviewing senior leaders in the nuclear enterprise, this research will discover their insights on the nuclear enterprise today and in the future.

Research Objectives and Investigative Questions

The objective of this research is to assess senior leaders' insights on the issues affecting the nuclear enterprise. The overarching research question is how do senior leaders perceive the challenges facing the nuclear enterprise today and in the future? During the course of the study, the researcher will attempt to ascertain the current state of the nuclear enterprise and identify areas of improvement. To answer the overarching research question, four investigative questions (IQ) are posed:

IQ1: What do senior leaders think are the issues affecting operations?

IQ2: What do senior leaders think are the issues affecting modernization?

IQ3: What do senior leaders think are the issues affecting personnel within the nuclear enterprise?

IQ4: How do senior leaders think the nuclear enterprise should be organized to increase effectiveness?

The interviews will capture and rank the top issues related to the nuclear enterprise to aid senior leaders in providing a single communications message. The goal was to speak face to face with each senior leader.

Assumptions/Limitations

There are several assumptions regarding this research effort. They are:

- The list of experts has adequate knowledge concerning nuclear enterprise issues of the past and present
- The results of the research are general enough to apply throughout the nuclear enterprise senior leadership
- Each individual opinion will be weighted the same

- There are only a limited number of senior leaders in the enterprise and a sufficient number was able to be interviewed

While it would be beneficial to study all General Officer, Flag Officer, Senior Executive Service members, and presidentially appointed leaders stewarding the nuclear enterprise, this study will be limited to those key leaders available for interviews.

Organization of paper

The organization of this report is separated into the following 4 chapters. Chapter 2 is the literature review guiding the reader through the challenges faced since the end of the Cold War. Chapter 3 is the methodology section informing the reader how senior leaders and questions were chosen, and how the interviews were conducted. Chapter 4 includes the analysis and results. Here common themes attained during the interviews are presented. Chapter 5, conclusions and recommendations, offer potential solutions based on the senior leaders' feedback.

II. Literature Review

Chapter Overview

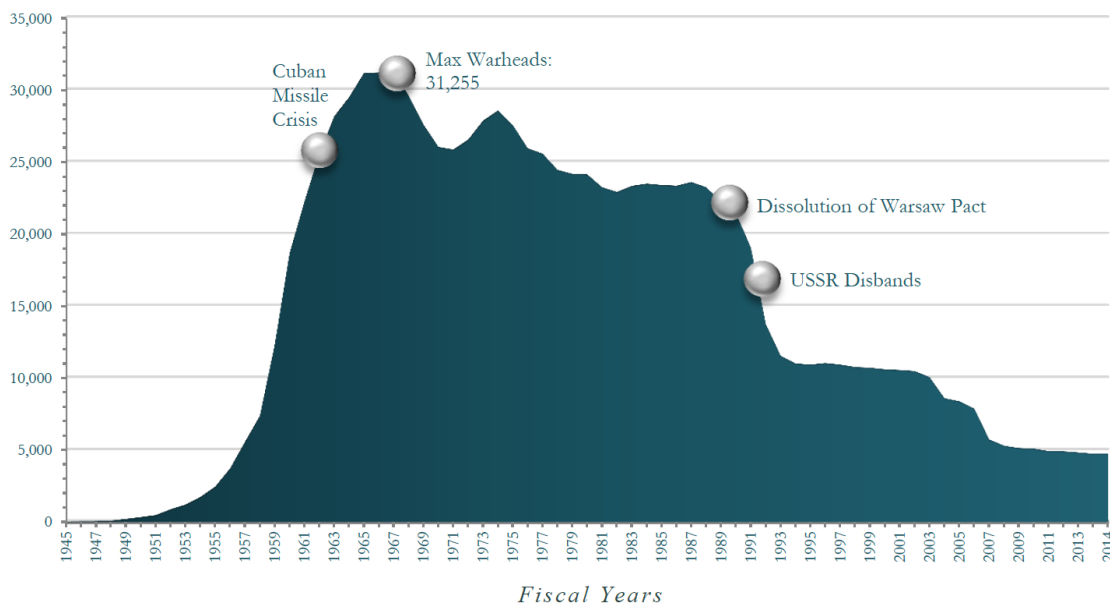
The purpose of this chapter is to explore the existing literature addressing the precursors to current issues in the nuclear enterprise. Years of neglect and underfunding the nuclear enterprise resulted in significant issues leading to the creation of AFGSC, the creation of HAF/A10, and the reorganization of AFNWC (Schlesinger 2008b). This literature review captures the decline in expertise, culture, and focus pertaining to the nuclear enterprise as well as the resultant internal and external reviews/reports designed to analyze and correct the direction the nuclear enterprise was (and may still be) headed. Analysis of the nuclear enterprise uncovers the decline starting with the Soviet Union collapse and the end of the Cold War. This left the US without an apparent near-peer adversary.

Cashing in the Peace Dividend

There has been a serious systemic erosion of focus, expertise, mission readiness, and discipline across the nuclear enterprise following the end of the Cold War and the collapse of the Soviet Union (Donley 2008). On December 25, 1991, Soviet President Mikhail Gorbachev resigned, and the Baltic States were recognized as independent (Schmemmann 1991). It appeared the U.S. did not have a clear near-peer enemy at this point and subsequently began drastic reductions of the nuclear arsenal. Nuclear weapons were reduced from over 31,000 during the height of the Cold War, to under 5,000 in 2014 (see Figure 2). The treaty obligations of START I established a limit of 4,900 warheads for our ICBMs and SLBMs (Bush 1991). As the U.S. reduced its nuclear stockpile

following the end of the Cold War, emphasis on salience of nuclear weapons in the national security strategy also declined. Consequently, resources, expertise, and focus on the part of forces assigned to operate, maintain, and support the U.S.' nuclear capability declined accordingly, especially since flying units were taken off alert (Schlesinger 2008a). Without an alert commitment for 17 years, the bomber force saw a dramatic atrophy of its nuclear operational and academic skills set (Schlesinger 2008a). Most Americans erroneously assumed the threat of nuclear war would go away with the end of the Cold War (Watkinson 1999).

U.S. Nuclear Weapons Stockpile, 1945-2014



**Includes active and inactive warheads. Several thousand additional nuclear warheads are retired and awaiting dismantlement.*

Figure 1: U.S. State Department Warhead Numbers

The post-Cold War environment, the implementation of arms control treaties, attenuation of the nuclear alert posture, and the priority assigned to the conventional and space missions resulted in the USAF drawing focus away from the nuclear enterprise and

even slashing nuclear enterprise resources by roughly 65 percent from 1990 to 2007

(Schlesinger 2008a). This resulted in five broad trends:

- 1) Nuclear missions became embedded in organizations whose primary focus was not nuclear
- 2) Overwhelming emphasis was given to conventional operations
- 3) The grade levels of personnel in line and staff appointments whose daily business involved nuclear weapons were lowered
- 4) The nuclear mission and those who performed it were generally devalued
- 5) There was no single command to advocate for the resources required to support nuclear capabilities.

Collectively, this meant no one command in the USAF had “ownership” of the nuclear mission (Schlesinger 2008a).

Almost concurrently with the dissolution of the former Soviet Union, Strategic Air Command (SAC) was dissolved in June 1992 and the four operational elements of USAF Strategic Forces were dispersed into three separate MAJCOMs. The bomber force and intelligence, surveillance, and reconnaissance (ISR) assets were assigned to Air Combat Command (ACC). The ICBMs were assigned to ACC for one year and later transferred to Air Force Space Command (AFSPC). The nuclear force committed tankers were allocated to Air Mobility Command (AMC). This organizational change marked the end of a USAF dedicated to the nuclear mission (Schlesinger 2008a).

USSTRATCOM was established in 1992 with the deterrence and global strike missions incorporated in Joint Task Forces (USSTRATCOM 2014). With other priorities taking time, USSTRATCOM did not adequately promote the nuclear enterprise.

Without a champion command, nuclear force matters lost the continuous involvement of senior leaders. Couple this with the downsizing of the nuclear enterprise, concerns pertaining to the nuclear forces were met with ambiguous focal points for

resolution (Joseph and Lehman II 1998). By not having senior leader support and influence in the nuclear enterprise, the mission was placed below conventional, higher priority programs and therefore, the mission began to deteriorate. For example, the SECDEF wrote in the 1997 Quadrennial Defense Review, deeper strategic nuclear force reductions could free resources for the National Missile Defense Program (Cohen 1997).

The nuclear enterprise also faced atrophy on the research and development side as well as operations. In order to address this, the Stockpile Stewardship Program was created and it helped ease fears of a credible deterrent by providing a more fundamental understanding of how these weapons work (Kimball 2012) and what needs to occur to ensure they continue to work when called upon. Although this program eased some fears, it has done nothing to alleviate the unavoidable outcome of banning testing. Currently, there are only a handful of scientists working at the labs who have conducted nuclear testing. Subsequently, this knowledge has greatly decreased, and there is no replacement for these scientists as they attrite out of the labs. With our current administration's continuing support of the Comprehensive Test Ban Treaty, there is no remedy for this issue facing the nuclear enterprise (Rogin 2016).

Decay of the Nuclear Enterprise – Post 9/11

In 2001, former President George W. Bush signed the Nuclear Posture Review (NPR) establishing a new triad. The new triad is composed of: 1) offensive strike systems (both nuclear and non-nuclear), 2) defenses (both active and passive), and 3) a revitalized defense infrastructure providing new capabilities in a timely fashion to meet emerging threats (see Figure 3). These new legs would be bound together by enhanced

command and control (C2) and intelligence systems (NPR 2001). The new triad concept was not generally understood by many of those involved in the USAF nuclear mission.

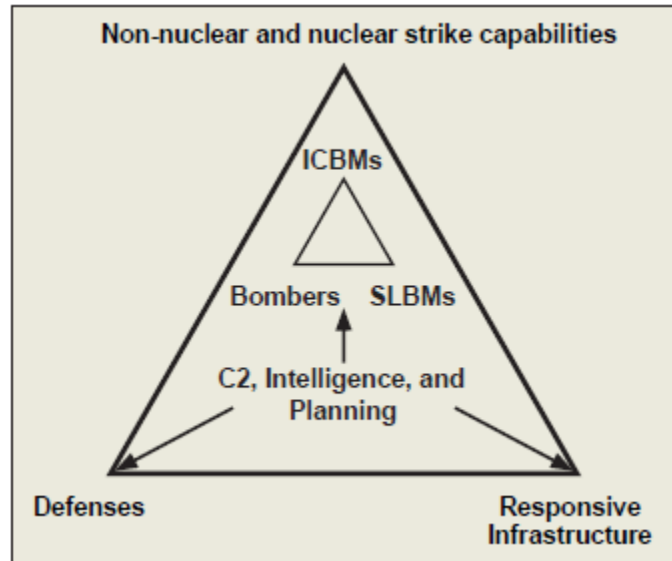


Figure 2: New Triad

The blending of nuclear weapons and conventional military capabilities was a major flaw in the new triad (Frankel and others 2009). The impact on the ICBM crew force was the impression nuclear weapons were simply conventional weapons with larger yields. This gave a perspective undermining nuclear deterrence and stability (Frankel and others 2009). This NPR was the Pentagon’s first strategic policy initiative to depart fundamentally from a Cold War-era policy focused overwhelmingly on the Soviet strategic nuclear threat, nuclear deterrence, and management of the U.S.—Soviet “balance of terror” (Payne 2005, 1).

There has been a gradual decline in the level and intensity of focus on the nuclear enterprise since the end of the Cold War. Significant modernization programs in the acquisition system were non-existent (Welch 2008). General Welch’s report showed the

focus on the nuclear enterprise was reduced from senior general/flag officer or senior civilian at the end of the Cold War to Colonels/Captains or mid-level civil servants.

Table 1 summarizes the change in level of focus across a broader set of organizations to illustrate the major downgrading of the level of attention accorded the nuclear enterprise (Welch 2008).

Table 1: Change in Level of Primary Focus

Organization	1990	2007
SECDEF	Assistant to the Secretary of Defense (ATSD) for Atomic Energy – direct report for safety & security (Senate-confirmed appointee)	Deputy ATSD Nuclear Matter (SES) w/ multi-mission ATSD reporting to USD/AT&L
OSD/Policy	Deputy Assistant Secretary for Nuclear Forces and Arms Control (SES)	Director, Strike Policy Integration (GS-15)
Navy Staff	Director, Strategy and Policy N51 (O-7)	Head, Global Strike & Nuclear Policy (GS-15)
Joint Staff	Deputy Director, Operations (O-8)	Chief, Strategic Operations Division (O-6)
Air Staff	Deputy Director, Forces (O-8)	Chief, Nuclear Operations Division (O-6)
Combatant Command	Commander, U.S. Strategic Command* (4 Star)	Chief, Division (O-6)
Major Air Command	Commander, Air Force Strategic Air Command* (4 Star)	Chief, Strategic Operations Division (O-6)
Numbered Air Force Bomber Commands	Commander, 8th Air Force (3 Star) Commander, 15th Air Force (3 Star)	Commander, 8th Air Force (multi-hatted, multi-mission) (3 Star)

Note: *Commander and Staff dual-hatted as Air Force MAJCOM and Combatant Command (Welch 2008)

In 2002, United States Space Command was disestablished, and its mission responsibilities for space operations (including missile defense and information

operations) were transferred to USSTRATCOM (Casey Jr. 2003). USSTRATCOM assumed ownership of the conventional global strike and ISR mission areas in 2003, in addition to the newly acquired responsibilities for missile defense and information operations. Furthermore, in 2006 the command was tasked with global network operations and combating weapons of mass destruction. As a result, USSTRATCOM's focus shifted from its core responsibility of the strategic nuclear mission to responsibilities now including eight global missions (Schlesinger 2008b). With USSTRATCOM's focus on other missions, so to was the focus of the B-52 crew members.

With B-52 operations focused on the conventional realm, versus their nuclear role, there was an accidental movement of nuclear weapons from Minot Air Force Base (AFB) to Barksdale AFB in 2007. White House and DoD leadership intervention was a just-in-time rescue of the nuclear enterprise if corrective actions were to be implemented (Welch 2008). The movement plan identified two pylons of nuclear-inert missiles to be transported by tactical ferry on 30 August 2007. Procedures required three subsequent verifications by three separate groups, of the payload installed in the cruise missiles (Welch 2008). These procedures were not followed. Incidents related to the USAF's mishandling of nuclear weapons (like the Minot AFB incident), led to the creation of a task force on nuclear matters, and provided the impetus for the stand up of a new MAJCOM, the first of its kind in 27 years (Schlesinger 2008b). Lt Gen Frank Klotz said, "The activation of AFGSC ensured the USAF will have the proper focus on critical missions that provide nuclear deterrence and global strike to combatant commanders, the joint team and allies" (Lyle 2009, 1).

The Minot AFB nuclear incident would not be the last before AFGSC would stand up in 2009. The Defense Logistics Agency (DLA) shipped four nose-cone fuze assemblies instead of replacement battery packs, for use in Taiwan’s UH-1 helicopters (White 2008). The mistake was discovered in the spring of 2008, eighteen months after the shipment was completed (White 2008). DLA continued with their quarterly inventory checks and did not notice the missing fuzes for those 18 months, creating more rifts in the nuclear enterprise. President of the Ploughshares Fund, Joseph Cirincione, said the incident shows Washington has “too many nuclear weapons with too little control over them” (White 2008, 2). The 2007 incident and the discovery of shipped fuzes, started the vast reports and inquiries for the enterprise.

Nuclear enterprise leaders failed in their leadership responsibilities to shift priorities and adjust policies and resources in ways needed to maintain robust nuclear stewardship (Schlesinger 2008a). In 2008, many senior officers were disciplined for their roles in the unauthorized transfer and fuze shipment. The general officers who were disciplined are listed in table 2.

Table 2: Generals Disciplined

Name	Service	Job title	Disciplinary action
Lt. Gen. Kevin J. Sullivan	USAF	Deputy Chief of Staff for logistics	letter of reprimand and is retiring
Lt. Gen. Michael A. Hamel	USAF	Commander of the Space and Missile Systems Center	letter of admonishment and planned to retire
Maj. Gen. Roger W. Burg	USAF	Commander of 20th Air Force	letter of admonishment
Maj. Gen. Kathleen D. Close	USAF	Commander of the Ogden Air Logistics Center	letter of admonishment

Brig. Gen. Francis M. Bruno	USAF	Director of logistics for Air Force Materiel Command	letter of admonishment and retiring
Brig. Gen. Arthur B. Cameron III	USAF	commander of the 309th Maintenance Wing	letter of admonishment and reassigned
Brig. Gen. Lynn A. Collyar	USA	Commanded the Defense Distribution Center from August 2006 to June 2008	Not disclosed
Brig. Gen. Michael J. Lally III	USA	commanded the center from August 2004 to August 2006	Not disclosed

Notes: (Associated Press 2008)

Five additional colonels received letters of reprimand, including two who were removed from command (Associated Press 2008). The Chief of Staff of the USAF, General T. Michael Moseley, and SECAF, Michael W. Wynne, were removed from office because oversight standards for the U.S. nuclear arsenal had deteriorated on their watch (Barnes and Spiegel 2008).

Rebuilding the Nuclear Enterprise

The weapons transfer across the U.S. as well as the shipment of fuzes to Taiwan, illustrated a tremendous lack of focus within the nuclear enterprise. This atrophy has been attributed to several causes, however, the operational shift within the USAF bomber community from nuclear to conventional remains at the top of the list. It is understandable to attribute this shift to the two major military conflicts (Iraq and Afghanistan) upon which the USAF (and the DoD) focused all of their resources and attention (Schlesinger 2008a).

In response to the shipment of fuzes, General Larry D. Welch chaired the DSB Task Force on Nuclear Weapons Surety. The report addressed three sets of surety issues:

1) Procedures and Processes, 2) nuclear enterprise Focus, and 3) nuclear enterprise Environment (Welch 2008). Procedures were ignored during both the unauthorized transfer and fuze incident. This task force was tasked with how the nuclear enterprise, an environment with a culture of perfection as the standard, could find itself in these major predicaments.

The culture in the bomber world seemed readily apparent that, over time, handling bomber weapons and nuclear activities have come to be considered an exercise activity rather than a serious operational activity (Welch 2008). The nuclear enterprise culture was in a downward spiral, but after implementing recommendations, USAF leaders were saying the right things. However, the question is whether there ultimately will be sufficient follow through (Schlesinger 2008a). It will take a concerted and sustained commitment by USAF leadership at all levels to restore the culture and ethos of nuclear excellence. The overall conclusion drawn from observations is an enterprise which needs revitalization to reinstitute a culture of nuclear excellence (Schlesinger 2008a).

One cannot look at these conflicts solely through a conventional lens however. The war in Iraq and Afghanistan further illustrated the dependence of the U.S. nuclear umbrella by our roughly 30 allied and friendly countries (Schlesinger 2008b). If our deterrent is not credible, our allies and partner nations who rely on us for nuclear deterrence may develop their own capabilities or our adversaries may threaten to use their nuclear weapons (Schlesinger 2008a). It was this very nuclear deterrence President Bush used against Saddam Hussein during the Iraq War (Bush 1991).

To address the recommendations of the DSB, The SECDEF created a Task Force on Nuclear Weapons management. The investigations revealed a serious erosion of

focus, expertise, mission readiness, resources, and discipline in the nuclear weapons enterprise within the USAF (Schlesinger 2008a). The atrophy of the nuclear mission was attributed to the low national emphasis on nuclear weapons and the failure of the USAF to maintain a viable nuclear deterrent capability. These were illustrated through several means.

USSTRATCOM was focusing on conventional war due to the bomber force's role in Operation Iraqi Freedom and Operation Enduring Freedom. The USAF Chief of Staff described the B-52 as a "sunset system" and expected to see the bomber force build back up toward the end of the century (Grant 2007). The makeup of the senior USAF leadership began to shift: the nuclear weapons-focused, bomber-experienced officers who had previously monopolized senior positions became the minority, and those remaining had to adapt to the ascendant group drawn from conventional weapons-focused fighter pilots (Schlesinger 2008a).

A blue ribbon review was chartered in 2007 to review nuclear weapons policies and procedures. The operational demands of the Global War on Terrorism coupled with the costs of fielding modern forces across the DoD continued to challenge our nuclear enterprise (Schlesinger 2008b). The review took a comprehensive look at the nuclear enterprise leading to five general conclusions (USAF 2008).

- Nuclear surety in the USAF is sound, but needs strengthening.
- USAF focus on the nuclear mission has diminished since 1991.
- The nuclear enterprise in the USAF works despite being fragmented.
- Declining USAF nuclear experience has led to waning expertise.
- USAF nuclear surety inspection programs need standardization.

Declining experience is most prevalent in aircraft units tasked with both nuclear and conventional missions, also known as Dual Capable Aircraft (DCA). However, units whose sole mission involves nuclear weapons also have a diminishing experience base (Schlesinger 2008b). A trend developed within the ICBM world, where crew members wanted to stop pulling alerts as soon as possible and move into a space operations job. Leadership in the nuclear enterprise continues to be professional, but experience levels continue to decline. Aviator experience and expertise is declining within the bomber and DCA units. ICBM units found difficulty in attracting and retaining Airmen with nuclear experience because of a perceived emphasis and desirability of space operations duties (Schlesinger 2008a). Absent some movement, U.S. nuclear policy will become one of ‘withering away by default’ – the gradual deterioration of U.S. nuclear capability because no one is minding the store (Caston and others 2014).

The establishment of AFGSC in 2009 was a step in the right direction to place all of the USAF’s nuclear weapons under one command. However, by initially making the command’s leader a 3-star versus a 4-star, this new MAJCOM was put at a major disadvantage against the other operational MAJCOMs. The MAJCOM commander would be dismissed from the table for 4-star only discussions and was fighting from a position of weakness when it came time to request funding and manning. At this time, “the most difficult issue with the most long-term implications was the perception a career in nuclear forces is not the highly promising opportunity of the past era” (Welch 2008, 26). The role and importance of the nuclear enterprise was again in question.

Then, President Obama used his first opportunity to speak on foreign policy to announce his vision of a world without nuclear weapons. Some in the nuclear enterprise

thought this could be the start of a bigger drawdown of the U.S. nuclear stockpile.

AFGSC had not begun its initial operating capability, but it seemed as if the USAF might put them on the back burner again. President Obama then released the 2010 NPR, which stated the fundamental role of nuclear weapons is to deter nuclear attack on the U.S. or our allies (NPR 2010). The Airmen in charge of these weapons were then left trying to find exactly what their mission would be.

The nuclear enterprise began to recover then, in January 2014, the USAF announced it uncovered missileers cheating on their monthly proficiency exams, through an investigation into the drug use of some crew members. These incidents within the USAF highlighted a need to improve the culture of the nuclear enterprise. The lack of core values these missileers showed and civilian and military leaders stressing the importance of the nuclear mission started many inquiries and reports. Multiple reports, including an internal and external review, a Command Directed Investigation, and FIP, provided the USAF with over 1,000 pages of observations and recommendations, some new, and some re-emerging issues. Since the inception of the ICBM mission in 1958, the missile force has faced the challenge of convincing young officers that missile combat crew jobs are vital to national security (Lowther 2015). Airmen of the nuclear missile force felt “burnout” from exhausting, unrewarding, and stressful work (Burns 2013).

Throughout the time of the unauthorized transfer through the cheating incident there was a feeling from the nuclear forces of not wanting to be involved with nuclear weapons. The bomber force was focused on the conventional missions during those operations. Missile operators would often hear the phrase “If you’re not in space, you’re

not in the race” which was a common refrain for the officer who sought to be promoted (Lowther 2015, 1).

The Honorable Madelyn Creedon co-chaired the DoD’s internal review of the nuclear enterprise with Rear Admiral Fanta, and Sergeant Major Alston. In spite of various shortcomings in the enterprise, the men and women of the nuclear enterprise were still dedicated and committed to the mission (Creedon 2015). The problems of the nuclear enterprise do not exist in isolation. The interdependent relationship of the problems led to the conclusion that ultimate solutions would have to be cultural and structural, and sustained over the long term (Creedon 2015).

An independent review of the nuclear enterprise was completed by General Larry D. Welch (Ret) and Admiral John C. Harvey (Ret). Key issues were brought up for the SECDEF including, the leadership “say-do” gap, the culture of “perfection is the standard”, and preparing for inspection was more important than the mission (Welch and Harvey 2014). Secretary James said in a speech to the Kennedy School of Government at Harvard University, “to try to close what I call the say-do gap by saying nuclear is Number 1, and actually doing what we put forth -- the two will be more in sync and it will ring more true going forward (James 2016, 8).” The most basic and overarching needs were addressed. The nuclear enterprise and the forces operating it are an essential underpinning of U.S. national security. The nuclear enterprise must be established as the highest priority and this must be reflected in personnel, logistics, and funding (Welch and Harvey 2014).

FIP was implemented by AFGSC as an opportunity for Airmen to make real, visible, and enduring changes to the ICBM work environment (Raatz 2014). Several

reoccurring themes were prevalent in the FIP outcomes. For example, ICBM operators had the idea they wanted to spend the least amount of time possible pulling alert duty. The pressure of being perfect was constantly on their minds. Perfection was the standard, and the crews trained for inspections. Leadership pushed for inspection preparation over the operational mission, and demanded perfection to be hired into training or evaluation positions. Lastly, the interviewees strongly felt squadron commanders demonstrated a lack of empathy when it came to understanding the mindset, desires, and needs of the crew force.

As one USAF NCO said to a review team, “There have been a lot of studies, but nothing ever changes. We want this study to be worth it this time” (Creedon 2015, 3).

Summary

This chapter explained some history of the nuclear enterprise and the issues affecting it. The end of the Cold War saw reallocation of resources that within a few years led to decay in the nuclear enterprise. Focus on the nuclear mission, has diminished from the robust nuclear culture existing during the Cold War. As a whole, the reduced nuclear force structure with a smaller nuclear experience base presents challenges for the USAF to enhance nuclear expertise for USAF leaders and supervisors (Welch 2008). While there are specific differences, the reviews found similar sets of attitudes and issues making up the three legs of the triad. There is a deep sense of pride and commitment in the men and women in the nuclear forces demonstrating extraordinary resilience under increasingly demanding conditions (Welch and Harvey 2014).

With the implementation of so many improvements, there is hope that the nuclear enterprise is on a road to recovery. In the next chapter, Methodology, the plan for interviewing nuclear enterprise senior leaders is outlined. Through these interviews, the goal of determining their assessment of the current issues and enacted improvements will be attained.

III. Methodology

Chapter Overview

This chapter presents the methodology followed to develop and conduct senior leader interviews. Semi-structured interviews were chosen as the best method to discover senior-leader perspective on the nuclear enterprise. This allowed subjects the freedom to express their views in their own terms (Cohen 2006). This chapter describes the processes followed to select participants, to select interview questions, and the guidelines followed during the interviews. The interviews focus on a comprehensive view of the present and future nuclear enterprise challenges as determined by the senior leaders.

Participant Selection

This study solicited senior leaders sitting in key positions within the nuclear enterprise. Senior leaders invited to participate in this study represent the following nuclear enterprise organizations:

- 1) Headquarters Air Force. Air Staff and Special Staff leaders provide insight from the uppermost echelon of the Air Force. HAF/A10 is responsible to the Secretary and Chief of Staff of the Air Force for Nuclear Deterrence Operations (HAF/A10 2015)
- 2) United States Strategic Command. Senior Air Force and Navy leaders provide insight from the strategic viewpoint of the Air Force and Navy. USSTRATCOM combines the synergy of the U.S. legacy nuclear command and control mission with responsibility for space operations; global strike; global missile defense; and global command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR); and combating weapons of mass destruction (USSTRATCOM 2014)
- 3) Major Commands. Directorate level leadership from MAJCOMs provide insight from the organize, train, and equip (OT&E) perspective. AFGSC is responsible for all U.S. intercontinental ballistic missile and bomber forces to provide strategic deterrence, global strike, and combat support (AFGSC 2016)

- 4) Numbered Air Forces. Senior leaders from Twentieth Air Force and Eighth Air Force provide perspective from the operational level. The 20/AF is responsible for the nation's intercontinental ballistic missile force. The 8/AF serves as the air component headquarters to USSTRATCOM for strategic deterrence, global strike, and operates USSTRATCOM's Joint Air Operations Center (AFGSC 2016)
- 5) Air Force Nuclear Weapons Center. Senior leaders from Air Force Centers provide acquisition, program management and security expertise to this study. The AFNWC is responsible for the life cycle management of nuclear weapons systems supporting two legs of the nation's nuclear triad, including intercontinental ballistic missiles; air launched cruise missiles; gravity bombs; and nuclear command, control, and communications systems (AFNWC 2015)
- 6) Department of Energy. Senior leaders from the DOE, NNSA and National Laboratories provide insight on nuclear weapons materials. DOE is responsible for advancing the national, economic and energy security of the United States through the implementation of policies regarding nuclear power, fossil fuels, and alternative energy sources. The NNSA is responsible for enhancing national security through the military application of nuclear science. National laboratories are responsible for the development, testing, and production of specialized nonnuclear components and quality assurance and systems engineering for all of the United States' nuclear weapons. (AllGov 2015)

In order to ensure high-quality information, each interviewee had to meet the following criteria:

- 1) Senior leaders were defined as personnel with the O-6 (or equivalent) rank or higher with at least twenty years of experience in the nuclear enterprise.
- 2) Senior leaders have the capacity and willingness to participate.
- 3) Senior leaders will have sufficient time (30-60 minutes) to participate in the duration of the interviews.

Twenty experts were selected representing a combined experience exceeding 400 years. In addressing capacity and willingness to participate, all of the senior leaders

volunteered to take part in this study. Each person was notified in advance of the time commitment for the interviews.

One of the features of this semi-structured interview is its use of experts in the nuclear enterprise whose names will not appear in this report. Members are truly confidential when they can freely express their opinions in the absence of group pressure, where ideas are judged on their merit rather than who proposed the idea (Skulmoski and others 2007). In a hierarchical type organization like the DoD, this is important. Those interviewee's contributions could be lost through conforming to their peers. Each senior leader signed a consent form, as shown in Appendix C, to participate in the interviews and were informed their full identity would remain confidential apart from their overall organization.

Interview Question selection

The interviews involved asking a list of questions and recording individual responses from participants. As an essential step in creating questions for an interview, a pre-test of the questions was conducted. Appendix A shows a list of questions considered at the beginning of the research. The researcher's classmates and director gave their responses to judge the best questions. Due to time considerations, only 9 questions were selected from the initial list. Being able to pre-test interview questions with willing participants narrowed the questions from 19 to 9. A complete list of questions was sent before each interview to prepare the senior leader. Additional questions than what were planned were created and readied if the time or conversation moved in a different direction.

The focus of the interviews was on what the senior leaders have to say about the issues. General officers have busy calendars and their time is precious. The research targeted a 30-60 minute interview. The researcher was able to use an interview guide consisting of questions to be covered during the conversation. The interviewer followed the guide, but was able to stray from the questions when it is necessary to foster further conversation (Cohen and Crabtree 2006).

Interview Methods

This research was to discover what senior leaders in the nuclear enterprise think about the enterprise and semi-structured interviews were the best way to accomplish this. There are a variety of interview forms, including: face-to-face individual interviews and face-to-face group interviews. This research used the face-to-face semi-structured (individual) interview technique. The semi-structured interview allows for open-ended questions and provides the researcher with control over the questions being asked (Creswell 2014). Semi-structured interviews can provide reliable, comparable qualitative data (Cohen and Crabtree 2006). Structured interviews (i.e., surveys with Likert scale items) are typically used in a quantitative design and unstructured interviews (i.e., surveys with open-ended questions) are typically used in a qualitative design. The researcher may bias the responses with their thoughts on questions answered, therefore, it was critical for the researcher to avoid asking leading questions as well as ensure the opportunities to answer the same questions were provided to all senior leaders. Of note, not everyone interviewed answered every question.

The next step was arranging the interview. The researcher made contact with the perspective senior leader to arrange a time and place. Coordination with staff was key to scheduling each interview. Support from high level USAF officers helped with the scheduling.

Interviews began with an explanation of the goal of the interviews, to determine what senior leaders' insights are on the issues in the nuclear enterprise. In order to conduct an effective interview, the interviewer researched the background of the subjects (Jones 2015). This provided the interviewer with information on the subject to assist in guiding the course of a conversation.

The interview was a guided conversation to obtain honest feedback from the senior leaders. While questions requiring a 'yes' or 'no' response allowed for some quantitative analysis, all questions selected in this study permitted an open-ended response to glean the senior leaders' insights and beliefs on the subject. The interviews began with the standard nine questions as a guide for the 30-60 interview.

Summary

The qualitative research method utilized in this research was one-on-one semi-structured interviews. Semi-structured interviews were chosen as the best method to discover senior-leader perspective on the nuclear enterprise. This chapter discussed the process to select the appropriate senior leaders to interview, how questions were selected, and how the interviews were conducted. Following the prescribed methodology yielded responses with similar themes that are presented in the next chapter.

IV. Analysis and Results

Chapter Overview

This chapter combines the literature from Chapter 2 with the data gathered from the semi-structured interviews. This chapter will analyze and compare the thoughts of senior leaders within the nuclear enterprise. Throughout the analysis of the interview transcripts, the investigative questions posed in Chapter 1 were addressed. The quality of data gathered is dependent upon the ability of the interviewer (Wyse 2014). Comparing the data will reveal potential patterns of interrelationship between responses (McCracken 1988). This will start the framework for recommendations in Chapter 5.

Data Analysis

Data were collected from one-on-one interviews and group discussions with senior leaders. Over 20 hours of interviews with 20 individuals resulted in over 40 pages of transcripts. As part of the research for this thesis, these transcripts were analyzed after reviewing over a thousand pages of writings on related subject matter. The data collected from the interviews were reviewed so the most usable portions of the interviews to determine similarities. This research focused on the most relevant information applicable to each question. The transcript review helped the researcher aim for a conceptualization of underlying patterns in the interviews.

Analyzing the themes of what leaders say about issues is key to showing results of the study. A qualitative review to determine the relationship between responses was conducted. By determining what senior leaders agree or disagree with, the message sent to operational units can be better standardized.

Validity and reliability can be difficult to verify in qualitative research (Seidman 2013). Over the course of twenty interviews, and an extensive literature review, there was a plethora of data. The research literature compared to the data collected provide validity for the results. Validity was demonstrated by the convergence of the data.

The reliability of this research was strengthened through the interviews and the consistency of results. During the data collection process, saturation was also achieved, where there were no new ideas or results being obtained following the completion of the interviews. Although an exact replication of these results in another setting cannot be guaranteed (the case for almost all qualitative research), the results obtained from this research should be consistent amongst another similar research setting.

Results

The results are presented as bar charts indicating the frequency of a particular response. Charts are grouped so as to address investigative questions. IQ1 is answered with issues affecting operations section. IQ2 is answered under the modernization section. IQ3 is answered in the issues affection personnel section. IQ4 is answered with the issues affecting organization section.

Issues affecting operations

Three main themes were discovered: culture, money, and leadership. Culture, and how to change it, was the most frequent response of the senior leaders. Unfavorable culture is not just a nuclear enterprise problem, but cuts across every MAJCOM in the USAF (Schlesinger 2008a). Former Chief of Staff of the USAF, Mark Welch addressed this issue with the creation of Profession of Arms Center of Excellence (PACE). PACE's

Number 1 priority is “resetting the USAF culture (PACE, 2016)”. The cultural issue in the nuclear enterprise was addressed within the multiple reviews, however, it will still take time to change. Although AFGSC is making strides in this arena, it will continue to take time, as illustrated by “culture” remaining on the top of the list of main themes. The difficulty in understanding culture becomes even more complex when attempting to bring about a significant cultural change (Gibson and others 2012). Figure 3 illustrates the varied responses received from the twenty leaders.

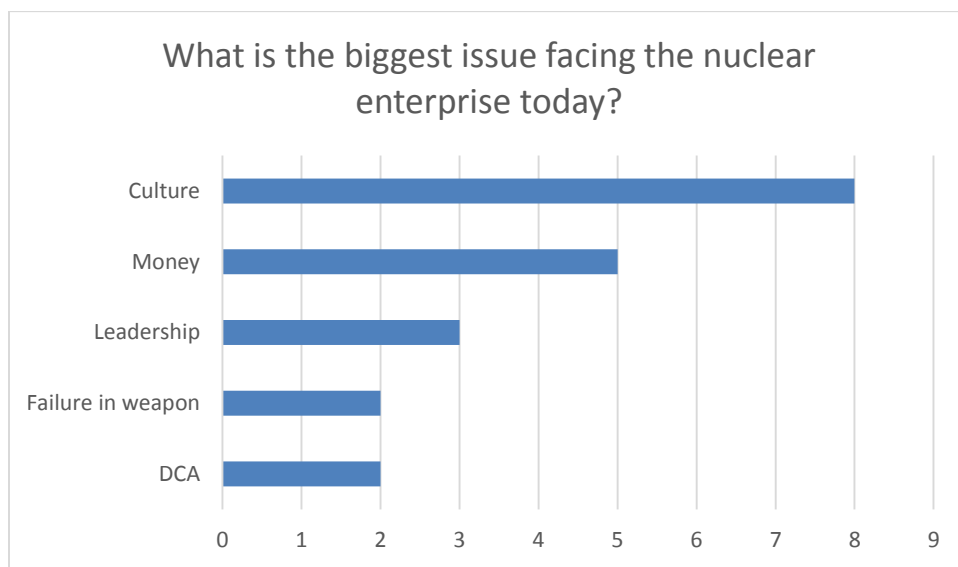


Figure 3: Senior Leader’s Thoughts on Issues in the Nuclear Enterprise

According to the senior leaders interviewed, the culture attached to nuclear weapons is the biggest issue facing the nuclear enterprise today. A common theme among the interviews was the culture of Airmen not working directly within the nuclear enterprise. By not having sufficient knowledge about nuclear weapons and their purpose, these Airmen are unable to critically think about all programs in the USAF. As stated in the Schlesinger report from 2008, training and professional education are the key tools

for generating a culture of nuclear excellence. Senior leaders agreed with this statement and were pushing to have nuclear education in every aspect of USAF professional education.

The second biggest issue from the interviews was the budget. Chapter 2 detailed the neglect of the nuclear enterprise and senior leaders today are still concerned over the modernization bill that is coming due in the next 30 years. After the cheating incident at Malmstrom AFB, the USAF nuclear enterprise received improved funding. FIP was able to make quality-of-life, manning, training, and facility improvements ignored for years (Hagel 2014). Those interviewed worried this trend will not stay for long and the budget will normalize. Having the right people in the right jobs will be key to acquiring the best for the nuclear enterprise.

The third biggest issue was leadership. The interviewees stated the nuclear enterprise needs to have the right personnel in leadership positions to make positive impacts. Since the incident in 2014, AFGSC has placed squadron commanders and mid-level leadership into positions where they can make a positive impact. Continuing the requirement process for these leaders to be put into key positions needs to continue. There has been a level of risk aversion in some nuclear enterprise leaders. Missile squadron commanders were afraid and unwilling to take risks and make decisions. One senior leader interviewed stated, “There needs to be an enduring focus on the leadership of the nuclear enterprise.”

A few of the nuclear enterprise senior leaders expressed concern that the next big issue will be in the production realm of nuclear weapons. The national laboratories are limited in what they can produce. The President has stated through pursuit of a sound

Stockpile Management Program, extending the life of U.S. nuclear weapons, we can ensure a safe, secure, and effective deterrent without the development of new nuclear warheads or further nuclear testing (NPR 2010). Nuclear enterprise leaders are still concerned because of the restrictions on upgrading the nuclear force prevents us from keeping up with foreign capabilities.

For the next question, senior leaders were asked what their current opinion was on the status of the nuclear enterprise. The most common answer from senior leaders was they viewed the nuclear enterprise as headed in the right direction. They believed AFGSC was taking charge of resetting the culture in the nuclear enterprise and is attempting to fix the root of the problem. They did not assign blame, but instead were focused on attacking the issues and finding a cure. Figure 4 shows where leaders see the nuclear enterprise.

Currently, senior leaders see a lot of attention on the nuclear enterprise. The events of 2007 and 2008 were thought to have been quelled with the standup of a new MAJCOM. The cheating and drug incident in 2014 brought the enterprise to the headlines again. Because of the issues, the nuclear enterprise has received an increase in funding and general attention from high levels in the government. The SECAF has visited missile wings and bomber bases to show support for this important mission. The increased attention will eventually end and those interviewed are contemplating how to avoid the degradation of the enterprise again.

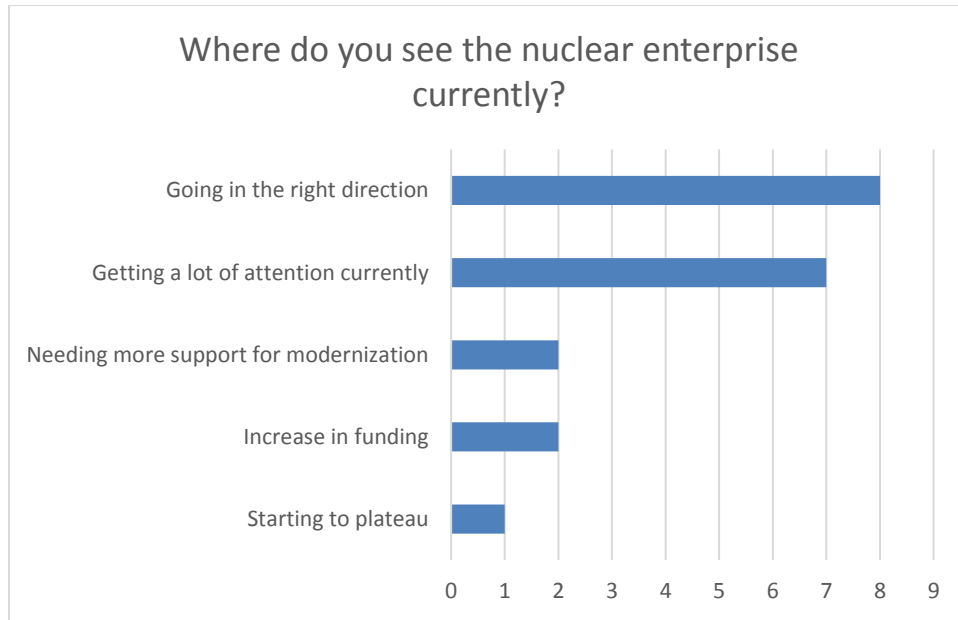


Figure 4: Where do Senior Leaders Currently see the Nuclear Enterprise

Modernization of the USAF’s two legs of the triad has many opponents. The authors of *A World Free of Nuclear Weapons* believe the end of the Cold War made the doctrine of mutual Soviet-American deterrence obsolete (Shultz and others 2007). Senior leaders advocating for support on modernization efforts parallels IQ2. Congressional backing for the modernization of the U.S. nuclear deterrent force is needed. Three senior leaders spoke of concern in sustainment and modernization of the nuclear enterprise (Figure 5). The youngest B-52 bomber came off the assembly line in 1961. The Minuteman III ICBM came into service in 1968. These weapon systems need to be modernized to stay credible in the eyes of U.S. adversaries and allies. By not modernizing the nuclear systems it is equivalent to buying a car in 1980 and not maintaining it for the past 36 years. The U.S. cannot afford to have a less credible nuclear deterrent.

Figure 5 illustrates their varied opinions on what the future of the nuclear enterprise holds. They believe the future will address the question of whether or not a nuclear triad is the right course of action for the U.S. With the current state of the triad, leaders expressed the need to continue difficult efforts to modernize and sustain the current force. AFGSC has received extra funding because they are the squeaky wheel. The future will bring a normalized budget and nuclear forces will compete on a more level playing field with the rest of the USAF for its budget.

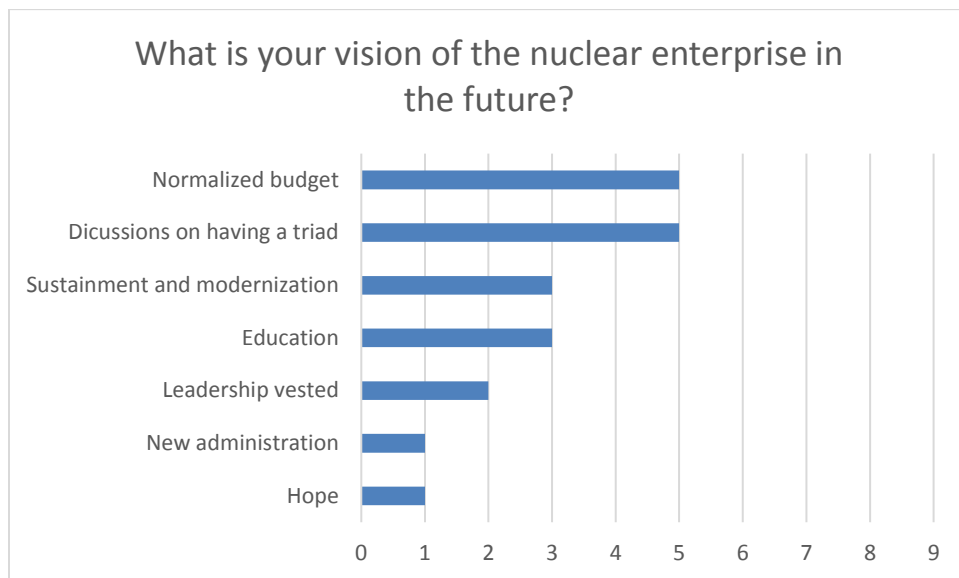


Figure 5: What are Senior Leader’s Vision of the Nuclear Enterprise in the Future

The nuclear enterprise needs be integrated into the rest of the USAF. From the beginning of an officer’s career in the USAF, there is very little taught on anything nuclear. Starting any career in the USAF with information on the nuclear enterprise will bring the education level on par with the rest of the USAF mission sets. Any Airman can

speak to the mission in Air, Space, and Cyberspace (nuclear fits into all of these) and this will educate them on the Number 1 priority in the USAF.

Two senior leaders interviewed introduced the vision of leadership being vested in all improvements to the nuclear enterprise. Educating the young members of the force, as well as the continuous improvement philosophy generated from the FIP, will set up a pipeline of qualified leaders.

Those outside of the nuclear enterprise do not fully understand the nuclear enterprise and need further education on the nuclear triad. For example, a presidential candidate from a major political party stumbled through an explanation of why we needed to modernize the triad during a national debate. The overall opinion of those interviewed revealed our leaders believe the nation's deterrent force is currently headed in the right direction but offered varied actions to get us there. Figure 6 shows senior leaders believe communicating the strategic goal of the nuclear enterprise between the experts and everyone else in the USAF needs to increase. SANDS was developed to make experts in deterrence and assurance so its graduates can educate other Airmen in jobs where they influence strategic thoughts.

Issues affecting modernization

Figure 7 shows what senior leaders are thinking about issues related to modernization of the triad to become more streamlined and effective. The budget, presenting powerful arguments, and providing effective communications, were the top answers. All of the senior leaders commented on how much investment dollars are needed to maintain a safe, secure and effective nuclear deterrent at different points during their interview. Recapitalization of all three legs of the triad needs to happen. Those

interviewed all agreed modernization is critical, but things need to be done smartly. Foreign nuclear capabilities are modernizing at a quick pace. Russian President Vladimir Putin has stated that 70 percent of the military equipment in use would be the most up-to-date and top-quality by 2020 (Putin 2015). The U.S. needs to stay on par with potential adversary's arsenals, or we will be at a disadvantage.

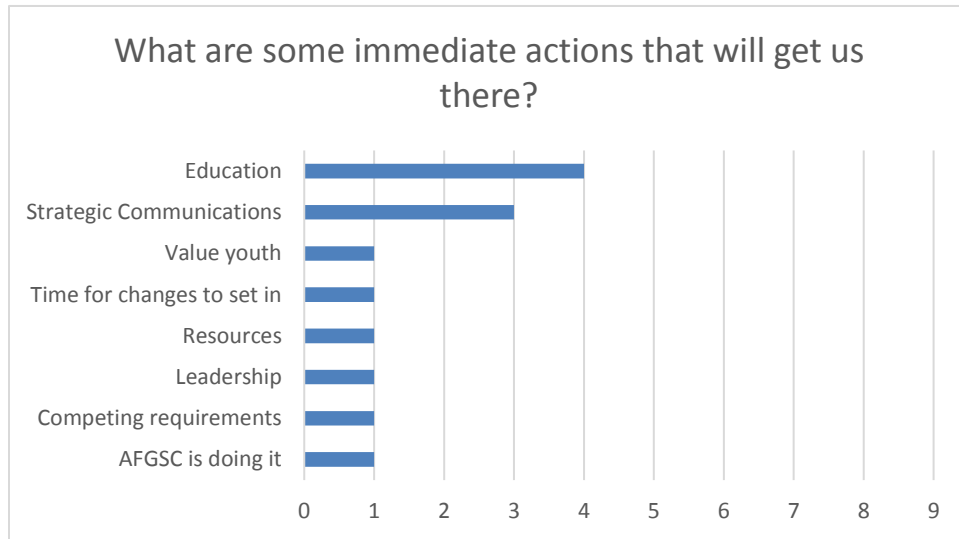


Figure 6: Immediate Actions to Get Us to the Future

Presenting powerful arguments to the nuclear enterprise and the general public are key to modernization. The efforts required to push new programs through the bureaucratic process are lengthy and difficult. The budget will plateau and the increase in funds over the past two years will level with the rest of the USAF.

Educating the majority of the U.S. population on the advantages of nuclear weapons is difficult. There are opponents of nuclear weapons who are effectively making a case for not having nuclear weapons. Opposition groups like Ploughshares and Global Zero have an effective advertising campaign that articulates their views to the

populace. Senior leaders noted the nuclear enterprise should concentrate on their own education programs.

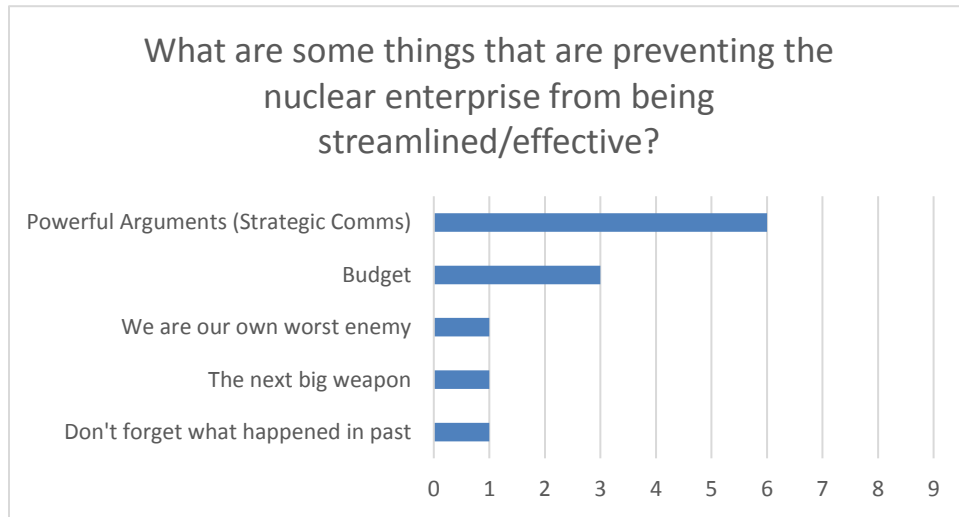


Figure 7: What is Preventing an Effective Nuclear Enterprise

Issues affecting personnel

Senior leaders’ thoughts on big issues regarding personnel are leadership and a culture of excellence and trust. The culture affects everything to do with personnel and how they operate. There is a need for a specific leadership path for those in the nuclear enterprise. Figure 8 shows four out of the twenty senior leaders interviewed expressed the need for a clear leadership path. A clear path will show young officers the route to take towards senior leadership. AFGSC has developed a career path pyramid to help them make critical career choices.

Five senior leaders discussed the attitude of “selflessness” needs to be more prevalent in the nuclear enterprise and “actions speak louder than words.” Someone in the position of influence on young officers in the nuclear enterprise needs to mentor appropriately. The stigma of leaders in the missile fields was one of being afraid to make

decisions. AFGSC leadership wants the right leaders in positions to get the job done, but also improve the life and careers of other Airmen.

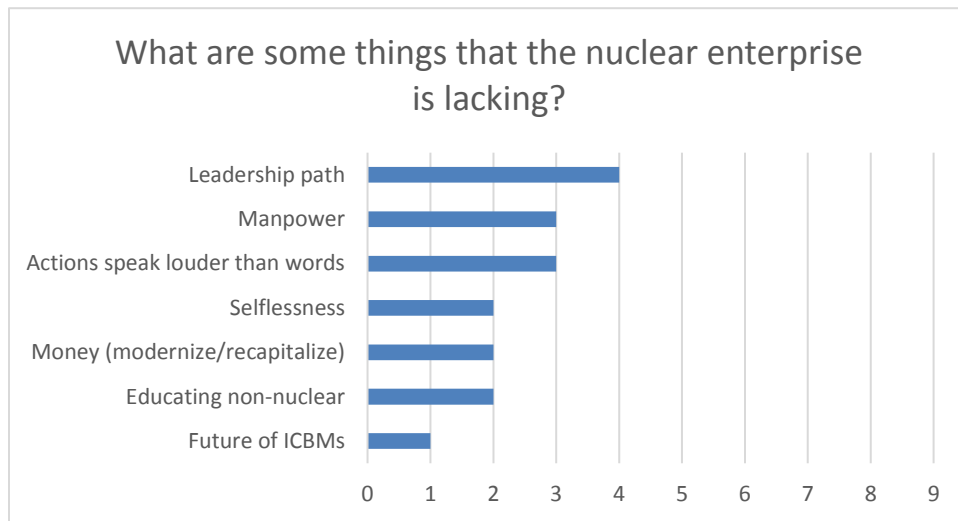


Figure 8: What Senior Leaders Think the Nuclear Enterprise is Lacking

Three more senior leaders suggest manpower in the nuclear enterprise is lacking. After the 2014 Malmstrom incident, the independent review and the FIP mentioned needing 100 percent effective manning, meaning the correct level of Airmen working the mission. The manning challenge is driven by the lack of qualified personnel (Welch and Harvey 2014). The recommendations were to effectively man the nuclear enterprise with the proper level of experience. These leaders want to continue what was started with these reviews and not let them fall off the radar of the USAF again.

The budget has been brought up many times by senior leaders. By stating this is an issue is not saying the nuclear enterprise does not have money, rather that the nuclear enterprise will continue to fight for funds just like every other program in the USAF. The

past has shown the nuclear enterprise being neglected in terms of funding. This is what those interviewed want to ensure does not happen again.

Figure 9 answers the question of successes and failures affecting morale and how it affects personnel. It is human nature to be concerned about one's career and to seek out self-improvement. Those interviewed stated leaders need to show that they care about the people and the morale in units they lead. Additionally, leaders need to genuinely care about the successes and failures of their Airmen. To measure these successes and failures, metrics need to be used. Not just any metric will help with personnel issues though. They need to be relevant to what the issues are and must be useful to leaders in the field.

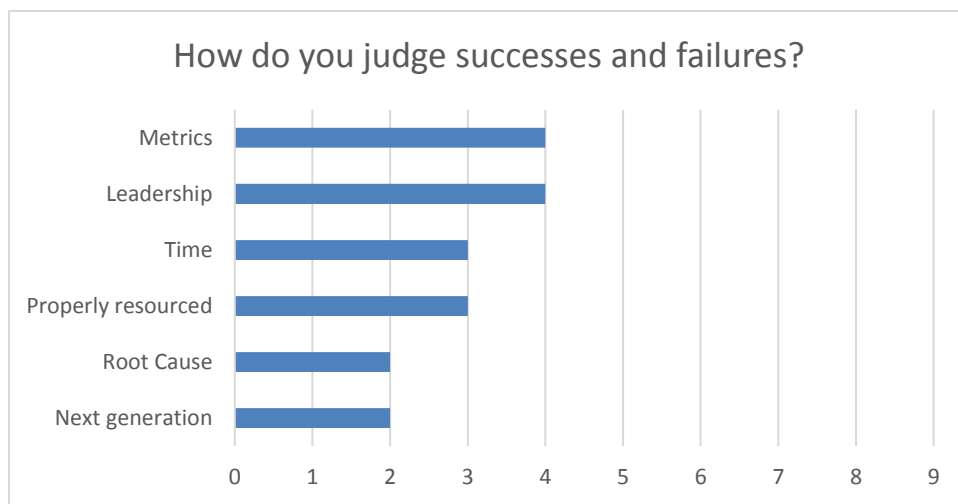


Figure 9: How Senior Leaders Judge Successes and Failures

Issues affecting organization

For IQ4, senior leaders were asked what they thought of putting all three legs of the triad under one person in the DoD. Most were adamant about having multiple services in charge of the triad. Naval and USAF officers agreed the nuclear enterprise

was too large to put under a single person. Figure 10 shows nuclear enterprise senior leaders believe there could be good in having one person in charge, but there will be difficulty in making a large organization work.

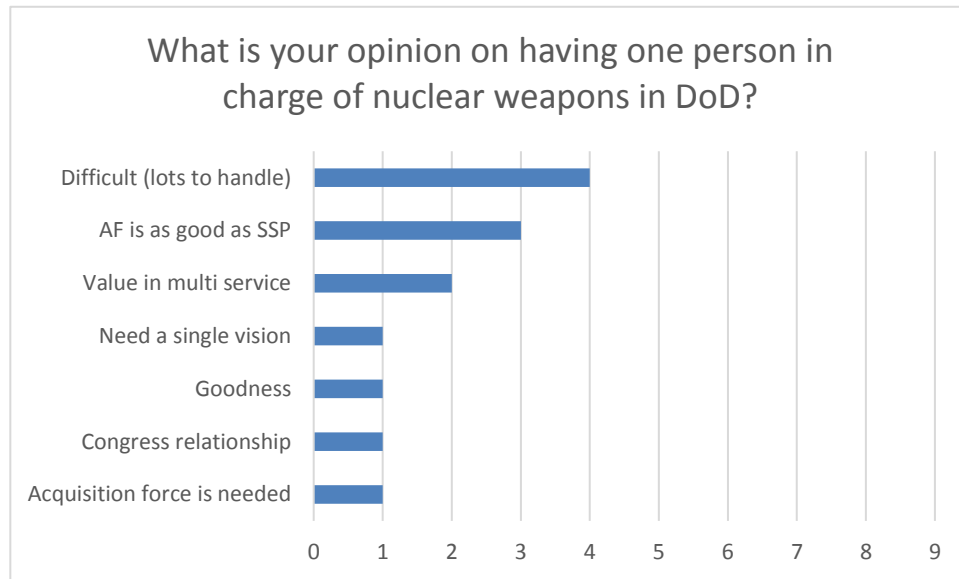


Figure 10: Nuclear Enterprise Organization

Three of the senior leaders stated the USAF portion of the triad conducts their mission just as effectively as the Navy’s Strategic Systems Programs (SSP). After the multiple incidents, the establishment of AFGSC was evidence that the USAF placed a high level of importance on the nuclear mission. Having a single command with one voice for all USAF nuclear matters was an important step in the evolution of the USAF nuclear mission. A new command that spanned the entire nuclear mission also allowed the USAF to take a more comprehensive look at the entire USAF nuclear enterprise to better plan for the program’s future.

Two other leaders mentioned the value in having nuclear weapons in multiple services. The USAF has two legs of the triad and the Navy directs the other. The nuclear organization in the USAF had its fair share of downs, but is on the upward direction. Moving every aspect of the nuclear triad under one person would be too much and one person would not be able to concentrate their efforts where needed.

Summary

The intent of this chapter was to identify what nuclear enterprise senior leaders believe are the big issues within the enterprise today and in the future. As a result, three main themes emerged: culture, money, and leadership. To make the nuclear enterprise a great organization, there needs to be a culture of great leadership. These leaders can educate others on the importance of nuclear deterrence and will have the ability to help with the budget, by communicating the requirements and arguing for support in required venues. Competing with conventional USAF priorities will always be a challenge, but the right leadership will ensure financial competition remains balanced. As in the rest of the USAF, the largest issue for the nuclear enterprise is the culture. As we have seen the examples of unprofessional behavior and lack of ethics in the nuclear enterprise, this should be the Number 1 issue that the enterprise takes head on and corrects immediately.

V. Conclusions and Recommendations

Chapter Overview

This research set out to illuminate the issues in the nuclear enterprise as identified by its senior leaders. The research has shown the significance of how each person interviewed agreed that a single, clear, and concise message is needed. Not every senior leader in the nuclear enterprise was interviewed, but a convenience sample covered key aspects. The interviews showed the most common responses to large issues in the nuclear enterprise are culture, budget, and leadership. This chapter summarizes the research and provides recommendations to improve the USAF nuclear enterprise.

Conclusions of Research

Senior leaders discussed the issues in the nuclear enterprise from their vantage point. The research found the position of the person being interviewed and their core directly affected their answers. Each interviewee had responses specific to their current job. Regardless of position, the issues most discussed were the culture of the nuclear enterprise, issues with the budget, and leadership.

The senior leaders stated the need to continue the reinvigoration of the culture changes introduced at a grass-roots level. This will ensure the changes take hold and are enduring. The process to change culture in the nuclear enterprise is continuous. Culture change will not take place overnight. Some believe because understanding culture takes difficult techniques, rare skills, and considerable time and then additional time to change it, deliberate attempts at culture change are not really practical (Gibson 2012). Those interviewed were adamant the culture of the nuclear enterprise needs to change. With a

consensus of culture change, the leadership of the nuclear enterprise focused on obtaining buy-in at all levels (i.e. FIP) and is working towards making great strides to improve the enterprise while ensuring the shift is embraced and thereby permanent.

Recommendations for Action

Training and professional education in the USAF are the key tools for generating a culture of nuclear excellence. Nuclear deterrence is no longer taught at the War Colleges (Schlesinger 2008a), and should be returned there as well as lower levels of professional military education. Senior leaders stated nuclear focused Airmen can broaden their careers and educate non-nuclear career fields as an educational benefit. For example, SANDS students have follow-on assignments to positions to help guide specific organizations on nuclear enterprise matters. It is critical for non-nuclear Airmen to recognize the nuclear mission is the Number 1 priority in the USAF. Without the basic understanding of nuclear deterrence and assurance, the USAF cannot provide the necessary support to the nuclear enterprise.

The nuclear enterprise needs to improve communication to the general populace. Publishing articles on the benefits of nuclear weapons will increase the public's perception of nuclear weapons. Opposition groups such as Ploughshares and Global Zero communicate their vision of a nuclear free world by explaining the dangers and worst case scenario could be if the weapons are used or accidents happen. The USAF should begin a campaign to explain the reason we have these weapons and how they are good for the world.

Senior leaders are concerned about the large bill approaching the modernization effort of the nuclear enterprise. Foreign nations are modernizing their nuclear forces and if the U.S. does nothing in response, we could be at a major disadvantage. The modernization effort of the nuclear enterprise needs to be fully funded. Nuclear symposiums and publications about the deterrence and assurance mission will increase the general populations view on nuclear weapons so they can understand the need to spend money on the nuclear enterprise.

Continuing to place our best people into leadership roles is vital to the success of the nuclear enterprise. After the 2014 events, many people were removed and new leadership put in place. Vetting the key leaders will ensure the right personnel are placed in the right jobs. AFGSC needs to continue to advance leaders who embrace cultural change.

Recommendations for Future Research

For future research, I recommend the following:

1. A quantitative study on culture change in the nuclear enterprise.
2. Interview those outside of the nuclear enterprise for their knowledge.
3. Interview mid-level leaders in the nuclear enterprise to find out what their opinions of nuclear enterprise issues. Interviews with field grade officers could be more enlightening to what those in the field perceive as big issues.
4. Accomplish a longitudinal study in five years. This will allow more time for cultural changes brought forth from recommendations made after the events of 2014.

Summary

According to the senior leaders interviewed, the culture of those inside the nuclear enterprise as well as those outside the enterprise is the biggest issue today. This research concluded senior leaders know of issues in the nuclear enterprise and are communicating the important issues from their position. As illustrated from the incidents of the past decade, the nuclear enterprise fails when senior leaders lose sight on the priorities and the culture of the nuclear enterprise. Communicating these priorities, educating all Airmen, and keeping the nuclear enterprise as the Number 1 priority are critical to the continued success. The culture of the nuclear enterprise is improving and new generations of leaders will take a high performance culture into the future with the ability to cope with constant change.

Appendix A. Interview Questions

- *What is the biggest issue facing the nuclear enterprise today?
- *Where do you see the nuclear enterprise currently?
- *What is your vision of the nuclear enterprise in the future?
- *What are some immediate actions that will get us there?
- *What are some things that are preventing the nuclear enterprise from being streamlined / effective?
- *What are some are that the nuclear enterprise is lacking?
- What is your definition of deterrence?
- What is the mission of a nuclear weapon?
- Are nuclear weapons of use, policy, or show?
- How do DOD and DOE interlace? Mainly with JCIDS and 6X process
- What is your opinion on having one person in charge of nuclear weapons in DOD?
- Do you think the Nuclear Weapons Council is affective?
- Who in the government is in charge of nuclear weapons?
 - Do you think that is the best way to accomplish this mission?
- What did ACC have to do to gain relevance?
- Is the threat of the time what drives relevance?
- *How do you judge what is a success and what is a failure?
- *What is your opinion on having one person in charge of nuclear weapons in DoD?
 - *Do you think that is the best way to accomplish this mission?

*Indicates questions that were retained for the interviews

Appendix B. IRB Exemption Approval



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

14 January 2016

MEMORANDUM FOR LT ROBERT OVERSTREET, PHD

FROM: William A. Cunningham, Ph.D.
AFIT IRB Research Reviewer
2950 Hobson Way
Wright-Patterson AFB, OH 45433-7765

SUBJECT: Approval for exemption request from human experimentation requirements (32 CFR 219, DoDD 3216.2 and AFI 40-402) for your study concerning Air Force Global Strike Command with a comprehensive view of the present and future nuclear enterprise challenges.

1. Your request was based on the Code of Federal Regulations, title 32, part 219, section 101, paragraph (b) (2) Research activities that involve the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior unless: (i) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) Any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.
2. Your study qualifies for this exemption because you are not collecting sensitive data, which could reasonably damage the subjects' financial standing, employability, or reputation. Further, the demographic data you are utilizing and the way that you plan to report it cannot realistically be expected to map a given response to a specific subject.
3. This determination pertains only to the Federal, Department of Defense, and Air Force regulations that govern the use of human subjects in research. Further, if a subject's future response reasonably places them at risk of criminal or civil liability or is damaging to their financial standing, employability, or reputation, you are required to file an adverse event report with this office immediately.

WILLIAM A CUNNINGHAM, PH.D.
AFIT Exempt Determination Official

Appendix C. Consent to Participate

SENIOR LEADER INSIGHTS ON NUCLEAR ENTERPRISE

You have been asked to participate in a research study conducted by researchers from the Air Force Institute of Technology (AFIT), Graduate School of Engineering and Management, Department of Operational Sciences. The main objective of the project is to conduct interviews with senior leaders in the nuclear enterprise to garner expert opinions regarding the challenges facing the nuclear force and complex both today and in the future. The results of this study will be included in a report and briefing to the AFGSC staff, as well as research publications. You were selected as a possible participant in this study because of your knowledge of the nuclear enterprise. You should read the information below and ask questions about anything you do not understand before deciding whether or not to participate.

- This interview is voluntary. You have the right not to answer any question, and to stop the interview at any time or for any reason. I expect that the interview will take 30-60 minutes.
- You will not be compensated for this interview.
- The information that you share will be kept confidential. All data will be presented at an aggregate level.
- This project will be completed by August 2016. All interview documents will be stored in a secure work space until 1 year after that date. The documents will then be destroyed.

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

(Please initial)

[] I give permission for this interview to be recorded and transcribed.

Name of Subject:

Signature of Subject _____ Date _____

Signature of Investigator _____ Date _____

Please contact Maj Boone with any questions or concerns at matthew.boone@us.af.mil or (505) 846-3687.

Appendix D. Graduate Research Project Storyboard



By interviewing senior leaders in the Nuclear Enterprise, this research will discover their insights of today and in the future



Senior Leader Perspective on the Air Force Nuclear Enterprise: Today's Issues and the Future

Abstract

The Air Force Nuclear Enterprise has undergone a period of great turmoil following the end of the Cold War. Failures within the Nuclear Enterprise necessitated a number of changes to manpower, funding, and core mission. In the wake of these incidents, senior leaders in the nuclear enterprise have reaffirmed its importance and have instituted changes to strengthen the enterprise. Some of the changes were more successful than others. In an attempt to better understand the current and future state of the nuclear enterprise, this research sought to answer the overarching research question "How do senior leaders perceive the challenges facing the nuclear enterprise today and in the future?"

This study consists of semi-structured interviews with senior leaders in the nuclear enterprise, to include leaders from Headquarters Air Force, United States Strategic Command, Air Force Global Strike Command, National Nuclear Security Administration, Air Force Nuclear Weapon Center, and national laboratories. Through these interviews, each senior leader offers what they think are the issues facing the nuclear enterprise and what the Air Force can do to correct the identified issues. Each leader's ideas are compared and contrasted to the others to determine the commonalities.

Research Goals

The objective of this research is to assess senior leaders' insights on the issues affecting the nuclear enterprise. The overarching research question is how do senior leader perceive the challenges facing the nuclear enterprise today and in the future? During the course of the study, the researcher attempted to ascertain the current state of the nuclear enterprise and identify areas of improvement. To answer the overarching research question, four investigative questions are posed:

IQ1. What do senior leaders think are the issues affecting operations?

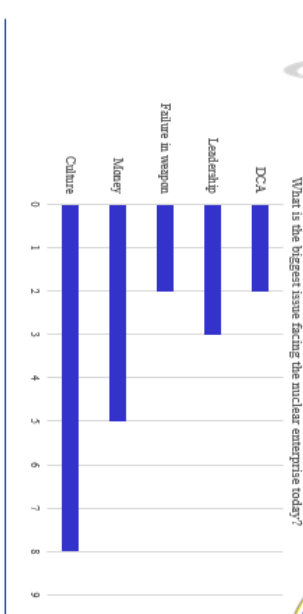
IQ2. What do senior leaders think are the issues affecting modernization?

IQ3. How do senior leaders think the nuclear enterprise should be organized to increase effectiveness?

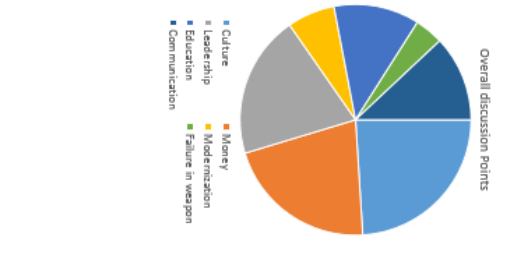
IQ4. How do senior leaders think the nuclear enterprise should be organized to increase effectiveness?



Maj Matthew "Doggie" Boone
 Advisor: Lt Col Robert E. Overstreet, PhD
 Advanced Nuclear Deterrence Studies (ENS)
 Air Force Institute of Technology



- What is the biggest issue facing the nuclear enterprise today?
- What is your vision of the nuclear enterprise in the future?
- Where do you see the nuclear enterprise currently?
- What are some immediate actions that will get us there?
- What are some things that are preventing the nuclear enterprise from being streamlined / effective?
- What are some areas that the nuclear enterprise is lacking?
- What is your definition of deterrence?
- Are nuclear weapons of use, policy, or show?
- How do DOD and DOE interface? Mainly with ACIDS and EX process
- What is the mission of a nuclear weapon?
- What is your opinion on having one person in charge of nuclear weapons in DOD?
- Do you think the Nuclear Weapons Council is effective?
- Who in the government is in charge of nuclear weapons?
- Do you think that is the best way to accomplish this mission?
- What did ACC have to do to gain relevance?
- Is the threat of the time what drives relevance?
- How do you judge what is a success and what is a failure?
- What is your opinion on having one person in charge of nuclear weapons in DOD?
- Do you think that is the best way to accomplish this mission?



Methodology

Step I: Extensive literature review. Semi-structured interviews were chosen as the best method to discover senior leader perspectives on the issues facing the nuclear enterprise. Senior leaders were given the freedom to express their views in their own terms.

Step II: This study solicited senior leaders sitting in key positions within the NE. Senior leaders invited to participate in this study represent the following NE organizations: Headquarters Air Force, United States Strategic Command, Air Force Global Strike Command, Department of Energy, National Nuclear Security Administration, Air Force Nuclear Weapon Center, and national laboratories.

Step III: The interviews involved asking a list of questions and recording individual responses from participants. A pre-test of the questions was conducted. A complete list of questions were sent before each interview to prepare the senior leader. Being able to test interviews with willing participants narrowed the questions from 19 to 9.

Step IV: Semi-structured interviews was the best method to accomplish the research goals. The semi-structured interview format allowed the senior researcher will have control over the questions being asked.

Following the prescribed methodology yielded responses with similar themes that are presented in the analysis of the interviews.

Recommendations

1. Training and professional education in the AF are the key tools for generating a culture of nuclear excellence. Senior leaders stated nuclear focused Airmen can broaden their careers and educate non-nuclear career fields as an educational benefit.
2. The nuclear enterprise needs to improve general communications. Opposition groups such as, Poughshares and Global Zero, communicate their vision of a nuclear free world, by explaining the dangers and what the worst case scenario can be if they are used or accidents happen. The AF can campaign the reason we have these weapons and how they are good for the world.
3. Senior leaders are concerned about the how we are approaching the nuclear enterprise modernization budget. Foreign nations are modernizing their nuclear forces and if the U.S. does nothing in response, we could be at a major disadvantage. Recommend the modernization effort of the nuclear enterprise be fully funded.
4. Future research opportunity. Do a similar study in 5 years to determine if culture changes have taken hold.

*Questions selected for interviews

Bibliography

- AFGSC. 2016. *AF Portal - Air Force Global Strike Command*. July 19. Accessed August 13, 2016. <https://www.my.af.mil/gcss-af/USAF/ep/globalTab.do?channelPageId=sA1FBF31D2116769B01211B08DD82061C>.
- AFNWC. 2015. *AF Portal: Air Force Nuclear Weapons Center*. May 13. Accessed August 11, 2016. <https://www.my.af.mil/gcss-af/USAF/ep/globalTab.do?channelPageId=s6925EC1356E50FB5E044080020E329A9>.
- AFPC. 2016. *Air Force Personnel Center*. March 31. <http://www.afpc.af.mil/library/airforcepersonnel demographics.asp>.
- AllGov. 2015. *www.allgov.com*. Accessed August 11, 2016. <http://www.allgov.com/departments/department-of-energy?detailsDepartmentID=565>.
- Associated Press. 2008. "www.nbcnews.com." *17 Officers Disciplined in U.S. Nuclear Mistake*. September 25. http://www.nbcnews.com/id/26892774/ns/us_news-military/t/officers-disciplined-us-nuclear-mistake/#.V5i4supf17g.
- Barnes, Julian E., and Peter Spiegel. 2008. *Los Angeles Times*. June 06. Accessed August 04, 2016. <http://articles.latimes.com/2008/jun/06/nation/na-airforce6>.
- Burns, Robert. 2013. *AP.org*. November 21. <http://www.ap.org/Content/AP-In-The-News/2013/Study-Nuclear-force-feeling-burnout-from-work>.
- Bush, George. 1991. *Los Angeles Times*. January 13. Accessed August 04, 2016. http://articles.latimes.com/1991-01-13/news/mn-412_1_u-n-security-council-resolution.
- Casey Jr., George W. 2003. *Promulgation of Unified Command Plan 2002 (with Change-1 and Change-2 incorporated)*. Washington D.C.: Joint Chiefs of Staff.
- Caston, Lauren, Robert S. Leonard, Christopher A. Mouton, Chad J. R. Ohlandt, S. Craig Moore, Raymond E. Conley, and Glenn Buchan. 2014. *The Future of the U.S. Intercontinental Ballistic Missile Force*. Santa Monica CA: RAND Corporation.

- Cohen, Deborah, and Benjamin Crabtree. 2006. *Robert Wood Johnson Foundation*. July. <http://www.qualres.org/>.
- Cohen, William S. 1997. *Report of the Quadrennial Defense Review*. Washington D.C.: Office of the Secretary of Defense.
- Creedon, Madelyn. 2015. *Implementation of the Nuclear Enterprise Review Recommendations*. Washington D.C.: Senate Committee on Armed Services.
- Creswell, John W. 2014. *Research Design: Qualitative, Quantitative, and Mixed Method Approaches*. Los Angeles: Sage.
- Donley, Michael B. 2008. *Reinvigorating the Air Force Nuclear Enterprise Center for Strategic and International Studies*. Washington D.C.: Office of the Secretary of the Air Force.
- Fisher, Max. 2013. *The Washington Post*. December 19. <https://www.washingtonpost.com/news/worldviews/wp/2013/12/19/amazing-details-from-the-drunken-moscow-bender-that-got-an-air-force-general-fired/>.
- Frankel, Michael J., James Scouras, and George W. Ullrich. 2009. *The New Triad: Diffusion, Illusion, and Confusion in the Nuclear Mission*. Laurel MD: The Johns Hopkins University Applied Physics Laboratory.
- Gibson, James L., John M. Ivancevich, James H. Donnelly, Jr., and Robert Konopaske. 2012. *Organizations: Behavior, Structure, Processes*. New York: McGraw-Hill.
- Grant, Rebecca. 2007. *Return of the Bomber: The Future of Long-Range Strike*. Arlington VA: Air Force Association.
- HAF/A10. 2015. *Assistant Chief of Staff of the Air Force Strategic Deterrence and Nuclear Integration*. HAF Mission Directive 1-60, Washington D.C.: Department of the Air Force.
- Hagel, Chuck. n.d. *Fact Sheet: Implementing Changes to the Nuclear Enterprise*. Fact Sheet, Washington D.C.: DoD.
- Hagel, Chuck. 2014. *Statement on the Nuclear Enterprise Review & Reforms*. November 14. <http://www.defense.gov/News/Speeches/Speech-View/Article/606634/statement-on-the-nuclear-enterprise-review-reforms>.

- James, Deborah Lee. 2014. *U.S. Air Force*. December 10.
<http://www.af.mil/News/ArticleDisplay/tabid/223/Article/555829/af-realigns-missions-to-enhance-nuclear-support.aspx>.
- James, Deborah Lee. 2016. *www.af.mil*. April 22. Accessed August 03, 2016.
<http://www.af.mil/AboutUs/AirForceSeniorLeaders/SECAF.aspx>.
- Jones, Elizabeth, interview by Matt Boone. 2015. *How to conduct an interview with Senior Leaders* (October 15).
- Joseph, Robert G., and Ronald F. Lehman II. 1998. *U.S. Nuclear Policy in the 21st Century: A Fresh Look at National Strategy and Requirements*. Washington D.C.: GPO.
- Kimball, Daryl G. 2012. "No Going Back: 20 Years Since the Last U.S. Nuclear Test." *Armscontrol.org*. September 20. <https://www.armscontrol.org/issuebriefs/No-Going-Back-20-Years-Since-the-Last-US-Nuclear-Test%20>.
- Losey, Stephen. 2015. *Air Force Times*. December 01.
<http://www.airforcetimes.com/story/military/2015/12/01/welsh-sounds-alarm-on-undermanned-air-force/76617202/>.
- Lowther, Adam. 2015. *A Year Later: Responding to Problems in the ICBM Force*. February 12. <http://thebulletin.org/year-later-responding-problems-icbm-force7984>.
- Lt Gen Stephen W. Wilson. 2015. *Status of Air Force Nuclear and Strategic Systems*. Statement to the Senate Armed Services Committee, Washington D.C.: U. S. Government Printing Office.
- Lyle, Amaani. 2009. *Air Force stands up Global Strike Command*. August 7.
<http://www.afgsc.af.mil/News/ArticleDisplay/tabid/2612/Article/455475/air-force-stands-up-global-strike-command.aspx>.
- Martinez, Luis. 2013. *ABC News*. October 09. <http://abcnews.go.com/Politics/vice-adm-tim-giardina-fired-nuclear-commander/story?id=20524735>.
- McCracken, Grant. 1988. *The Long Interview*. Newbury Park: SAGE Publications.
- Miklaszewski, Jim, and Courtney Kube. 2014. *More nuclear missile officers accused in cheating probe*. January 28.

- http://usnews.nbcnews.com/_news/2014/01/28/22483405-more-nuclear-missile-officers-accused-in-cheating-probe?lite.
2010. *Nuclear Posture Review*. Washington D.C.: Office of the Secretary of Defense.
2001. *Nuclear Posture Review*. Washington D.C.: Office of the Secretary of Defense.
- Obama, Barack. 2009. "The White House." *The White House*. April 05.
<https://www.whitehouse.gov/the-press-office/remarks-president-barack-obama-prague-delivered>.
- PACE. 2016. *www.airman.af.mil*. July 1. Accessed August 22, 2016.
<http://www.airman.af.mil/>.
- Pampe, Carla. 2014. *Force Improvement Program team moving forward*. April 08.
<http://www.af.mil/News/ArticleDisplay/tabid/223/Article/478226/force-improvement-program-team-moving-forward.aspx>.
- Payne, Keith B. 2005. "The Nuclear Posture Review: Setting the Record Straight." *The Washington Quarterly* (The Washington Quarterly) 135-151.
- Putin, Vladimir. 2015. *Army 2015*. June 16. <http://www.reuters.com/article/us-russia-nuclear-putin-idUSKBN0OW17X20150616>.
- Raatz, Joseph. 2014. *Force Improvement Program gives Airmen direct line to Air Force Leaders*. February 06.
<http://www.af.mil/News/ArticleDisplay/tabid/223/Article/473286/force-improvement-program-gives-airmen-direct-line-to-air-force-leaders.aspx>.
- Rogin, Josh. 2016. *The Washington Post*. July 10.
https://www.washingtonpost.com/opinions/global-opinions/obama-plans-major-nuclear-policy-changes-in-his-final-months/2016/07/10/fe3d5ca-4521-11e6-88d0-6adee48be8bc_story.html.
- Schlesinger, James R. 2008. *Phase I: The Air Force's Nuclear Mission*. Arlington VA: Secretary of Defense.
- Schlesinger, James R. 2008. *Phase II: Review of the DoD Nuclear Mission*. Arlington VA: Secretary of Defense.

- Schmemmann, Serge. 1991. *The New York Times*. September 07.
<http://www.nytimes.com/1991/09/07/world/soviet-turmoil-soviets-recognize-baltic-independence-ending-51-year-occupation-3.html?pagewanted=all>.
- Seidman, Irving. 2013. *Interviewing as Qualitative Research*. New York: Teachers College Press.
- Shultz, George P., William J. Perry, Henry A. Kissinger, and Sam Nunn. 2007. "A world free of nuclear weapons." *Wall Street Journal* (Wall Street Journal) 4.
- Skulmoski, Gregory J., Francis T. Hartman, and Jennifer Krahn. 2007. "The Delphi Method for Graduate Research." *Journal of Information Technology Education* 1-21.
- The Nobel Foundation. 2009. *Nobelprize.org*. October 2009. Accessed August 11, 2016.
http://www.nobelprize.org/nobel_prizes/peace/laureates/2009/.
- USSTRATCOM. 2014. *U.S. Strategic Command*. August 01.
<https://www.stratcom.mil/history/>.
- Watkinson, Kate. 1999. *Ethics of Development in a Global Environment*. August 18.
http://web.stanford.edu/class/e297c/war_peace/atomic/hcoldwar.html.
- Welch, Larry D. 2008. *The Defense Science Board Permanent Task Force on Nuclear Weapons Surety Report on the Unauthorized Movement of Nuclear Weapons*. Washington D.C.: February.
- Welch, Larry D., and John C. Harvey. 2014. *Independent Review of the Department of Defense Nuclear Enterprise*. Washington D.C.: Department of Defense.
- White, Josh. 2008. *The Washington Post*. March 26.
<http://www.washingtonpost.com/wp-dyn/content/article/2008/03/25/AR2008032501309.html>.
- Wyse, Susan E. 2014. *Advantages and Disadvantages of Face-to-Face Data Collection*. October 15. <http://www.snapsurveys.com/blog/advantages-disadvantages-facetoface-data-collection/>.

Vita

MAJOR MATTHEW D. BOONE

Major Matthew Boone is a student in the School of Advanced Nuclear Deterrence Studies (SANDS) at, Kirtland Air Force Base, New Mexico. He is completing an intense 13-month Intermediate Development Education program sponsored by Air Force Global Strike Command and Air Force Institute of Technology designed specifically for future leaders within the nuclear enterprise

Maj Boone received his commission from the Ohio Northern University, ROTC Detachment 620 in May 2003. He has served as an ICBM crew commander, instructor, Flight Commander and Executive Officer. His first assignment was to Minot AFB, ND, as a missile launch officer where he served in a variety of positions to include instructor and Chief of ICBM Codes. Maj Boone's previous assignments include Flight Commander/National Space Systems Operations Director, 566th Intelligence Squadron, Buckley AFB, CO, Executive Officer to the Director of Strategic Plans, Programs, Requirements, and Assessments, and Executive Action Officer, HQ Air Force Global Strike Command, Barksdale AFB, LA.

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