AU/ACSC/2016

AIR COMMAND AND STAFF COLLEGE

AIR UNIVERSITY

AIR NATIONAL GUARD C-130H AIRCRAFT MAINTENANCE OFFICER MANNING: IS THERE A BETTER OPTION?

by

Jerry W. Zollman Jr., Major, USAF

A Research Report Submitted to the Faculty

In Partial Fulfillment of the Graduation Requirements

Advisor: Dr. Fred P. Stone

Maxwell Air Force Base, Alabama

October 2016

Disclaimer

The views expressed in this academic research paper are those of the author and do not reflect the official policy or position of the US government or the Department of Defense. In accordance with Air Force Instruction 51-303, it is not copyrighted, but is the property of the United States government.

TABLE OF CONTENTS

Page

List of Figures:

Page

Abstract

Current Air National Guard (ANG) C-130H maintenance group organizational structure creates span of control imbalance for aircraft maintenance officers within the aircraft maintenance squadron (AMXS) and maintenance squadron (MXS). This research project will use the evaluation method to analyze the impact of moving one aircraft maintenance officer from the AMXS to the MXS in order to create two separate officer in charge billets within the MXS. This will be accomplished by comparing existing ANG C-130H maintenance group organizational structure to a notional organizational structure with these changes made. Four criteria will be used during the evaluation: cost, span of control, effects on professional development, and effects on management of aircraft maintenance.

Due to today's environment of fiscal constraints and budget cuts, a lot of thought was put into how to reorganize existing aircraft manpower and without creating additional cost or manpower requirements. Through careful analysis it was determined that the notional change would improve span of control balance, professional development opportunities, and overall ability to manage aircraft maintenance. These improvements could be made by shifting a single ANG C-130H unit type code (UTC) during a scheduled UTC review. This report makes the recommendation that the ANG C-130H HFSVD UTC be reassigned from the AMXS to the MXS.

Section I: Introduction

The C-130 Hercules has been the mainstay of the United States Air Force (USAF) airlift fleet for more than six decades. The C-130 Hercules is a versatile aircraft that fills a critical intra-theater airlift role for the United States military. The first production C-130 Hercules completed its initial flight on April 7, 1955.[1] The USAF currently maintains an inventory of 320 C-130 aircraft for combat delivery missions.[2] Of these 320 C-130 aircraft, the Air National Guard (ANG) operates 126 C-130H model aircraft.[3]

Typical active duty USAF C-130 airlift wings have 28 aircraft assigned and are organized into two flying squadrons with 14 aircraft each.[4] In contrast, ANG C-130 airlift wings have eight aircraft assigned and are organized into a single flying squadron. According to information in the report, active duty C-130 units are larger to support continuing rotational requirements.[5]

The National Guard Bureau determines aircraft maintenance manning levels for ANG C-130H maintenance groups. Air National Guard Instruction (ANGI) 38-201 *Determining Manpower Requirements* states, "National Guard Bureau (NGB)/A1MR will build Unit Manning Documents (UMD) in accordance with gaining Major Command (MAJCOM) approved Unit Type Codes (UTC) and Designed Operational Capability (DOC) taskings."[6] Current manning levels for ANG C-130H aircraft maintenance officers adequately allow units to fill UTCs for deployment.

Although ANG C-130H maintenance group UTCs work well in the Air Expeditionary Forces (AEF) deployed environment, the in-garrison organizational structure creates span of control issues for aircraft maintenance officers. This research paper examines the potential impact of moving one aircraft maintenance officer from the aircraft maintenance squadron (AMXS) to the maintenance squadron (MXS) in order to create two separate officer in charge

billets within the MXS. The AMXS is responsible for sortie generation through maintaining, launching, and recovering assigned aircraft.[7] The AMXS is manned by crew chiefs divided into two flights.[8] The MXS supports sortie generation through on and off equipment maintenance to include managing the isochronal inspection process.[9] The MXS is manned by specialist from twelve different Air Force Specialty Codes (AFSC) divided into two flights.[10]

In ANG C-130H maintenance groups, the MXS is nearly three times larger than the AMXS. The MXS is authorized 150 personnel and the AMXS is authorized 56 personnel.[11] Even though the MXS is three times larger they are assigned one less aircraft maintenance officer than the AMXS. The AMXS having more aircraft maintenance officers than the MXS creates span of control imbalance.

In today's environment of limited budgets and fiscal constraints, this report will explore re-organizing existing ANG C-130H maintenance group organizational structure utilizing existing manning levels. This paper will use the evaluation framework to determine if an alternate ANG C-130H maintenance group organizational structure would provide improved command and control by reducing span of control issues for aircraft maintenance officers.

The next section will identify problems that have led to span of control issues for ANG C-130H aircraft maintenance officers. Section III will set forth the criteria used to evaluate a comparison of existing ANG C-130H maintenance group organizational structure to a notional organizational structure. Four criteria will be used: cost, span of control, effects on professional development, and effects on management of aircraft maintenance. Section IV will analyze the comparison of the existing ANG C-130H maintenance group organizational structure to a notional organizational structure using the three criteria set forth in Section III. Section V will highlight the results from the comparison of the two organizational structures. Finally, Section

VI will consist of the conclusion of the research performed and a recommendation of what, if any, changes need to be made to the existing ANG C-130H maintenance group organizational structure.

Section II: Problem Identification

The USAF is in the process of recapitalizing all remaining active duty C-130H. C-130H are being replaced with C-130J model aircraft. According to a report published by the Congressional Research Service, the active duty USAF may not have any remaining C-130H as early as fiscal year 2018.[12] This will leave the ANG and the Air Force Reserve Command (AFRC) as the remaining total force operators of the C-130H. The difference between active duty USAF versus ANG C-130 units does not stop at the model of C-130. The size and organizational structure of active duty C-130J units differ from ANG C-130H units. An active duty C-130J airlift squadron has 14 aircraft assigned. Each C-130J base, such as Little Rock AFB, have two airlift squadrons for a total Primary Aerospace Vehicle Inventory (PAI) of 28. The active duty justifies larger squadrons to cover continuing rotational obligations.[13] In contrast, ANG C-130H airlift units are much smaller. ANG C-130H airlift squadrons are standardized to have 8 assigned aircraft. This was done to maximize the number of ANG C-130H units with the limited number of aircraft available to distribute. This construct also aligns with how ANG C-130H units are deployed in support of combatant commanders and the AEF construct. [14]

All aircraft maintenance officer positions on ANG C-130H equipped maintenance group UMDs are tied directly to UTC positions. Current ANG C-130H UTCs work well in the Air Expeditionary Forces construct. Aircraft maintenance personnel from both the aircraft maintenance squadron (AMXS) and maintenance squadron (MXS) combine to form an aircraft

maintenance unit (AMU) while deployed in support of the combatant commander. This AMU personnel package is deployed as AMXS C-130H UTC HNH4L dated 27 October 2004.[15] There is one aircraft maintenance officer attached to this UTC. There is also a second aircraft maintenance officer on a separate AMXS C-130H UTC HFSVD dated 22 Feb 2012. UTC HFSVD is designed to provide either a MXS or AMXS maintenance officer to a forward operating location. [16] This extra aircraft maintenance officer would be assigned as a maintenance operations officer (MOO) to an existing MXS or AMXS squadron structure. Because UTC HFSVD is listed as an AMXS UTC, the manning to support this UTC was placed in the AMXS on the UMD. Master Sergeant John Robey, who works at NGB/A1MR, stated the additional aircraft maintenance officer was placed in the AMXS in order to continue operations at home station when the lead package, UTC HNH4L, is deployed.[17]

Another problem currently facing ANG C-130H aircraft maintenance officers involves span of control issues for MXS aircraft maintenance officers. The additional aircraft maintenance officer from AMXS UTC HFSVD that is assigned to the AMXS on the UMD adds to the problem. The AMXS has a squadron commander and two aircraft maintenance officers assigned on the UMD to supervise 56 personnel. This translates into a span of control of approximately 28 personnel per aircraft maintenance officer assigned to the AMXS. In contrast, the MXS has a squadron commander and a single maintenance officer assigned on the UMD to supervise 150 personnel. This translates into a span of control of approximately 144 personnel for the one aircraft maintenance officer assigned to the MXS. In addition to the one MXS aircraft maintenance officer having such a large span of control, he or she is also managing personnel from 11 different AFSCs divided into 12 different work centers.[18] The assignment of aircraft maintenance officers to ANG C-130H UMDs is out of balance.

Lack of recent review of C-130H UTCs is leading to ANG C-130H units using outdated UTCs that are based on active duty manning. Colonel Barton Welker, Commander, 182d Maintenance Group (MXG), Illinois Air National Guard confirmed that the 182d Airlift Wing is assigned as the pilot unit for C-130H UTCs. He said the majority of the existing C-130H UTCs were written by active duty USAF units before recapitalization of the active duty C-130H model aircraft began.[19] This was confirmed by verifying the pilot unit listed on the UTCs. AMXS C-130H UTC HNH4L shows the 19th Airlift Wing, Little Rock AFB, Arkansas as the pilot unit.[20] Additionally MXS C-130H UTC HNDH1 shows the 317th Airlift Group, Dyess AFB, Texas as the pilot unit.[21] Col Welker said a comprehensive review and update of all C-130H maintenance group UTCs has not been accomplished since the 182d Airlift Wing became the pilot unit for UTC review.

A lot of thought has gone into placing aircraft maintenance officers into ANG C-130H maintenance groups to ensure UTC tasking can be met and into ensuring aircraft maintenance officers can backfill key positions when specific UTCs are tasked. It, however, does not appear that enough thought was put into how ANG C-130H maintenance officer placement on the UMD affects day to day operations at home station. Aircraft maintenance officer span of control imbalance is at its peak during unit training assemblies (UTA), when the entire maintenance group is assembled for training.

Section III: Evaluation Criteria

The goal of this project is to determine the impact of moving one aircraft maintenance officer from the AMXS to the MXS in order to create two separate officer in charge billets within the MXS. In order to do so, a comparison will be made between existing ANG C-130 maintenance group organizational structure and a notional organizational structure that

encompasses the movement of one aircraft maintenance officer from the AMXS to the MXS. The following evaluation criteria will be used: cost, span of control, effects on professional development, and effects on management of aircraft maintenance.

In today's environment of reduced budgets and fiscal limitations, proposed changes to manning should be reviewed to determine any costs associated with the movement. The ANG C-130H maintenance group notional organization structure will be reviewed to determine any cost that would be incurred to make the manning document changes. Examples of costs that could be incurred include additional manning authorizations if needed and the cost for a manpower study to verify the viability of changes.

The next criteria is the effect any movement has on span of control for aircraft maintenance officers. Existing ANG C-130H maintenance group organizational structure will be reviewed to determine span of control numbers for assigned aircraft maintenance officers. The notional organization structure will then be analyzed to determine how span of control numbers are affected for assigned aircraft maintenance officers. Along with span of control numbers for the amount of personnel supervised, the responsibility for supervising multiple AFSCs will be reviewed as well.

Additionally, both organizational structures will be reviewed to determine what impact the notional reorganization would have on professional development opportunities for aircraft maintenance officers. Where aircraft maintenance officers are assigned within the organization can have an effect on their ability to develop into leaders; leaders that are well rounded and prepared to take command as squadron commanders. Both organizational structures will also be reviewed to identify opportunities for placement of newly trained aircraft maintenance

officers. Positions will be identified that offer opportunity to receive mentorship and guidance from senior leaders and senior non-commissioned officers.

Finally, both organizational structures will be reviewed to determine what impact the notional reorganization would have on management of aircraft maintenance. Where aircraft maintenance officers are assigned within the organization can have a direct effect on how well aircraft maintenance is managed. Span of control, number of AFSCs managed, and chain of command will be analyzed to determine the effect on aircraft maintenance leadership.

Section IV: Analysis of organizational comparison

ANG C-130H maintenance groups currently have eight aircraft maintenance officers assigned. Figure 1, illustrates the current placement of aircraft maintenance officers within the maintenance group organization.

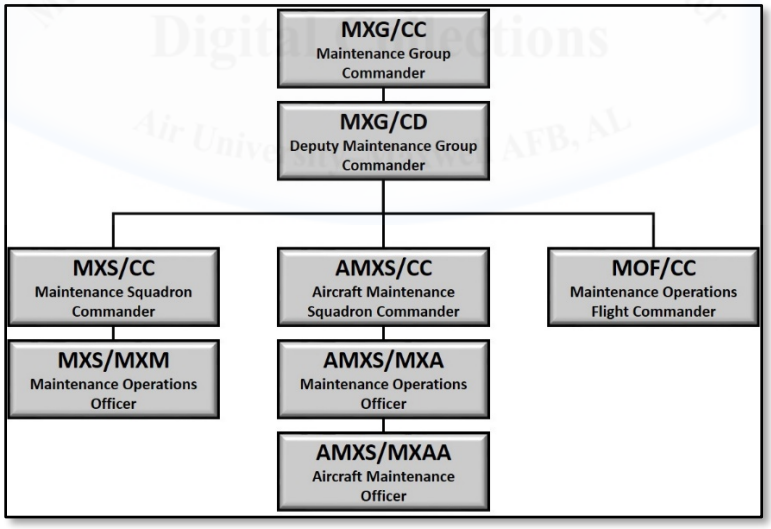

Figure 1. Current ANG C-130H MXG Aircraft Maintenance Officer Distribution (Adapted from 123d Airlift Wing, Unit Manning Document, 31 July 2015.)

Current ANG C-130H maintenance groups have 239 authorized personnel assigned as follows: MXS has 150, AMXS has 56, maintenance operations flight (MOF) has 21, and maintenance group (MXG) staff has 12.[22] The MXS is the largest squadron in the MXG and is

three times larger than the AMXS. However, because the HFSVD UTC is assigned to the AMXS, it is assigned one extra aircraft maintenance officer than the MXS.

The following four figures illustrate existing ANG C-130H MXS and AMXS organizational structure and notional organizational structures for comparison. Figure 2 and Figure 3 compare MXS organizational structures. Figure 4 and Figure 5 compare AMXS organizational structures. The positions shaded in green are positions that would be affected by the reorganization. The major difference is that one aircraft maintenance officer from the existing AMXS organizational structure (Figure 4.) is being moved to the notional MXS organizational structure (Figure 3).

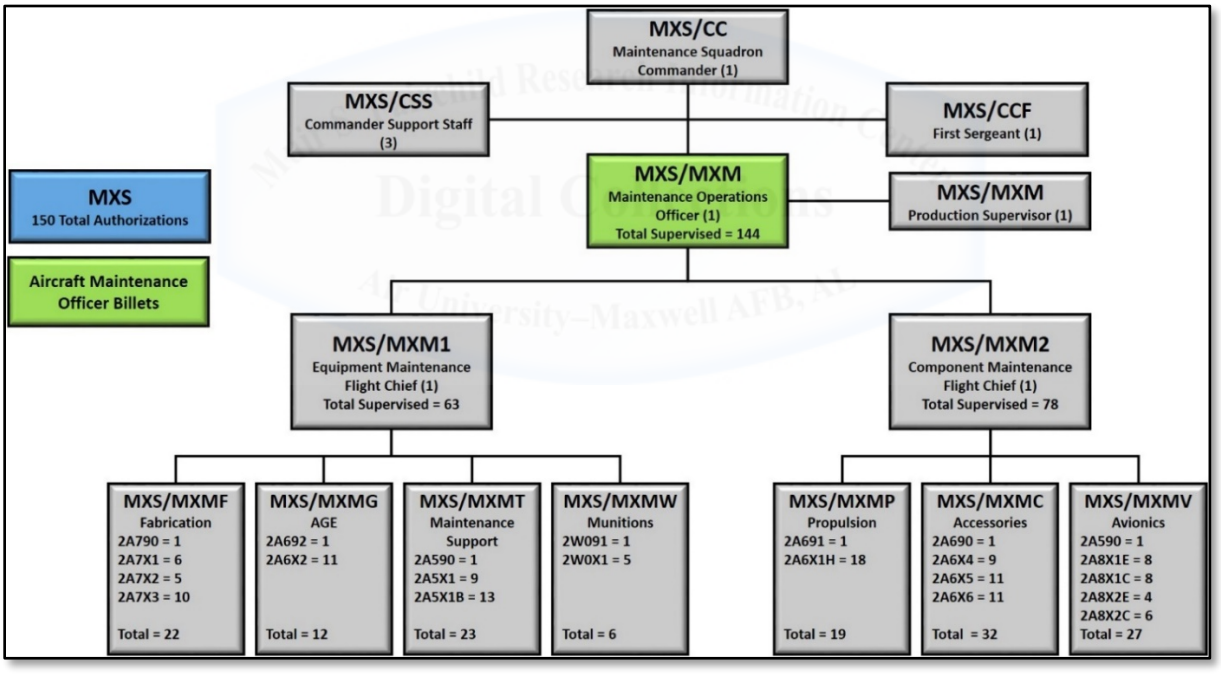

Figure 2. Existing ANG C-130H MXS Organizational Structure (Adapted from 123d Airlift Wing, Unit Manning Document, 31 July 2015.)

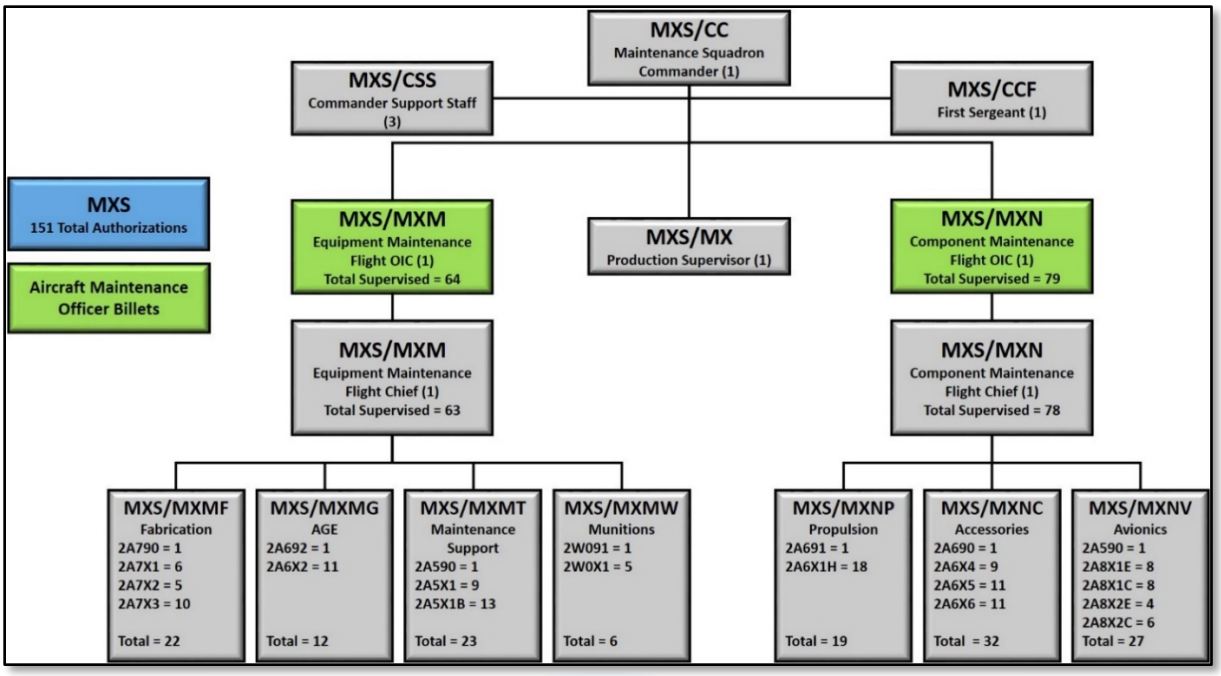

Figure 3. Notional MXS Organizational Structure with Additional Aircraft Maintenance Officer (Adapted from 123d Airlift Wing, Unit Manning Document, 31 July 2015.)

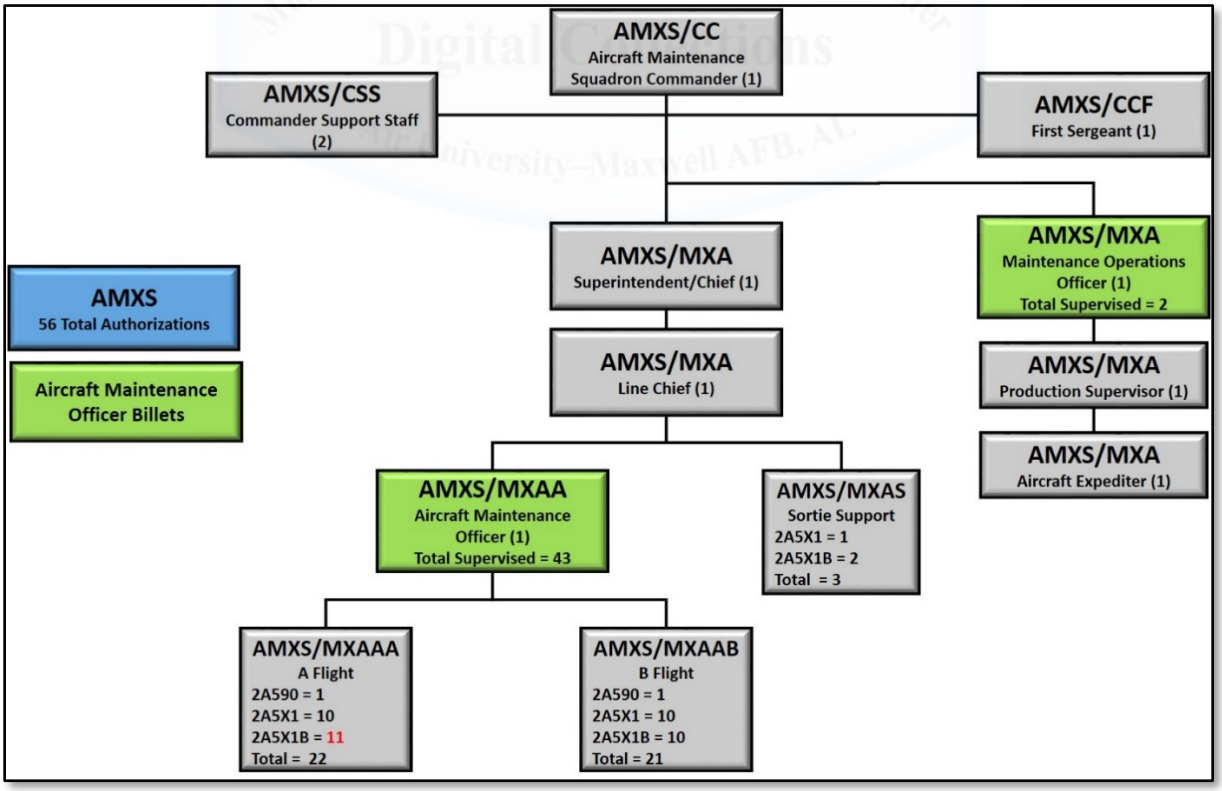

Figure 4. Current ANG C-130H AMXS Organizational Structure (Adapted from 123d Airlift Wing, Unit Manning Document, 31 July 2015.)

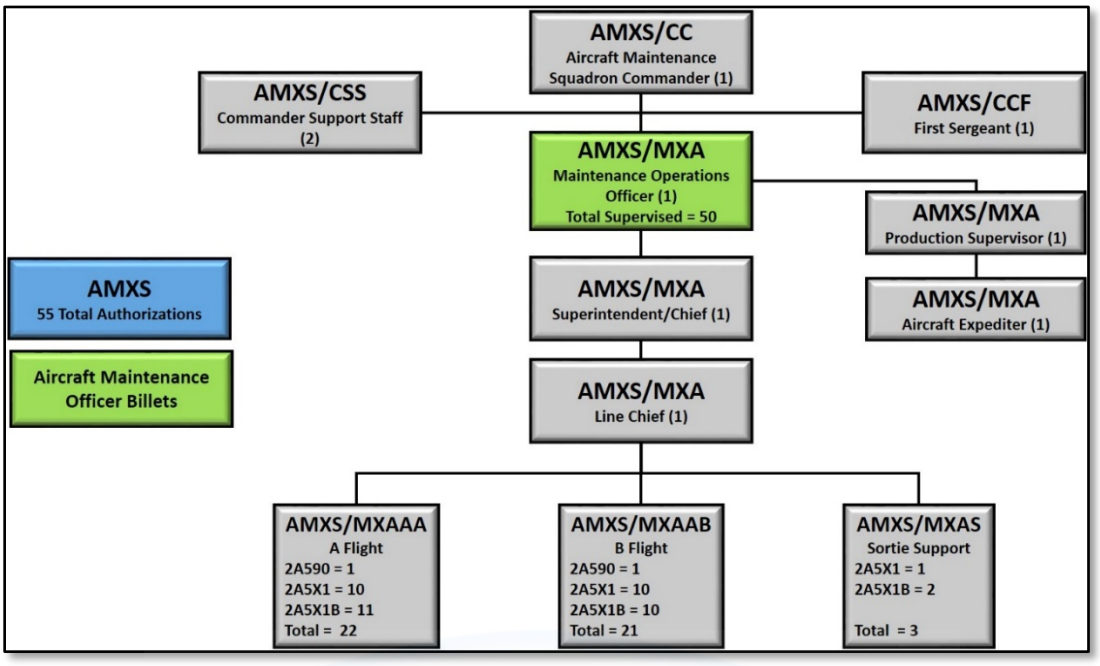

Figure 5. Notional AMXS Organizational Structure with One Aircraft Maintenance Officer Removed (Adapted from 123d Airlift Wing, Unit Manning Document, 31 July 2015.)

The organizational structures have been placed in consecutive order for ease of comparison. There would be no cost associated with leaving the existing MXS and AMXS organizational structures the way they are. Therefore, I will focus on any possible cost that would be associated with changing to the notional organizational structure.

By simply moving existing manpower authorizations via the Manpower Change Request (MCR) process, there would be no additional manning required in order to complete the reorganization.[23] According to ANGI 38-201, "create peacetime positions only when full-time requirements exceed UTC requirements or when an ANG approved mission or function is not UTC tasked."[24] Therefore, an additional non-UTC tasked aircraft maintenance officer position would not be authorized per ANGI-38-201.

According to ANGI 38-201, military manpower requirements are validated during UTC review.[25] In order to prevent additional cost associated with an out of cycle UTC or military

manning review, the notional reorganization of aircraft maintenance officers could occur during the next scheduled ANG C-130H MXG UTC review. Any changes accomplished during the scheduled UTC review would drive a manpower requirement review for impact on ANG units. So, as long as any reorganization happened along with the regularly scheduled UTC review, there would not be any new costs associated with moving one aircraft maintenance officer from the AMXS to the MXS.

The second area analyzed will be the effect of span of control for aircraft maintenance officers. As previously stated, the MXS has close to three time as many personnel as the AMXS. However, the AMXS benefits by being assigned ANG C-130H UTC HFSVD, which provides an additional aircraft maintenance officer. In Figure 2, existing ANG C-130H MXS squadrons have a single maintenance operations officer (MOO). This MOO supervises 144 personnel divided into two flights, the equipment maintenance flight (EMF) and component maintenance flight (CMF). Each flight has a Chief Master Sergeant assigned as a flight chief. In Figure 4, existing ANG C-130H AMXS squadrons have two aircraft maintenance officers assigned. The AMXS MOO supervises maintenance that is accomplished by 51 personnel in the organization. However, the MOO only directly supervises the production superintendent and expediter. There is a second aircraft maintenance officer assigned in the organization that supervises 43 assigned to the MXAAA and MXAAB flights. According to Master Sergeant John Robey, the AMXS MOO position is intended to focus on the overall supervision of aircraft maintenance at the squadron level. The aircraft maintenance officer at the MXAA level is to focus on leading the two flights of personnel under them.[26]

In Figure 3, the notional MXS squadron has a second aircraft maintenance officer added. The organizational structure is reorganized to place an aircraft maintenance in both the EMF and

CMF as an officer in charge (OIC). This change reduces span of control for the new EMF OIC to 64. Span of control for the new CMF OIC is reduced to 79. In contrast, in Figure 5 the notional AMXS organizational structure is changed to remove the aircraft maintenance officer at the MXAA level. Doing so does effect span of control for the remaining MOO. Span of control for the AMXS MOO would become 50. There would be an increased burden on the flight chiefs at the MXAAA and MXAAB level. However, these flight chiefs are backed up by both a line chief and superintendent at the MXA level.

Along with span of control, the number of different AFSCs supervised is substantially different between the MXS and AMXS. The AMXS is structured around the 2A5X1 Crew Chief AFSC.[27] According to Air Force Instruction (AFI) 21-101, Air National Guard Supplement (ANG SUP), *Aircraft and Equipment Maintenance Management*, "AMXS personnel service, inspect, maintain, launch, and recover assigned/transient aircraft."[28] Figure 4 shows that current AMXS structure consists of primarily 2A5X1 personnel divided into multiple flights. Responsibility for maintaining the eight C-130H aircraft is divided between the two flights. Each flight, MXAAA and MXAAB are assigned four aircraft each.

Figure 2 shows that MXS leadership is responsible for managing twelve different AFSCs structured into thirteen different work centers. According to AFI 21-101 ANG SUP, "the MXS maintains AGE, munitions, off-equipment aircraft and support equipment components; performs on-equipment maintenance of aircraft and fabrication of parts; and provides repair and calibration of TMDE."[29] Like the AMXS, the bulk of MXS personnel are divided into two flights, the EMF and CMF. The EMF is divided into four elements: the Fabrication Element, Aerospace Ground Equipment (AGE) Element, Maintenance Support Element, and Munitions Element. The CMF is divided into three elements: the Propulsion Element, Accessories

Element, and Avionics Element. The single MXS MOO is responsible for both the EMF and CMF.

In Figure 5, the notional AMXS organizational structure, the aircraft maintenance officer position is removed from the MXAA level. This change affects how aircraft maintenance is managed and will be further explained later in this section. However, it has no effect on management of different AFSCs since the AMXS is primarily staffed with 2A5X0 Crew Chiefs. In Figure 3, the notional MXS organizational structure, an aircraft maintenance officer is added, creating OIC positions in the EMF and CMF. The net effect of this move that both the EMF and CMF OIC now manage only six different AFSCs instead of a single MOO managing twelve AFSCs.

The third area analyzed is the effect notional organizational change would have on professional development of aircraft maintenance officers in ANG C-130H maintenance groups. The single MOO in the existing MXS organizational structure is responsible for managing 144 personnel with twelve different AFSCs organized into thirteen different work centers. This MOO position benefits from having a Chief Master Sergeant supervising both the EMF and CMF. According to AFI 36-2618, *The Enlisted Force Structure,* senior non-commissioned officers are charged to, "support commissioned officers' continued development by sharing knowledge and experience to best meet their organization's mission requirements. Build and maintain professional relationships with commissioned officers, striving to create effective leadership teams."[30] The large span of control and multiple AFSCs to manage, however, make this a very challenging position to place a newly commissioned aircraft maintenance officer.

In the current AMXS organizational structure, the aircraft maintenance officer at the MXAA level has the benefit of having the MOO at the MXA level available to back him or her

up and offer mentorship. This aircraft maintenance officer also has the benefit of mentorship and guidance from the Chief Master Sergeant and Senior Master Sergeant at the MXA level. This provides an opportunity to place a newly commissioned aircraft maintenance officer into a billet that allows for mentorship and professional development.

In Figure 5, the notional AMXS organizational structure, the aircraft maintenance officer at the MXAA level is removed. This aircraft maintenance officer position is moved to the notional MXS organizational structure as the EMF OIC. The existing MOO within the MXS organizational structure becomes the CMF OIC. With reduced span of control and number of AFSCs managed, both EMF and CMF OIC positions become billets a newly commissioned aircraft maintenance officer could be placed. Each newly commissioned officer would be paired with a Chief Master Sergeant flight chief that would provide mentorship and guidance to the OIC. This notional change would allow both EMF and CMF OIC to get more involved and learn more about each of the AFSCs they manage.

The fourth and final area analyzed is the impact the notional change in ANG C-130H maintenance group organizational structure would have on management of aircraft maintenance. According to Master Sergeant Robey, from NGB/A1MR, existing AMXS squadrons benefit from receiving an additional aircraft maintenance officer due to ANG C-130H UTC HSFVD being assigned to the AMXS.[31] This creates an additional aircraft maintenance officer position that is placed at the MXA level and acts as the MOO for the AMXS. The AMXS MOO works directly with the squadron superintendent, line chief and production superintendent. The MOO focuses on the overall maintenance effort leaving supervision of MXAAA and MXAAB flights to the aircraft maintenance officer at the MXAA level. According to Sergeant Robey, the most likely UTC to be tasked for ANG C-130H units is the HNH4L UTC.[32] This is the personnel

package to accompany a four C-130H deployment.[33] Sergeant Robey explained that the AMXS aircraft maintenance officer at the MXAA level would be the officer tasked with deploying with the HNH4L UTC. This UTC meets typical AEF tasking for ANG C-130H units. For this reason, the extra AMXS aircraft maintenance officer earned by the HFSVD UTC was placed in the AMXS to fill in during the absence of the aircraft maintenance officer at the MXAA level.[34] While in garrison, without UTCs deployed, the extra aircraft maintenance officer assigned as the MOO at the MXA level is truly an extra aircraft maintenance officer.

The primary function of the MXS is to manage the isochronal inspection process on C-130H aircraft. According to Sergeant Robey, management of the isochronal inspection process and assignment of ANG C-130H HNDH1 UTC to the MXS is how the single existing MXS MOO is earned and authorized on the UMD.[35] However, the isochronal inspection is not the only function the MXS MOO has to manage. The MXS MOO manages scheduled and unscheduled on and off equipment maintenance to support sortie generation. According to Sergeant Robey, existing MXS organizational structure does not warrant a second aircraft maintenance officer due to the fact that the leadership team is all assigned under the single MXM Office Symbol Code (OSC)[36]. There, however, are two Chief Master Sergeant billets assigned at the MXM level who both share the same OSC on the UMD.[37] Although it is not reflected on the UMD, the EMF Chief is designated MXM1 and the CMF Chief is designated MXM2.

In Figure 5, notional AMXS organizational structure, the aircraft maintenance officer at the MXAA is removed. This would affect how aircraft maintenance is managed in the AMXS. The AMXS MOO that is currently focused on the overall maintenance effort through the production superintendent would have to also begin supervising the flights at the MXAAA and MXAAB level. The AMXS MOO's span of control would increase from the two personnel he

directly supervises to 50 personnel. This change would add more responsibility on the flight chiefs at the MXAAA and MXAAB level. But this would be offset by these two flight chiefs, who would have the squadron superintendent, line chief and production supervisor above them to coordinate the maintenance effort.

In Figure 3, notional MXS organizational structure, the MXS MOO position is eliminated and OIC positions are created for the EMF and CMF. The removal of the MXS MOO position does take away the aircraft maintenance officer position with responsibility of supervising and coordinating the maintenance effort of the whole squadron. However, this is the role that is filled by the MXS production superintendent. The production superintendent remains in a position that reports directly to the squadron commander and coordinates the maintenance effort for the entire squadron. By placing aircraft maintenance officers in OIC positions over both the EMF and CMF they take ownership of their flights. Each new OIC's span of control is reduced by half of what the original MOO span of control is in the existing organizational structure. Each OIC only has to manage six different AFSCs which greatly reduces the workload for both OICs. The EMF OIC could take ownership of the isochronal inspection process. The production superintendent would coordinate the effort of the entire squadron for the isochronal inspection. This would leave the EMF OIC to focus on improving the isochronal inspection process.

During the 21 March 2016 interview, Sergeant Robey explained that aircraft maintenance officers are assigned within ANG C-130H maintenance groups to allow units to adjust to manage maintenance functions after different UTCs are deployed. As I alluded to earlier in this section, Sergeant Robey explained that the current AMXS aircraft maintenance officer at the MXAA position is tied to the HNH4L UTC. This UTC is the lead personnel package to accompany and support a deployment of four or more C-130H aircraft. In the event that the HNH4L UTC

deploys the AMXS MOO at the MXA level assumes leadership of the remaining 2A5X1 Crew Chiefs to manage home station flying for the remaining aircraft.[38]

Sergeant Robey went on to explain that the current MXS MOO is earned by and assigned to the HNDH1 UTC. This UTC is the heavy isochronal inspection package. This UTC includes the current MXS MOO and one of the Chief Master Sergeant flight chiefs within the MXS. Since the capability to perform isochronal inspections will be deployed, the remaining Chief Master Sergeant flight chief would manage the MXS maintenance effort for home station flying support.[39]

Colonel Kenneth J. Dale, Commander of the 123d Maintenance Group, Kentucky Air National Guard related that Sergeant Robey's explanation makes sense on paper. However, ANG C-130H maintenance groups do not always deploy the individual that is currently assigned to the UTC being tasked. Maintenance group commanders must rotate aircraft maintenance officers regularly through the different available positions within the maintenance group for professional development. ANG personnel do not have permanent change of station moves that open up opportunities for professional development throughout the entire air force. ANG personnel are limited to rotating between the available billets within their assigned state. Just because the HNH4L UTC is the most likely UTC to be tasked does not mean the AMXS MXAA level maintenance officer is the most likely individual to deploy. ANG C-130H maintenance groups fill UTC taskings with the most qualified individual available that is ready and willing to deploy when the tasking arrives.[40]

The notional AMXS organizational structure depicted in Figure 5 only has one aircraft maintenance officer assigned as the AMXS MOO. This position would be assigned to the 21A3 aircraft maintenance officer position in the HNH4L UTC. The notional MXS organizational

structure depicted in Figure 3 has two aircraft maintenance officers assigned. The EMF OIC position would be assigned to the 21A3 aircraft maintenance officer position in the HNDH1 UTC. The CMF OIC position would be assigned to the 21A3 aircraft maintenance officer position on the HFSVD UTC. ANG C-130H UTC HFSVD "provides an MXS/AMXS maintenance officer to a forward operating location."[41] Since this individual could be used in the capacity of either a MXS or AMXS MOO, there is no requirement for it be assigned to an AMXS unit at home station.

UTC	Squadron	Title	OSC
HNH4L	AMXS	Aircraft Maintenance Officer	AMXS/MXAA
HNDH1	MXS	Maintenance Operations Officer	MXS/MXM
HFSVD	AMXS	Maintenance Operations Officer	AMXS/MXA

UTC	Squadron	Title	OSC
HNH4L	AMXS	Maintenance Operations Officer	AMXS/MXA
HNDH1	MXS	Officer in Charge	MXS/MXM
HFSVD	MXS	Officer in Charge	MXS/MXN

Figure 6. Current versus Notional ANG C-130H AMXS and MXS Aircraft Maintenance Officer UTC Assignments (Adapted from AMXS UTC HNH4L, 27 Oct 2004, AMXS UTC HSFVD, 22 Feb 2012, and MXS UTC HNDH1, 31 Jan 2013.

Section IV: Result of Analysis

In the last section, I analyzed the impact of moving one Aircraft Maintenance Officer from the AMXS to the MXS in order to create two separate officer in charge billets within the MXS. In a separate interview with Master Sergeant John Robey, NGB/A1MR, on 29 September 2016, the process of manpower studies for ANG units was discussed. I asked what type of manpower study would drive moving ANG C-130H aircraft maintenance officer positions on the UMD. Sergeant Robey informed me that the ANG only accomplishes manpower studies for full time positions through the use of Logistics Composite Model (LCOM) studies. Military positions are

not determined by manpower studies, but rather are determined by UTC requirements. After UTC changes are made, UMDs are adjusted to align with and ensure UTC requirement are met.[42]

A UTC review is the way to affect changes to UMD positions in ANG units. However, there would be cost associated with an out of cycle UTC and UMD review specifically to make the notional changes. Therefore, any notional changes would be held until the next scheduled UTC review. By making the notional changes during a scheduled UTC review, the notional moves could be combined with other moves generated by the review. A UMD review would take place after the scheduled UTC review provided changes were made to UTC manning levels per ANGI 38-201.[43] There would be no additional costs associated with combining the notional organizational changes with other changes driven by the scheduled UTC review.

The second criteria used in the analysis was the impact on span on control. The notional change to ANG C-130H maintenance group organizational structure would lessen span of control for MXS aircraft maintenance officers without significantly increasing span of control for AMXS aircraft maintenance officers. The notional change would also decrease the number of different AFSCs MXS aircraft maintenance officers manage without any change in the number of AFSCs AMXS aircraft maintenance officers manage.

The notional change to the MXS organizational structure shown in Figure 3 would eliminate a single MOO position that is currently has a span of control of 144 personnel, holding 12 different AFSCs, and organized into 13 different work centers. The notional organizational structure moves the eliminated MXS MOO position to the EMF OIC position. The AMXS MXAA aircraft maintenance officer moves to the CMF OIC position. As shown in Figure 7, the EMF OIC would now have a span of control of 64 personnel holding six different AFSCs

organized into seven different work centers. As shown in Figure 8, the CMF OIC would now have span of control of 79 personnel holding six different AFSCs, organized into six different work centers.

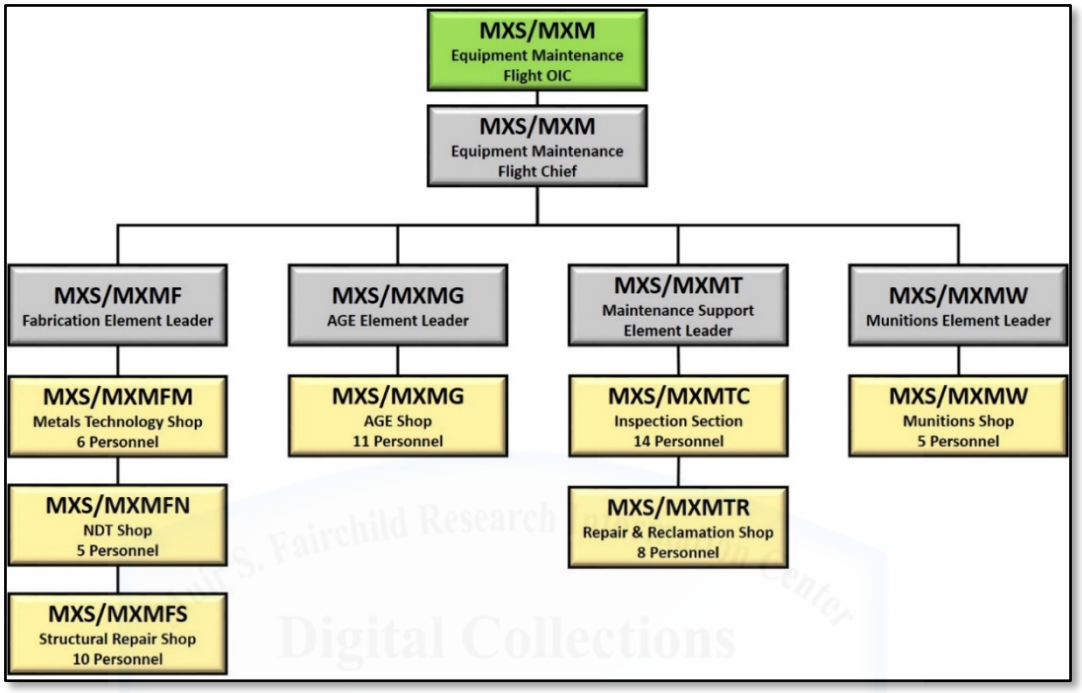

Figure 7. Notional Equipment Maintenance Flight Structure (Adapted from 123d Airlift Wing, Unit Manning Document, 31 July 2015.)

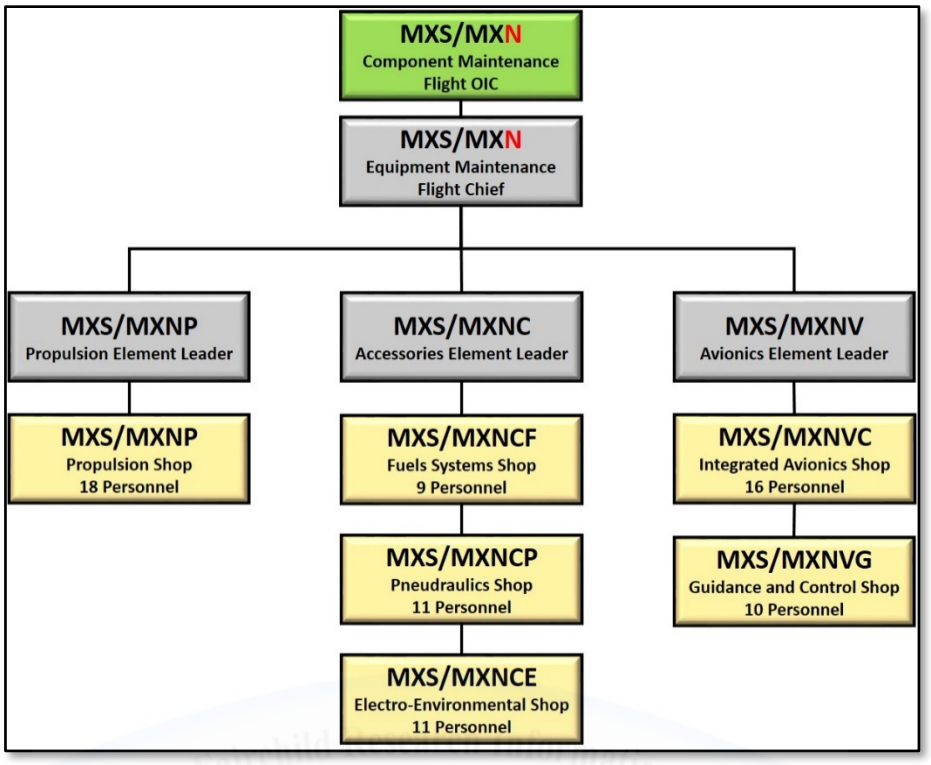

Figure 8. Notional Component Maintenance Flight Structure (Adapted from 123d Airlift Wing, Unit Manning Document, 31 July 2015.)

The notional change to the AMXS organizational structure shown in Figure 5 would eliminate the MXAA aircraft maintenance officer position. This would increase responsibility for the AMXS MOO. However, span of control would only increase by seven personnel after assuming the span of control relinquished by the MXAA aircraft maintenance officer. The total span of control for the AMXS MOO on the notional organizational chart is 50 personnel. There would be no difference in management of AFSCs since the AMXS MOO would continue to only manage 2A5X1 personnel as they currently do.

The third criteria used in the analysis was the impact on professional development. The notional change to ANG C-130H maintenance group organizational structure would increase opportunity for professional development of aircraft maintenance officers. Although the improvements are not significant, they are measureable.

Currently, the AMXS MOO position is the only suitable location to place a newly commissioned aircraft maintenance officer within either the AMXS or MXS in ANG C-130H maintenance groups. This is because the AMXS benefits from the additional aircraft maintenance officer by being assigned the HFSVD UTC. Lieutenant Colonel James C. Bishop, Commander of the 123d Aircraft Maintenance Squadron, Kentucky Air National Guard, confirmed that he places newly commissioned aircraft maintenance officers into the AMXS MOO position. He does so because the AMXS MOO focuses entirely on aircraft maintenance management leaving management of personnel from MXAAA and MXAAB flight to the second aircraft maintenance officer.[44] This allows aircraft maintenance officers fresh out of the Aircraft Maintenance Officer Course to focus on accomplishing on the job training per the 21AX Career Field Education and Training Plan without distraction of managing personnel. [45]

The notional change moves the aircraft maintenance officer earned by the HFSVD UTC to the MXS. Creating the EMF and CMF OIC positions provide opportunity for each officer to pair up with a Chief Master Sergeant flight chief. This arrangement gives the officers exposure to maintenance leadership with the benefit of having a seasoned Chief Master Sergeant to support them. This notional change would create two positions within ANG C-130H maintenance groups suitable for placement of newly commissioned aircraft maintenance officers. Colonel Dale agreed that this arrangement would be conducive to placement of new aircraft maintenance officers because of the support provided by the Chief Master Sergeant flight Chief.[46] The end result of the notional change is that the three aircraft maintenance officers in the AMXS and MXS are now paired directly with a Chief Master Sergeant for support, guidance and mentorship.

The fourth criteria used in the analysis was the impact of how the notional change would affect management of aircraft maintenance. The notional organizational structures in figure 3 and 5 show an alternate way to make use of the additional aircraft maintenance officer earned by the HFSVD UTC. Moving one aircraft maintenance officer from the AMXS to the MXS reduces and balances span of control for AMXS and MXS aircraft maintenance officers.

Dividing the responsibility for managing the different MXS shops between the EMF OIC and CMF OIC would decrease workload compared to having one existing MXS MOO. Each OIC could take ownership of their flight and focus on making improvements. This move also decreases the overall number of AFSCs each MXS OIC has to manage. This would allow each of the MXS OICs to focus on the shops they are responsible for. The isochronal inspection process is the main focus of the MXS. This change would allow the EMF OIC to focus on improving the isochronal inspection process.

There are two negative drawbacks to making this change. The first drawback is that removing the MXS MOO position to create the EMF OIC position. This change removes the aircraft maintenance officer from the MXS organizational structure responsible for overseeing and managing the maintenance effort for the entire squadron. However, this drawback is mitigated by leaving the MXS production superintendent in this role to coordinate maintenance production for the entire squadron.

The second drawback to making this change involves how the AMXS manages aircraft maintenance and sortie production. In the current AMXS organizational structure the MOO at the MXA level is only responsible for managing maintenance on the aircraft through the production superintendent and expediter. The change eliminates the second aircraft maintenance officer at the MXAA level who manages the MXAAA and MXAAB flights. The change

combines the responsibility of both of these positions into the AMXS MOO position. The added responsibility on the AMXS MOO would affect his or her ability to manage sortie production and aircraft maintenance. However, this is also mitigated by the fact that the AMXS MOO would have the production supervisor and expeditor managing this process.

It appears that a lot of thought went into how ANG C-130H aircraft maintenance officers are assigned with the AMXS and MXS. This was to ensure that organizational structure on the UMD matches UTC assignments and there is adequate home station coverage if a UTC is deployed. Although Sergeant Robey's explanation of how AMXS and MXS aircraft maintenance officers are assigned to UTCs makes sense on paper, Colonel Dale was able to explain that, in reality, ANG C-130H units do not deploy personnel according to which UTC they are assigned to on a daily basis. ANG C-130H units fill aircraft maintenance officer UTCs with the individual that is most qualified and ready to deploy, from anywhere within the maintenance group.[47] Sergeant Robey also made the point that the HFSVD UTC is assigned to the AMXS based on the likelihood that the HNH4L UTC will deploy be deployed first. Sergeant Robey contends that AMXS MOO would backfill for the MXAA aircraft maintenance officer that would deploy with the HNH4L UTC. [48] If Colonel Dale decides to deploy the aircraft maintenance officer currently assigned as the MXS MOO with the HNH4L package, because he or she is more qualified and ready, that logic does not work.

Section V: Conclusion and Recommendations

Leadership within the ANG is constantly dealing with budget reductions, sequestration, and fiscal scrutiny. The goal of this research was to determine if there is a better way of doing business without creating new costs or manpower requirements. This research project evaluated

the impact of moving one aircraft maintenance officer from the AMXS to the MXS in order to create two separate officer in charge billets within the MXS.

I have concluded that the change would be an overall improvement for ANG C-130H maintenance groups. There were a few drawbacks to the change. However, mitigation measures, improvement to span of control, professional development, and improved maintenance management outweigh the drawbacks. By placing two officers in the MXS as OICs, span of control for the EMF OIC is reduced by 56 percent and the CMF by 45 percent when compared to having a single MXS MOO with a span of control of 144. In contrast, consolidating the responsibility of the two current AMXS aircraft maintenance officers into one MOO position, increases span of control for this position by 15 percent over the current MXAA aircraft maintenance officer span of control of 43. Lieutenant Colonel Bishop indicated that having the second aircraft maintenance officer earned by the HSFVD UTC is a luxury that the squadron could easily function without.

I recommend that the HFSVD UTC from the AMXS should be reassigned to the MXS during the next scheduled ANG C-130H UTC review. This would generate a UMD review to determine how the UTC change affects manning levels. An Organizational Change Request (OCR) would be accomplished to reorganize both AMXS and MXS structure to reflect the notional organizational structures depicted in Figures 3 and 5. Along with the OCR, an MCR would need to be accomplished to move the aircraft maintenance officer positions on the UMD. Sergeant Robey explained that the MXS does not earn a second aircraft maintenance officer position, because the MXS organizational structure shares the same OSC, which is MXM.[49] During the process of accomplishing the OCR I would recommend establishing a new OSC for the CMF. This is depicted in Figures 3 and 8 where the OSC has been changed to MXN for the

CMF. The letter N, which is highlighted in red, is being used for notional purposes during this research project. An appropriate letter would need assigned when the OCR is submitted.

ANG C-130H maintenance group UTCs work well for supporting the Combatant Commander in theater during AEF deployments. The current UMD adequately supports and aligns with the UTCs as they are published. However, the resulting UMD does not meet the needs of ANG C-130H maintenance groups while managing maintenance operations at home station. ANG C-130H UTC HNH4L has not been revised since 2004[50]. This is the most likely UTC to be tasked for deployment for ANG C-130H units. This UTC was designed and built by an active Duty USAF unit that does not reflect current ANG C-130H unit structure or manning levels. It is time for a comprehensive ANG C-130H UTC review. This notional change represents a way to balance span of control for aircraft maintenance officers and improve home station maintenance efficiency without affecting the ability to fill all required UTCs. Simply reassigning one UTC would set this notional change in motion.

Endnotes

[1]. C-130J Super Hercules. "Hercules History." Lockheed Martin.
[2] Military Times. "Annual Aviation Inventory and Funding Plan: Fiscal Years (FY) 2017-2046."
[3] United States Air Force. "Report on C-130 Force Structure," 9.
[4] Ibid., page 10.
[5] Ibid., page 10.
[6] Air National Guard Instruction (ANGI) 38-201, *Determining Manpower Requirements*, 27 April 2009, page 5.
[7] Air Force Instruction (AFI) 21-101, Air National Guard Supplement, *Aircraft and Equipment Maintenance Management*, 4 March 2016, page 44.
[8] 123d Airlift Wing, Unit Manning Document, 31 July 2015.
[9] Air Force Instruction (AFI) 21-101, Air National Guard Supplement, *Aircraft and Equipment Maintenance Management*, 4 March 2016, page 60.
[10] 123d Airlift Wing, Unit Manning Document, 31 July 2015.
[11] Ibid.
[12] Heisler, "C-130 Hercules: Background, Sustainment," 27.
[13] United States Air Force. "Report on C-130 Force Structure." Report to Congressional Committees, 10.
[14] Ibid., page 10.
[15] Aircraft Maintenance Squadron Unit Type Code HNH4L, 27 Oct 2004.
[16]Aircraft Maintenance Squadron Unit Type Code HFSVD, 22 Feb 2012.
[17] Robey, MSgt John H., interview by the author, 21 March 2016.
[18] 123d Airlift Wing, Unit Manning Document, 31 July 2015.

[19] Welker, Col Barton. 182d Maintenance Group Commander, Illinois Air National Guard, Peoria, IL, interview with the author, 18 March 2016.
[20] Aircraft Maintenance Squadron Unit Type Code HNH4L, 27 Oct 2004.
[21] Maintenance Squadron Unit Type Code HNDH1, 31 Jan 2013.
[22] 123d Airlift Wing, Unit Manning Document, 31 July 2015.
[23] Air National Guard Instruction (ANGI) 38-201, *Determining Manpower Requirements*, 27 April 2009, page 5.
[24] Ibid., page 5.
[25] Ibid., page 4.
[26] Robey, MSgt John H., interview by the author, 21 March 2016.
[27] 123d Airlift Wing, Unit Manning Document, 31 July 2015.
[28] Air Force Instruction (AFI) 21-101, Air National Guard Supplement, *Aircraft and Equipment Maintenance Management*, 4 March 2016, page 44.
[29] Ibid., page 60.
[30] Air Force Instruction (AFI) 36-2618, *The Enlisted Force Structure*, 23 March 2012, page 13.
[31] Robey, MSgt John H., interview by the author, 21 March 2016.
[32] Ibid.
[33] Aircraft Maintenance Squadron Unit Type Code HNH4L, 27 Oct 2004.
[34] Robey, MSgt John H., interview by the author, 21 March 2016.
[35] Ibid.
[36] Ibid.
[37] 123d Airlift Wing, Unit Manning Document, 31 July 2015.
[38] Robey, MSgt John H., interview by the author, 21 March 2016.
[39] Ibid.
[40] Dale, Col Kenneth J., interview by the author, 22 April 2016.
[41] Aircraft Maintenance Squadron Unit Type Code HFSVD, 22 Feb 2012.
[42] Robey, MSgt John H., interview by the author, 29 September 2016.
[43] Air National Guard Instruction (ANGI) 38-201, *Determining Manpower Requirements*, 27 April 2009, page 5.
[44] Bishop, Lt Col James C., interview by the author, 12 October 2016.
[45] Department of the Air Force. "21A3 AFSC Aircraft Maintenance Officer: Career Field Education and Training Plan," Headquarters United States Air Force, Washington DC, 25 July 2013.
[46] Dale, Col Kenneth J., interview by the author, 22 April 2016.
[47] Ibid.
[48] Robey, MSgt John H., interview by the author, 21 March 2016.
[49] Ibid.
[50] Aircraft Maintenance Squadron Unit Type Code HNH4L, 27 Oct 2004.

Bibliography

123d Airlift Wing, Unit Manning Document, 31 July 2015.

Air Force Instruction (AFI) 21-101, Air National Guard Supplement, *Aircraft and Equipment Maintenance Management*, 4 March 2016.

Air Force Instruction (AFI) 36-2618, *The Enlisted Force Structure*, 23 March 2012.

Air National Guard Instruction (ANGI) 38-201, *Determining Manpower Requirements*, 27 April 2009.

Aircraft Maintenance Squadron Unit Type Code HFSVD, 22 Feb 2012.

Aircraft Maintenance Squadron Unit Type Code HNH4L, 27 Oct 2004.

Bishop, Lt Col James C., interview by the author, 12 October 2016.

C-130J Super Hercules. "Hercules History." Lockheed Martin. http://lockheedmartin.com/us/products/c130/History.html (accessed 17 Sep 16).

Dale, Col Kenneth J., interview by the author, 22 April 2016.

Department of the Air Force. "21A3 AFSC Aircraft Maintenance Officer: Career Field Education and Training Plan," Headquarters US Air Force, Washington DC, 25 July 2013.

Heisler, Timrek. "C-130 Hercules: Background, Sustainment." Congressional Research Service, 24 June 2014. https://www.fas.org/sgp/crs/weapons/R43618.pdf (accessed 17 Sep 2016).

Maintenance Squadron Unit Type Code HNDH1, 31 Jan 2013.

Military Times. "Annual Aviation Inventory and Funding Plan: Fiscal Years (FY) 2017-2046." http://ec.militarytimes.com/static/pdfs/2016-Annual-Aviation-Report.pdf (accessed 17 Sep 16).

Robey, MSgt John H., NGB/A1MR, interview by the author, 21 March 2016 and 29 September 2016.

United States Air Force. "Report on C-130 Force Structure." Report to Congressional Committees, March 2015, http://bloximages.newyork1.vip.townnews.com/fayobserver.com/content/tncms/assets/v3/editorial/8/af/8af67970-e302-11e4-845f-6ff9ea3c949d/552daa7d65f79.pdf.pdf

Welker, Col Barton. 182d Maintenance Group Commander, Illinois Air National Guard, Peoria,

IL, interview with the author, 18 March 2016.