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Personnel, the Class 0 Supply Item: A Logistics Management Approach to Supplying Combatant Commanders with Warfighters

William P. Beard

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PERSONNEL, THE CLASS 0 SUPPLY ITEM: A LOGISTICS MANAGEMENT
APPROACH TO SUPPLYING COMBATANT COMMANDERS WITH
WARFIGHTERS

THESIS

William P. Beard, Captain, USAF

AFIT/LSCM/ENS/12-01

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THESIS

Presented to the Faculty

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Air University

Air Education and Training Command

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Logistics Management

WILLIAM P. BEARD

Captain, USAF

March 2012

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Abstract

The Air Force's end strength has drawn down from 530,000 to just over 332,000 in the past 20 years. All indications are that resources will continue to become more restricted in the future, including manpower. Meanwhile, studies indicate that the Air Force will likely continue to withdraw permanently stationed forces overseas and rely increasingly on the Air Expeditionary Force (AEF) construct for rapid mobility and force projection. With the AEF and efficient manpower utilization projected to become increasingly important, this study provides the first examination of the AEF as an overarching process for improvement opportunities. It proposes that the concept of AEF requirement fulfillment is actually a supply chain designed to supply Combatant Commanders with equipment and warfighters. It focuses on the fulfillment of manpower requirements identifying them as a Class 0 Supply Item and uses Supply Chain and Logistics Management principles to conduct an initial examination of the process to identify overarching relationships and process flow. Using the information gathered, it then maps the conceptual relationships and develops a statistical probability model to aid leaders and future researchers in analyzing expected costs and benefits of various targeted changes within the current construct. This study proposes new methods for managing AEF manpower capabilities, a new application of SCM principles, and hopes to be a solid platform for a multi-phase study aimed at reengineering the AEF, from force reporting to sourcing in an effort to maximize manpower utilization and provide senior leadership and the planning community more accurate force accountability.

To Mom and Dad

“When you walk, they will guide you; when you sleep, they will watch over you; when you awake, they will speak to you” ~Proverbs 6:22.

Acknowledgments

I would like to express my sincere appreciation to my faculty advisor, Lt Col Sharon Heilmann and committee member Dr. Alan Johnson for your guidance and support and expert advice throughout the course of this thesis effort. I would also like to thank Mr. Dan Soha and Lt Col Keryl Green for all of your outstanding assistance.

William P. Beard

Table of Contents

	Page
Abstract	iv
Table of Contents	vii
List of Figures	ix
List of Tables	x
I. Introduction	1
II. Methodology	8
III. Process Discovery	12
Establishing Manpower Requirements	12
The Air Expeditionary Force	17
Electronic Data Interface Systems Used to Support the AEF Process	25
Capability Limitations	28
Reporting Status of Forces	34
AEF Rotation Planning	39
Types of Taskings	41
AEF Sourcing	42
Summary	53
IV. Analysis and Results	55
Supply Chain Maps	56
Statistical Probability Decision Tree	60
Summary	71
V. Conclusions and Recommendations	73
Conclusions of Research	73
Significance of Research	80

Limitations of Research.....	81
Recommendations for Action and Future Research.....	82
Appendix A: DAV Codes (AFI_10-403, 2008).....	84
Appendix B: ART Checklist (AFI_10-244, 2010)	85
Appendix C: Supply Chain Maps	86
Appendix C: Supply Chain Maps	87
Appendix D: Statistical Probability Decision Tree.....	90
Appendix E: Quad Chart.....	104
Bibliography	105

List of Figures

	Page
Figure 1. Joint Sourcing Planning System.....	13
Figure 2. JSPS Execution.....	13
Figure 3. Request For Forces/Capabilities.....	16
Figure 4. AEF Band A & B	23
Figure 5. AEF Bands C, D, & E	24
Figure 6. War Planning & Execution System.....	26
Figure 7. MEB Process	32
Figure 8. UTC Assessment Flow Chart	36
Figure 9. AEF Rotation Timelines.....	40
Figure 10. By Name Sourcing Process	45
Figure 11. AFPC Sourcing Process	48
Figure 12. UIC/UTC Sourcing Process	49
Figure 13. Wing/Unit Level Sourcing	50

List of Tables

	Page
Table 1. Statistical Probability Decision Tree Summary	68
Table 2. Simulation of 95% Medical Success	69

PERSONNEL, THE CLASS 0 SUPPLY ITEM: A LOGISTICS MANAGEMENT APPROACH TO SUPPLYING COMBATANT COMMANDERS WITH WARFIGHTERS

I. Introduction

The official vision of the United States Air Force lists Air and Space Superiority, Global Attack, Rapid Global Mobility, Precision Engagement, Information Superiority, and Agile Combat Support as the Air Force's six distinctive capabilities (www.af.mil, 2012). At least two of those distinctive capabilities, Rapid Global Mobility & Agile Combat Support rely upon the ability to rapidly project our resources anywhere in the world. In part, this means the ability to rapidly send people and equipment anywhere the Air Force is called upon. The future of the Air Force will likely demand continued improvement on our processes and resource utilization at a rate the Air Force has yet to imagine.

General Shaud (ret.) and Adam Lowther authored a strategic study of where the Air Force will likely need to evolve to in order to meet the requirements of 2020. In the study, they state "conventional power projection against peer or near-peer competitors will continue to shape Air Force requirements for the foreseeable future" (Shaud & Lowther, 2011). Additionally, their study proposes "with Air Force power-projection capabilities often serving as the single best tool available, options must be scalable. This presents a challenge that is proving difficult to overcome in present conflicts." They continue to propose that the U.S. Forces will likely continue to draw down overseas (Shaud & Lowther, 2011). This paints a picture where the Air Expeditionary Force

structure will continue to be critical to our ability to meet future requirements. What is more, the Air Force will need to meet those needs with fewer, and fewer resources.

Senate Bill 2171 of the 101st Congress directed the 1991 Air Force end strength be 530,000 (101st Congress, 1990). The Air Force end strength for 2012 is directed to be just over 332,000 people (112th Congress, 2011). That is a 37% reduction in forces within one, short career-span, and there are no indications that the reductions will stop.

The saying “do more with less” is often heard, and some may feel it is trite. What we really mean is do better, and with less. Instead, we should identify the things that we need to do, and do them better. Do them better, so that there is less waste, which means we will be able to do it with fewer resources. In any process, you do not attempt to increase output while simultaneously decreasing input. Only after you “optimize” your process, can you determine what it is capable of and make an intelligent decision about its output, and what resources would be required for that output. In his book “The Goal: A Process of Ongoing Improvement”, Eliyahu Goldratt proposed his Theory of Constraints and a method of evaluating processes to improve their throughput (Goldratt, 2004). Goldratt argues that before you can improve a process, you have to be able to measure the process, and before you can even begin to measure a process, you have to know what the process hopes to achieve. You have to know what the goal of the process is. The Air Force is no different. The Air Force has a “Mission” which is to “Fly, Fight, Win”, and it has a vision, which, among other things states we will “support the joint mission first. We will provide compelling air, space, and cyber capabilities for use by the combatant commanders” (www.af.mil, 2012). In effect, supporting the needs of the Combatant Commanders (CCDR) and the Joint Chiefs of Staff (JCS) is our goal.

As we further examine supporting CCDR's and the JCS by asking "how will we do this", one answer is, with the Air Expeditionary Task Force and through the use of scalable resources to meet the CCDR's need for capabilities. In other words, providing the JCS and CCDR with a list of capabilities, and fulfilling their need when, where, and how they need them. That statement is remarkably similar to a common phrase used in many descriptions of lean logistics, which is "the correct item, in the right quantity, to the right place, at the right time". The most basic capability the Air Force provides CCDR's, is a trained warfighter, which makes our dwindling resource of manpower, also a critical resource in accomplishing our goal. That connection drives the purpose of this study. This study will evaluate the process the Air Force uses to supply CCDR's with warfighters.

The Air Expeditionary Force structure can be argued as the process, and it has been studied over the years for sub-process improvement opportunities such as intermediate avionic maintenance consolidation (Peltz, 2000) or methods for improved capabilities based planning (Snyder & Mills, 2004), but this will be the first time it has been evaluated from a Supply Chain Management (SCM) perspective. This study will apply principles of Logistics Management, Supply Chain Management, and Operations Management to evaluate the end-to-end process of how the Air Force supplies CCDR's with a warfighter.

Critical to this evaluation will be the recognition that a warfighter is a resource, much like an airplane is a resource. Fundamental to this study is disconnecting the portion of that resource that is the human factor such as their individual career plans, motivations, and personal intentions, and recognizing that, although important in total

force management, those are not what the JCS or the CCDR are requiring. The JCS and CCDR simply require a warfighter capable of a clearly defined set of capabilities. This understanding implies the clinical definition of a warfighter as an asset, which should be categorized by its capabilities, and managed appropriately, much the same as you would expect any other asset the Air Force manages. At the most basic level, the Air Force is responsible for managing the warfighter and getting the correct warfighter to the right place and at the right time... just like any other class of supply. In essence, this makes the warfighter a class of supply. If we put it first, then it would be the class zero supply item.

In their book “Reengineering the Corporation: A Manifesto for Business Revolution”, Hammer & Champy (1993) argue that a fundamental concept behind truly improving a process is the need to approach the process as a whole, from the top down with the buy-in of the entire process owner. They argue that any optimization of individual processes ignorant of the larger process to which they belong, is called sub-optimization and actually reduces the efficiency of the overall process. They point out that sub-optimization is how a bureaucracy perpetuates, and only through a top down full process reengineering effort, can you identify and eliminate the sub-optimizations. This means that the only way to make the process of supplying CCDR’s with warfighters as efficient as possible is to attack it as a whole.

Before a reengineering attempt is made however, first we need to identify if the process should be reengineered. To determine that, we need to look at the metrics measuring how well we manage our Class 0 supplies. If a warfighter is a supply item, the CCDR is the customer ordering a specific type of warfighter, then their home units are

the storage locations and accurately selecting the correct type of warfighter is the process. Physical movement of the warfighter to the CDR is beyond the scope of this study.

If we attempt to measure the efficiency of the process by only measuring what percentage of CDR requirements are met, in supply terminology that would be referred to as the order fill rate. This rating can be misleading because although it indicates if we met our goal, it does not indicate how efficiently we met our goal. There is no indication of how many resources it took, how effective we were at categorizing our resources, knowing exactly what resources we had available, how accurately we can predict our true capabilities, or how well we did at attempting to source (issue) those resources.

There are other metrics used to provide valuable insight into the health of the supply system. Among those are inventory accuracy, and warehouse refusal rates. Inventory accuracy refers to how accurately what you think you have compares to what you really have. Warehouse refusal refers to how often we attempt to use an asset we think we have, but for some reason cannot. Common causes of warehouse refusals are inaccurate inventories and miscategorized assets. Department of Defense Instructions state the minimum standard for Inventory Accuracy is 98% (DODI_5000.64, 2011). We can easily apply these terms to our Class 0 supply system to get a basic idea of how well we are managing those resources as well... as they pertain to knowing what we have (capabilities) and ability to effectively find them and get them to the customer. An AEF adapted metric similar to inventory accuracy or warehouse refusal as they pertain to the AEF construct could be measured by how many taskings we successfully source on the first attempt. This is important because it is the fundamental building block of knowing what you have (capability). If you know your inventory accuracy averages 98.6%, and

you have 40,000 warfighters in the vulnerability window, then you should be able to confidently build commitments for 39,440 of them. Inventory accuracy is just a lagging indicator though. For inventory accuracy to be high, other processes must be in good order. One of which is making sure you properly inventory and categorize your assets when you put them on the shelf. If we apply warehouse refusals to the process of supplying CCDR's with warfighters, a metric that may represent warehouse refusals is the reclama rate. When we attempt to "go to the shelf" to grab a warfighter for a CCDR and for some reason that warfighter is not there, is not capable, or otherwise can not fill the requirement, a reclama is generated. According to data in an AFMC AEF debrief presented to Lt Gen Moore on 4 November 2011 that references data from April-September of 2011, the Air Force attempted to source 23,013 CCDR requirements. Of those requirements, there were 2,376 reclaims. That is an 11% warehouse refusal rate, which means only an 89% inventory accuracy rate. Applied to the entire Air Force inventory of over 332,000 warfighters, an 89% inventory accuracy means we do not know the true status/capability for 34,528 warfighters, leaving us only 297,742 we can account for. It is important to note that all of the warfighters we already know cannot deploy are part of the 297, 742. The 34,528 are all warfighters we currently think are assets ready for a CCDR.

Given that metric, this study will attempt to identify areas to focus improvement efforts in and attempt to provide a roadmap for better asset accountability and ultimately better resource management using current literature, guidance, and interviews with sub-process experts in an attempt to discover the current process of how a CCDR's requirement becomes an Air Force tasking, how the Air Force postures itself to meet

those requirements, how we categorize our warfighters, and how we determine which warfighter to assign to which tasking. Next, this study will create a conceptual Supply Chain Map to help create a visual representation of the process. This visual representation will help identify possible redundancies, oversights, or other opportunities for improvement that may exist in the process. Using the Supply Chain Map, and information developed during the process discovery, a statistical probabilities decision tree was developed to help future researchers and leadership visualize how improvements in various areas of the process will affect the goal and metrics supporting the goal. Finally, process improvement recommendations will be presented, as well as identification of area's that may benefit from additional research.

II. Methodology

The purpose of this chapter is to outline the methods used in this study. The overall concept of the study is the initial data gathering and conceptual mapping of the very large, complex process the Air Force uses to supply CCDR's with warfighters. It uses the principles presented by Hammer and Champy in their book "Reengineering the Corporation: A Manifesto for Business Revolution" (1993) to build towards an improved process for providing CCDR's with warfighters. This applies the data and conceptual mapping in a method conducive with many process improvement initiatives such as the Observe and Orient phases of the Air Force Smart Operations for the 21st Century (AFSO-21) program or the Define and Measure phases of the DMAIC methodology used in Six-Sigma process redesign.

The first part of defining the process will be a "Process Discovery", which will use a combination of literature and interviews to identify the current process. A review was conducted of all currently published guidance pertaining to how the Air Force gets tasked with CCDR requirements, how the Air Force organizes its capabilities, how the Air Force selects capabilities for tasking, as well as guidance relating to duty status coding, COCOM restrictions, COCOM required processes, and medical patient administration. It attempted to clarify the literature and confirm actual process practices by interviewing sub-process experts.

Additional clarification was sought from sub-process subject matter experts at different levels. To gain first-hand experience with various Electronic Data Interface (EDI) systems and their products, telephone and in-person interviews were conducted with AFMC Subject Matter Experts (SME)'s. The interviews had an open format with no

scripted questions. One individual is a Personnel Specialist at AFMC/A1R, the other is the AFMC ART Manager. Additional telephone interviews as well as written correspondence were conducted with various other process owners, and subject matter experts (SME)'s to validate conceptions of the overall process and different sub-processes developed from the literature review.

Other agencies contributing to the pool of experts were AFPC/DPW, AFPC's Medical Retention Standards Branch, AFCENT/SG, CENTCOM/SG, and AFMC/A4. Communication with AFPC/DPW occurred via telephone interviews and written correspondence. AFPC/DPW controlled access to the schedulers, therefore participant selection was less than ideal and a true Delphi study of AFPC/DPW's sub-process was unobtainable, however the deputy director of scheduling, a lead scheduler, and at least 2 other schedulers provided input and participated in concept verifications suggesting the sub-process is accurately represented.

Validating processes was accomplished by communicating a perception of the process and soliciting clarification or corrections. When corrections were suggested, the original perceived procedure was corrected and returned to the interviewee as well as other individuals in the pool of experts to verify accuracy.

Once a thorough understanding of the process is achieved and detailed in the Process Discovery, the next objective of this study is to use that information to create basic, conceptual supply chain maps of the process. The conceptual supply chain maps will show the warfighter as the product, and the CDR as the customer. Illustrating supply chain maps provide many benefits. Among them are providing a "visual representation and analysis of the complexities in... direct and indirect supply chain

relationships [serving] as a starting point for increasing the cross-functional and cross-[organizational] communication... also enables management to identify internal and external improvement opportunities and establish the critical relationship linkages that must be closely managed". Supply chain maps can be "used to identify and realize improvement opportunities across the network of companies that constitute the supply chain" (Lambert, Garcia-Dastugue, & Knemeyer, 2008). Instead of mapping different companies however, this study will view individual units as the companies comprising the supply chain network. There are several different types of supply chain maps that may be beneficial, however they require significant participation and data. Therefore, this thesis aims to use a simplified "Extended Value Stream Map" to illustrate basic relationships and interactions in an attempt to present a big-picture perspective of the Class-0 supply process.

Data access was severely restricted. AFPC is the lowest level capable of accessing much of the data requested however formal requests for data were denied. Several other agencies either denied requests for data or did not track the data requested. As a result, the only data available was raw medical waiver tracking data from AFCENT/SG and AF AEF metrics compiled and reported to senior leaders, provided by AFMC/A4. The AFCENT medical waiver data was a spreadsheet tracking all waivers received from July 2010 through November 2011 (n=820). AFCENT speculated the fact that their status as the largest customer of warfighters contributed to their status as the only Component Command with formal waiver data. This status was confirmed by AFPC and supports the assumption that AFCENT medical waiver data is a sufficient

representation of Air Force medical waiver statistics to enable coarse estimations for the purposes of overall deployment process evaluation.

Data obtained from AFMC was in the form of a power point briefing presented to the Vice Commander of AFMC on November 11, 2011. This briefing presents metrics based on data collected from 1 April 2011 through 30 September 2011. The briefing provides various metrics and data for several MAJCOMS and DRU's as well as combined Air Force data.

Finally, given a conceptual map of the Class-0 supply chain, a description of the process, and the data collected, this thesis will develop a statistical probability decision tree that will illustrate probability of sourcing results given various inputs. The inputs in the statistical probability tree will be based on actual or assumed data controlling the probabilities. This statistical probability decision tree will provide leadership with a tool to manipulate various metrics related to the process and visualize the results they have on the final outcomes such as number of medical reclama's, or number of total taskings. It will also identify what metrics are important to control the desired outcomes as well as distinguish the metrics currently overlooked. Identifying critical metrics and an ability to visualize how focused improvements or changes impact the process will enable better decision making and help identify areas for future improvement efforts.

III. Process Discovery

The purpose of this chapter is process discovery. It will use a review existing literature and regulatory guidance, and personal interviews to identify the process of how the Air Force provides manpower to support Department of Defense (DoD) requirements. It will explore how Presidential, Secretary of Defense, and Joint requirements are assigned to individual services to support. It will identify how the Air Force organizes itself to support those requirements. This chapter will identify the Automated Data Processing (ADP), also referred to as Electronic Data Interface (EDI) systems utilized to maintain current operations and follow the process of turning a manpower requirement into an actual individual prepared to deploy. This chapter will consolidate over 1200 pages of literature and personal interviews to develop a complete conceptual model of how a Combatant Commander's requirement results in a warfighter ready to deploy.

Establishing Manpower Requirements

The Chairman of the Joint Chiefs of Staff has many responsibilities. Among those responsibilities are advising the National Security Council, testifying before Congress on military affairs, and Assisting the Secretary of Defense in planning and employment of military forces to include providing military forces to combatant commanders (CJCSI3100.01B, 2008).

The Joint Strategic Planning System (JSPS) is process that provides a means for the CJCS and other members of the Joint Planning community to communicate, plan, and



Role of the CJCS and the Joint Strategic Planning System (JSPS)

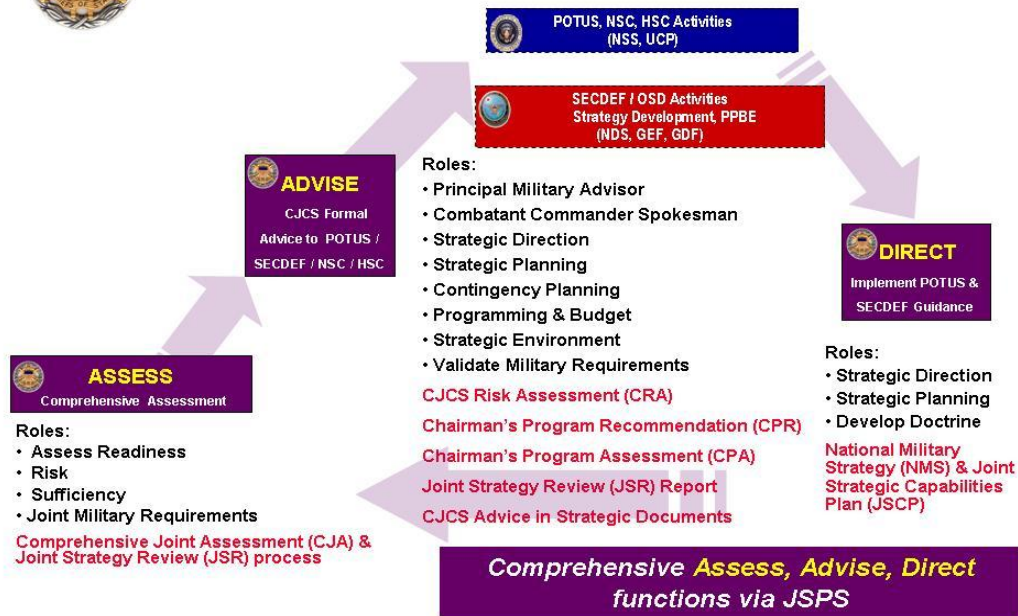


Figure 1: Joint Sourcing Planning System (CJCSI 3100.01B, 2008)

Formal Execution: Major JSPS Components

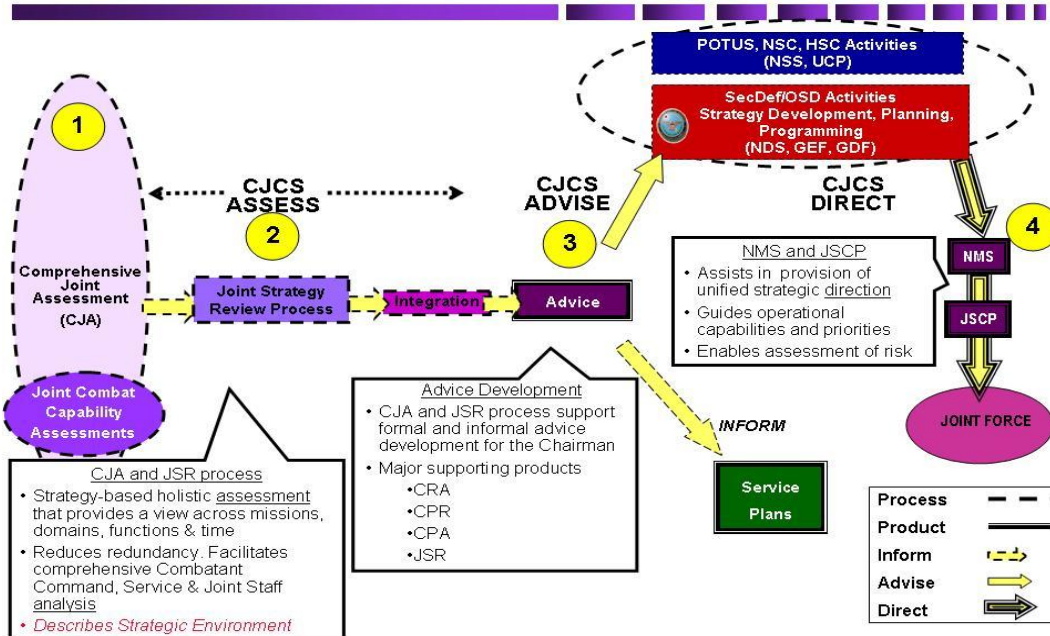


Figure 2: JSPS Execution (CJCSI 3100.01B, 2008)

advise on military strategy and capabilities to develop our National Military Strategy and

the Joint Strategic Capabilities Plan (JSCP). Figure 1 depicts the roles of the CJCS and the JSPS, Figure 2 depicts the execution of the JSPS.

The two JSPS outputs of focus are the National Military Strategy (NMS) and the Joint Strategic Capabilities Plan (JSCP). The NMS is the military strategy for how the military will support the National Security and Defense Strategies and other objectives. The JSCP...

provides guidance to combatant commanders, Service Chiefs, Combat Support Agency (CSA) directors, applicable Defense agencies, DOD Field Activity directors, and the Chief, National Guard Bureau (NGB) to accomplish tasks and missions based on near-term military capabilities.

The JSCP implements campaign, campaign support, contingency, and posture planning guidance reflected in the Guidance for Employment of the Force” (CJCSI3100.01B, 2008).

The JSCP formally tasks campaign, contingency, and posture planning. It also contains detailed guidance, tasks, appropriation of forces and planning assumptions.

The DoD uses the Joint Operation Planning and Execution System (JOPES) as the overarching umbrella system for ADP. JOPES provides an electronic platform to allow the military community to interface, plan, store, and communicate requirements. It is supported by a network of ADP systems from across the DoD that resides on the Global Command and Control System (GCCS). JOPES contains the mechanisms necessary to plan, and implement military action and manage Global Force Management (GFM) guidance. The GFM Board is comprised of members of the Joint Staff, Office of the Secretary of Defense, the combatant commands, and the military services. The board is

what provides prioritized guidance for force management to support operational and rotational force support to combatant commander requirements (AFI_10-401, 2010).

There are several different types of planning, however the scope of this project is only to evaluate the system for supporting rotational forces. Supporting rotational forces means that an actual Contingency or Adaptive Plan was implemented and has progressed to a sustainment mode.

In accordance with the GFMIG, JFCOM, TRANSCOM, and SOCOM are the designated JFPs for conventional forces, mobility forces, and special operations forces, respectively...The Joint Staff tasks JFPs to recommend global force sourcing solutions for global CCDR [Combatant Commander] requirements; these sourcing solutions may be from assigned forces, forces assigned to other CCDRs, or Service-retained forces (AFI_10-401, 2010).

This is how the Air Force was apportioned all taskings it currently supports. In addition to current taskings, sometimes CCDR's require additional forces. These forces may be either an additional capability or an increase in a current capability provided by a standard force package. If a CCDR wishes to increase a current standard force capability by no more than 10 persons or 10%, he may submit an Authorization Change Request (ACR). An ACR can bypass the Joint Staff and go directly to the Service providing the forces (force provider) (AFI_10-401, 2010). If the force is not a standard force capability, is not supporting an existing Global Force Management (GFM) approved authorization, or exceeds the 10-person / 10% rule, the CCDR must submit a Request for Forces/Capabilities (RFF/C). The RFF/C must go through the entire JFP sourcing

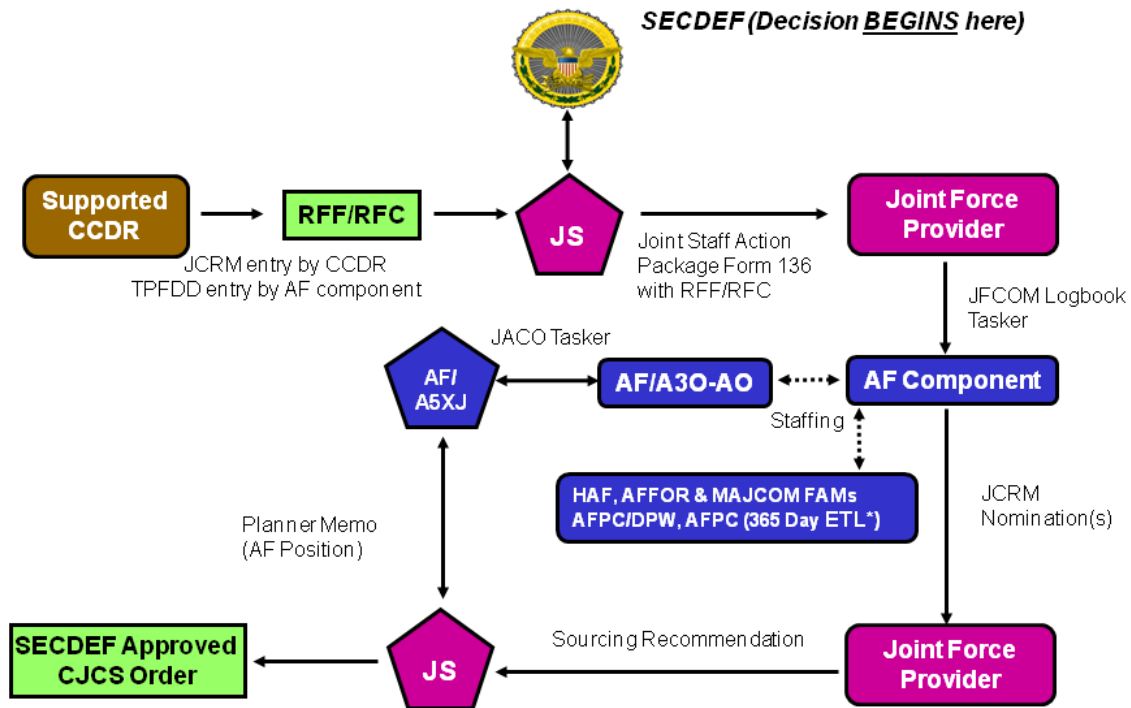


Figure 3. Request for Forces/Capabilities (AFI 10-401, 2008)

procedure for approval, JFP sourcing strategies, service concurrence, and finally recommendation for SecDef approval. This is how the Air Force receives its apportionment of taskings to support Joint Staff and CCDR Requirements for rotational operations (see Fig 3).

While JOPES is the DoD planning and execution system, the Deliberate and Crisis Action Planning and Execution Segments (DCAPES) is the Air Forces' war planning system and provides the Air Force feed to JOPES (AFI_10-401, 2010).

“Air Force planners and readiness offices use DCAPES at various command levels to translate contingency planning, JCS exercise, real world crisis execution, or local exercise taskings into detailed unit requirements down to the AFSC and tool box level. Air Force planners,

readiness personnel, FAMs [functional area managers], and unit deployment managers (UDMs) use the data in DCAPEs to prepare resources for movement and accomplish force accountability at the deployment and employment locations” (AFI_10-401, 2010).

“DCAPEs is at the heart of the Air Force’s War Planning and Execution System (WPES); a comprehensive, net-centric system of systems used in war planning and execution for the purpose of presenting, planning, sourcing, mobilizing, deploying, accounting for, sustaining, redeploying, and reconstituting AF forces; and provides a Service feed to JOPES.

NOTE: WPES includes LOGMOD, BaS&E (formerly LOGCAT), LOGFAC, DCAPEs, UTC Availability (formerly AFWUS), and several other war planning and execution systems” (AFI_10-403, 2008)

One very important JOPES product accessed through DCAPEs is the Time Phased Force Deployment Document (TPFDD). The TPFDD is a listing of all forces required to support a plan and it is the document that ultimately choreographs the implementation of military action. Among other things, it contains the Unit Type Code (UTC) of the forces required, dictates a movement plan, key movement dates, deployed location, and CCDR remarks.

The Air Expeditionary Force

The Air Force aligns its war fighting capabilities into a baseline of 10 AEFs, each intended to contain an equivalent capability from which to

provide forces. During periods of increased requirements, capability areas from these 10 AEFs may be realigned within the Global AEF construct to a Tempo Band that provides a deeper pool of capability, deploying that capability at a more stringent deploy-to-dwell rate. The Air Force develops and tailors force packages to meet mission requirements. Specifically tailored forces are presented to theater commanders as Air and Space Expeditionary Task Forces (AETFs)” (AFI_10-244, 2010).

In addition to a brief description of the AEF, this indicates that the ideal state of the AEF is utilizing the baseline of 10 AEF’s and any other alignment should be considered a “period of increased requirement”.

All Air Force units have fundamental capabilities they are suppose to be able to provide the CJCS. This capability is defined in their DOC. Unit Commanders are required to assess their ability to provide these capabilities within their required response time. CJCSM 3150.02 states that Unit Commanders are to report their units capabilities based on organic resources under their control and “personnel or equipment from units providing resources or gained through deployments qualify as organic resources. US Air Force mobile or transportable communications organizations may include those resources on loan that can be re-deployed within organizational-tasked response time, not to exceed 72 hours.” The status of the unit’s capabilities are reported to the CJCS through the use of the Status of Resources and Training System (SORTS).

While SORTS is how Unit Commanders report on their units overall capabilities, breaking forces down into smaller capability-related pieces called Unit Type Code’s (UTC’s) provides more flexibility. UTC’s are very narrowly scoped packages of

equipment and or manpower representing a potential capability the Air Force possesses. A UTC can be equipment only, such as a special vehicle, it can be a combination of equipment and personnel, such as a Security Forces team and the equipment they need for integrated base defense, or it can be only personnel, such as a 2-person Tactical Air Control Party, or a single individual such as a Logistics Readiness Officer. Every UTC has a Mission Capabilities Statement (MISCAP) that defines the basic mission the UTC is capable of accomplishing (AFI_10-401, 2010). UTC's can be thought of as individual building blocks of military capability. These building blocks can be combined in countless combinations to build the desired force such as an AETF, or they can be singled out to fill a specific gap anywhere in the military such as a one-person Logistics Readiness Officer UTC being used to fill an Army unit's vacancy that is similar to the MISCAP of the Air Force UTC. The remainder of this study will only focus on UTC's that include personnel. There are two types of UTC's, standard and non-standard. Standard UTC's are the UTC's that, among other things, have standardized MISCAPs and fully developed movement data. If you come to associate a particular set of manpower and equipment to represent a particular UTC, that would most likely be a "Standard UTC". Associate UTC's are a type of non-standard UTC. AFI 10-401 directs "Unit manpower that cannot be captured in a standard UTC will be postured into an "Associate" UTC. Associate UTCs are placeholders for all funded military authorizations that cannot be described or do not fit into an existing standard UTC. Each functional area has an Associate UTC to represent that functional area. The Associate UTCs themselves are not deployable, but the individuals filling the authorizations that are associated with the UTC are deployable." Basically this directs all personnel to be

postured in a UTC for deployment and explains the practice of creating Associate UTC's to account for personnel even though all standard UTC's are fully manned. This also supports AFI 10-401 paragraph 7.7.2 where it directs "all forces are inherently deployable."

All UTC's are cataloged in the AEF Capability Library. "The AEF Capability Library contains the Air Force's total warfighting capability in terms of UTCs. The library consists of all the forces postured in the five primary and two ARC Tempo Bands plus the Enabler force. AEF Capability data is currently in the AEF TPFDD Libraries, located in DCAVES. When this data migrates to the UTC Availability (UTA) application of DCAVES, the TPFDD libraries will be phased out (AFI_10-401, 2010). Overall responsibility for managing the AEF Library rests with AFPC/DPW. Individual UTC's are managed by their Functional Area Managers (FAM's) at HAF (AFI_10-401, 2010).

There are four basic components of the AEF, readily available forces, enabler forces, in-place forces, and institutional forces. Institutional forces are the forces necessary to sustain fundamental Air Force processes while the other three comprise the Air Force's primary war fighting capability. The readily available forces are aligned in one of 10 AEF's, which are paired together to create 5 deployment cycles over a 24-month period. "During periods of increased requirements" the AEF's are realigned into tempo bands that deploy resources at a progressively increasing rate (AFI_10-401, 2010). Enabler forces are those forces that have special missions that prevent standard rotational tasking and/or are high demand/low supply. Institutional and in place support forces are forces that are either primarily in direct support of the CCDR or are required for essential home station operations. These forces are now referred to as institutional forces. They

are still deployable capabilities, however they are aligned in a separate tempo band and normally only deploy to fill Individual Augmentee positions on an approved JMD .

The standard AEF construct is based on 2 fiscal years, giving it a 24-month cycle. It contains “buckets” in which UTC’s will be postured. The number of buckets depends on which tempo band that UTC is in as well. There are three basic places in the AEF’s tempo-band battle rhythm that forces postured in AEFs will be in at any given time. The Vulnerability period, during which the personnel assigned to the UTC’s postured for that AEF are the forces expected to support any validated CCDR requirements that arise or are scheduled during that period. Forces not deployed during their vulnerability period remain on-call for their entire vulnerability period. Reconstitution & Training is the period after the UTC’s return home and/or the vulnerability period is over. This is when forces resume home-station operations, catch up on training and other military affairs that may have lapsed during deployment. “Prepare to Deploy” or “Spin-up” is the two months prior to the start of the vulnerability period. This time is dedicated to making the forces ready to deploy such as getting ahead on training that will lapse during deployment and deployment specific training (AFI_10-401, 2010). Even though there is an official “prepare to deploy” phase, some deployment preparations are required prior to this to help meet overall AEF planning timelines. Additionally, some taskings require special training that may require individuals to depart or go TDY before they officially enter their “prepare to deploy” phase.

The AEF construct had 5 Active Duty and ARC tempo bands, however it just developed an additional tempo band for institutional forces. UTC’s are assigned to AEF tempo bands individually based on the number of resources available across the Air

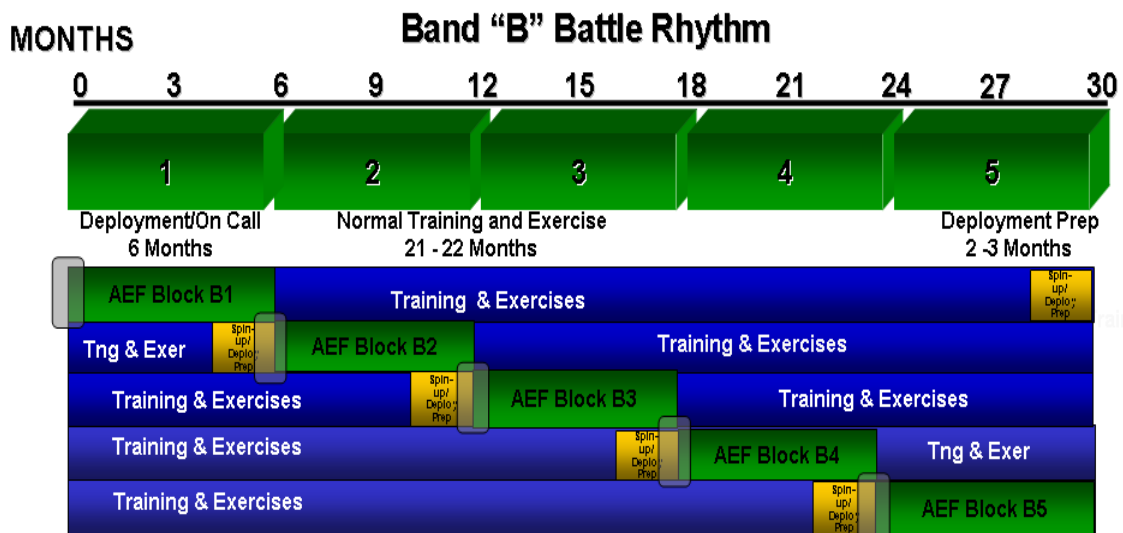
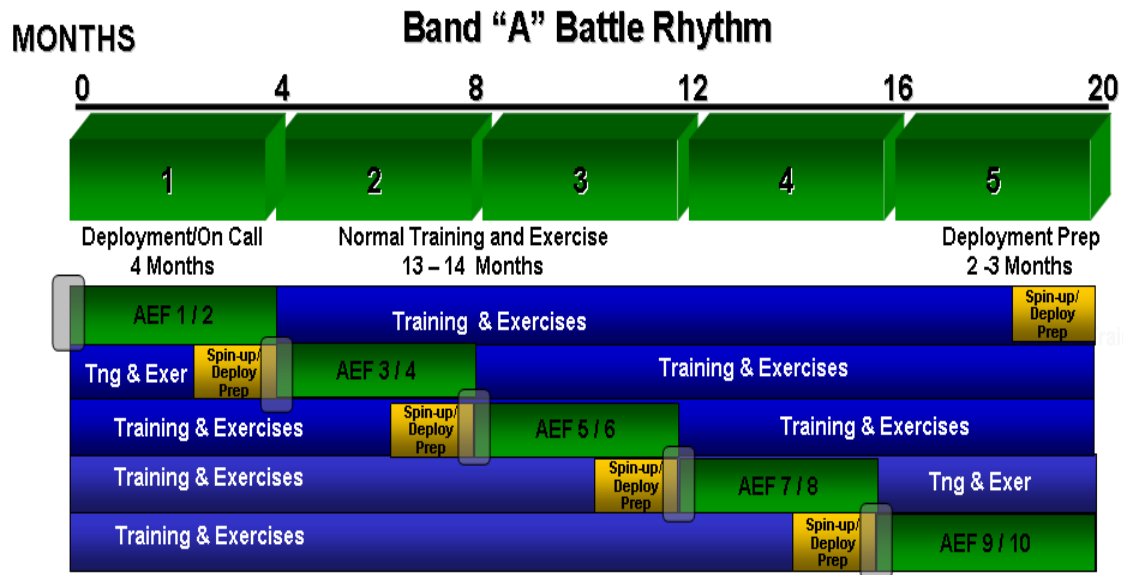


Figure 4: AEF Band A & B (AFI 10-401).

Force to meet current and projected requirements, meaning UTC 9xxxx may be in tempo band E while a co-worker may be in Tempo band B. The tempo bands are different timelines of vulnerability/deployment duration to reconstitution ratio's. For Active Duty, Tempo Band-A contains 5 buckets that have 4-months vulnerability and 14-months reconstitution. Band-B contains 5 buckets that have 6-months vulnerability and 22-months reconstitution see Figure 4. Tempo Band-A and B represent a similar operations

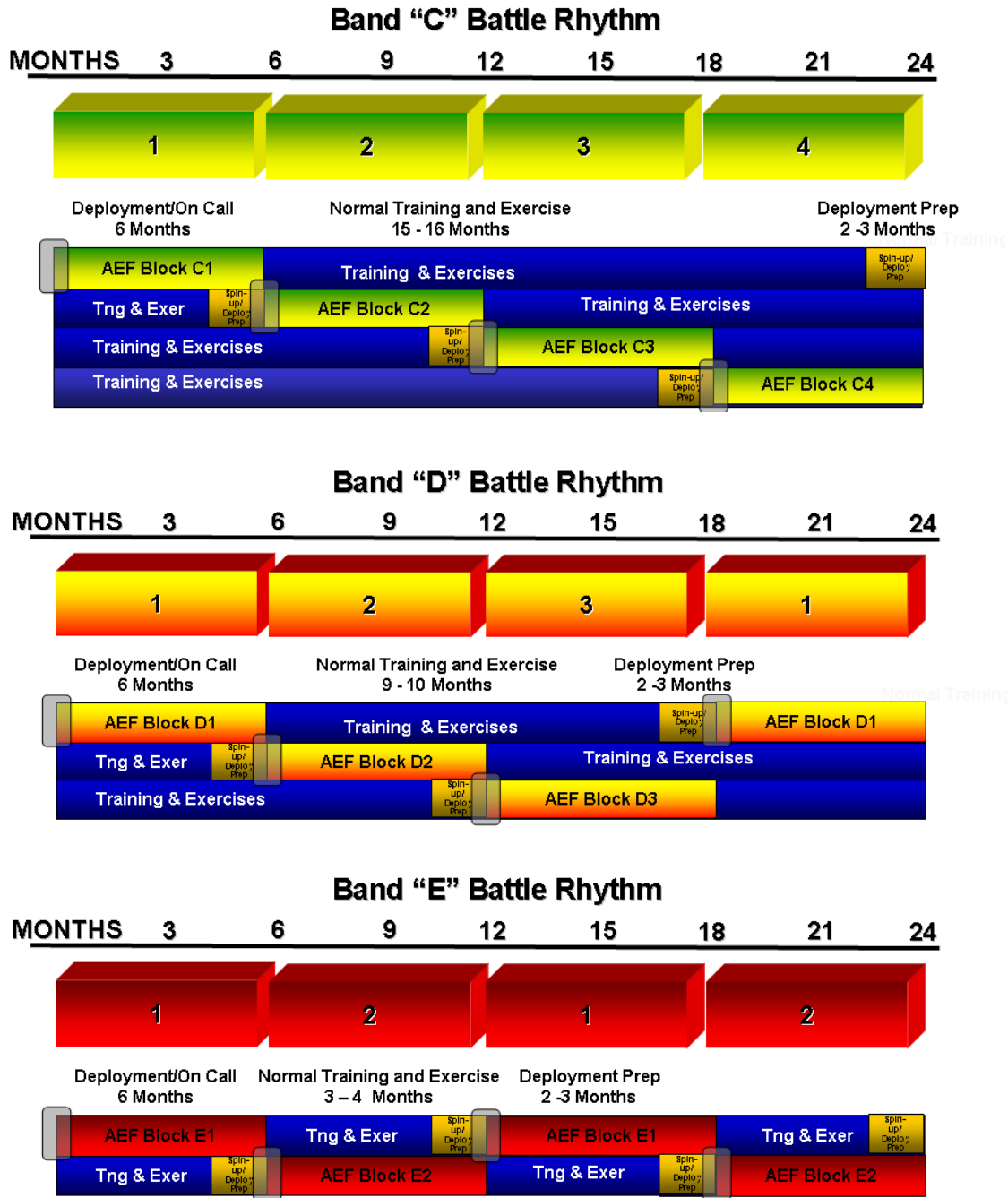


Figure 5: AEF Bands C, D, & E (AFI 10-401, 2010)

tempo, they only differ in their standard deployment length. Originally, the AEF was based on a 4-month deployment standard, however the AEF standard recently changed to 6-month deployments. This now makes Tempo Band-B the point of homeostasis.

As the requirements for a UTC increases and makes Band-A or B infeasible, the vulnerability to reconstitution & prepare time, also known as “dwell ratio” or “deployment ratio” increases. Tempo Band-C aligns the UTC’s into 4 buckets with 6-months vulnerability and 18-months reconstitution & prepare to deploy, for a dwell ratio of 1:3. Tempo Band-D aligns the UTC’s into 3 buckets with 6-months vulnerability and 12-months reconstitution & prepare to deploy for a dwell ratio of 1:2. Tempo Band E is the most rigorous and has 6-months vulnerability with 6-months reconstitution & prepare to deploy, see Figure 5.

The newest addition to the AEF construct is Tempo Band-X. Air Force leadership realized that some forces are necessary to maintaining home station operations and other institutional capabilities that can not be allowed to fail. In the past, these forces were assigned to UTC’s and managed no different than the rest of the Air Force. This caused the Air Force to appear to have greater deployable capabilities than it truly possessed. To fix this, Band X was created. Now, these institutional forces are aligned to Band X instead of comingling with the rest of the Air Force capabilities postured in Band A through E. In addition to realigning capabilities, the Air Force realigned how they source CCDR requirements. Now, CCDR requirements that are institutional in nature and on a Joint Manning Document (JMD) are primarily sourced from Band-X capabilities. Band-X operates on a similar operations tempo to Band-B, which is 6-months vulnerability and 22-months reconstitution for a dwell ratio of 1:5. Band-X can be sourced to fill non-institutional requirements as necessary to prevent the Air Force from telling the JCS we are unable to meet a requirement (service level reclama).

An active component (AC) employment ratio of one deployment period

followed by a dwell period of twice the deployment period (1:2) for all postured capabilities is considered the maximum sustainable utilization rate while maintaining total Air Force unit readiness at C1/C2. This ratio coincides with the SecDef deploy-to-dwell planning objective... Specific functional areas will enter surge operations or surpass trigger points at different times. If the new requirements are enduring, the functional area should re-band capability during the next AEF Schedule evaluation... Identifying when a functional area is required to enter surge is a HAF FAM responsibility (AFI_10-401, 2010).

The C1/C2 readiness capability cited above refers to the SORTS readiness code.

Electronic Data Interface Systems Used to Support the AEF Process

The Joint Planning and Execution System (JOPES) supports all aspects of military planning, and command and control. It is the umbrella platform that all of the other systems will ultimately feed. Most relevant to this study, it provides the joint interface allowing CCDR requirements to be properly vetted, approved, and recognized in the TPFDD. It contains the TPFDD and provides it to subordinate systems. The Air Force system for deployment planning is called Deliberate and Crisis Action Planning and Execution Segments (DCAPES).

DCAPES interfaces with JOPES, and provides the heart of the Air Force War Planning and Execution System (WPES), which is comprised of several specialized sub-systems that interface to provide full unit-level visibility and interface, see Figure 6. The

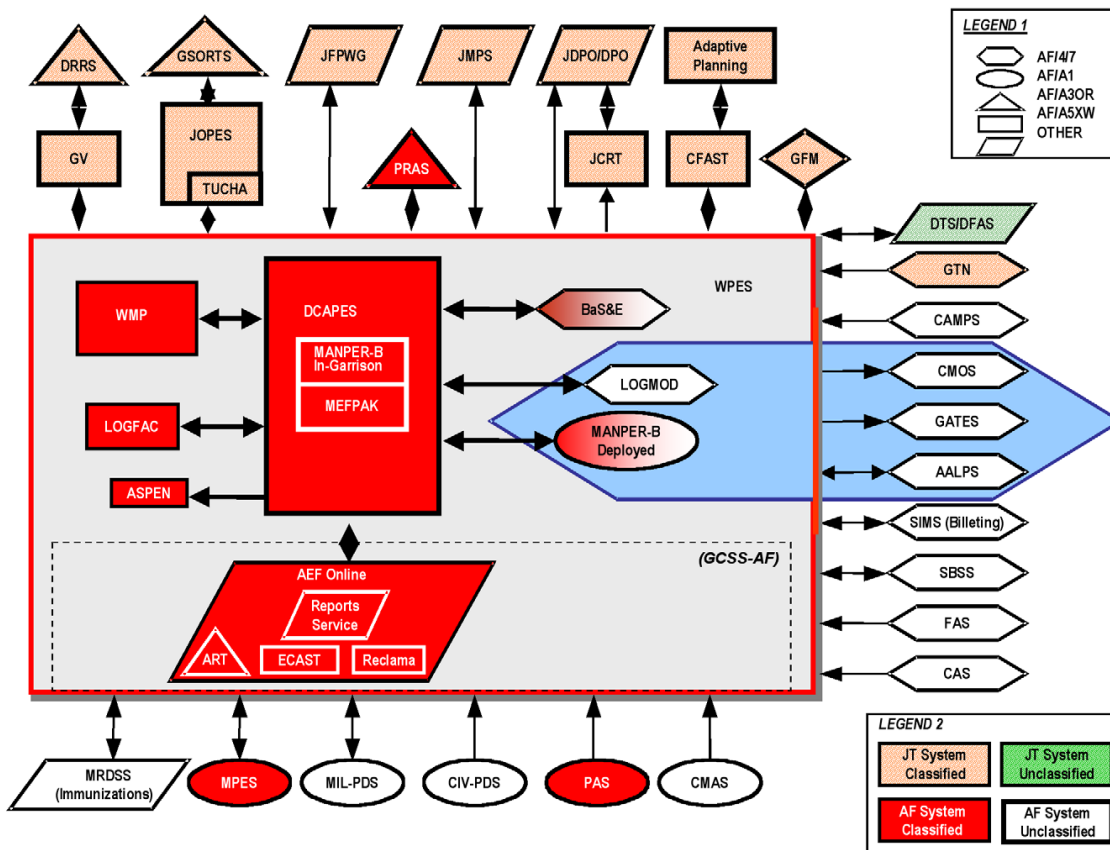


Figure 6: War Planning & Execution System (AFI 10-401, 2010)

systems comprising WPES are both classified and unclassified. They cover everything from the Integrated Deployment System (IDS), which contains systems such as LOGMOD, CMOS, AALPS, the War Management Plan (WMP) and the AEF online.

MANPER-B is a classified manpower tracking system that allows for accountability of all manpower forces. Another personnel related system is the Military Personnel Data System (MilPDS).

MilPDS is an unclassified database that tracks every aspect of everyone's military service. It is used in the assignment process, tracks everyone's UTC and AEF alignment, provides deployment history and overseas return dates as well as indicating Duty Status Codes, Assignment Availability Codes (AAC), Deployment Availability Codes (DAV),

and Assignment Limitation Codes (ALC's). It can be used to assign an individual to a tasking requirement and feeds DCAPES which then updates the JOPES TPFDD.

The AEF Reporting Tool (ART) is a...

CSAF-directed system at the [AFPC/DPW] that was developed to measure

AEF readiness. It is a secure, web-based tool that resides on the

SIPRNET. It addresses readiness at the UTC level... ART enables

commanders to report the ability of a standard UTC to perform its Mission

Capability Statement (MISCAP) anywhere in the world at the time of the

assessment and identify capability through the next AEF pair. It highlights

missing resources and helps to quantify missing requirements for

additional justification when submitting budgets. It also provides the

ability to evaluate a UTC prior to tasking...and helps to forecast shortfalls.

Unlike SORTS, ART is the only assessment system that goes down to the

UTC level. Note: ART does not measure a UTCs availability to deploy,

only its ability to meet its MISCAP should it be tasked (AFI_10-401,

2010).

One of the things ART provides is an Air Force specific tool for Unit Commanders to associate forces with UTC's, and report their status up the chain of command all the way to the CSAF level as well as provide a readily available output at all levels to assist in sourcing decisions and force management. Commanders assess UTC's with a color code to indicate their overall availability status. There is also a place to provide ALC's, AAC's, DAV's, an ability to record a general categorization of the reason for any restrictions as well as a section for plain English Commanders remarks/comments.

Another system under the AEF Online umbrella is the Enhanced Contingency Rotational AEF Scheduling Tool (ECAST).

ECAST is a system that provides AFPC/DPW the ability to manage and source requirements. It gives functional schedulers at AFPC/DPW the ability to access UTC data, interface with the WPES providing access to MilPDS, ART and the AEF Library (AFI_10-401, 2010). It is the primary means of AFPC/DPW interface with the WPES for scheduling and sourcing CCDR requirements.

Capability Limitations

Duty limiting conditions are conditions that may limit the individuals activities at home station, may limit assignment availability, and/or limit their ability to deploy. There are numerous reasons an individual may have a duty limiting condition such as being a student, being court martialled, or a medical restriction. DAV codes are two digit codes that represent an individual's ability to deploy. The codes are listed in AFI 10-403, Attachment 2, table A2.2. For example, DAV-64 indicates mobility training is required; DAV- 49 indicates the individual can not deploy due to pregnancy. Out of the nearly 60 possible DAV codes, only a few are used to help communicate medical restrictions. DAV-40 limits assignment to a base with a hospital. DAV-41 is a generic medical deferment. DAV-42 is awaiting a physical evaluation board, and DAV-48 is a generic medical disqualification. Those are the full definitions of those DAV codes, therefore it is critical to provide more information in ART when assessing a UTC, see Appendix A for a full listing of DAV codes and their definitions.

Assignment limitations may be permanent or semi-permanent; ALC's are used to communicate these assignment limitations in ART. Similar to DAV codes, they indicate a condition that limits or restricts if and/or where an individual may be assigned or deployed. "Normally, limitations applying only to a current assignment or location are managed by an AAC" (AFI_36-2110, 2011).

If an individual is subject to a medical condition that is expected to resolve in less than 30 days, the only documentation of their condition is their AF Form 469, commonly known as a medical profile. Medical conditions expected to resolve within 30 days are not considered a limitation when assessing UTC's.

When an individual is medically restricted from worldwide mobility for what is expected to be more than 30 days, but less than 12 months, an AAC-31 is input in MilPDS and ART. "When an Airman is scheduled for a mandatory PCS while temporarily medically deferred from PCS, MTF officials determine if the Airman will proceed on PCS and can be evaluated and/or treated upon arrival at the next duty station" (AFI_36-2110, 2011). This is an important statement because it gives the Medical Treatment Facility the ability to assess an individual's medical condition and their ability to go to their gaining base, however this is only for PCS. For deployments there is a much more lengthy process that will be described later.

If an individual's medical condition is expected to restrict their worldwide mobility status for more than 12 months, they must be reviewed by a Medical Evaluation Board (MEB) or Physical Evaluation Board (PEB). When an individual is deferred awaiting an MEB, their status should indicate an AAC-37. When an individual is undergoing an MEB, they are restricted from PCS, TDY, and even leave outside the local

area until results are determined.

“When a PEB directs an Airman to remain on active duty, who may not be fully qualified for World Wide service...HQ AFPC/DPAMM will [assign]... ALC X, Y, or C”. “Assignments or deployments outside the designated geographic restrictions require a waiver” (AFI_36-2110, 2011). For individuals with medical limitations that meet the MEB/PEB and are returned to service their ALC will be one of three codes, ALC-C1, C2, or C3. These ALC’s are tracked in MilPDS and Commanders also use these codes to assess the UTC the individuals are assigned to in ART. The Commander needs to properly code the UTC, and attempt to articulate the limitation in the comments. In an effort to avoid entanglement with The Health Insurance Portability and Accountability Act of 1996 (HIPAA) Privacy and Security Rules, current practice restricts the comments in ART from divulging any information that gives indication of an actual diagnosis.

Definitions of ALC-C1, 2, and 3 can be found in several different AFI’s. The different AFI’s are mostly standardized in their descriptions, however in some places, slightly different wording of what these three “C-codes” mean can be found. In fact, AFMC Memorandum for ART Reporting dated 6 October 2011 states "the current reporting mechanism in ART does not match profile categories used by the medical community” (Huber, 2011). AFI 48-123 “Medical Examinations and Standards”, AFI 10-203 “Duty Limiting Conditions” and AFI 41-210 “Patient Administrative Functions” all cite definitions, and their definitions all indicate the same generic restrictions. AFI 41-210 “Patient Administrative Functions” states,

ALC-C1 Deployable/Assignable to Global DoD fixed installations
with intrinsic Medical Treatment Facilities (MTF). This code will be used

primarily to identify individuals with temporary or mild conditions requiring medical follow-up but whose condition is clinically quiescent or unlikely to cause serious impact if untreated or treatment is limited to primary care during periods of deployment or assignment.

ALC-C2 Deployable/Assignable to CONUS installations with intrinsic fixed MTFs (Tricare Network availability assumed). This ALC-C will be used for medical conditions for which specialist medical care and referral within one year is likely but who could be deployed or reassigned OCONUS or to non-fixed environments if appropriate specialty care is available, or for short periods of time.

ALC-C3 Non-Deployable/Assignment limited to specific CONUS installations based on medical need. This ALC-C stratification designates members who should not be deployed or assigned away from specialty medical capability required to manage their unique medical condition (AFI_41-210, 2010).

The general takeaway from these definitions are that all ALC's represent persistent medical conditions that a Medical Evaluation Board determined did not prevent the member from still being a valued contributor to the Air Force, see Figure 7 for a flowchart of the MEB/PEB process. ALC-C1 should represent a condition that is mild and should not restrict deployments. ALC-C2 is more restrictive, but still conditions that may be capable of deployment to CONUS locations and a select few overseas locations. ALC-C3 is the most restrictive and should be considered non-deployable. These should be the conditions that require continuous management by their medical specialist.

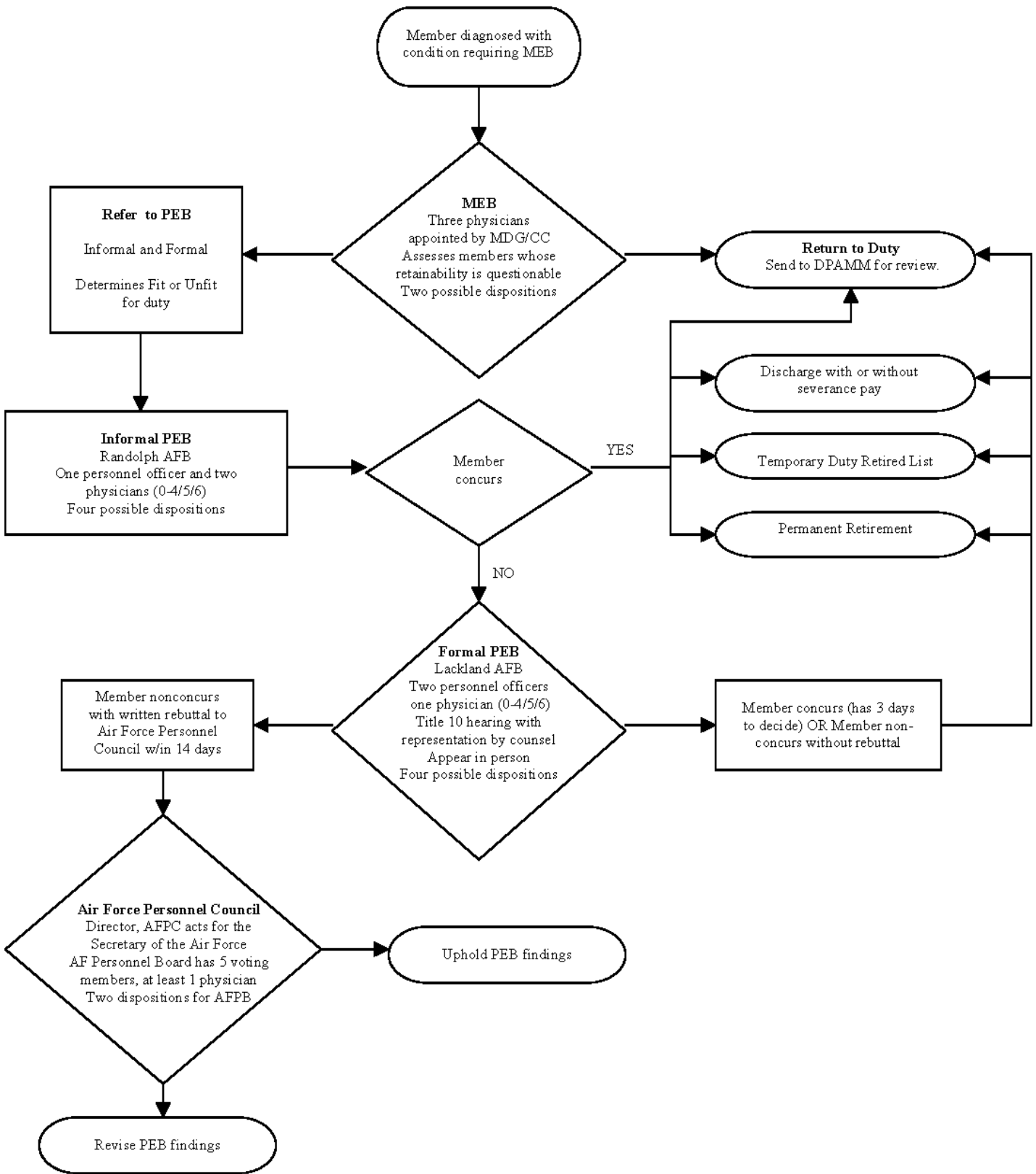


Figure 7: MEB Process (AFI_41-210, 2010)

In the interest of the members health and safety, ALC conditions require a medical clearance before the Air Force sends them anywhere, whether it is for deployment or permanent assignment. For a deployment, the member's MTF first evaluates the member's ability to receive necessary treatment at the deployed location, to include any forward deployment possibility as well. If the MTF determines the member can deploy, they forward a request for a waiver to the Air Force Component Headquarters, for example AFCENT if the deployment is to CENTCOM. The Component Headquarters Surgeon General will then evaluate the members ability to safely deploy to meet tasking requirements and either approve or disapprove the waiver. If the waiver is approved at the Component Headquarters, the waiver is then sent to the Combatant Command's Surgeon General for approval. In this example it would be CENTCOM/SG. The Combatant Command's Surgeon General then reviews the information and either grants final approval or disapproval of the waiver (USAFCENT/SG, 2012). Currently, CENTCOM has delegated waiver authority for all medical conditions except behavioral to the Component Command (USCENTCOM, 2011). In an interview with the CENTCOM medical clearances branch, it was revealed that only some medical clearances are actually approved/disapproved based on the actual, specific medical capabilities of the location the individual will deploy to, most clearances are approved/disapproved based on the general CENTCOM medical policies published in their Individual Protection and Individual-Unit Deployment Policy, currently referred to as "Mod-11" (CENTCOM/SG, 2011).

MOD-11 is a policy letter published by CENTCOM, which outlines medically related information and requirements to deploy into the CENTCOM AOR. This

document is updated annually and distributed so that anyone desiring access can obtain it. Among other things, this document lists the minimum medical capabilities required by CENTCOM. It lists several conditions that individuals should not deploy with unless a waiver is granted. The listing is very broad in scope, however not in depth meaning it encompasses a very wide range of ailments, more than likely enough to capture any condition worthy of an ALC-C code. However it does not go into enough detail to determine any type of guess as to whether a waiver would be approved. It does however list a few very specific conditions that will not be waived; this is helpful in knowing in advance which conditions would definitely be disapproved.

The USAFCENT/SG Medical Waiver Guide directs “submit packages up to three months prior to deployment or pre-deployment training, (longer if situation warrants). Waivers must be submitted at least one week prior to first movement date”. This timeline conflicts with the AEF planning timeline which attempts to have taskings sourced approximately 114 to 142 days prior to deployment, depending on the duration of the deployment. The waiver guidance would potentially cause units to wait for up to 52 days after receiving tasking notification before initiating a medical waiver to determine eligibility.

Reporting Status of Forces

Unit Commanders are required to assign their personnel to an AEF bucket and associate them with a UTC. Assigning individuals to an AEF bucket is intended to provide some stability and predictability for the member. It allows members to know

when they are typically vulnerable.

ART is a tool that provides UTC status visibility to the entire chain of command and it provides several levels of detail that are intended to give the decision makers enough information to make well informed decisions at all levels. ART is intended to enable the decision makers to know if UTC's are able to accomplish their Mission Capabilities Statement (MISCAP), and if "adequate resources exist and is training available in order to accomplish and sustain the AEF mission(s)... the UTC assessments are used to determine the most effective force tasking. Effective management of Air Force resources requires accurate information at all levels." (AFI_10-244, 2010). Squadron Commanders are responsible for "associating, tracking, and managing personnel and equipment in UTCs and assigning them to the proper AEF. The squadron/unit commander is the authority for status of the unit's UTC(s)" (AFI_10-244, 2010).

In ART, Commanders determine the assessment on the UTCs ability to meet the MISCAP, the completeness of the UTC based on the manpower and equipment the UTC is suppose to have and if the UTC is able to deploy within 72 hours of notification. Commanders rate their UTCs primarily using a color code system of green, yellow, or Red. If all manpower, and equipment are available, can complete the MISCAP, and can deploy within 72 hours then UTC should be green. AFI 10-244 directs that if the UTC is missing some of the manning or equipment it is suppose to have, or has a deficient condition, but can still meet the MISCAP, then it should assessed as yellow. With the yellow rating, AFI 10-244 also directs Commanders to "provide a detailed explanation in remarks. Describe the condition, the corrective action, and the get-well date." If a UTC

has missing or deficient equipment or manpower that prevents the UTC from meeting the MISCAP, then Commanders assess the UTC as Red. Again, AFI 10-244 directs Commanders to remark on condition, corrective action, and get-well date, see Figure 8

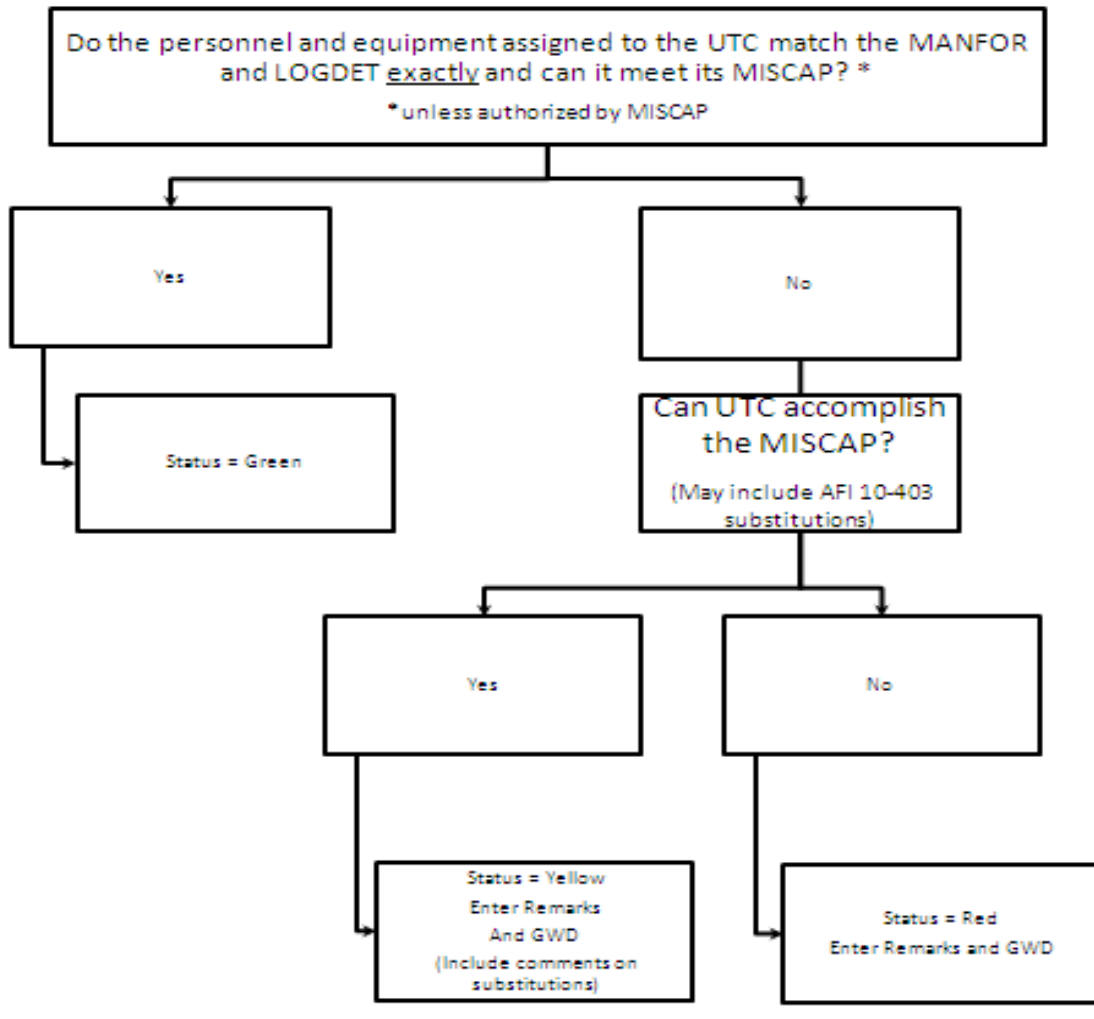


Figure 8: UTC Assessment Flow-Chart (AFI 10-244, 2010)

Remarks are very important to effectively communicating a UTC's status and enabling higher-level decision-making in support of the TPFDD requirements. Schedulers at AFPC/DPW do not have first hand knowledge of the personnel or equipment deviations in a Commanders assessment and must rely on the remarks to help

them decide if that UTC can still support a particular tasking. For example a yellow UTC because only four of the required five people are available may not be allowed to fill a tasking that stipulates it must have the full 5-person team. Likewise, a red UTC with only 3 of the 5 may still be able to fill a tasking requiring only one or two. Unfortunately, there are oversights in the guidance that results in an inconsistency in the perceptions of how to classify UTC's and how to report additional comments.

Interviews at all levels indicate a major problem with ART is inconsistency in ratings and remarks. There is no Air Force level guidance that directs Commanders how to standardize their comments about UTC's that are not rated as green. If a UTC is limited due to a medical condition, the UTC would be rated yellow or red. With that rating, guidance directs reporting the "condition, corrective action, and get well date". This guidance is incomplete because it fails to properly direct "how" to report on condition. ART has the ability to report the DAV, AAC or ALC, which according to an interview with the AFMC ART manager is the level of detail some Commanders stop at. This level of detail fails to capitalize on ART's capabilities to communicate a UTC's restrictions for higher-level decision-making. In addition to a DAV, ALC, or AAC number, ART provides the ability to stratify what the nature of the limitation code is such as "medical", or "personal". The Commander can then use the remarks section to help provide even more data, however without standardization of common remarks and definitions, higher level interpretation is spotty and unreliable. Within AFMC, a MAJCOM memorandum was published directing use of AAC/DAV codes and remarks in ART (Huber, 2011), however ART is intended to be viewed and interpreted at an Air Force level such as AFPC/DPW, and there is no guidance directing standardization of the

product at their level.

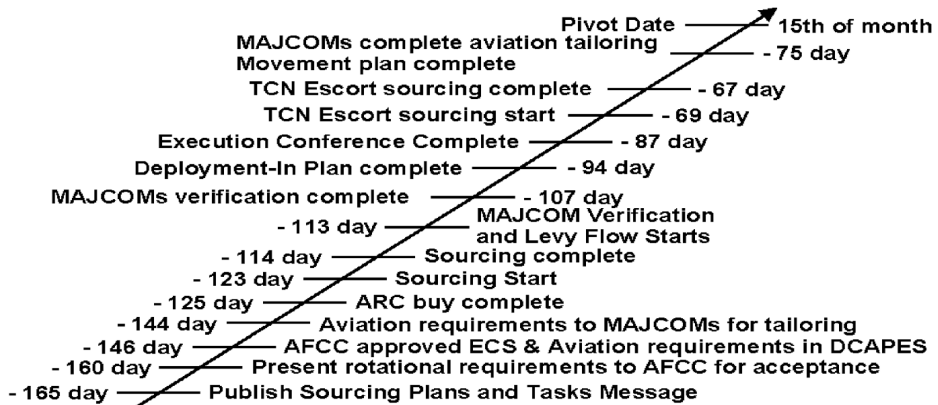
Another disconnect in ART reporting guidance became apparent during an interview with AFPC/DPW. Current guidance states a “green” rating is given if the UTC meets the MISCAP and is able to deploy within 72 hours, it even states “in addition and independent of the stoplight (Green, Yellow, Red) assessment, each unit will indicate if a UTC is tasked to deploy and, if tasked, whether it can meet theater specific requirements including line remarks IAW timing criteria” (AFI_10-244, 2010). However this guidance is not necessarily interpreted to mean assignment limitations. There is differing opinions as to whether the guidance requires a UTC with an ALC-C1 to be rated green because it meets the MISCAP by the letter, or it should be rated yellow because even though it can fulfill the MISCAP, it is limited in its theater of employment. AFI 10-244’s “Art Monitor Checklist” further supports the confusion (see Appendix B). Section 4 of the checklist asks if “members are free of non-waiverable DAV codes”. If the answer is yes, it instructs the rating should be green. Additionally, there appears to be very liberal use of the 72-hour availability. Though it is possible to process a medical waiver from start to finish within 72-hours, it would not be possible to process more than a few within that timeframe. The void in guidance here is if anything requiring a waiver should be considered green, yellow, or maybe even red. This confusion, and the current state of inconsistent reporting results in an inability to positively differentiate a capability that can be called upon to rapidly deploy to anywhere in the world to fulfill its MISCAP, and one that must wait for a waiver and still be limited by location.

AEF Rotation Planning

AFI 10-403 states “the AF goal is to provide the unit as much time as possible for a deployment tasking.” AFPC is responsible for preparing the AEF rotation schedule and maintaining the master rotational TPFDD in DCAPES. The rotational TPFDD is a revolving TPFDD of reoccurring requirements. CCDR’s constantly evaluate their forces’ ability to meet the mission requirements and based on changes will initiate an ACR, RFF/RFC, or release forces. Other than that, the rotational TPFDD will call for the forces necessary to maintain the current requirements. “The [AFPC/DPW], with support of component headquarters, will conduct a review of force rotational requirements with line remarks prior to the start of each AEF cycle” (AFI_10-401, 2010). AFPC/DPW is also responsible for the planning of critical dates for each AEF TPFDD. There are a few dates of importance. The Pivot Date is the date that each AEF rotation officially begins, “normally the 15th day of the first month of the AEF deployment eligibility window. The transportation movement window is 15-days on either side of the AEF pivot date” (AFI_10-401, 2010). AFPC/DPW will work to plan so all forces are rotated within a 30-day window. Typically key personnel will rotate towards the beginning of the window and the rest of the forces will phase in through the rest of the window. Planning for the upcoming AEF begins 160 days before the pivot date for 4-month and 191 days before pivot for 6-month rotations. During that time AFPC, FAM’s, CCDR’s and the Joint Staff may all be involved in working out issues so that AFPC/DPW will have firm requirements and be able to implement sourcing on time. Sourcing is the process of identifying actual assets/names to fill TPFDD requirements. Sourcing begins approximately 123 days prior to pivot for 4-month rotations and 151

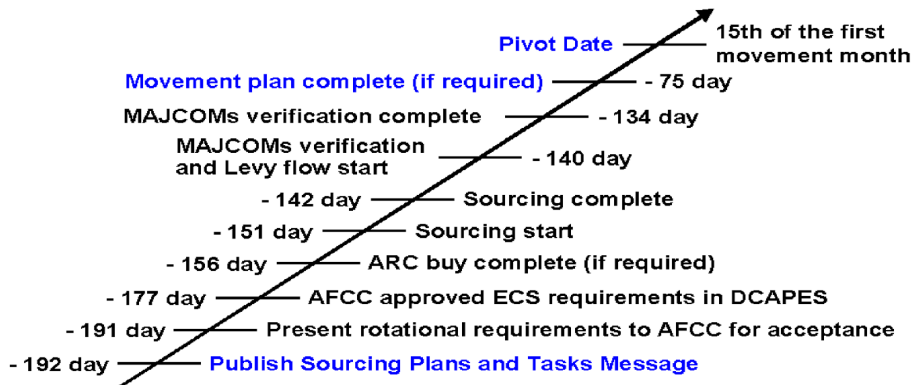
days prior to pivot for 6-month rotations (AFI_10-401, 2010). Even though there appears to be a lot of time between sourcing and the date forces need to actually be arriving in

AEF 4-MONTH ROTATION TIMELINE TEMPLATE



NOTE: Dates maybe adjusted (+/- a few days) due to Holidays/Weekends

AEF 6-MONTH ROTATION TIMELINE TEMPLATE



Blue = Date IAW 10-401

NOTE: Dates maybe adjusted (+/- a few days) due to Holidays/Weekends

Figure 9: AEF Rotation Timelines (AFI 10-401, 2010)

theater, there is still a lot of planning and co-ordination that must take place such as tailoring movement plans for specific requirements. This only allows planning for

approximately 9 days from the beginning of sourcing to completing sourcing, see Figure 9.

Types of Taskings

There are standard and non-standard force requirements. When the forces needed to meet a CCDR's requirement aligns with an Air Force standard capability, such as a standard UTC in the AEF Library, it is referred to as a standard requirement, also known as Expeditionary Combat Support (ECS). When a CCDR requirement does not align with an Air Force standard capability, the Air Force refers to them as Joint Expeditionary Taskings (JET). In the Joint environment there are three types of taskings that are collectively referred to as JET by the Air Force. Those three are the Joint Force Capability, In-Lieu of, and Ad Hoc sourcing solutions.

Joint Capability sourcing is providing an Air Force capability in place of another services capability such as Red Horse substituting for Army Combat Engineers, where no additional special training is required (AFI_10-401, 2010).

In-Lieu of (ILO) sourcing is using an Air Force capability to fill a hole in another services capability where the capabilities are not necessarily a clear-cut direct substitution such as sending an LRO to work as an Army S4, or an Air Force vehicle maintainer deploying to fill a motor pool position with the Army. ILO can also be sourcing a "best fit" strategy where a standard capability can fill the requirement, but it is not necessarily working within its core competencies. AFI 10-401 gives an example of a "Direct Support Supply Company, filled by Army reserve Petroleum, Oil and Lubricant Unit."

AFI 10-401 describes Ad Hoc as “A consolidation of individuals and equipment from various commands/services forming a deployable/employable entity, properly manned, trained and equipped to meet the supported CCDR’s requirements (e.g. Provincial Reconstruction Team (PRT) sourced with Navy & Air Force personnel).”

There is one more type of sourcing for another type of requirement. Individual Augmentees (IA) are intended to be temporary positions needed to support a Joint requirement. IA’s must be routed through the Joint Staff and added to a Joint Manning Document. These positions are levied to the different services as requirements. AFI 10-401 directs that IA’s should be temporary in nature and not to “address permanent manning or capability shortages.” The Air Force will attempt to align IA requirements with existing AEF rotations to the maximum extent possible. IA’s are tasked by AFPC through MilPDS using ECAST (AFI_10-401, 2010). These are now the taskings primarily filled by Tempo Band-X.

The Air Force also supports Indeterminate Temporary Duty (ITDY) requirements, commonly known as “365’s”. These requirements are handled as assignments and are not included in this study.

AEF Sourcing

There are several key players in sourcing an individual to fill a CCDR’s requirement. At AFPC there are Schedulers, at the MAJCOM there are Functional Area Managers (FAM’s), at the installation there is an Installation Deployment Officer (IDO), Unit Commander, sometimes an installation/wing level Functional Manager, the Personnel Readiness Flight, and the Manpower Office. Schedulers are assigned based on

functional specialties. Schedulers are familiar with the capabilities their functional areas provide and how they are leveraged to meet CCDR requirements. MAJCOM Functional Managers are responsible for tracking the MAJCOM's capabilities in their functional area and maintaining awareness on the status of those forces as well as controlling tasking actions affecting them. The IDO is the installation's interface with DCAPES for receiving tasking notifications, and coordinating all deployment actions from tasking to departure of forces. Sometimes UTCs or requirements span more than a single unit on the installation, in these situations it is common to have a single functional manager for all of those forces on the installation. Examples would be assigning a Supply Chief to manage all supply AFSC's on the installation, or having a Group Chief manage the TCN escort taskings. The Personnel Readiness Flight (PRF) is responsible for providing information on reporting instructions, assisting with reclaims, and actually associating a name/SSN with a tasking in DCAPES. The Unit Commander is responsible for weighing their first-person knowledge of their UTCs and personnel against the requirements to determine if a) the member can fulfill the requirements, and b) the ability of the Unit to function should the UTC be deployed.

Sourcing is the process of taking a TPFDD requirement and then identifying, and tasking the actual force that will deploy to fill the requirement. Ultimately for UTCs with manpower requirements, a "face" will be assigned to actual spaces in DCAPES. The AFPC/DPW is responsible for managing the process. Sourcing begins at AFPC/DPW with a requirement. For the purpose of this study, the requirement will be sourced in one of two methods depending on what type of requirement it is. With few exceptions such as some Ad Hoc requirements, if the requirement is for an Individual Augmentee (a form

of JET), or for “any AFSC” (which does not include requirements for Third Country National [TCN] escorts), then AFPC/DPW will source the forces necessary to fill the requirement directly using MilPDS. For the purpose of this study it will be referred to as sourcing by name. All other taskings should be able to be filled with standard UTC’s postured in their normal AEF buckets (tempo bands A-E). In this case, AFPC/DPW tasks individual units to source the forces (AFPC/DPWS, 2012). For the purpose of this study this will be referred to as UIC/UTC sourcing. This study will not include ITDY, Senior Staff or Commander sourcing.

Sourcing by name begins at AFPC/DPW with a requirement for an IA, “any AFSC”, or select other type. Within AFPC, there are functional schedulers. These individuals use ECAST to view requirements, and pull up a listing of possible candidates to fill the requirement. For these taskings, AFPC will use ART and MilPDS data to evaluate the candidates. At this stage AFPC is looking at individuals and their service records to select candidates based on, first, the capability to meet requirement. Second, the number of contingency deployments they have (fewer goes to the top of the list). Finally, the short tour return date (oldest date goes to the top of the list). When initially looking at candidates, ECAST will show all candidates regardless of the ART color coding. According to the Deputy of AEF Scheduling at AFPC/DPWS, it is up to the scheduler to evaluate each candidate based on the remarks in ART, if a red UTC is on the top of the list and has a get well date that will meet the requirement, then that is the individual that should be tasked (AFPC/DPWS, 2012). Once the scheduler selects the candidate, they “task” the individual by SSN to fill the requirement. Notification of the tasking is then sent to the member’s MAJCOM for tasking verification. For this type of

sourcing, the MAJCOM's process is called "verification" however the only MAJCOM action taken at this stage is changing the coding and making it visible to the members owning installation. Once the Installation Deployment Officer (IDO) receives the notification, the IDO briefs the Unit Commander and verifies the member's ability to meet the deployment requirements. If it is possible for the member to meet, or have a limitation waived that would allow them to meet the requirements of the tasking, the Unit verifies the tasking. If the Unit and or member cannot support the tasking they fill out a Reclama. An approved Reclama, for this type of tasking causes the AFPC Scheduler to begin all over again by evaluating possible candidates from across the Air Force, see Figure 10. Reclama's and waivers will be discussed later.

Sourcing by UIC/UTC begins at AFPC/DPW with a requirement. The AEF scheduler uses ECAST to populate a list of candidates to fill the requirement. ECAST populates a list of candidates based on Forward Operating Location (FOL) teaming. FOL teaming is a strategy to pull forces from a common geographic location to fill requirements to a common forward operating location. This concept is intended to improve aggregation and transportation. All UTC's in the FOL team will randomly populate the ECAST listing of possible candidates. The Deputy Director of AFPC/DPWS states the scheduler then evaluates the first UTC on the list for its ability to meet the requirements. The top UTC could be a Red UTC because 3 of 5 personnel are missing, but the CCDR requirement may only need 2 people, then the UTC would be sourced even though it is Red. On the other hand, a green UTC may pop to the top of the list but a CCDR line remark may require a special experience indicator (SEI). In this case there is a decision point, the scheduler must either attempt to communicate with

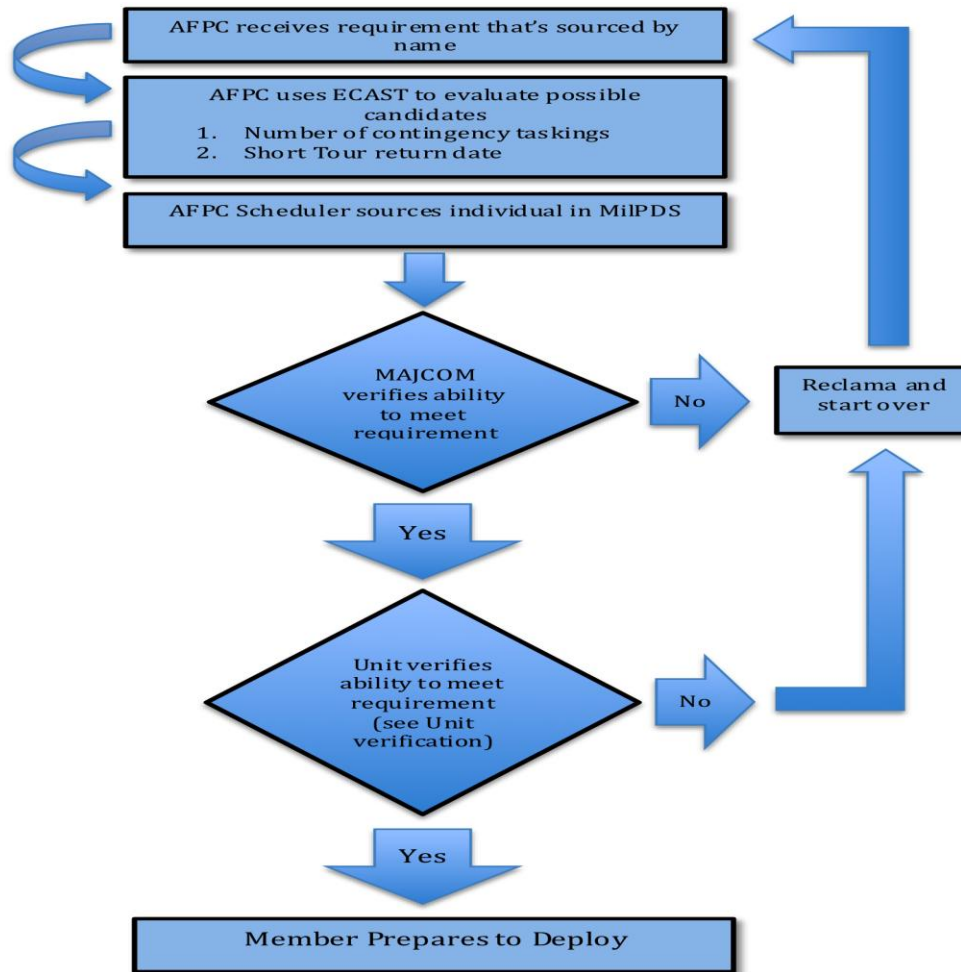


Figure 10: By Name Sourcing Process

FAM's to find a capability with the SEI and move down the list until a UTC with the SEI is identified, or decide to either just source a UTC not knowing the status and risk sourcing a capability that will a waiver or reclama. Supporting this decision point can arguably be the most important function of ART's ability to effectively communicate the status of UTC's. This decision point is made above the MAJCOM, on day zero of sourcing. It needs to be supported by terminology and status reporting practices that are standard across the Air Force, therefore any MAJCOM supplementation regarding this purpose is considered ineffective.

Once the Scheduler selects a UIC/UTC to fill the requirement, it flows to the MAJCOM via DCAPEs. The MAJCOM's readiness division coordinates with the MAJCOM functional manager who verifies whether the requirement can be supported. If the MAJCOM determines the unit can support the tasking, it verifies the tasking and makes it visible to the installation. At the installation, the IDO confers with the Unit CC and any others deemed necessary to determine the member's ability to fill the requirements. If the Unit Commander determines the member can fill the requirement, and that the Unit can support the loss, the Unit accepts (verifies) the tasking. If the member has any limitation that will expire before the requirement begins, or any other limitations that can possibly be waved such as an ALC-C2 or needing CCDR waiver to a line remark, then the Unit verifies the tasking and initiates necessary waivers. The key here is that CCDR line remark waivers are sought prior to verification and assigning a name in DCAPEs, while medical waivers are not necessarily accomplished prior to verification. See Figure 11 for AFPC/DPW sourcing process, Figure 12 for UIC/UTC sourcing process & Figure 13 for Wing/Unit level sourcing decisions.

If the forces available to the Unit Commander have a limitation, or there are restrictions placed upon the requirement by the CCDR that prevents the Unit Commander from filling the requirement, they must request a waiver before attempting to submit a reclama. If the condition preventing the Unit from filling the requirement is due to CCDR restrictions, "the tasked commander will request the deployed group commander waive the requirement that precludes the unit from filling the tasking (e.g., line remarks, special experience identifier (SEI), grade, skill level, etc.) or expand substitution rules that will meet the UTC's MISCAP" (AFI_10-401, 2010). This waiver is initiated

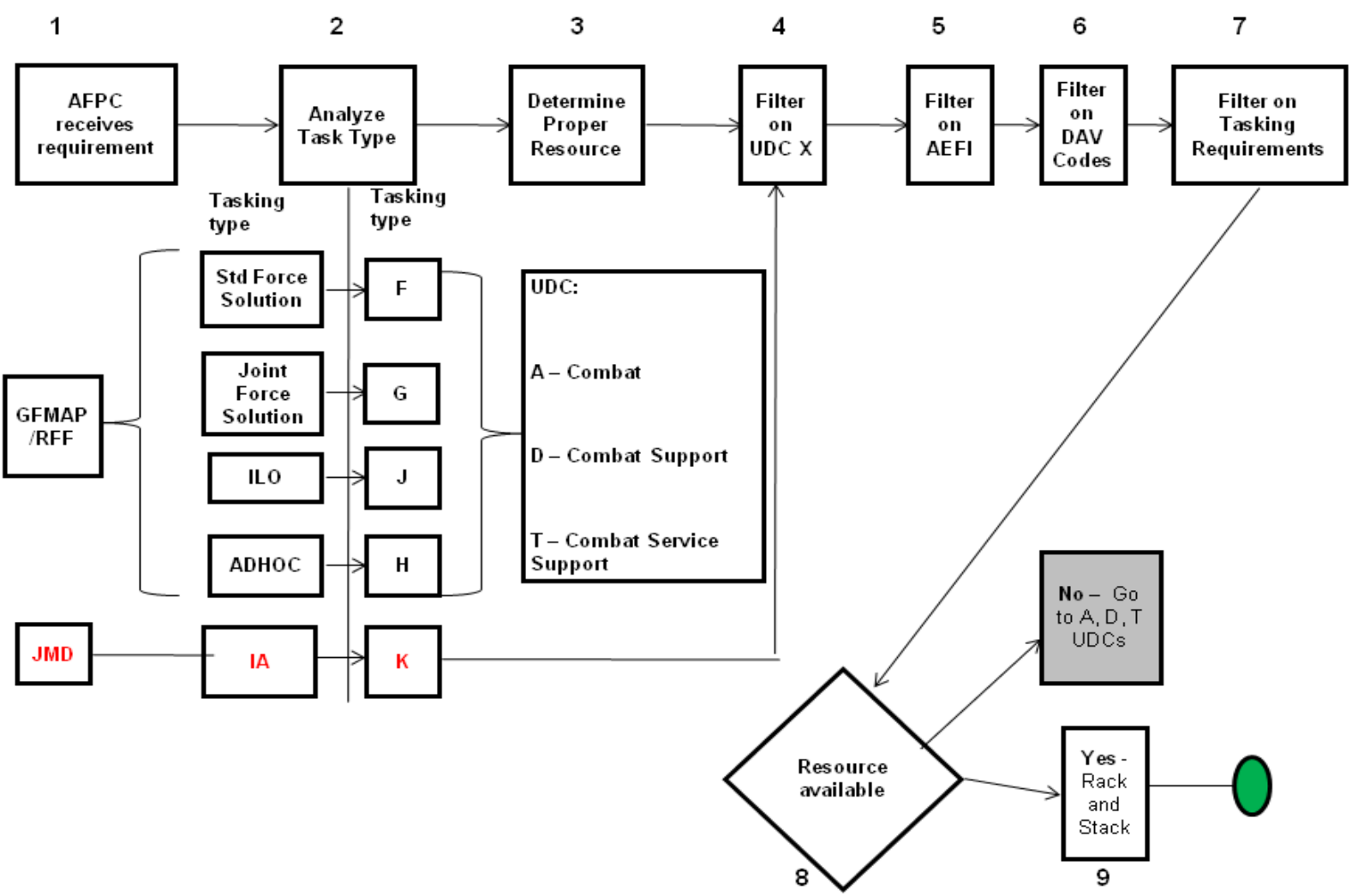


Figure 11: AFPC Sourcing Process (AFI_10-401, 2010)

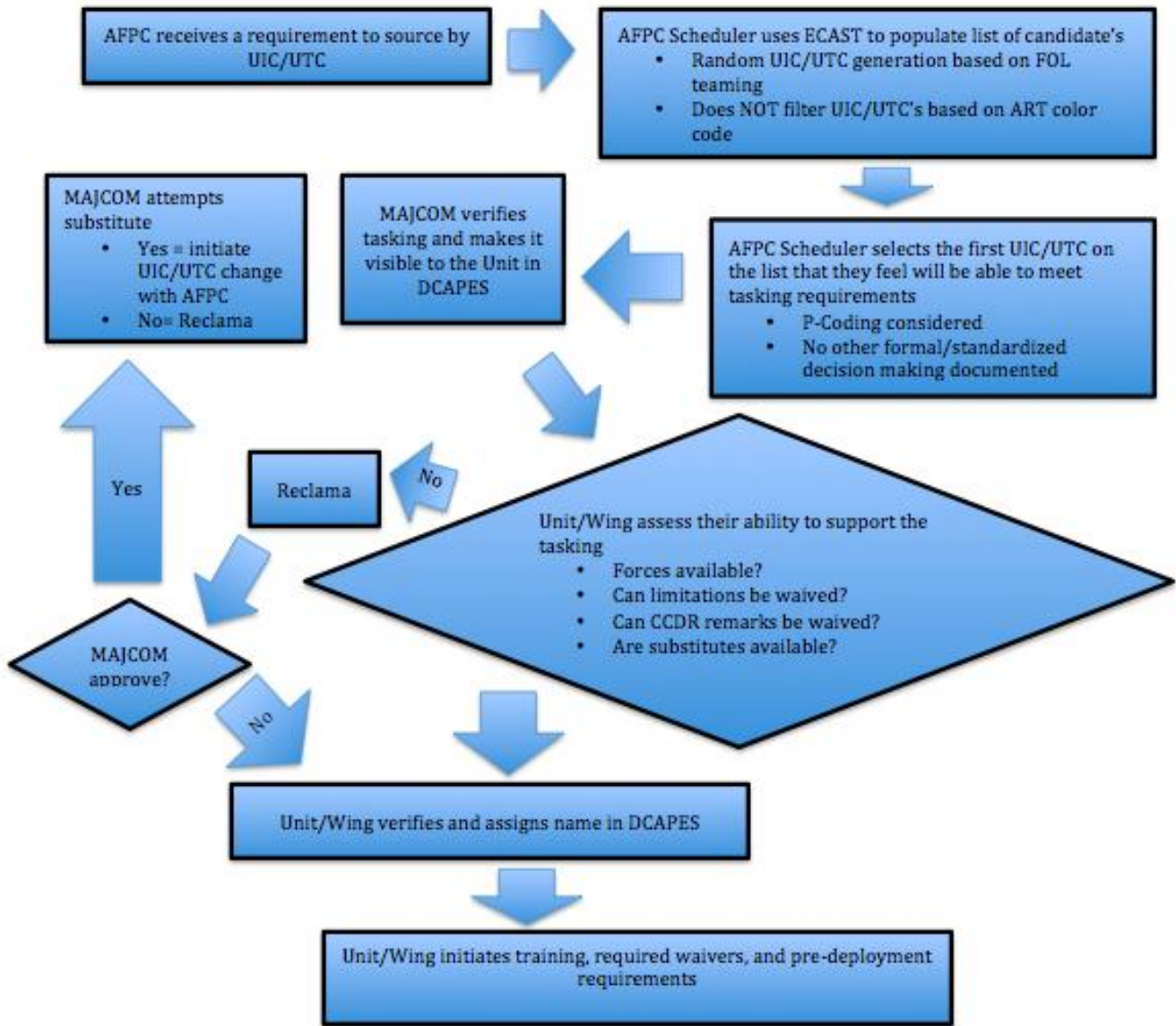


Figure 12: UIC/UTC Sourcing Process

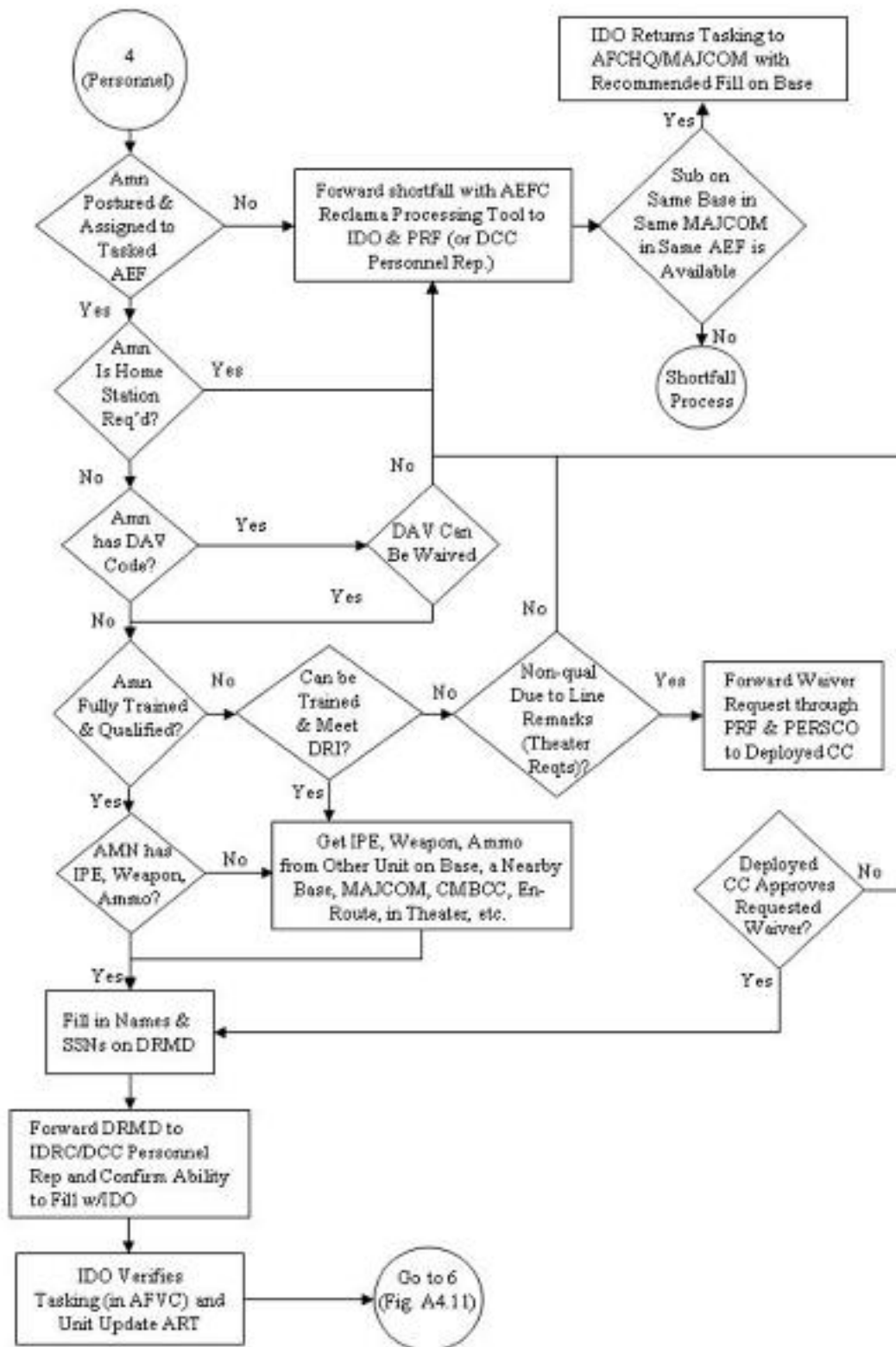


Figure 13: Wing/Unit Level Sourcing (AFI_10-403, 2008)

through the IDO and the PRF. The CCDR has 5 days to accept the request and update the requirements in the TPFDD, or 3 days when the requirement is within 30 days of first movement. If the TPFDD is not updated within the timeframe, the waiver is considered denied, and the IDO may submit the reclama.

When the limitation is due to an AAC/ALC/DAV for a medical condition, a medical waiver must be submitted. The Commander directs the member to initiate a medical waiver through the member's MTF. The MTF evaluates the member's condition, the tasking location, and the COCOM's guidance to determine initial eligibility for a waiver. If the MTF believes fulfilling the tasking does not put the member at undo risk with regards to their current medical condition(s) and treatment plans, the MTF follows the specific waiver submission guidelines directed by the tasking's COCOM/AF Component Command. For AFCENT, the waiver package and guidance directs MTF's can disapprove a member for deployment, but cannot approve a member for deployment. It also directs that normally, waivers should be submitted no earlier than 90-days prior to first movement (USAFCENT/SG, 2012). The AFCENT Surgeon General has been delegated authority to approve CENTCOM waivers for all but behavioral conditions. The AFCENT SG evaluates the waiver request, and approves, disapproves, or forwards the waiver to CENTCOM for final approval/disapproval as needed. This process is used for all medical clearances whether they are for conditions known prior to the tasking, or conditions that arise during the tasking. According to an interview with AFCENT/SG, a major cause of waivers requiring CENTCOM/SG review is for psychotropic drugs. Any medication that has mind altering effects requires a

waiver by CENTCOM/SG unless the member has been on the drug long enough to establish a history of no negative side effects.

Unit/Wing Commanders must seek all avenues to meet a UIC/UTC tasking. Even if the individual assigned cannot meet the requirement, they must attempt to receive waivers to requirements and limitations as well as explore the Unit/Wing's ability to substitute other forces (within the same vulnerability period) to meet the requirement. Ultimately though, reclama's can result from any reason the Unit Commander feels prevents the Unit from meeting the requirement. A reclama is justified "when a wing or tasked unit does not possess sufficient or qualified personnel to support a crisis tasking, the deployed commander is unable to waive the requirement, or the tasking is impossible to meet or will shut down critical elements of the home- station mission, as determined by the wing commander or equivalent" (AFI_10-401, 2010).

There are 5 categories of Reclama's. Condition 1 is when there is "insufficient authorized (1A), assigned (1B), eligible (1C), qualified (1D), or trained (1E) personnel" (AFI_10-401, 2010) available. Condition 2 is when there is insufficient equipment. Condition 3 is when there is "no capability available in the on-call AEF" (AFI_10-401, 2010). Condition 4 is if the desired capability is not "inherent" in the tasked unit. Finally, Condition 5 is when the tasked Unit (unit/wing/MAJCOM as appropriate) has the capability, "but deployment of personnel would cause a severe adverse impact on the wing/unit mission" (AFI_10-401, 2010).

Reclama processing has it's own separate electronic system for submission, routing, approval and tracking. From the installation, the reclama goes to the MAJCOM. The MAJCOM will evaluate the reclama to make sure the installation did everything

possible to fill the requirement such as requesting a CCDR waiver or requesting a medical waiver for the limitations. The MAJCOM will approve or disapprove the Unit's reclama. If the MAJCOM approves the reclama, then the MAJCOM seeks alternate avenues to fill the requirement from within the MAJCOM. If the MAJCOM cannot meet the requirements, it forwards the reclama to AFPC. At AFPC, the sourcing process repeats itself until a successful tasking is made, or all AF capabilities are exhausted. If AFPC determines the AF cannot meet the requirement, AFPC submits a shortfall to the AF Operations Group, HAF Crisis Action Team, and the ACC Operations Group, (AFI_10-401, 2010). However, before AFPC submits a shortfall they will coordinate with the HAF FAM to develop "a mitigation plan that utilizes a combination of (1) full or unused portions of fragged or tailored UTCs from the available Enabler libraries, (2) UTCs from the next AEF block/pair, (3) mobilized ARC forces, and/or (4) AFSCs from the Institutional Force, in the current AEF vulnerability period, that could be aggregated into a UTC" (AFI_10-401, 2010). Reaching forward to the next AEF bucket to source forces is strategy initiated across the entire functional area AF-wide. At the Unit/Wing level, "personnel swaps between AEF pairs are discouraged and require MAJCOM/CV or equivalent approval" (AFI_10-401, 2010).

Summary

The purpose of this chapter was to use existing literature, on-site training, and personal interviews to discover the process of how a Combatant Commander requirement flows through the process of being assigned to a service. How requirements assigned to the Air Force are sorted. How the Air Force structures itself to meet the requirements,

and how the Air Force ultimately tasks a specific individual to fill the tasking. This chapter attempted to identify parallel processes and deviations such as the Reclama and medical waiver processes, as well as some peculiarities such as the fact that FOL teaming is integral in the strategy of sourcing, but the current process and manning structure dictates MAJCOMs attempt to find substitutions before forwarding reclamation back to AFPC...a process that undoubtedly reduces FOL teamed substitution options. Another peculiarity is the 30-60 day gap between verifying a tasking and requesting the medical waiver (at least as written). It also explored definitions and classifications supporting critical decision points in the various processes.

IV. Analysis and Results

This chapter will build on the information gained during the process discovery by providing tools that should be helpful tying everything together and it will provide visual representations useful in analyzing the entire network of processes for improvement opportunities. It will use the information gathered during the process discovery and the available data to create a supply chain map of the Class-0 supply item. The supply chain map will be a simplified version of the “Extended Value Stream Map”. According to the information gathered so far, the planning cycle’s target lead-time for tasking warfighters is between 123 days and 151 days. The Air Force standard for tasking verification is at most 15 days, data shows this standard is met 89% of the time. This indicates time constraints are not likely to be a major contributor when evaluating the process with the purpose of identifying areas that result in failure to successfully fulfill CCDR requirements or to decrease the “warehouse refusal” or “inventory accuracy” metrics which indicate the Air Force’s true knowledge of the status of its resources as well as its ability to successfully task those resources on the first attempt. Therefore, the map will not contain time, nor will it attempt to cast judgment on value or non-value added sub-processes. It will simply be a conceptual map of the overall process to enable a broad process-wide visualization of the current state. A simplified representation of relationships should provide leadership enough information to identify questionable areas for potential improvements. Next, the available data will be digested to populate a statistical probability decision tree. The decision tree will provide a tool to analyze the probabilities of various sourcing outcomes based on current probabilities. It will also

provide the ability to change various characteristics to analyze the effects that targeted efforts or adjusted goals in different area's will have on the final sourcing probabilities.

Supply Chain Maps

Based on the information gathered during the Process Discovery, three supply chain maps were developed. The first map is of the planning process, the second map is of how requirements are fulfilled, and the third map is presented as a possible future state after incorporating changes suggested though the course of the study as possible improvements; see Appendix C for the conceptual Supply Chain Maps. These maps are simplified in an attempt to provide basic conceptual relationships and process flow.

While all members of the supply chain may be capable of communication or interaction with each other, they are not illustrated unless they are a primary process flow.

All three maps are essentially the same with only minor changes based on what portion of the process is being looked at. First is the Deployment Planning Supply Chain Map. Building the map by beginning with the customer and working backwards, the customer is identified as the COCOM. The COCOM was chosen over breaking it out to the CCDR's for a couple of reasons. First, CCDR's are subordinate to their COCOM's creating a "parent/child" relationship. This analogy is used similar to the mapping of a product targeting children, but is purchased by the parent such as a sugary breakfast cereal. The child is the real customer, but the decisions of the parent are what must be evaluated as the final customer because they are the one actually purchasing the good. Second, mapping to the CCDR's would create too much chaos to provide any inputs of

value to the purpose of these maps. Since COCOM's are ultimately responsible for their CCDR's and the requirements CCDR's request, they are mapped as the customer.

Stratifying the COCOM's as individual icons on the map also does not provide any value for the purpose of this map, therefore they are simplified into one because the planning and sourcing communication links are sufficiently identical at this level of analysis.

Directly upstream of the customers during the planning phase is the HAF & JCS. Their functions intertwine a great deal and for the purpose of this study, representing them as one entity accomplishes the intent. The HAF & JCS actually act as e-retailers in the supply chain. They do not actually handle the goods, they merely promote, and sell the warfighters capabilities. The HAF & JCS are the point of contact with the customer. This is where demand management and customer relationship management can be the most effective. The HAF & JCS are where customer demands can be tempered and managed to help "sell" standardized solutions and reduce customized requirements. Increasing the standardized proportion of requirements that adhere to standardized capabilities in turn decreases irregular sourcing processes as well as requirements that are customized by line remarks. Fewer line remarks means fewer reclaims for line remarks. Customer demand is relayed to AFPC through the EDI systems discussed in Chapter 3.

AFPC acts as an electronic distributor in the Planning SCM. AFPC is the keeper of the AEF Library and with it all AEF Capabilities. They are also the pivot point where all customer requirements converge with supplier capabilities. During planning AFPC takes new customer orders from the JCS in the form of approved tasking orders based on approved RFF's and ACR's. AFPC also interacts with the AFCC's and COCOM's to update the Master AEF TPFDD of all recurring requirements. In effect, this is a form of

“standing order” placed by the customer. During the planning phase, AFPC takes inputs from the MAJCOMs regarding the status of capabilities. The MAJCOMs also play the role as a distributor (except for forces their own indigenous forces). MAJCOMs consolidate the inputs of the individual units and offer their capabilities to AFPC. The Units are mapped as manufacturers because they take various inputs of raw materials in the form of manpower and are responsible for producing the warfighter with the capabilities concurrent with their skill and grade. They also package those warfighters in UTC’s for presentation to the customer. During planning, the Units interface with the MTF’s to evaluate the medical status of their warfighters. For medical conditions expected to last more than 12 months, the MTFs interface with AFPC for medical evaluation of the warfighters. This information is then referred back to the Units for the purpose of updating capabilities. A Unit’s list of capabilities can be thought of as a supplier’s list of what is in stock. The portion of the supply chain process illustrated on this map can be thought of as taking customer orders for future deliveries and creating manufacturing/distribution plans to meet customer requirements. The next map illustrates the execution of those manufacturing/distribution plans.

The second map illustrates the requirements fulfillment process. This process begins with the JCS issuing a tasking order to AFPC. AFPC then uses ECAST to interface with ART statuses consolidated by the MAJCOMs and MilPDS data provided by the individual units (wings) to determine which units/individuals (depending on sourcing method) possess the capabilities necessary to fill the customer orders. Once AFPC determines which manufacturer to order the capability from, they send their order to the MAJCOMs. The MAJCOMs process the order and forward it on to the units. At

this stage, the units have the task of fulfilling the orders, however currently this task is complicated by the fact that the method of reporting their “in-stock” capabilities does not allow enough detail for AFPC to match requirements to actual capabilities accurately. For instance, UTC capabilities reported may require a CGO, however the grade of the CGO as directed in the UTC’s MISCAP is insignificant. Unfortunately, sometimes CCDR’s tailor their requirements with line remarks directing the CGO be a Captain, but the unit was posturing a 2nd Lieutenant in the UTC. This is only one example of how insufficient data describing UTC’s “in-stock” results in poor sourcing decisions. To use a vehicle analogy, it would be like shopping for a new pick-up truck on line but not being able to see whether they were 2-wheel drive or 4-wheel drive until after you submit the order and wait a week. Sometimes it does not matter what kind of truck you get, but sometimes you may need a 4-wheel drive and the manufacturer only has 2-wheel drives. If the unit’s do not have the exact capabilities requested by the customer, they then communicate directly with the final customer to see if they will relax their requirements and take delivery of a product that does not meet their initial requirements. Another problem the unit may run into while filling orders from AFPC is created by the practice of posturing capabilities as “in stock” when in actuality, those units are controlled by an unpredictable medical waiver process. Before a unit can fill an order with a capability that has a medical restriction, they must receive permission from the medical community. The problem is that this process of obtaining permission has a high failure rate (discussed later). In essence, the units were posturing capabilities that were not theirs to posture. In a supply chain sense, the MTF’s actually stock those assets and the units must order the assets from the MTF’s. This illustrates the fact that MTF’s are actually in the supply

chain as manufacturers who supply warfighters with medical restrictions to the units. Realizing this, it becomes apparent that units are reporting capabilities as “in stock” that must actually be ordered from another manufacturer. This presents a problem for reliability of the reported capabilities as well as for rapid mobility. If the unit must order the assets from the MTF, then those assets are not readily available. In practice, the unit is actually relaying a capability status. The MTF’s communicate statuses of the capabilities they offer to the units through the use of physical profiles, ALC’s, and ACC’s. These statuses are currently coded in such a manner that is resulting in sufficient miscommunication that it contributes to the single largest cause of failed sourcing attempts. The third SCM will be discussed in Chapter 5.

Statistical Probability Decision Tree

The purpose of the Statistical Probability Decision Tree is to provide a numerical representation of how various actions affect the goal of being able to successfully identify, task, and deploy a warfighter that meets the CCDR’s requirements on the first attempt. This goal provides an indication of how accurately the Air Force can account for its inventory of warfighters. This level of inventory accuracy directly relates to the level of resource utilization, impacts the “safety stock” of warfighters necessary, and affects the accuracy of Air Force capability forecasts when conducting contingency and crisis planning. Due to the fact that the goal is tasking warfighters on the first try, substitutions and UIC changes are not included in this decision tree as they are remedial actions and have no bearing on the goal.

To assist in modeling the decision tree, an Excel add-in called “Tree Plan” was used to create the map. The model uses events and branches. Events are simply decision points and the branches are the results of the decision points. The branches are modeled such that the top left cell is the branch probability and below that is the name of the branch. All branches stemming from a single event are mutually exclusive and their probabilities sum to one. The bottom left cell indicates the total probability of that branch and the bottom right cell is the expected value of sourcing attempts realized at that branch calculated by multiplying total probability by initial sourcing attempts input at the start. There is insufficient data to enable more in-depth analysis of individual probabilities and their dependencies on upstream events, therefore it is necessary at this stage to calculate total probabilities based on an assumption of independence. Assuming independence, the total probability of a branch is calculated by multiplying the probability of the branch by the total probability of the event from which the branch is derived. The total probability of the event is the same as the probability of the upstream branch to which it is associated. Events are numbered top to bottom, left to right beginning at the first decision point. Branches are bulleted so that the number of the branch reflects the entire decision path leading to the branch.

The decision tree allows the user to change probabilities at any point in the chain of events to experiment with how various changes impact the final outcome given a set input. The user may also change the number of attempted taskings to simulate an expected outcome given set probabilities. To simulate an actual AEF tasking scenario, the user can input a number under in block 1 “Tasking Attempts” that is representative of the

number of requirements to be tasked, the final output represents the expected number of warfighters for each different type of result.

The start is the far left block, which allows the user to input the number of sourcing attempts to simulate. This study will use the data presented to the AFMC/CV on 4 November 2011 (AFMC/CV, 2011) to derive initial estimates of probabilities. The total number of sourcing attempts will be estimated by the total number of taskings (21,290) plus the total number of known failures (2099), which results in an input of 23,389.

The first event is whether the tasking is sourced by name or by UIC/UTC. There are two branches from this event. Branch 1 is By Name Sourcing and Branch 2 is UIC/UTC sourcing. With currently available data, the remaining model of events and branches for Branch 1 mirrors Branch 2. There is no data to derive a proportion of taskings sourced via name or UIC/UTC, therefore for this study the proportion will be set to 100% UIC/UTC and 0% By Name. For this initial study, setting the proportion at this branch to 100/0 has no effect on final summaries and keeps the analysis of the given data simplified. Future collection of data broken out by type of sourcing will allow more precise analysis of system performance. Analyzing system performance based on tasking method would support future improvement efforts that wish to evaluate which method of sourcing provides the best results. For now, the 100/0 proportion causes the current model to return an expected value of zero for the entire By Name structure.

Following the UIC/UTC branch, the next event (2) has two branches. Branch 1.1 is if the UTC that is trying to be sourced meets the tasking requirements. Branch 1.2 is the UTC's that do not meet the tasking requirements. The equation used to determine

the probability for Branch 1.1 is derived using known values of total Condition 5 reclaims, and the known number of total successful taskings, which includes the estimated number of approved COCOM medical waivers that are estimated by the AFCENT/SG data. Estimating COCOM medical waivers is discussed later. Branch 1.1 includes Condition 5 reclaims and known successful taskings minus the estimation of “Approved COCOM Waivers”, therefore the formula used to derive the branch probability is
$$\frac{(Known\ Successes - Estimate\ of\ COCOM\ Waiver\ Approvals) + Condition\ 5\ Reclamas}{Total\ Tasking\ Attempts}$$
.

This results in a branch probability of .9045, and a total probability of .9045. Branch 1.2’s estimated probability is calculated as 1-P(Branch 1.1) which provides a probability of .0955 and a total probability of .0955.

If the UTC meets the tasking requirements, the next event (4) has Branch 1.1.1, which is if the Unit is unable to support the tasking, which leads to Branch 1.1.1.1, a Condition 5 Reclama. The branch probability of a Condition 5 Reclama is estimated by
$$\frac{Total\ Condition\ 5\ Reclamas}{Total\ Members\ Who\ Meet\ Requirements}$$
 which results in a branch probability of .0125 and when

multiplied by the total probability of the Branch 1.1, it yields the total probability of a Condition 5 Reclama to be .0113.

Branch 1.1.2 is “Unit Verifies Tasking”, this represents a sourcing attempt that is ultimately verified by the unit and a name/names are placed in the system. Branch 1.1.2’s probability is estimated as 1-P(Branch 1.1.1), which results in a probability of .9875 and a total probability of .8932.

The next event (8) after Branch 1.1.2 leads to Branch 1.1.2.1 “Member Successfully Deploys” and Branch 1.1.2.2 “Post Tasking Incident Prevents Deployment”.

There is no data available to determine how many successfully tasked individuals still result in a reclama due to unforeseen circumstances before they can deploy, therefore until data is available, the probability of Branch 1.1.2.1 is set to 1, and the probability of branch 1.1.2.2 is set to zero. Branch 1.1.2.1's branch probability multiplied by the total probability of its upstream branch yields a total probability of .8932. For future applications, the model continues with another event (14) to stratify "Post Tasking Incidents" with Branch 1.1.2.2.1 "Medical Reclama Post Verification" and Branch 1.1.2.2.2 "Other Post Verification Reclama". Currently these probabilities are downstream of a zero probability and non-applicable, however this could be very insightful data for decision makers as it would indicate the number of medical and other reclaims that occur after individuals are notified of an impending deployment.

Going back to the event Branch 1.2 "Member Doesn't Meet Requirements", the equation estimating this branch's probability was $1 - P(\text{Branch 1.1})$. This equation results in a branch probability of .0955. The event (5) following this branch has four branches representing different reasons for a reclama and one branch that leads to various medically related outcomes. There is no data available representing true Air Force reclama rates, however the AFMC data breaks out reclaims by seven different causes. They are Medical, Personnel Action, Line Remarks, Inaccurate ART, 3-Day Option, Other, and Condition 5. The 3-Day option is only applicable to ITDY's and therefore not included in this decision tree. Due to a lack of AF-Level data, the AFMC data (n=238) will be used as an estimation of AF probabilities.

The equations for Branches 1.2.2, 1.2.3, 1.2.4, and 1.2.5 all root from the same estimation of AF reclama probabilities based on AFMC reclama probabilities calculated

as $\left(\frac{AFMC\ Occurrences\ for\ Branch}{Total\ AFMC\ Reclamas-Condition\ 5\ Reclamas-3-Day\ Option\ Reclamas}\right)$. Due to the fact that there are downstream branches that do not result in reclamas, it is necessary to subtract the Expected Value (EV) for all downstream non-reclama branches from the EV of the upstream branch (1.2) prior to multiplying the reclama probabilities derived from the AFMC data by the upstream EV of Branch 1.2. Once an EV for branches 1.2.2, 1.2.3, 1.2.4, and 1.2.5 are calculated based on an input that does not include downstream non-reclama outcomes, the branch EV's can then be divided by the actual EV of their upstream branch to determine initial estimates their true branch probabilities. This equation results in a Branch 1.2.2 "Line Remark Reclama" probability of .1874 and total probability of .0179. Branch 1.2.3 "Personnel Action Reclama's" probability is .2512 and has a total probability of .024. Branch 1.2.4 "Inaccurate ART Reclama's" probability is .017 and has a total probability of .0016. Branch 1.2.5 "Other Reclama's" probability is .017 and also has a total probability of .0016.

Branch 1.2.1 "Medical", contains the possibility of various outcomes therefore, the equation estimating the branch probability for Branch 1.2.1 is $1 - \sum_2^5 P(Branch\ 1.2.\ x)$. This equation results in a branch probability of .5274 and a total probability of .0503.

The event (9) following Branch 1.2.1 consists of Branch 1.2.1.1 "MTF Approves Waiver", and Branch 1.2.1.2 "Reclama-MTF Denies Waiver". Data is not collected to track the number of MTF waiver applications, nor the percentage of MTF waivers that are approved, or disapproved. Finally, there is no data tracked that directly states average MTF Waiver Accuracy. MTF Waiver Accuracy would be defined as the % of MTF waivers that are approved, which are subsequently approved by the COCOM. This

metric could prove valuable in assessing the medical waiver processes effective communication between Medical Doctors at Base Level and their COCOM counterparts as well as an indication of the processes overall efficiency. Fortunately, enough data is available to derive an initial estimation of the probabilities of MTF Waiver Approval and Disapproval. It is assumed that all medical reclaims are submitted for a waiver. Given the AEF Data from AFMC's AEF Debrief and probabilities established thus far, it is determined that there are approximately 1,177.6915 tasking attempts splitting between Branch 1.2.1.1 and 1.2.1.2. Based on data obtained from AFCENT/SG (representing CENTCOM), there were 464 waivers submitted during the same time as the AFMC data. Of those submissions, 396 were approved and 66 were denied. That data is not a conclusive estimate of total AF COCOM waiver submissions because it does not include the other COCOM's, however CENTCOM is the largest customer of warfighters and should provide a rough initial estimate of the true COCOM waiver data. The true total COCOM waiver submissions will be higher than the estimated, which means the true MTF Waiver Approval probability will also be higher than estimated. Given an input of 1,177.6915 and an output of Branch 1.2.1.1 of 464, an MTF Waiver Approval probability is derived as .394, with a total probability of .0198. The Branch 1.2.1.2 "Reclama-MTF Denies Waiver" probability is established as $1 - P(\text{MTF Waiver Approval})$ which is .606. This gives a total probability of .0305 that a sourcing attempt will result in an MTF medical waiver denial.

If the MTF approves the waiver, the next event (13) sends the waiver to the COCOM for approval/disapproval. There are two branches, Branch 1.2.1.1.1 "COCOM Approves Waiver" and Branch 1.2.1.1.2 "Reclama-COCOM Denies Waiver". The

probabilities of these branches were estimated using all available AFCENT/SG waiver data (n=820). Based on those data, the branch probability that COCOM approves the waiver is estimated to be .8578, resulting in a total probability of .0170. Branch 1.2.1.1.2's probability is estimated as $1 - P(\text{COCOM approves waiver})$ which is .1422, resulting in a total probability of .0028.

The event (16) following COCOM Waiver Approval has two branches. Branch 1.2.1.1.1.1 "Member Successfully Deploys" and Branch 1.2.1.1.1.2 "Post Tasking Incident Prevents Deployment". Again, there is no data to enable developing probabilities for these branches, therefore all successful COCOM waivers will be assumed to successfully deploy. This sets Branch 1.2.1.1.1's probability to 1, and results in a total probability of .0170, and sets Branch 1.2.1.1.2's probability as well as its total probability to zero. This is an area lacking metrics that could provide useful information if tracked. Being aware of when incidents occur in the chain of events may present trends or other obvious opportunities to focus future research or improvement efforts. For example, AFPC/DPAMM, the Medical Standards and Retention Branch may find it useful to know how post tasking incident rates vary between the warfighters that were initially verified as ready to deploy and warfighters that were already medically limited for some other reason prior to tasking. For future applications supporting that purpose, the model continues with another event (18) to stratify "Post Tasking Incidents" with Branch 12.1.1.1.2.1 "Medical Reclama Post COCOM Waiver" and Branch 1.2.1.1.1.2.2 "Other Post COCOM Waiver Reclama". Both of those branches are downstream of a zero probability and therefore currently non applicable.

This completes all of the events mapped downstream of Branch 1 “UIC/UTC Sourcing”. Currently there is no data to support making the events downstream of Branch 2 “By Name Sourcing” any different than Branch 1. Therefore, all events and branch probabilities downstream of Branch 2 are identical to all events and branch probabilities downstream of Branch 1. Due to the fact that Branch 2’s probability is currently zero, all downstream total probabilities are also zero. Future research to gather data and differentiate the events and probabilities downstream of Branch 1 and 2 would provide valuable insight towards discovering the most effective and efficient method of tasking. See Appendix C for the Statistical Probabilities Decision Tree.

Utilizing the above described decision tree and inputting data from AFMC’s AEF debrief (AFMC/CV, 2011), the model was run with an input of 23,389. Given that input, it successfully duplicated the known total number of Air Force Tasking successes

Table 1: Statistical Probability Decision Tree Summary

SUMMARY					
Attempts	23389	Condition	264	COCOM Waivers Denied	66
Success	21290	Medical Reclama	779.6915	MTF Waivers Denied	713.6915
Fail	2099	Line Remarks	418.38	COCOM Waiver Approval %	85.80%
Total (should = Attempts)	23389	Personnel Actions	560.9595	MTF Waiver Approval Accuracy - COCOM Approval %	
Success Rate	0.910256958	Inaccurate ART	37.9845		
		Other	37.9845		
		Post Tasking Incident	0		

(21,290) and reclamas, recorded as failures (2099) as well as maintained proper reclama ratios. From the summary of this simulation (see Table 1), valuable data indicating opportunities for improvement are evident. Immediately evident is a success rate of only

91% (this differs from the rates quoted in the introduction because it excludes some types of tasking methods). Also evident are the major impact reclaims are having on the success rate. Personnel Actions, and Medical Reclamas, and Line Remarks comprise 83% of all tasking failures, which is surprising because except for the unknown number of post validation medical and personnel action reclaims, as well as the fact that ART status changes are suppose to be updated within 24 hours, all conditions contributing to the failures should be known when the decision to attempt to source that specific name/UIC/UTC is made. This model also presents the first ever estimation of MTF Waiver Denial rates, which while the estimate is known to be high due to a low estimate of true AF COCOM waiver submissions, the fact that a 25% underestimation of the true COCOM Waiver submission rate would only change the MTF Waiver Denial rate from 61% to 51% indicates that the MTF is actually bearing the most significant load with regards to medical screening.

While investigating the branches downstream of Branch 1.2.1 “Medical”, another metric can be derived. The ratio of total successful outcomes stemming from Branch

Table 2: Simulation of 95% Medical Success

SUMMARY					
Attempts	23389	Medical Reclama	58.88458	COCOM Waivers Denied	0
Success	22010.80693	Personnel Actions	560.9595	MTF Waivers Denied	58.88458
Fail	1378.193075	Line Remarks	418.38	Total Medical Waivers Approved	1118.807
Total (should be Attempts)	23389	Conditions	264	COCOM Waiver Approval %	85.80%
Success Rate	0.94107516	Inaccurate ART	37.9845	MTF Waiver Approval Accuracy % COCOM Approval %	
		Other	37.9845		
		Post Tasking Incident	0		

1.2.1 to unsuccessful outcomes would represent a probability of successful deployment given a need for a medical waiver. The simulation of one AEF based on AFMC's data (AFMC/CV, 2011), results in a medical success rate of 389/1177.69, which is only 33.79%, resulting in 779.69 sourcing attempt failures. This model allows manipulation of probabilities to enable visualization of effects that various improvements or changes will have on the final outcome. Should an attempt to improve the medical success rate decide to target various goals, those goals can be set to view the outcome. In the above simulation, changing the medical success rate to 95% provides the results in Table 2.

Comparing the results of the simulation targeting improved medical success rates to the simulation of the current state reveals that the improved rate results reducing medical reclaims from 779.69 to 58.88, a reduction of 720.8 sourcing failures in a single AEF cycle. This single improvement raises the overall sourcing success rate to 94%.

Examining improvement efforts further by targeting 80% improvements on the top four drivers of reclaims, which are medical, line remarks, personnel actions, and Condition 5, and simulating the results based on the same single AEF input of 23,389 results in a reduction of 1,618.42 sourcing failures and drives the sourcing success rate up to 97.95%. Applying this improved sourcing success rate to the entire AF population of 332,000 results in the ability to demonstrate successful accounting of 325,178.376, which means the employable war fighting capability, is increased by 22,973 warfighters over the current state. This statement does not imply a member that cannot deploy is not an employable warfighter, it implies that members thought to be capable for deployment that turns out to be non deployable and in fact not only non employable for as a planning factor, they are 22,973 sourcing problems that will require last minute rework and

problem solving, as well as at a minimum an additional 22,973 re-sourcing requirements. All re-sourcing requirements are waste. To envision the value of that waste, 22,973 are more than the initial requirements of a single AEF rotation. It is the equivalent of wasting all of the work from all levels and agencies required to execute a single AEF sourcing effort. Recognize this simulation would not represent true statistics for attempting to task the entire Air Force simultaneously; it merely simulates extending the evaluation over a longer period of time until 332,000 simulation attempts are made.

Perhaps the most pertinent revelation of this simulation with regards to process improvement was the fact that the number of attempts required to successfully fulfill requirements had to be derived from other data, and was not reported as a metric itself. Measuring that information would result in a metric indicating the process success rate. This is significant from a process perspective because to have a successful process, there should be a metric to track process success, and there currently is not one.

Summary

This chapter utilized the information gained during the process discovery and data obtained from cooperating Air Force agencies and evaluated them with Process Improvement, Supply Chain Management, Logistics Management, and Statistical Probability methodology to produce supply chain maps and a statistical probability decision tree to aid in the assessment of the current state as well as possible future improvements. It presented two supply chain maps simplifying the processes of planning and actual requirement fulfillment in order to provide visual indications of possible unnecessary or misplaced supply chain members or processes. It also analyzed available

data to produce a statistical probability model to help map the various outcomes of sourcing attempts as well as initial estimations of the various probabilities for those outcomes. This model also serves to illustrate what metrics would support process improvement and provided estimations of metrics that have not been tracked, but may be very useful. Finally, in one of the final simulations, this model provided a first glimpse of the magnitude of waste that may be eliminated with properly focused improvement efforts.

V. Conclusions and Recommendations

This chapter will discuss the conclusions of the research conducted by this study as well as its significance. It will also identify the limitations of this research in an attempt to clarify its reliability. Finally, this chapter will provide recommendations for action and future research.

Conclusions of Research

The purpose of this study was to evaluate the process of supplying warfighters to CCDR's. Through a process of exhaustive literature review and interviews, it thoroughly examined the written processes and investigated gaps in the literature to develop a conceptual map of the major processes involved. This conceptual map is not intended to be a step by step all inclusive instruction manual of sub processes, rather an overarching study attempting to link all of the sub processes together into a single piece of literature to enable evaluation of the larger process. It successfully accomplished this task by bringing regulatory guidance together from numerous different specialty fields such as personnel, medical, and contingency planning as well as guidance from numerous echelons such as the DoD, CJCS, and Air Force. It then brought all of that guidance together and reinforced the information with interviews of sub process experts. Using this research, simplified sourcing process flow charts and conceptual supply chain maps were developed. Finally, the available data was used to create a statistical probability decision tree to map possible outcomes of sourcing events in an effort to identify initial estimates of critical metrics pertaining to the sourcing process as well as to provide a model that would allow future researchers and leaders to manipulate the probabilities of

various outcomes in order to visualize the effects those changes will have. The model also allows the user to simulate any value for the number of sourcing attempts to provide expected values of the various outcomes.

In addition to providing tools for future research and improvement efforts, the research suggests that the process needs improvement. It also identifies some areas of concern that should be addressed with either improvement efforts or further research.

The first area of concern is ART reporting. ART attempts to classify and communicate the readiness of capabilities electronically through numerous levels of supervision before it is viewed by its end user, the person attempting to match requirements to capabilities at AFPC. The problem is that ART only uses three-color codes and limited stratification with ALC/ACC/DAV's and commander comments that are all subjective. The guidance for coding dictates only UTC's capable of deployment within 72 hours should be coded as green, yet in an interview, a leader at AFPC's scheduling office stated UTC's with an ALC-C2 should be green. This illustrates the problem of lack of standardized reporting in. The problem here is that not only should individuals with any type ALC-C be considered unable to meet the 72-hour requirement because the medical waiver process would likely be overwhelmed should more than a few waivers be submitted at a time, but also because an ALC-C2 limits where the UTC can deploy. However an ALC-C1 is supposedly cleared capable of world wide deployment provided it receives a waiver first. Provided they get approved waivers, ALC-C1's meet the worldwide deployment requirement to be green, however the judgment call on 72-hour readiness results in some ALC-C1's being coded green and other Commanders coding them yellow. If an ALC-C1 is green, it misrepresents it

readiness and the fact that depending on it's ailment, (which cannot be in ART and is unknown to the scheduler) it must still navigate a waiver process that this research estimates to only have less than a 40% success rate. Classifying ALC-C1's as yellow presents the same problems between ALC-C1's and ALC-C2's. C1's are worldwide capable and C2's are only CONUS capable (plus select few overseas locations), but they both carry the same color status in ART. Further stratification enables the scheduler to discern the ALC-C1's from the ALC-C2's, but still insight into the probability of successfully obtaining a waiver for deployment can only be deciphered from the Commanders comments which cannot actually indicate an ailment.

This problem with ART indicating the true capability of UTC's that are other than green combined with the fact that the medical community is actually acting as capability suppliers during the actual requirement fulfillment process instead of during the planning process indicates a possible improvement opportunity. The data suggests medical disqualification is the leading cause of sourcing failure. The literature suggests AEF Tempo Band A and B are the natural equilibrium for all capabilities. Functional managers are tasked with evaluating deployment tempo on a regular basis to determine the need to remain in surge operations. This indicates that the majority of eligible members assigned to a UTC in any tempo band besides A or B should expect to be tasked every time they are vulnerable. Given this information, having medically limited members in temp bands other than A or B obtain waivers prior to the sourcing window of their AEF vulnerability instead of after they are tasked would not be expected to significantly increase the burden on the medical waiver process. Considering the statement from CENTCOM/SG that most waivers are evaluated strictly from an AOR

perspective and not based on the exact base the member will deploy to, those prequalification waivers can be preliminary prequalifications for the deployment locations that their ALC qualifies them for. Additional restrictions to those locations can be identified by the MTF on the waiver. For example an ALC-C1's approved waiver could state "prequalified for all C-1 locations" or "prequalified for all C-1 locations with permanent treatment facilities", etc. These limitations do not divulge HIPPA information and can be included in the Commanders comments in ART to provide schedulers with better information. The data indicates MTF's are approximately 85% accurate at predicting the outcome of waivers submitted to COCOM/SG's. If the MTF's process prequalification waivers for individuals prior to their sourcing window and then submit the waivers to the COCOM's once individuals are tasked, it could potentially drastically increase the sourcing success of medically coded individuals.

To capitalize on the improved stratification of medical limitations, and resolve frustrations with poor ART status coding, it should be recognized that 3 colors do not accurately represent the status of forces that have so many levels of readiness. SORTS is a time-tested method of capability reporting for units that uses 6 levels of status reporting. The ART stoplight should be evaluated to possibly add an additional color to provide the capability to communicate limitations more accurately. For discussion, if the color blue were added as a status between yellow and green, it could be a good status indication for medical limitations that currently have a medical prequalification on file, while yellow would be reserved for those that do not. It is important to note that these prequalifications are not actual COCOM approved waivers, just MTF approvals contingent upon final approval once the tasking is assigned. Also it is important to

recognize that they are no more a duplication of the qualifications suggested by the normal ALC/AAC/DAV's or profiles processes than an actual final waiver would be. The prequalifications would be the medical recommendation of an expert examination of the member's symptoms with consideration to available treatment at the possible deployed locations. Using the statistical probability decision tree to simulate MTF prequalification and eliminate MTF waiver rejections from the post-sourcing equation results in an estimated decrease of 613 medical reclaims from 780 to 167, as well as increasing the overall sourcing success rate to 94%. That is a 3% increase in total force capability accountability as well as a reduction in the sourcing workload of a single AEF by 613. That is avoiding the waste associated at least 613 resourcing attempts which are handled by multiple people at multiple echelons, as well as the waste associated with 613 reclaims, and the additional costs incurred by duplicating any deployment preparations those 613 reclaims incurred before they were denied their medical waivers.

Another area of interest identified by this study is the MAJCOM involvement. With modern data systems and improved communications, the value of continuing to have the MAJCOMs inserted in the process between the units and AFPC is questionable for a few reasons. First, the By Name Sourcing method illustrates a process capable of little to no MAJCOM involvement. Second, when the sourcing decisions are being made by a single overarching entity such as AFPC, having the individual MAJCOMs supplementing guidance and creating up to ten different variations of capability reporting and sourcing may prove counter productive. Third, while the planning and functional management jobs accomplished at the MAJCOMs are very important, perhaps consolidating the manpower from all of the MAJCOM's into a single entity would

improve standardization, and possibly enable a reduction in the total manpower required. Finally, having the FAM's and planners consolidated at AFPC would allow substitutions to still be with consideration of the FOL teaming strategy, because often the next closest substitute geographically belongs to a different MAJCOM and would not otherwise be a viable substitution for a MAJCOM level FAM.

Another revelation provided by this study is the lack of metrics. There are a lot of metrics tracked, however there still seem to be critical gaps between what is tracked and the metrics that are key indicators of a successful deployment sourcing process. Developing the statistical probability decision tree identified numerous metrics that are currently not tracked, however are critical in understanding how the process is performing. This includes the primary metric of tracking the sourcing success rate. Other missing data that would provide valuable insight are the number of waivers the MTF's actually handle and their actual approval rates as well as stratifying medical reclaims based on if they result from known ALC's (conditions already evaluated by an MEB), ACC's (conditions over 30 but less than 365 days), or from conditions that occur post sourcing. Other data that may improve the ability to evaluate the process are tracking the timelines of all reclaims to know when in the process they occur and tracking the tasking rates of the various ART reporting statuses. For example, knowing how many personnel actions reclaims occur prior to tasking would indicate how well Commanders are complying with status updates in a timely manner and knowing whether UTC's coded as green are being tasked more, the same, or less than UTC's coded yellow.

The final conclusion of this research is the discovery that, except for the P-codes and in the case of By Name Sourcing the number of contingency taskings and short tour

return date, candidate names/UIC/UTC's are sourced without considering the minimum capability necessary to meet the requirement. The study revealed that once the already mentioned criteria are sorted, the schedulers choose the first candidate on the list that meets the requirements. This is good for meeting the single known demand presented to the scheduler at that time, but it is a sub-optimal allocation of resources to meet the maximum demand. It ensures a candidate is sourced that appears to have the capabilities to meet the minimum requirements, however it does not ensure excessive capabilities are not sourced. Back to the analogy of the pick up trucks. If a car dealer that has 2-wheel drive and 4-wheel drive trucks does not track what type of truck it gives customers unless the customer specifically requests the increased capability of the 4-wheel drive, then it is apparent that occasionally customers that would be satisfied with a 2-wheel drive would actually be given a 4-wheel drive, and all customers wanting 4-wheel drives would be given 4-wheel drives...until the dealer runs out of 4-wheel drives. At that point, every time that a customer wanting a 4-wheel drive is turned away because there are only 2-wheel drives left, it is directly due to how the dealer managed it's inventory. This analogy resembles what appears to be the sourcing process currently used. Every time a requirement is sourced with an excessive capability it is a lost opportunity. If a requirement is being sourced that can be filled by a capability with an ALC-C2 limitation is actually filled with a fully capable green coded asset, then we are sacrificing the ability to fill future requirements with that fully capable asset. For example, there are two UTC's left in the pool of capabilities for the scheduled vulnerability cycle. One is coded yellow with an ALC-C1 and the other is green. A requirement is received to source one of these UTC's to deploy to Al Udeid. The green UTC happens to be at the top of the list

and is sourced for the requirement. Now there is only the ALC-C1 coded UTC is left. If a second requirement is received that is to somewhere the ALC-C1 cannot go, but the green UTC could have, then our mismanagement of assets caused this inability to meet the requirement. The same scenario could apply for other UTC attributes that are visible to the schedulers such as Rank for individuals being sourced by name. Sending a TSgt to fill a 7-level requirement when a SSgt will suffice only limits our pool of remaining resources and our ability to respond to line remarks stipulating TSgt's only. This means that instead of selecting the first qualified candidate, a process should be developed to select the first qualified candidate that minimizes wasted excess capability. For example, all deployment requirements to stateside locations that are not sourced by other selective means, should be sourced with ALC-C2 limited candidates first.

A third Supply Chain Map was developed illustrating one possible future state that may improve process efficiency, it is included in Appendix C and streamlines the processes by consolidating functional managers and other necessary planners at AFPC and eliminating the MAJCOMs from the process entirely. The map also implements the process of prequalifying medical waivers and eliminates MTFs from acting as suppliers during the requirements fulfillment phase.

Significance of Research

This study is an initial examination of a subject with little to no previously published research. It provides a conceptual map of the process in a single written work which was previously unavailable. It simplifies extremely complicated processes in a

manner that supports an understanding of the overarching process and provides a tool for further process improvement. This research also developed estimations of metrics that were previously completely unknown and it developed a tool for modeling the effects various targeted changes have on the overall sourcing success rate. It also identifies several improvement opportunities. Finally, this research illustrates a process in need of significant improvement that has the ability dramatically increase the actual capabilities of the Air Force with the resources already on hand.

Limitations of Research

Data is the most significant limitation of this research. There was no data available to provide statistical analysis or to enable more accurate estimations. One of the most impacting limitations is the lack of data pertaining to the specific details surrounding medical reclama's. No data was available to allow segregation based on ALC's, pre/post tasking injuries, or even true MTF waiver statistics.

Generalizability is another limitation. This is a study of a very unique process and does not easily generalize to any other application with the exception of the basic tools and methods used for the process evaluation. Also, the data pertaining to the break out of reclamation by cause was specific to AFMC and not an ideal sample of all MAJCOMS.

Reliability of the probabilities developed with the statistical probability decision tree is limited by lack of data as well. The lack of data required a lot of unsupported assumptions in an effort to field initial estimations. All data related conclusions are

based completely on descriptive statistics without the benefit of inferential statistical support.

Recommendations for Action and Future Research

This study identified a need for action and future research. Recommendations for action based on the results of this study are a review of sourcing policies with regards to optimizing resource management and possibilities of implementing a method of sourcing that fills requirements with the minimum capabilities necessary. Next a review of the ART 3-color coding methodology is recommended as this study indicates the current method fails to accurately communicate capability limitations. Additional research or action is needed to evaluate the costs of prequalifying medically limited members versus the potential benefits such as improved sourcing accuracy (capability accountability), and the reduced workload associated with decreased resourcing efforts. Future research is recommended to gather data to improve the reliability and further elaborate upon the tools provided by this study. Focused research on mapping the supply chain to identify value added and non-value added processes should provide significant results. Further evaluation of the various causes of reclaims, surrounding circumstances and potential remedies should also prove to be extremely beneficial. Finally, senior leadership should reevaluate the system of metrics used to track the health of the sourcing process and its implication as an indication of force capability accountability to identify and direct the use of carefully selected, yet specific metrics that will support an effective, efficient process that maximizes capability accountability.

During a time of doing more with less and dwindling resources, this study identifies an area as well as several opportunities for massive improvements in both process workload and resource utilization. If the sourcing process success rate is brought up to a standard concurrent with DoD inventory accuracy rates, the Air Force stands to reclaim accountability of over 22,000 warfighters and to reduce the sourcing workload by almost an entire AEF rotation every 4-5 years at the current rate.

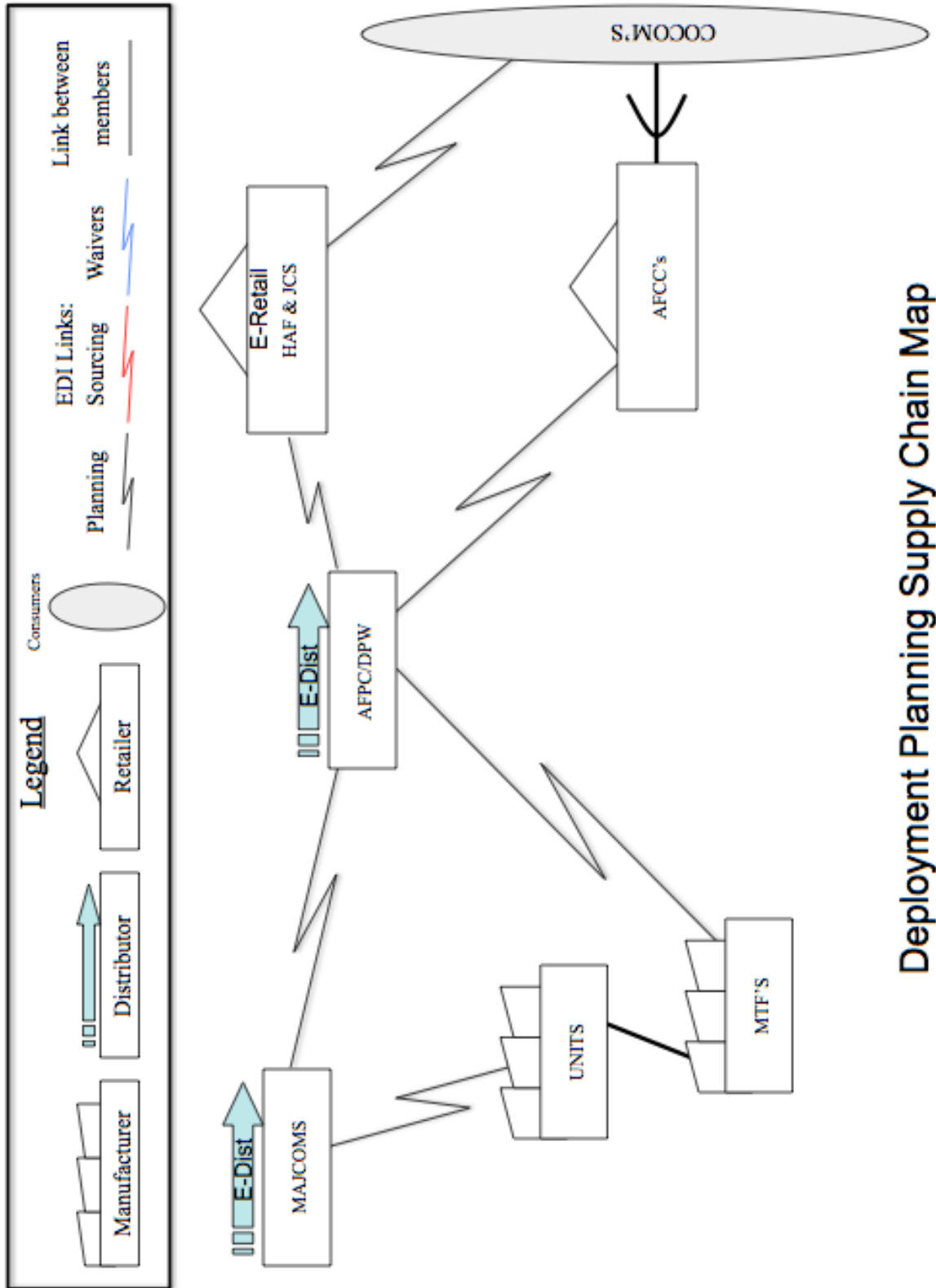
Appendix A: DAV Codes (AFI_10-403, 2008)

DAV	DEFINITION	DAV	DEFINITION
28	Unable to hand-carry or possess firearms/ammunition	56	Airman with less than 12 weeks Total Active Federal Military Service (TAFMS)
29	Conditional release (ARC)	57	TOS less than 15 days/45 days/6 months
30	Probation or rehabilitation program	58	Airman declines to extend
31	Control roster	59	Duty and travel restriction
32	Pending SFS/AFOSI investigation	60	Deferred from hostile fire zone
33	Administrative or international hold	61	Sole surviving son or daughter
34	Material witness	62	Functional category "L" pipeline
35	Action under Article 15 - UCMJ	63	Needs Special Security Investigation Required (SSIR) clearance
36	Prisoner	64	Requires mobility training
37	Pending court martial/civil trial	65	Commander's option
38	Commander-directed hold	66	Conscientious objector
39	Adoptive parent	67	Insufficient security clearance
40	Assignment limited to base with hospital	68	Voluntary expiration term of service (ANG)
41	Medical deferment	69	Involuntary expiration term of service (ANG)
42	Physical Evaluation Board (PEB) action	70	Conditional release (ANG)
43	Flying status under review	71	Promotion deferral (ANG)
44	Exceptional Family Member Program (EFMP) deferment	72	Mandatory separation date (ARC)
45	Humanitarian assignment or deferment	73	Age 60 (ARC)
46	Chronic humanitarian	74	Involuntary discharge pending (ARC)
47	Substance Abuse Re-orientation and Treatment (SART) program tracks 4/5	75	Selective retention (ANG)
48	Medically disqualified for deployment	76	Voluntary discharge request
49	Pregnancy deferment	77	Other (ANG)
50	Projected separation (within 180 days)	78	Projected for reenlistment (within 180 days)
51	Reserve officer DOS (within 180 days)	79	Ex-Prisoner of War (POW)
52	First-term airman DOS (within 180 days)	80	Members under the age of 18-years old
53	PCS inter-command (within 180 days)	96	ANG on special tour Military Personnel Appropriation (MPA) man-days
54	PCS intra-command (within 180 days)	97	USAFR on special tour MPA man-days
55	Date Eligible for Return from Overseas (DEROS) (within 180 days)	98	ANG on extended active duty Presidential call-up

Appendix B: ART Checklist (AFI_10-244, 2010)

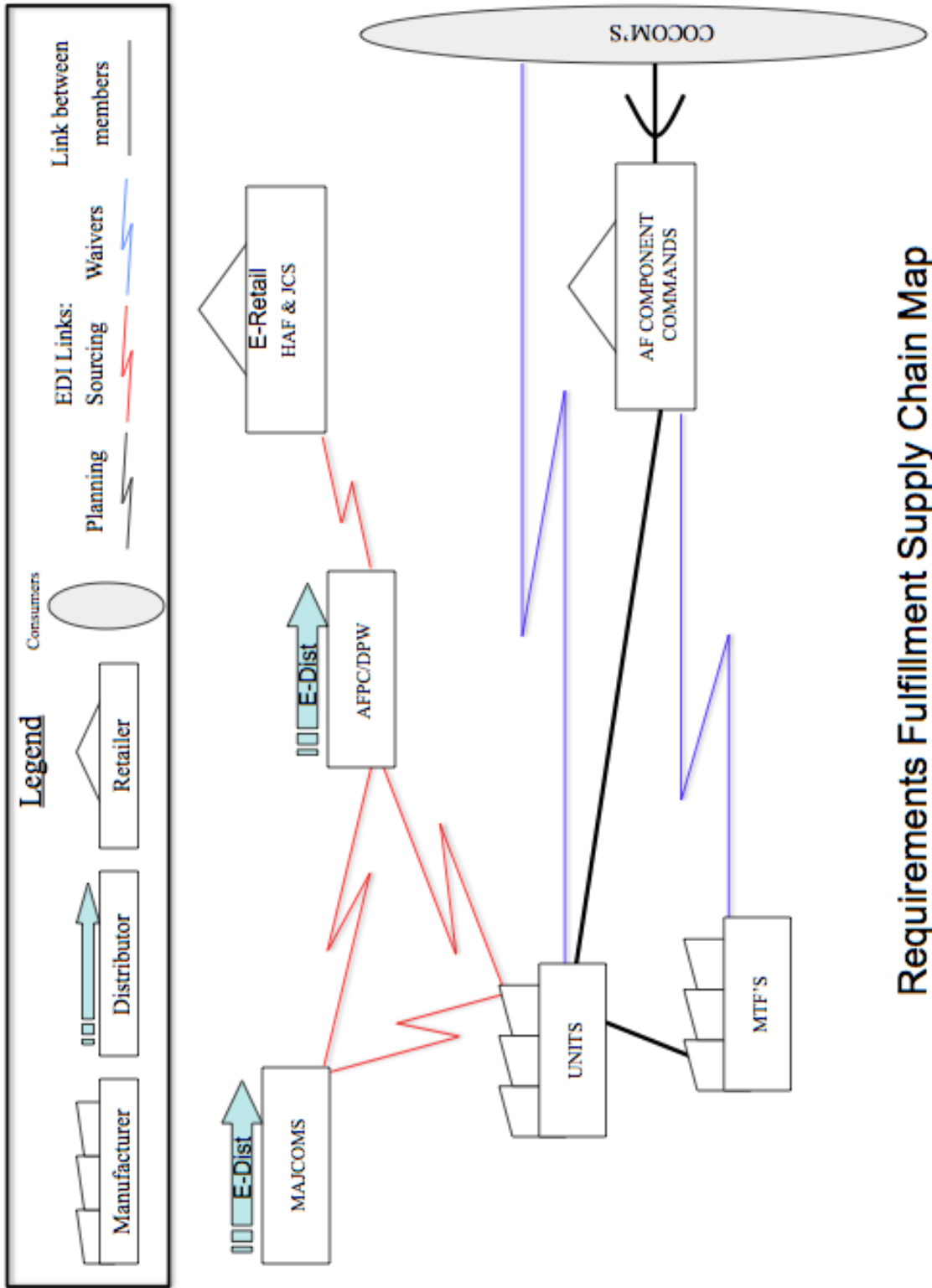
All units MUST use this checklist as a tool to assess UTC Personnel, Training, Equipment/Supplies and Equipment Condition (PTEC) monthly in ART. ALWAYS consider what the UTC's MISCAP states when assessing.		Current AEF	
GREEN = There are absolutely NO UTC deficiencies in any of the four assessed areas YELLOW = UTC can meet MISCAP but there are deficiencies to be noted RED = UTC cannot meet MISCAP due to too many deficiencies BLACK = UTC is postured incorrectly and requires MAJCOM FAM attention.	G		
		Y	
			R
<p>Check the appropriate shaded block (G, Y, R) below, depending on how you answer the question. The lowest rating in any area will drive the overall rating of the UTC. Any deficiencies must have remarks and Get Well Dates (GWD); check each month for expiration. Only the FINAL rating is used in ART.</p> <p>Refer to the MISCAP, MANFOR, LOGFOR, MILPDS, AFI 10-244 (Ch 3), AFI 10-401 and AFI 10-403.</p> <p><i>Once an individual is associated to an AEF they cannot be changed without obtaining a MAJCOM/CV waiver IAW AFI 10-401, 9.7.6</i></p>			
A: PERSONNEL			
1 MANNING: Are all position numbers in the UTC, as outlined by the MANFOR, filled by assigned personnel?			
a	Yes.		G
b	No, but can still meet MISCAP.	GWD	Y
c	No, and cannot meet MISCAP.	GWD	R
2 CAFSC (Enlisted), DAFSC (Officer): Does each member's CAFSC/DAFSC listed in each UTC position number match the MANFOR requirement exactly?			
a	Yes.		G
b	No, but substitution allowed by MISCAP or AFI 10-403.	GWD	Y
c	No, and substitution exceeds MISCAP and 10-403 allowances.	GWD	R
3 GRADE: Does each member's grade listed in each UTC position number match the MANFOR requirement?			
a	Yes.		G
b	No, but substitution allowed by MISCAP or AFI 10-403.	GWD	Y
c	No, and substitution exceeds MISCAP and 10-403 allowances.	GWD	R
4 DAV: Are all members free of any non-waiverable Deployment Availability Codes			
a	Yes.		G
b	No, but can still meet MISCAP.	GWD	Y
c	No, and cannot meet MISCAP.	GWD	R

Appendix C: Supply Chain Maps



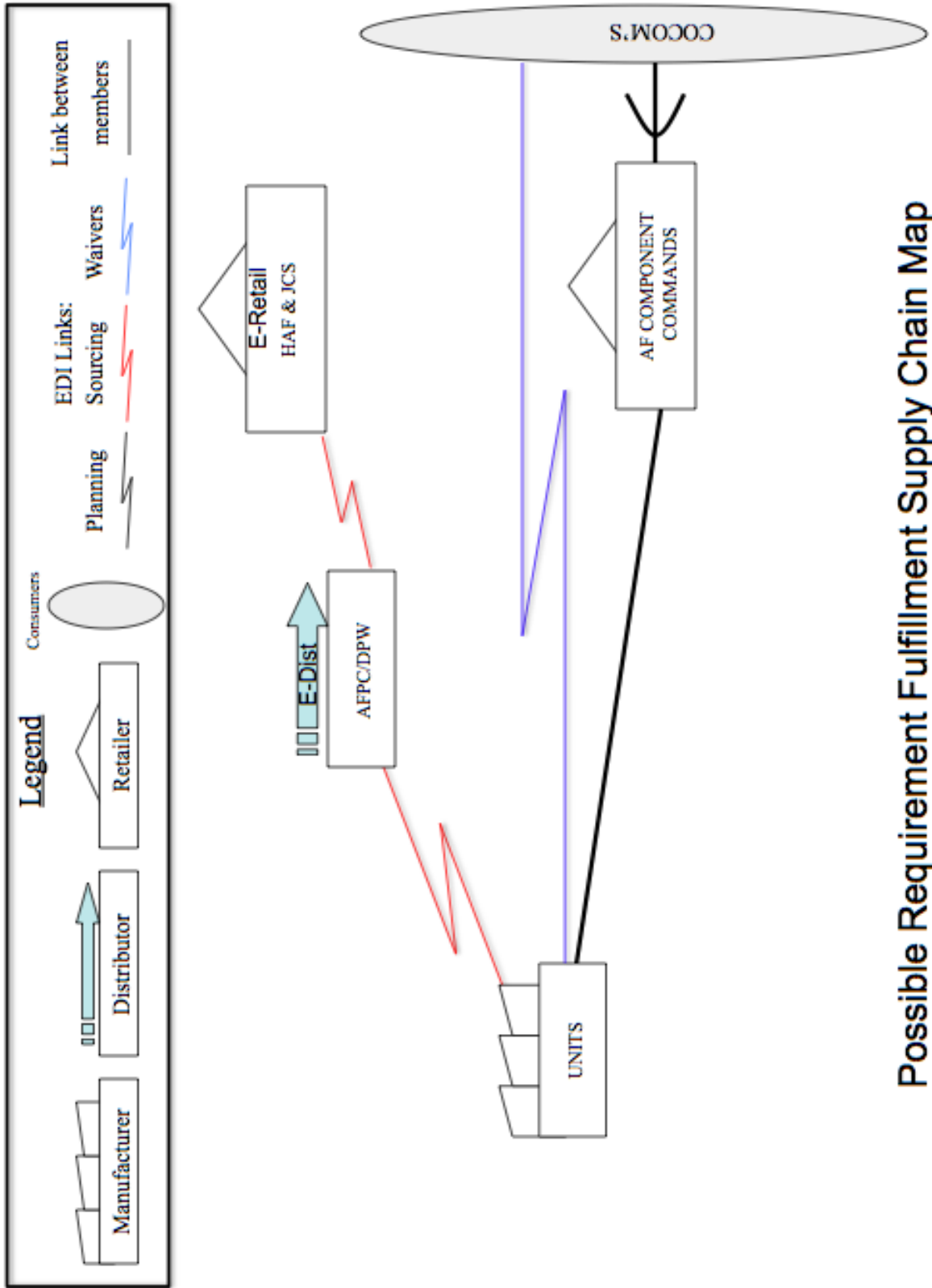
Deployment Planning Supply Chain Map

Appendix C: Supply Chain Maps



Requirements Fulfillment Supply Chain Map

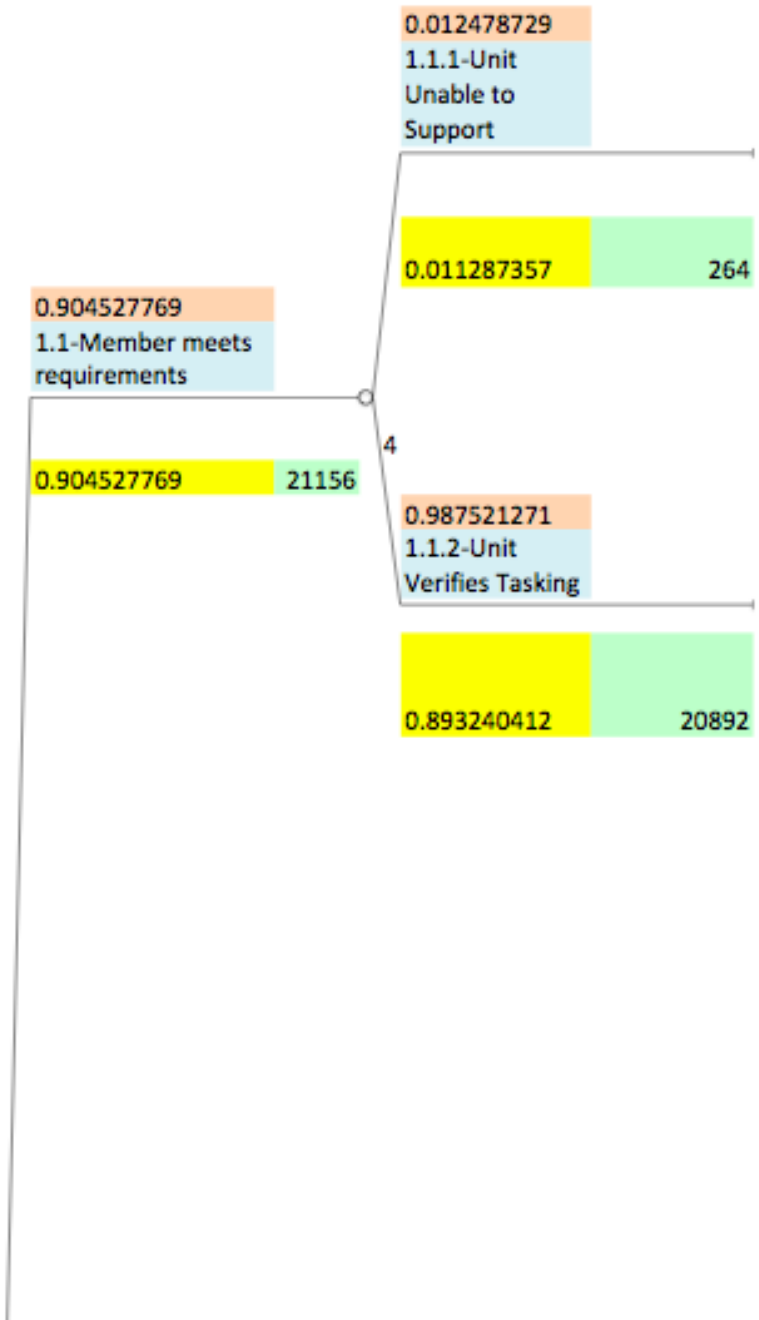
Appendix C: Supply Chain Maps



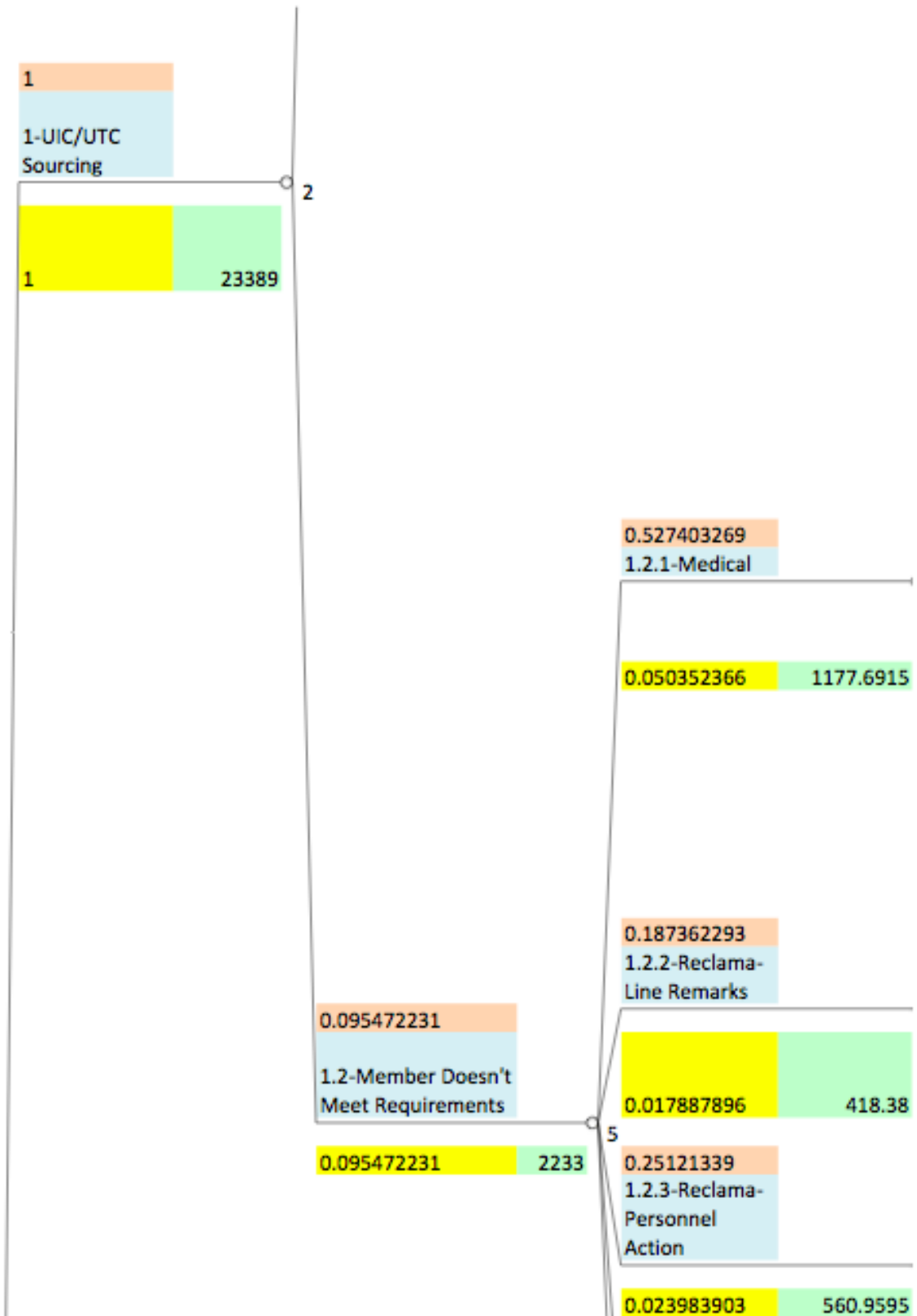
Possible Requirement Fulfillment Supply Chain Map

Appendix D: Statistical Probability Decision Tree pg. 1/15

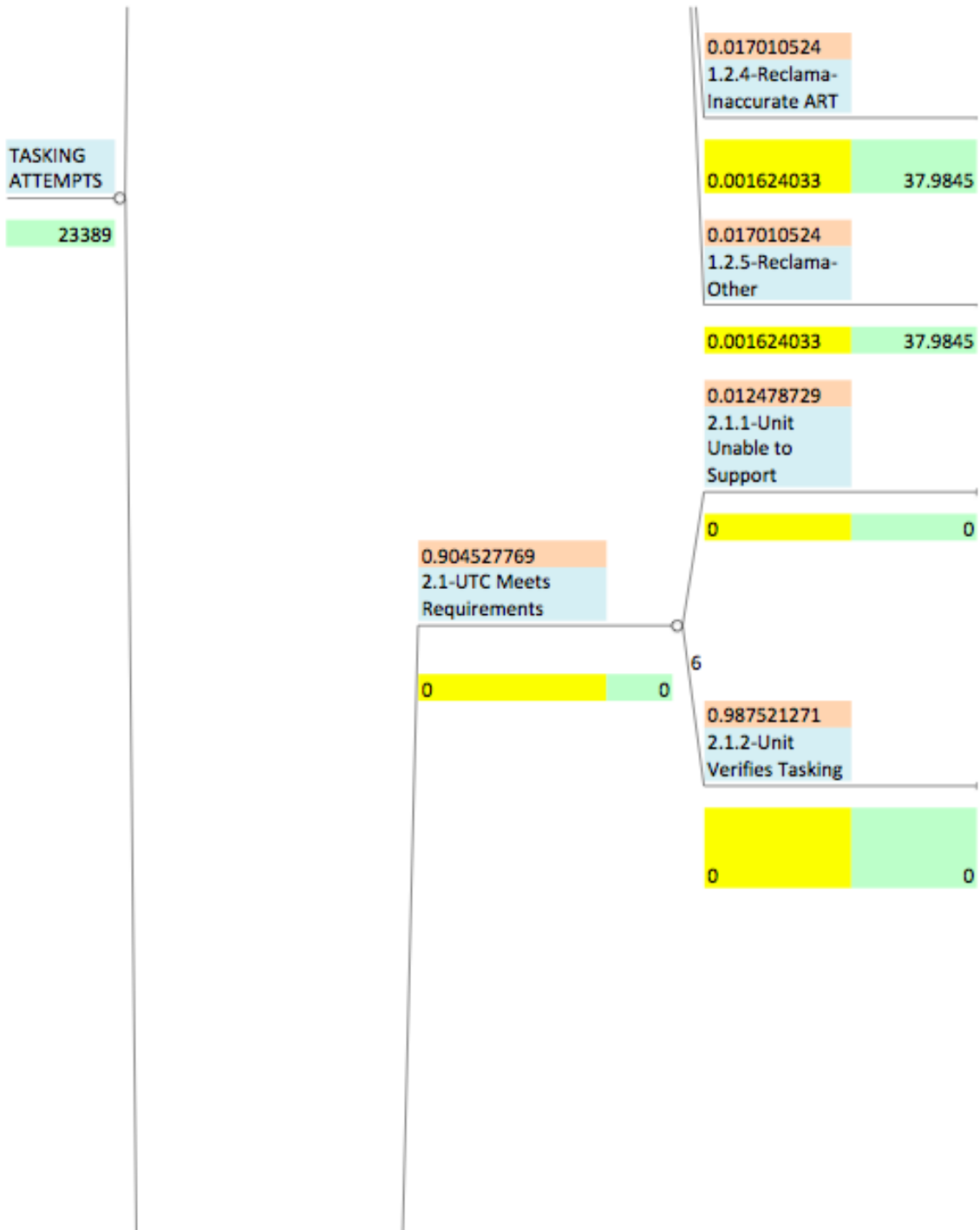
LEGEND	
Branch Probability	
Name of Branch	
Total Probability	Expected Value



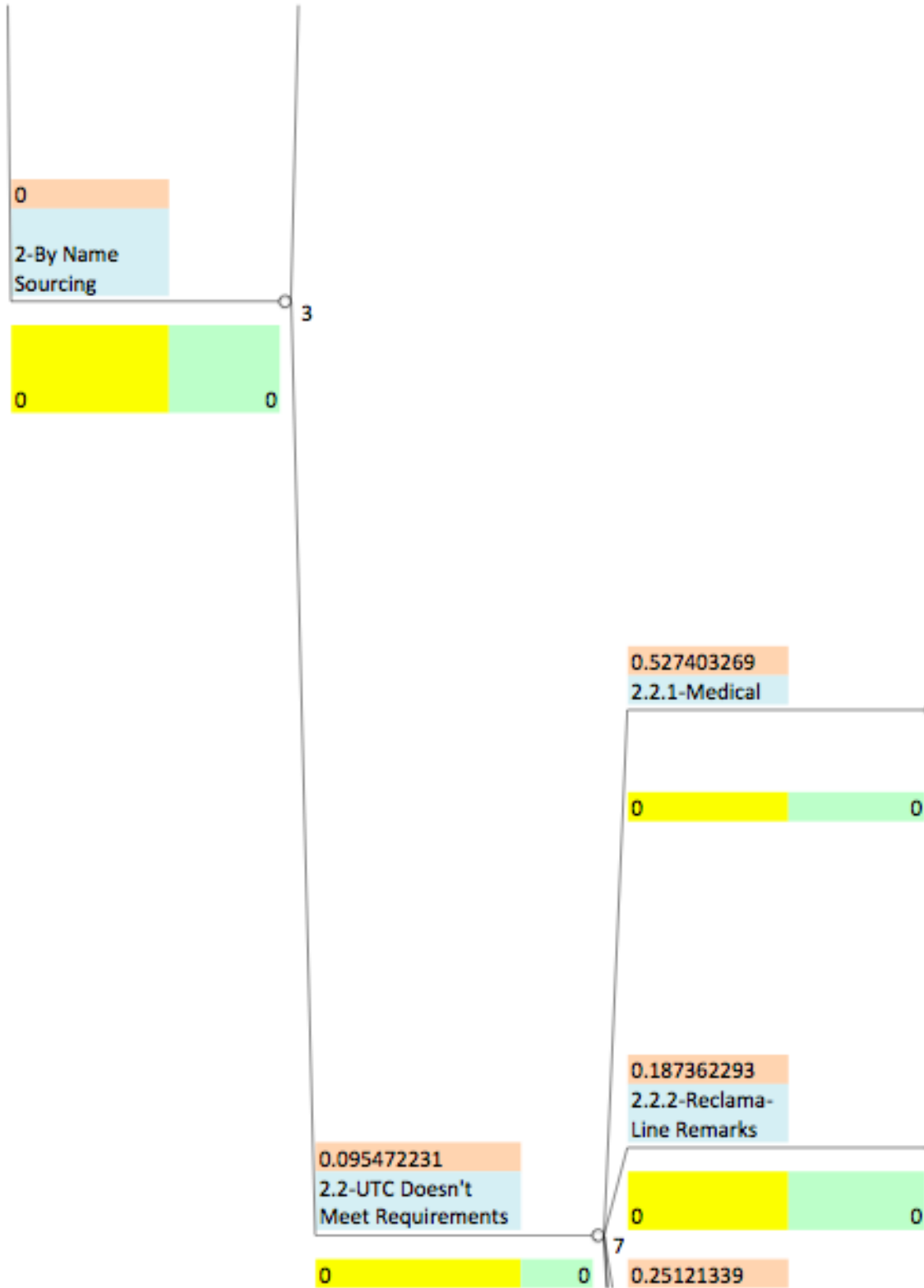
Appendix D: Statistical Probability Decision Tree pg. 2/15



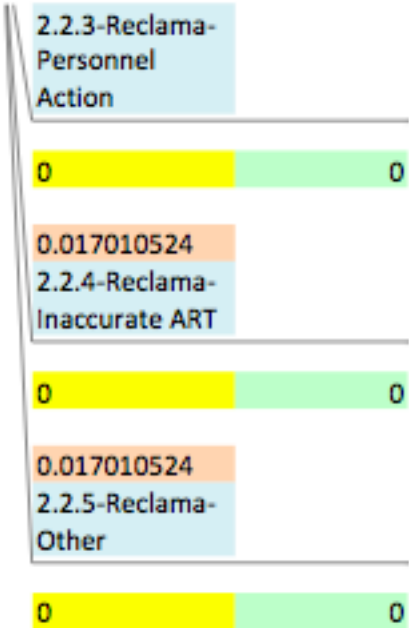
Appendix D: Statistical Probability Decision Tree pg. 3/15



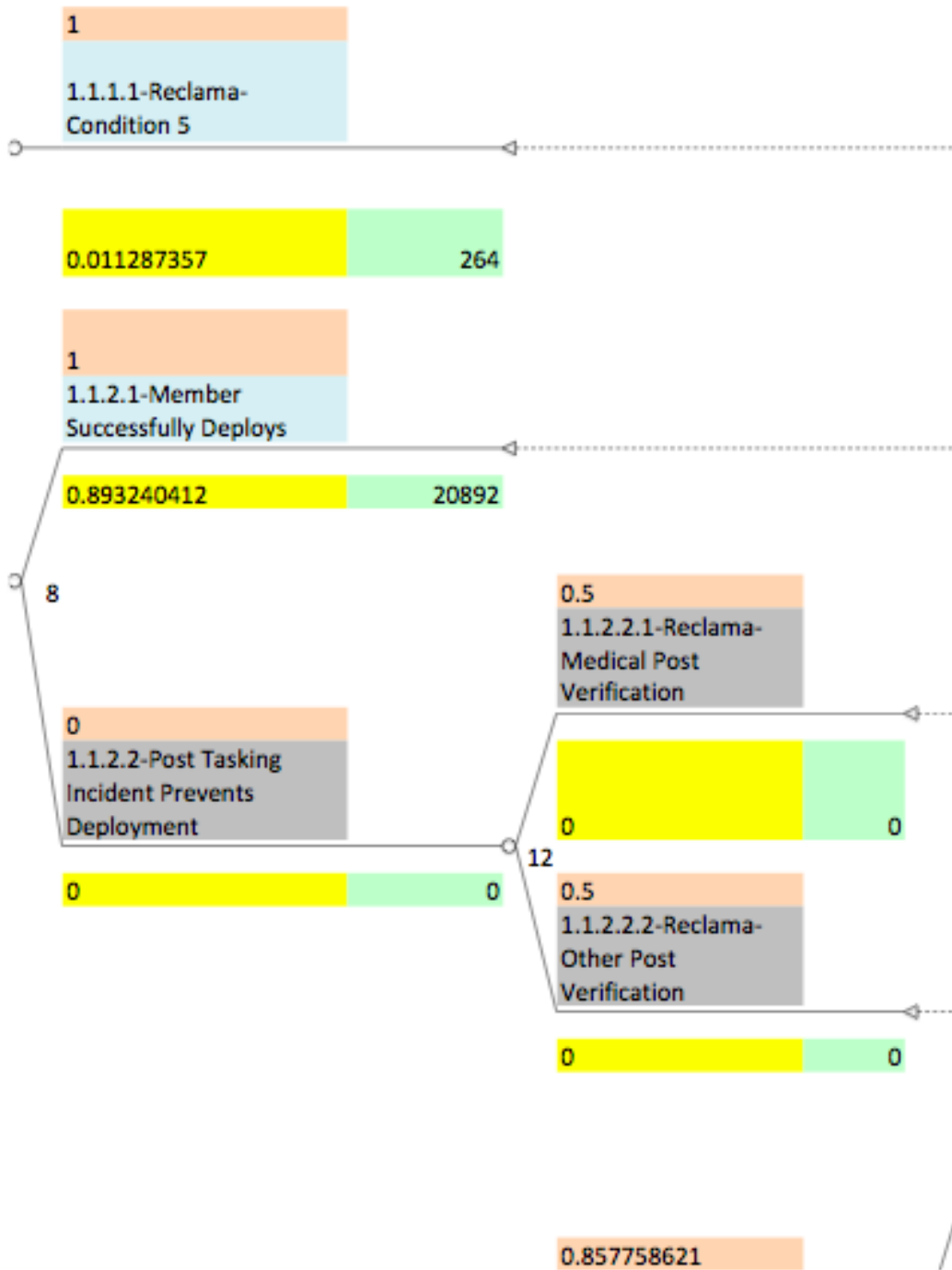
Appendix D: Statistical Probability Decision Tree pg. 4/15



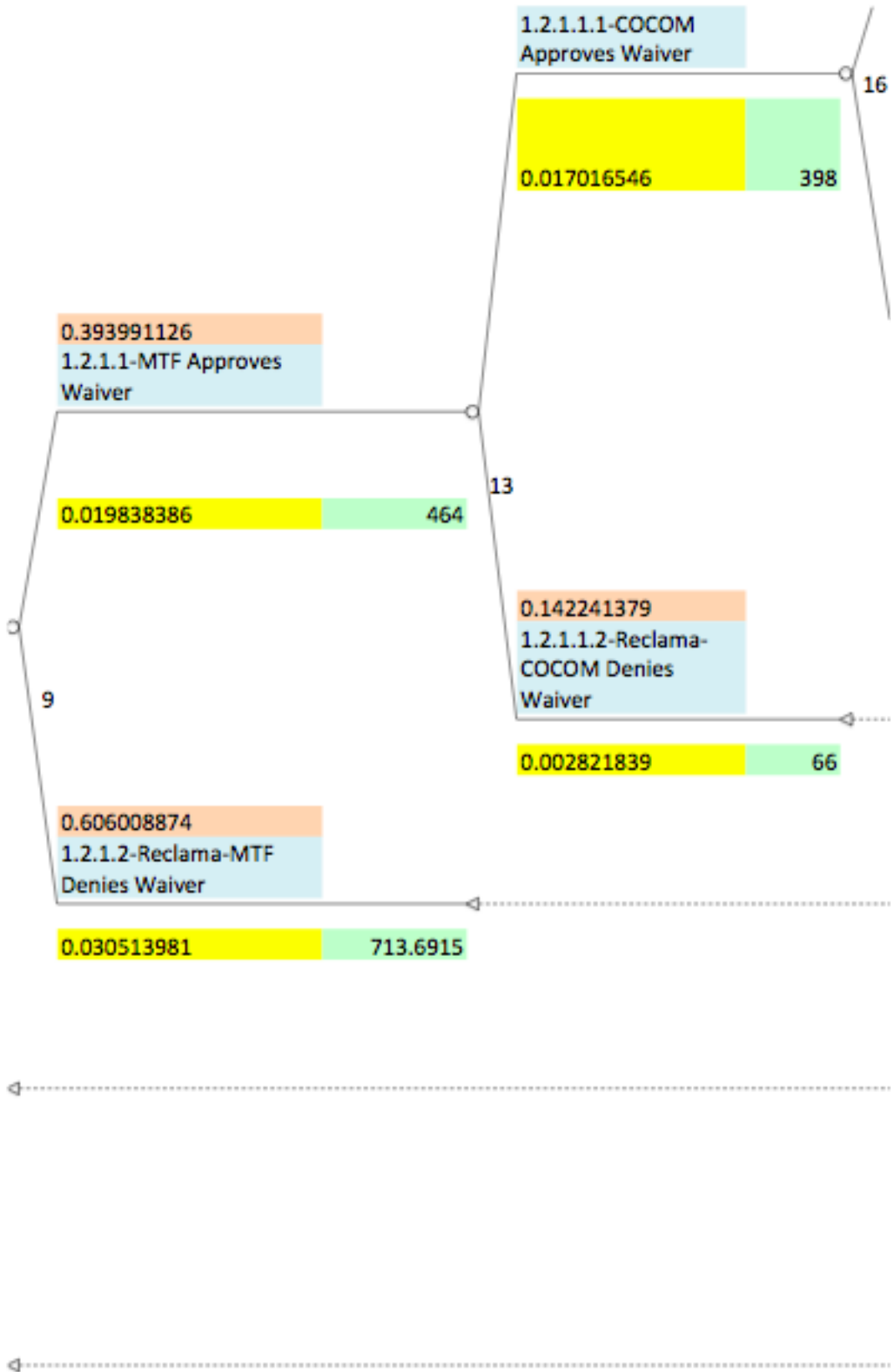
Appendix D: Statistical Probability Decision Tree pg. 5/15



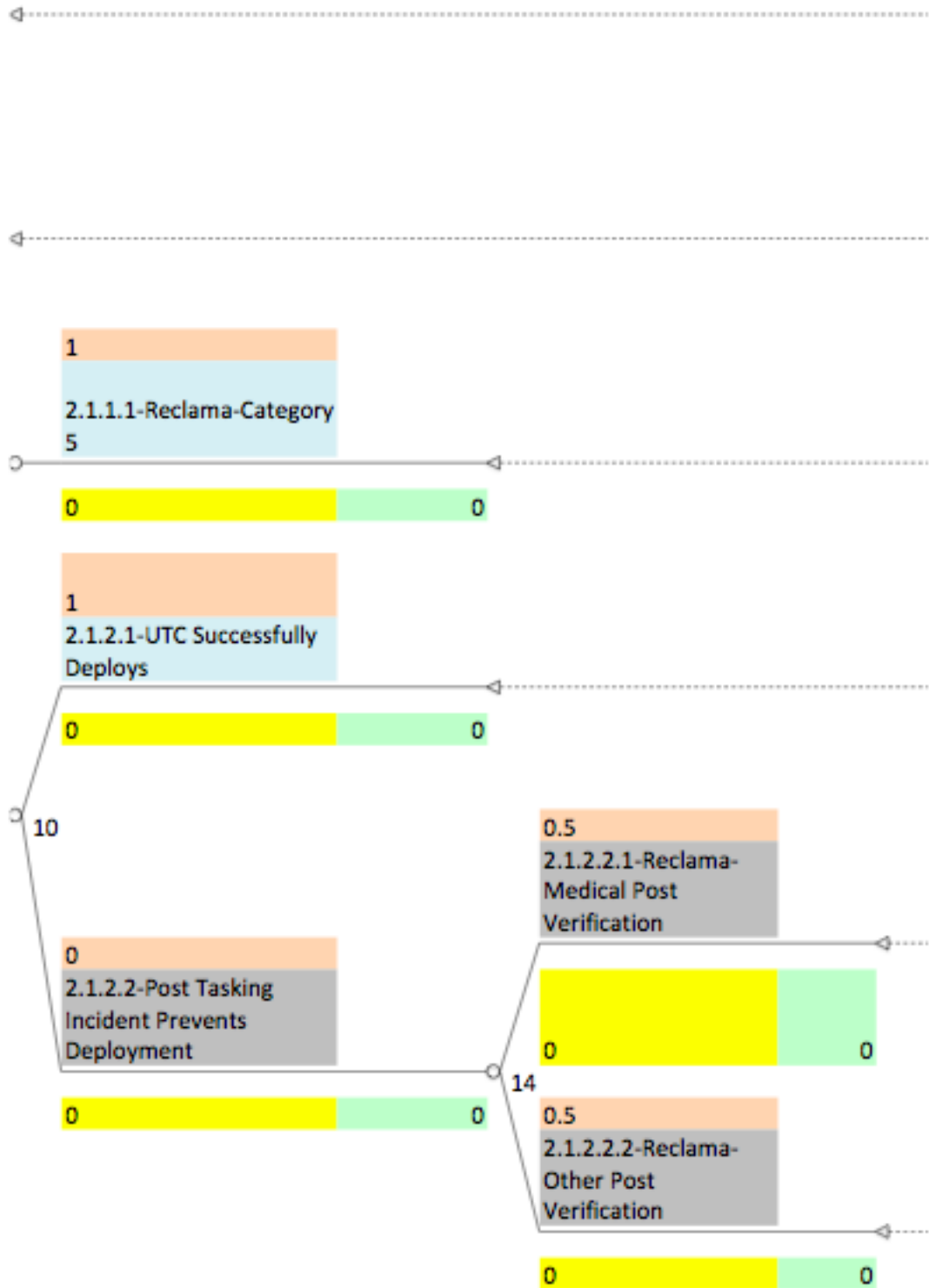
Appendix D: Statistical Probability Decision Tree pg. 6/15



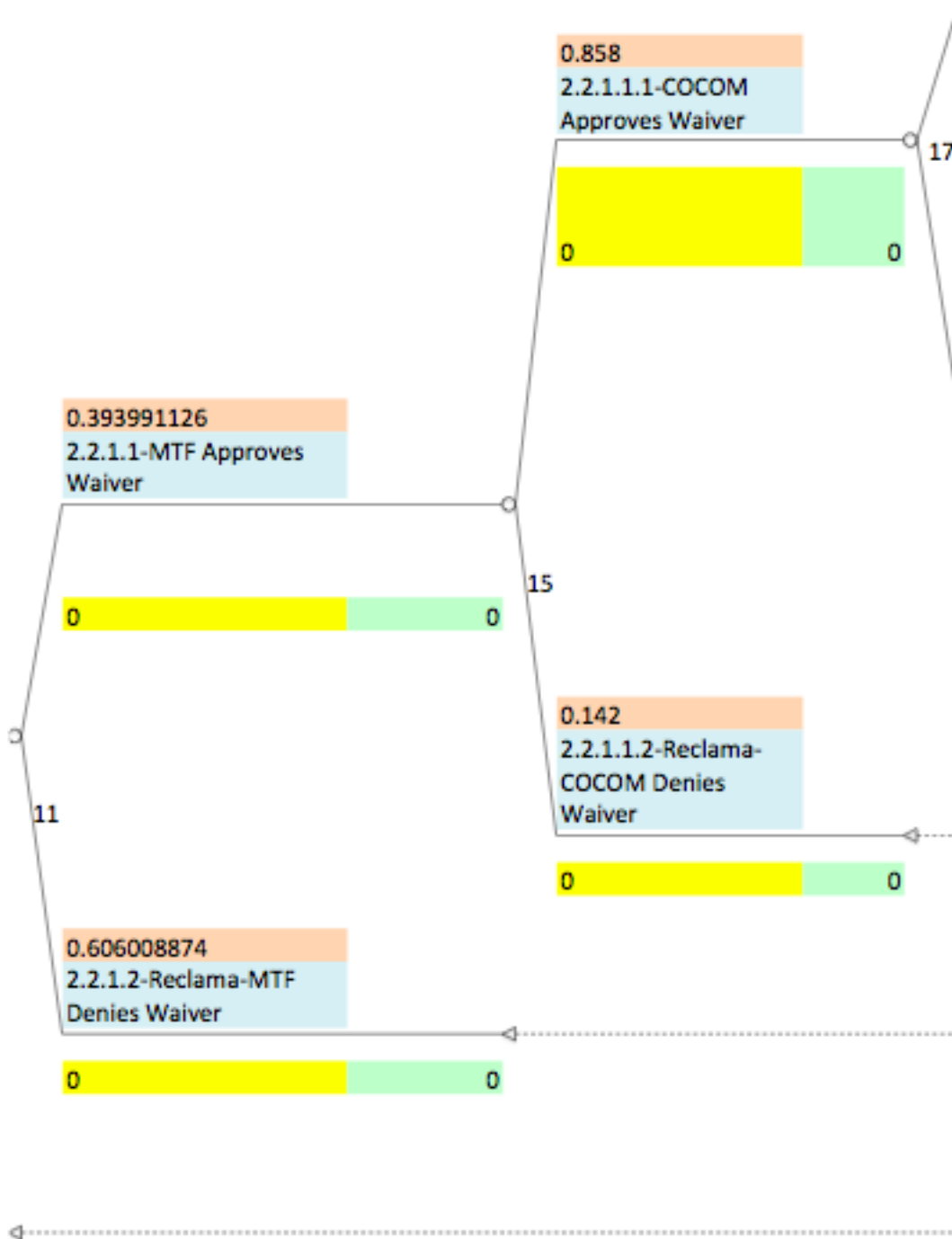
Appendix D: Statistical Probability Decision Tree pg. 7/15



Appendix D: Statistical Probability Decision Tree pg. 8/15



Appendix D: Statistical Probability Decision Tree pg. 9/15



Appendix D: Statistical Probability Decision Tree pg. 10/15

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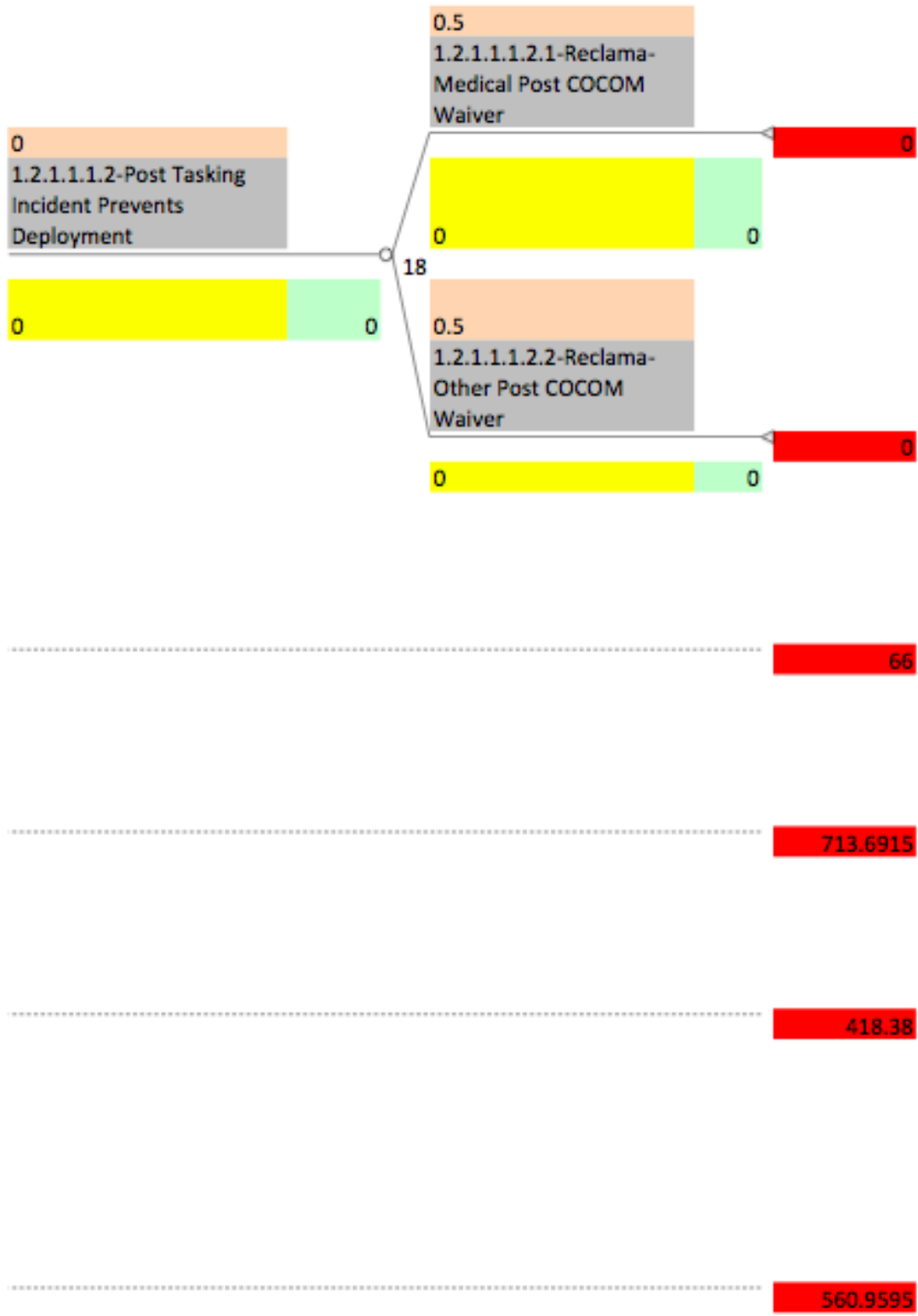
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Appendix D: Statistical Probability Decision Tree pg. 11/15



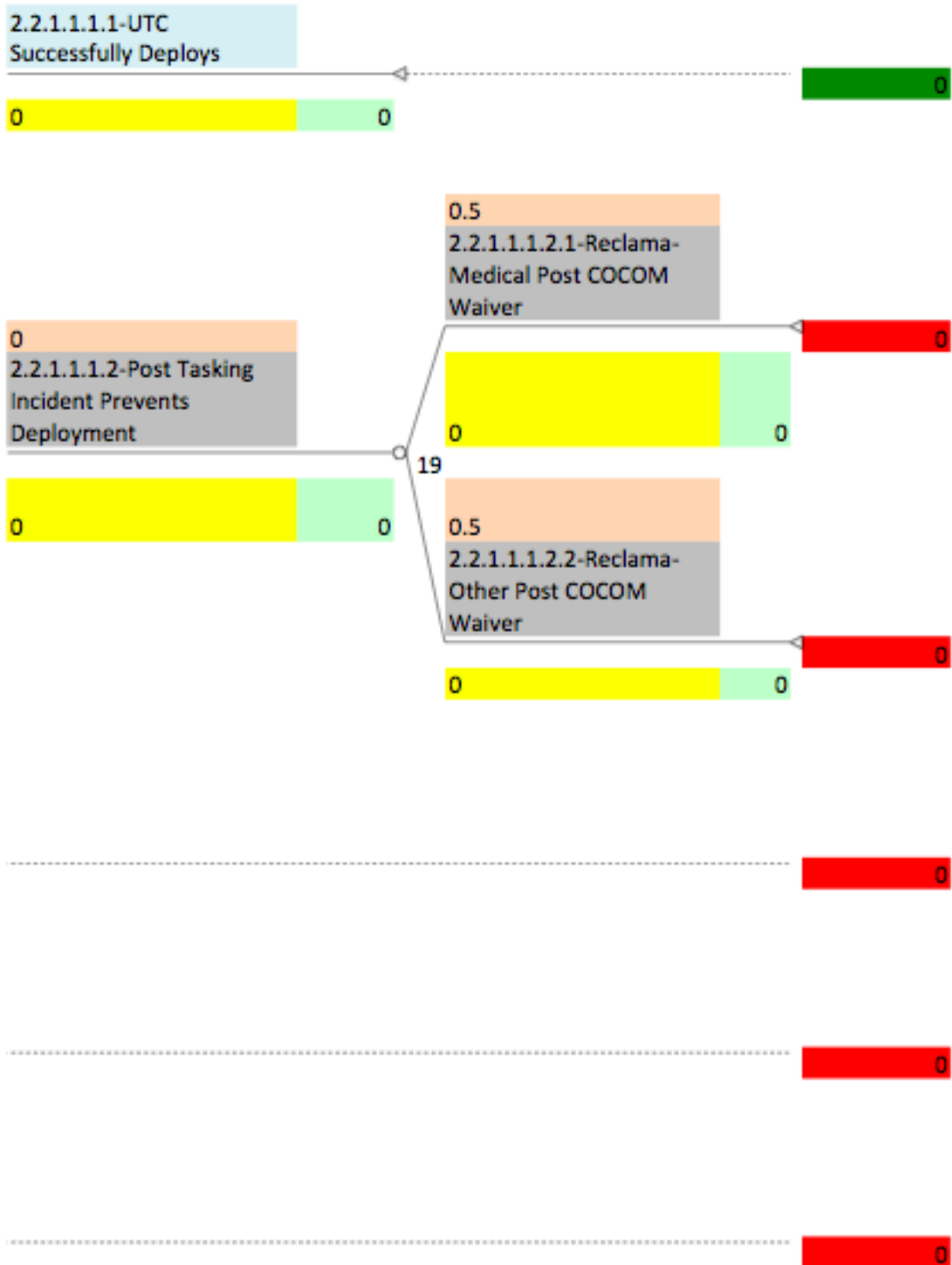
Appendix D: Statistical Probability Decision Tree pg. 12/15



Appendix D: Statistical Probability Decision Tree pg. 13/15



Appendix D: Statistical Probability Decision Tree pg. 14/15



Appendix D: Statistical Probability Decision Tree pg. 15/15





PERSONNEL, THE CLASS 0 SUPPLY ITEM: A LOGISTICS MANAGEMENT APPROACH TO SUPPLYING COMBATANT COMMANDERS WITH WARFIGHTERS

AFIT

Purpose

- Utilize SCM Tools to Evaluate Manpower Resource Utilization and Capability Management
- Evaluate the AEF Process of Supplying CCDR's with Warfighters to Determine If Improvement Can Be Beneficial
- Study Entire Process to Develop Conceptual Map and Literary Description of the Overarching Concepts and Processes
- Develop A Tool To Measure Improvement
- Identify Potential Improvements or Area's of Concern
- Provide Solid Foundation for Future Research and Improvement Efforts

Capt William Beard

Advisor: Lt Col Sharon Heilmann

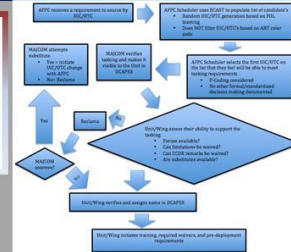
Member: Dr. Alan Johnson

Department of Operational Sciences (ENS)

Air Force Institute of Technology

Methods

- Process Discovery
 - Literature Review
 - Use Interviews To Validate Concepts and Gaps In Literature
- Develop Simplified Supply Chain Maps of Relationships
- Develop Statistical Probability Decision Tree



AEF 6-MONTH ROTATION TIMELINE TEMPLATE



Conclusions

- The Process Needs Improvement
- Area's Of Concern
 - ART Reporting — Insufficient Capability Stratification
 - Medical Community Acting as Suppliers During Requirements Fulfillment
 - Sourcing Excessive Capabilities
 - MAJCOM Involvement Has Questionable Value-Added Input
 - Lack of Metrics Describing Variables Affecting Sourcing

Recommendations

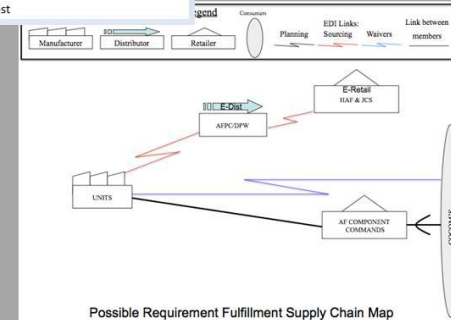
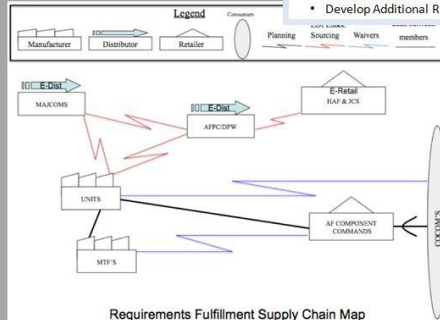
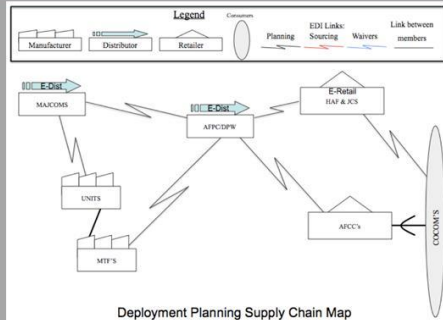
- Evaluate Requiring Preapproved Medical Waivers to Common Locations (CONUS, Large/Common OS) Prior to Sourcing Window
 - Tempo Bands Other Than A&B Should Expect Mobilization
 - COCOM States Most Waivers Are Approved On AOR in General, Not Specific Base
 - Route Waivers for Final Approval Once Tasked
- Re-evaluate ART Coding System For Addition of More Colors/Status Codes
 - Stratify Medical "Waiver Unknown" as Yellow
 - Medical "Preapproved" Between Yellow and Green
- Develop Process to Reduce Sourcing Excess Capability
 - Source Minimum Capability Necessary to Meet Requirements
 - Keep Most Versatile Assets in Reserve For Unknown Future Requirements
- Evaluate Possibility of Consolidating FAM's and Planners at AFCC, Eliminating MAJCOMs From Process
 - Continue Developing SPDT Model
 - Develop Metrics for Critical Relationships
 - Develop Additional Relationships of Interest

LEGEND		SUMMARY	
Branch	Probability	Attempts	23389
Name of Branch		Medical Reclaima	779.6915
Total Probability	Expected Value	Success	21290
0.904527769	1.1-Member meets requirements	Fail	2099
0.904527769	21156	Total (should = attempts)	23389
		Condition 5	264
		Inaccurate ART	37.9845
		Success Rate	0.910256958
		Other	37.9845
		Post Tasking Incident	0
		COCOM Waivers Denied	66
		MAJCOMs verification complete and Levy flow start	- 134 day
		MAJCOMs verification and Levy flow start	- 140 day
		Sourcing complete	- 142 day
		Sourcing start	- 151 day
		ARC buy complete (if required)	- 156 day
		AFCC approved ECS requirements in DCAPES	- 177 day
		Present rotational requirements to AFCC for acceptance	- 181 day
		Publish Sourcing Plans and Tasks Message	- 192 day

Statistical Probability Decision Tree Results

- Success Rate Only 91%
 - Poor Inventory Accuracy/Capability Accountability
 - Fail Rate * AF End Strength = 29,880 lost capabilities
- Medical, Personnel Actions, & Line Remarks Comprise 83% of Failures
- 80% Improvement in Top 4 Reclaima Drivers Result in 1,618 Fewer Failures in Single AEF Cycle & Provides 97.95% Success Rate
- 97.95% Success Rate = Accountability of 22,973 More Warfighters When Simulating AF End Strength
 - Saves More Workload Than Equivalent of Tasking an Entire AEF Rotation

Appendix E: Quad Chart



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14. ABSTRACT The Air Force's end strength has drawn down from 530,000 to just over 332,000 in the past 20 years. All indications are that resources will continue to become more restricted in the future, including manpower. Meanwhile, studies indicate that the Air Force will likely continue to withdraw permanently stationed forces overseas and rely increasingly on the Air Expeditionary Force (AEF) construct for rapid mobility and force projection. With the AEF and efficient manpower utilization projected to become increasingly important, this study provides the first examination of the AEF as an overarching process for improvement opportunities. It proposes that the concept of AEF requirement fulfillment is actually a supply chain designed to supply Combatant Commanders with equipment and warfighters. It focuses on the fulfillment of manpower requirements identifying them as a Class 0 Supply Item and uses Supply Chain and Logistics Management principles to conduct an initial examination of the process to identify overarching relationships and process flow. Using the information gathered, it then maps the conceptual relationships and develops a statistical probability model to aid leaders and future researchers in analyzing expected costs and benefits of various targeted changes within the current construct. This study proposes new methods for managing AEF manpower capabilities, a new application of SCM principles, and hopes to be a solid platform for a multi-phase study aimed at reengineering the AEF, from force reporting to sourcing in an effort to maximize manpower utilization and provide senior leadership and the planning community more accurate force accountability.					
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